

# National Institute of Standards and Technology

## Plan for Providing Public Access to the Results of Federally Funded Research

### 1. PURPOSE

This document establishes a plan to enable public access to the results of research funded wholly or in part by NIST; NIST's Public Access Policy will be informed by this Public Access Plan. To the extent feasible and consistent with law, agency mission, resource constraints, U.S. national, homeland, and economic security, and the objectives listed below, NIST intends to make freely available to the public, in publicly accessible repositories, all peer-reviewed scholarly publications and associated data arising from unclassified research and programs funded wholly or in part by NIST. Subject to the same conditions and constraints listed above, NIST will also promote the deposit of scientific data arising from unclassified research and programs, funded wholly or in part by NIST, to make it available free of charge unless otherwise excepted, in publicly accessible databases. NIST's Public Access Plan promotes the following objectives:

- Establish NIST's commitment to providing public access to scientific research results
- Support governance of and best practices for managing peer-reviewed scholarly publications and digital scientific data across NIST
- Ensure effective access to and reliable preservation of NIST peer-reviewed scholarly publications and digital scientific data for use in research, development, education, and scientific discovery
- Enhance innovation and competitiveness by maximizing the potential to create new business opportunities.

### 2. SCOPE

The NIST Public Access Plan applies to the results of research funded wholly or in part by NIST, presented in peer-reviewed scholarly publications and as research data, defined in Circular A-110 of the Office of Management and Budget as the "recorded factual material commonly accepted in the scientific community as necessary to validate research findings."

Not considered research data in Circular A-110, and therefore not covered by this plan, are:

- Laboratory notebooks, results of preliminary analyses, drafts of scientific papers, plans for future research, peer review reports, communications with colleagues, or physical objects, such as laboratory specimens;
- Trade secrets, commercial information, or other materials necessary to be held confidential by a researcher until they are published, or similar information that is protected under law; and
- Personnel and medical information and similar information the disclosure of which would constitute a clearly unwarranted invasion of personal privacy.

NIST will protect confidentiality and personal privacy and will recognize proprietary interests, business confidential information, and intellectual property rights, avoiding significant negative impact on intellectual property rights, innovation, and U.S. competitiveness.

Implementation will be prospective and will not apply to NIST peer-reviewed scholarly publications published and research data created before NIST's Public Access Policy takes effect. However, NIST will endeavor to make legacy information publicly available and ensure its preservation as soon as practicable. A process will be created to engage with customers to help facilitate and prioritize information release.

### **3. APPLICABILITY**

The NIST Public Access Plan applies to the following groups:

- All NIST employees who publish peer-reviewed scholarly material and data as part of their employment, including full- and part-time employees, temporary government employees, and special government employees;
- Awardees from non-NIST organizations that publish peer-reviewed scholarly material and data through activities funded wholly or in part by NIST through a grant, cooperative agreement, contract, or other agreement. This includes but is not limited to states, localities, regulated parties, non-profit and volunteer organizations, contractors, cooperative agreement holders, grantees, cooperating Federal agencies, intergovernmental organizations, universities, and other educational institutions. For activities funded by multiple sources with differing public access requirements, the provisions of this plan will apply unless otherwise specified by NIST in its funding documents.

### **4. REQUIREMENTS**

To the extent feasible and consistent with law, agency mission, resource constraints, U.S. national, homeland, and economic security, and the objectives listed below, NIST intends to make freely available to the public, in publicly accessible repositories, all peer-reviewed scholarly publications and associated data arising from unclassified research and programs funded wholly or in part by NIST. Subject to the same conditions and constraints listed above, NIST will also promote the deposit of scientific data arising from unclassified research and programs, funded wholly or in part by NIST, free of charge unless otherwise excepted, in publicly accessible databases.

All proposals or plans for activities that will generate scientific data using NIST funding will be required to (1) adhere to a Data Management Plan (DMP) that describes how scientific data generated through the course of the proposed work will be shared and preserved or (2) explain why data sharing and/or preservation are not within the scope of this plan.

- Reasonable costs for data preservation and access may be included in grant proposals or project plan budgets for contracts. Grantee and contractor DMPs will be reviewed as part of the technical evaluation process.
- NIST managers will be required to ensure staff compliance with the requirements of DMPs, including those for preservation and discoverability. NIST managers will ensure that DMPs are considered in the context of employees' performance plans and evaluations.
- Non-compliance with requirements by staff and funding recipients will result in penalties; policies will evolve over time.

Authors of peer-reviewed scholarly publications are required to submit to the NIST public access archive system metadata and their copies of final peer-reviewed journal manuscripts within the scope of this

plan once the manuscript is accepted for publication. In lieu of the author's version of the final peer-reviewed manuscript, NIST will also accept the final published article, as formatted by the journal, provided the author has the right to submit the published version.

NIST's plan further requires that the final manuscript, which has been peer-reviewed and accepted for publication, be freely available to the public no later than 12 months following publication.

## 5. AUTHORITY

NIST's authority to require broad public access to the results of federally funded research stems from multiple sources, including, but not necessarily limited to, those below.

- Executive Office of the President, Memorandum for the Heads of Executive Departments and Agencies: Increasing Access to the Results of Federally Funded Scientific Research, dated February 22, 2013, requires that the direct results of federally funded scientific research, including that of awardees, be made available to and useful for the public, industry, and the scientific community. Available at [http://www.whitehouse.gov/sites/default/files/microsites/ostp/ostp\\_public\\_access\\_memo\\_2013.pdf](http://www.whitehouse.gov/sites/default/files/microsites/ostp/ostp_public_access_memo_2013.pdf) (Accessed 10 February 2014.)
- Memorandum for the Heads of Executive Departments and Agencies – Transparency and Open Government, Executive Office of the President, January 21, 2009, requires that be transparent, participatory, and collaborative. [http://www.whitehouse.gov/the\\_press\\_office/TransparencyandOpenGovernment](http://www.whitehouse.gov/the_press_office/TransparencyandOpenGovernment) (Accessed 8 April 2014.)
- Open Government Directive (M10-06) issued on December 8, 2009 directs executive departments and agencies that, “to increase accountability, promote informed participation by the public, and create economic opportunity, each agency shall take prompt steps to expand access to information by making it available online in open formats.” <http://www.whitehouse.gov/open/documents/open-government-directive> (Accessed 10 February 2014.)
- The Office of Management and Budget (OMB) Memorandum M-13-13 Open Data Policy – Managing Information as an Asset dated May 9, 2013, requires that agencies collect or create information in a way that supports downstream processing and dissemination (e.g., use of machine-readable and open formats and extensible metadata). <http://www.whitehouse.gov/sites/default/files/omb/memoranda/2013/m-13-13.pdf> (Accessed 8 April 2014.)
- The Office of Management and Budget (OMB) Circular A-110, Uniform Administrative Requirements for Grants and Agreements with Institutions of Higher Education, Hospitals, and Other Non-Profit Organizations (section 36) specifies “The Federal awarding agency(ies) reserve a royalty-free, nonexclusive and irrevocable right to reproduce, publish, or otherwise use the work for Federal purposes, and to authorize others to do so.” [http://www.whitehouse.gov/omb/circulars\\_a110/](http://www.whitehouse.gov/omb/circulars_a110/) (Accessed 10 February 2014.)
- The Office of Management and Budget (OMB) Circular A-130, Management of Federal Information Resources, states that “[t]he open and efficient exchange of scientific and technical government information ... fosters excellence in scientific research and effective use of federal

research and development funds.”

[http://www.whitehouse.gov/omb/circulars\\_a130\\_a130trans4/](http://www.whitehouse.gov/omb/circulars_a130_a130trans4/) (Accessed 10 February 2014.)

- The Freedom of Information Act (FOIA; 5 U.S.C. 552) provides for public access to the records of the federal government. <http://www.gpo.gov/fdsys/pkg/USCODE-2011-title5/html/USCODE-2011-title5-partI-chap5-subchapII-sec552.htm> (Accessed 10 February 2014.)
- National Institute of Standards and Technology Act (15 U.S.C. 271, Chapter 7) states the responsibility of NIST to “compile, evaluate, publish, and otherwise disseminate general, specific, and technical data resulting from the performance of the functions specified in this section or from other sources when such data are important to science, engineering, or industry, or to the general public, and are not available elsewhere.”  
<http://www.gpo.gov/fdsys/pkg/USCODE-2011-title15/html/USCODE-2011-title15-chap7-sec271.htm> (Accessed 24 January 2014) and <http://www.nist.gov/director/ocla/upload/NIST-Organic-Act.pdf> (Accessed 10 April 2014)
- Copyright Act (17 U.S.C. 105, Section 105) provides that “copyright protection under this title is not available for any work of the United States Government.”  
[http://uscode.house.gov/view.xhtml?req=\(title:17%20section:105%20edition:prelim](http://uscode.house.gov/view.xhtml?req=(title:17%20section:105%20edition:prelim) (Accessed 24 January 2014)
- The E-Government Act of 2002 (44 U.S.C. 101) has among its primary purposes the promotion of “the use of the Internet and emerging technologies within and across Government agencies to provide citizen-centric Government information and services” as well as providing “enhanced access to Government information and services.” <http://www.gpo.gov/fdsys/pkg/PLAW-107publ347/pdf/PLAW-107publ347.pdf> (Accessed 8 April 2014)
- Public Law 90-396 Standard Reference Data Act provides for publication and copyright of Standard Reference Data. <http://www.nist.gov/srd/upload/publiclaw90-396.pdf> (Accessed 24 January 2014)
- Public Law 104-13, The Paperwork Reduction Act of 1995 has as one of its key purposes to “ensure the greatest possible public benefit from and maximize the utility of information created, collected, maintained, used, shared, and disseminated by or for the federal government.” <http://www.reginfo.gov/public/reginfo/pru.pdf> (Accessed 8 April 2014.)
- Public Law 111-358, Section 103, The America COMPETES Reauthorization Act of 2010 outlines the responsibility of a working group of the National Science and Technology Council “to coordinate Federal science agency research and policies related to the dissemination and long-term stewardship of the results of unclassified research, including digital data and peer-reviewed scholarly publications, supported wholly, or in part, by funding from the Federal science agencies.” <http://www.gpo.gov/fdsys/pkg/PLAW-111publ358/pdf/PLAW-111publ358.pdf> (Accessed 10 February 2014.)

NIST’s Public Access Plan and resulting policies do not rescind any other Department of Commerce or NIST policies or guidance and do not alter or supersede existing law or regulations, including NIST’s fee recovery authority for the provision of calibrations and Standard Reference Materials (15 USC 275c) and Standard Reference Data (15 USC 271-278e), which is further articulated in Public Law 90-396, the Standard Reference Data Act.

## **6. ROLES AND RESPONSIBILITIES**

### **The NIST Director**

- Controls and manages NIST's Policy and Order on Managing Public Access to Results of Federally Funded Research.
- Ensures coordination of the management of public access to results of federally funded research with non-NIST organizations, as applicable.

### **Associate Director for Laboratory Programs (ADLP)**

- Implements and provides oversight for maintenance of, and compliance with, NIST's Policy and Order on Managing Public Access to Results of Federally Funded Research.
- Ensures the availability of appropriate resources for managing public access to results of federally funded research.
- Reviews, approves, and evaluates the effectiveness of NIST OU and Office plans for managing public access to results of federally funded research.
- Ensures compliance with NIST's Policy and Order on Managing Public Access to Results of Federally Funded Research.
- Coordinates collaboration and cooperation on implementation of the NIST's Policy and Order on Managing Public Access to Results of Federally Funded Research across NIST and with the Department of Commerce and other federal agencies.
- With the Associate Director for Management Resources (ADMR) and the Associated Director for Innovation and Industry Services (ADIIS), coordinates with relevant OUs and Offices in their infrastructure planning and implementation to promote interoperability across NIST.
- With the ADMR and Chief Information Officer (CIO), coordinates with relevant OUs and Offices in their infrastructure planning and implementation to promote interoperability across NIST.
- With the ADMR and CIO, coordinates collaboration and cooperation on implementation of this plan across NIST, and with the Department of Commerce and other Federal agencies.

### **Associate Director for Management Resources (ADMR)**

- Facilitates the provision of NIST-level infrastructure to manage public access to results of federally funded research.
- Ensures the development and deployment of training, awareness, and outreach activities pertaining to the management of public access to results of federally funded research.
- With the ADLP and ADIIS, coordinates with relevant OUs and Offices in their infrastructure planning and implementation to promote interoperability across NIST.
- Oversees the activities of the Chief Information Officer and the Directors of the Information Services Office and Office of Acquisition and Agreements Management in supporting NIST's Policy and Order on Managing Public Access to Results of Federally Funded Research, as applicable.
- With the ADLP and CIO, coordinates collaboration and cooperation on implementation of this plan across NIST, and with the Department of Commerce and other Federal agencies.

### **Associate Director for Innovation and Industry Services**

- Oversees the activities of the Directors of the Advanced Manufacturing National Program Office, the Baldrige Performance Excellence Program, the Economic Analysis Office, the Hollings Manufacturing Extension Partnership, the Technology Innovation Program, and the Technology Partnership Office in supporting NIST's Policy and Order on Managing Public Access to Results of Federally Funded Research, as applicable.

### **NIST Chief Information Officer (CIO)**

- Manages NIST-level information technology infrastructure to support NIST's provision of public access to results of federally funded research.
- Ensures that the NIST Enterprise Data Inventory (EDI) is available to NIST employees and that NIST inventory records are provided to the Department of Commerce and government-wide inventories in the necessary format, per Office of Management and Budget requirements.
- Supports NIST OU and Office Directors' responsibilities (*see* Section VI.6. of this Order), as applicable.
- With the ADLP and ADMR, coordinates with relevant OUs and Offices in their infrastructure planning and implementation to promote interoperability across NIST.
- With the ADLP and ADMR, coordinates with other agency CIOs and with the Federal CIO Council to promote interoperability across agencies.

### **Director, Information Services Office**

- Works with the Office of Information Systems Management (OISM) to ensure implementation and operation of the NIST EDI.
- Curates metadata for NIST scholarly publications and scientific research data for publicly available repositories.
- Manages creation and maintenance of persistent identifiers for NIST Technical Series Publications.
- Develops data citation methods to facilitate attribution to NIST scientific data sets.
- Provides consultation and educational materials for NIST employees on managing data and providing public access to results of federally-funded research, including use of the NIST EDI, and the NIST review process, as applicable, for results of federally funded research that are intended for public dissemination.
- Facilitates search and access to metadata for NIST data or final published articles or NIST Technical Series Publications for the public.
- Supports NIST OU and Office Directors' responsibilities, as applicable

### **Director, Office of Acquisition and Agreements Management (OAAM)**

- Works with the Directors of NIST OUs and Offices to ensure that activities funded wholly or in part by NIST to a non-NIST organization through a grant, cooperative agreement, contract, or other agreement include requirements for managing data and publications consistently with the NIST directives for Managing Public Access to Results of Federally Funded Research, as specified by NIST in the terms and conditions of the grant, cooperative agreement, contract, or other agreement with the non-NIST organization, beginning October 1, 2015.

### **Directors of the OUs and Offices that produce scientific data**

- Implements ADLP-approved plan to manage public access to results of federally funded research within his/her OU or Office.
- Works with other offices, e.g., OISM and the Information Services Office, to manage public access to results of federally funded research.
- Reviews data prior to making it publicly available; authority to carry out this responsibility may be delegated to the Division Chief or equivalent.
- Ensures that his/her OU or Office prioritizes the discoverability and publication of applicable OU or Office datasets based on stakeholder needs and resources required.
- Provide oversight for implementation of the OU-/Office-level plan by units (such as divisions, programs, or projects) within the OU/Office.
- Evaluate the effectiveness of units with the OU/Office in meeting the objectives of this plan
- Coordinate with ADLP, ADMR, and CIO in infrastructure planning and implementation to promote interoperability across NIST.

### **Supervisory Employee within an OU or Office**

- Ensures activities under his/her direction are in compliance with his/her OU or Office plans to manage public access to results of federally funded research.
- Ensures employees under his/her supervision meet employee-level requirements of his/her OU or Office plans to manage public access to results of federally funded research.
- Works with OAAM to ensure that activities funded wholly or in part by NIST to a non-NIST organization through a grant, cooperative agreement, contract, or other agreement include requirements for managing data and publications consistently with the NIST directives for Managing Public Access to Results of Federally Funded Research, as specified by NIST in the terms and conditions of the grant, cooperative agreement, contract, or other agreement with the non-NIST organization, beginning October 1, 2015.

### **Non-Supervisory Employee**

- Complies with the employee-level requirements of his/her OU or Office plans to manage public access to results of federally funded research:
  - prepares and executes DMPs as specified by the OU or Office plans to manage public access to results of federally funded research, as applicable,
  - provides metadata for NIST data to the NIST EDI or other publicly available repositories, as applicable,

- if data are tagged as available to the public in the EDI, provides data in open formats via publicly available repositories or upon request and to the extent feasible, directly to the requestor, free of charge unless otherwise excepted, and
- provides publications dated October 1, 2015 and later to the NIST public access archive system no later than 12 months following publication.
- Works with OAAM to ensure that activities funded wholly or in part by NIST to a non-NIST organization through a grant, cooperative agreement, contract, or other agreement include requirements for managing data and publications consistently with the NIST directives for Managing Public Access to Results of Federally Funded Research, as specified by NIST in the terms and conditions of the grant, cooperative agreement, contract, or other agreement with the non-NIST organization, beginning October 1, 2015.

**Awardees and their institutions:**

- Ensure that authors and investigators comply with all terms and conditions of awards, including compliance with the NIST Public Access Policy.

**7. IMPLEMENTATION**

This plan establishes a framework for identifying, managing, and preserving the results of federally funded research so as to make them publicly accessible as peer-reviewed publications and digital data. NIST’s guiding principles for implementation include the following:

- Create flexible approaches and infrastructure to accommodate a wide range of results of scientific research as well as a diversity of stakeholders including funded researchers, universities, libraries, publishers, industry, civil society, and any other users of NIST research results. Policies, processes, and infrastructure that provide meaningful access to the results of NIST-funded research for this full range of stakeholders will be developed.
- Optimize search, archival, and dissemination features to encourage innovation in accessibility and interoperability while ensuring long-term stewardship of the results of federally funded research.
- Plan for change as the types and volume of scientific information produced with NIST funding expands. Extensible and evolvable solutions that can accommodate new needs on an ongoing basis are required. NIST will track and respond to continuing changes in digital technologies when planning to make research results publicly accessible.
- Provide appropriate leadership to promote and enhance NIST’s reputation for high-quality output, willingness to work in partnership, and responsiveness to stakeholders.

**Policy**

NIST will adopt a systematic approach to implement a Public Access Policy that includes the following:

- NIST-wide and OU-/Office-level processes for the continual update and evaluation of public access and data management policies to ensure that these remain effective and relevant into the future and that the evaluation takes into account the relative values of long-term preservation and access and its associated costs and administrative burden.

- Full and open consultation and cooperation with stakeholders, including those in the private sector, through the formation of public-private partnerships with foundations and other research-funding organizations, to improve compatibility and access to publications and data and explore new approaches to maintain and improve NIST's public access and data management policies.
- Public discovery and download of peer-reviewed publications and associated data free of charge no later than 12 months following publication.
- Attribution of publications to authors, journals, and original publishers.
- Effective data management planning for all NIST-funded activities that produce scientific data.
- Public discovery and access to NIST scientific data.
- Clear guidance and access to appropriate education and training materials for NIST staff and NIST-funded extramural researchers to help them comply with NIST policies.

### **Publications**

NIST will establish a public access archive system to enable the submission of metadata and final, peer-reviewed manuscripts or final publications that includes the following functionalities:

- Allows authors to submit and manage manuscripts directly with the NIST public access archive system or through the funding agreement's NIST Program Official.
- Allows submission by the author, the publisher, or the manager of the funding agreement.
- Accepts manuscripts in a variety of formats compatible with the current state-of-the-art in repository architecture.
- Accepts any additional files of figures, tables, data files, or supplementary information included with the manuscript.
- Provides flexible and multiple approaches to manuscript submission.

NIST will partner with the National Institutes of Health (NIH) to utilize the existing PubMed Central (PMC) repository system to serve as the repository of full-text peer-reviewed scholarly publications for NIST, leveraging off of the well-established search, archival, and dissemination features of PMC. The NIST interface to PMC will:

- Enable the storage, organization, and management of metadata and contents of peer-reviewed publications and associated data collected or submitted under NIST's Public Access Policy.
- Be established using an architecture and follow industry standards that facilitate open government, enable integration, be machine readable in non-proprietary or widely distributed archival formats, and promote interoperability and accessibility.
- Have the capacity to integrate peer-reviewed scholarly publications with appropriate scientific databases.
- Be accessible from NIST websites.
- Enable NIST to monitor compliance with the Public Access Policy.

The NIST interface to the PMC public access archive system will ensure easy search, analysis, and download of the full text of peer-reviewed scholarly publications arising from research funded by NIST. Public access to the full text will be provided without charge no later than a 12-month embargo period following publication, although NIST reserves the right to shorten or extend the embargo period. Such an extension would be announced in the Federal Register. Full public access to publications' metadata upon first publication will be provided through PMC in a format that ensures interoperability with current and future search technology. NIST's responsibilities to ensure public access include:

- Properly maintaining the interface system to the PMC archive system to ensure that it is reliably available through the Internet.
- Using existing archives that are trusted, reliable providers of peer-reviewed scholarly and technical literature and are available through the Internet.
- Ensuring that the system is accessible to people with disabilities and compliant with Section 508a of the Rehabilitation Act (29 USC 794d).
- Including the features and capabilities to meet the criteria outlined in the Office of Science and Technology Policy Director's Memorandum dated February 22, 2013.
- Providing annual notice in the Federal Register to allow NIST's customers to petition for changing the embargo period in the following year, for publications in a specific field, by providing evidence that the current embargo period does not provide a public benefit and is inconsistent with the objectives articulated in the OSTP memo.

All of the material available from the PMC site is provided by the respective publishers or authors. Almost all of it is protected by U.S. and/or foreign copyright laws, even though PMC provides free access to it. (Public domain material<sup>1</sup> is an exception.) Users of PMC are directly and solely responsible for compliance with copyright restrictions and are expected to adhere to the terms and conditions defined by the copyright holder. Transmission, reproduction, or reuse of protected material, beyond that allowed by the fair use principles of the copyright laws, requires the written permission of the copyright owners. U.S. fair use guidelines are available from the U.S. Copyright Office at the Library of Congress.<sup>2,3</sup>

PMC has two services that may be used for automated retrieval and bulk downloading of a subset of articles and all the metadata from the PMC archive. The PMC Open Archives Initiative (OAI) service and the PMC File Transfer Protocol (FTP) service are the only services that may be used for automated downloading of articles in PMC and only a subset of the total PMC content, the PMC Open Access Subset<sup>4</sup>, is included. Publishers can set licenses allowing bulk download when they send final published articles directly to PMC. (Articles that are available through the PMC OAI and FTP services are still protected by copyright but are distributed under a Creative Commons or similar license that generally allows more liberal use than a traditional copyrighted work.)

By partnering with the NIH and its established PubMed Central publication archive, NIST ensures the permanent preservation and long-term accessibility of metadata and its peer-reviewed scholarly publications free of charge.

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<sup>1</sup> <http://www.ncbi.nlm.nih.gov/pmc/about/copyright/#public-domain>

<sup>2</sup> For fair use guidelines, see <http://www.copyright.gov/fls/fl102.html>

<sup>3</sup> For more information, see <http://www.ncbi.nlm.nih.gov/pmc/about/copyright/>.

<sup>4</sup> <http://www.ncbi.nlm.nih.gov/pmc/tools/openftlist/>

NIST will take a staged approach to providing public access to publications via PMC. A pilot exercise, which will include the *NIST Journal of Research* and the *Journal of Physical and Chemical Reference Data*, will be conducted in year one, establishing the infrastructure for transferring metadata and publications to the repository. In year two, deposit of NIST-authored peer-reviewed publications will be operational. In year three, extramural publications of scientific research funded wholly or in part by NIST will be deposited.

## Data

To the extent feasible and consistent with applicable law and policy, agency mission, resource constraints, U.S. national, homeland, and economic security, and the objectives listed above, digitally formatted scientific data resulting from unclassified research supported wholly or in part by Federal funding will be stored and publicly accessible to search, retrieve, and analyze.

NIST's plan for providing public access to data consists of three components: data management plans (DMPs), an Enterprise Data Inventory (EDI), and a Common Access Platform providing a public access infrastructure. Work began with a pilot implementation developed according to the guidance provided in the Project Open Data component of OMB memorandum M-13-13 and the deadline it set of November 9, 2013 for initial implementation. This pilot was initiated with a review of NIST reference data and the selection of an appropriate pilot set representative of the diversity of data types and domains across NIST. Persistent identifiers and metadata have been provided for some of this reference data, and the work is continuing. Lessons learned in this pilot will inform the development of NIST's Enterprise Data Inventory (EDI), described below.

Generation of data management plans has also begun, providing documentation of plans for storage, archival, and accessibility for NIST's multiple types of data. At a minimum, data management plans (DMPs) must contain a summary of activities that generate data, a summary of the data types generated by the identified activities, a plan for storage and preservation of the data, and a plan describing whether and how data generated will be reviewed and made available to the public.

The EDI is a catalog of the datasets that are generated via NIST-sponsored research to enable researchers to link those datasets to the scientific literature, other datasets, etc. The metadata describing the scientific data contained in the catalog will include, at a minimum, the common core metadata schema in use by the federal government, found at <https://project-open-data.cio.gov/>. This catalog is part of the comprehensive public listing of agency data that was required by the Executive Order of May 9, 2013 and OMB Memorandum M-13-13. The JSON file for the current public listing of datasets is provided at <http://www.nist.gov/data/index.cfm>; 93 NIST datasets are currently available via data.gov, including a complete listing of NIST Standard Reference Data (SRD), which has been critically evaluated using documented procedures under the requirements of the Standard Reference Data Act. The NIST EDI serves not as a repository of study data but as an index containing information that describes a data set (i.e., metadata) and information about where and how to access the data. An interagency technical advisory group has been assembled to provide input to this effort and ensure that the reference implementation meets the needs of a wide range of stakeholders.

The final component, the Common Access Platform (CAP), will use the information gained in the first two phases to put in place production-level infrastructure and populate it with persistent identifiers and metadata for all publicly available NIST data. The CAP is expected to provide for interoperability within NIST and potentially with other federal agencies. This production infrastructure will be subject to continuing evaluation, refinement, and revision. NIST will assess the long-term needs for preservation

of scientific data in fields that the agency supports, and outline options for developing and sustaining repositories for scientific data in digital formats, taking into account the efforts of public- and private-sector entities.

All grants, contracts, and cooperative agreements will include requirements for data management planning consistent with the goals of the NIST plan. Terms and Conditions will include language that requires scientists seeking funding to describe how and where they will make their data available to the public and explicitly describe how they will make the data that underlies scientific publications available for discovery, retrieval, and analysis.

### **Outreach and Education**

In coordination with other agencies and the private sector, awareness and support training, education, and workforce development related to NIST's plans to provide public access to the results of federally funded scientific research, including scientific data management, analysis, storage, preservation, and stewardship, will be provided to NIST staff and those outside NIST who are working on NIST-funded scientific research.

## **8. METRICS, COMPLIANCE, AND EVALUATION**

NIST will develop metrics that evaluate compliance with NIST's Public Access Policy.

Possible metrics include:

- Number of intramural and extramural papers (i.e., articles submitted from NIST grants and contracts) made available to the public per year,
- Percentage of intramural and extramural papers for which datasets were made available immediately upon publication,
- Percentage of intramural and extramural papers available in full text after the embargo period, per year,
- Number of datasets added to the Enterprise Data Inventory per year.
- Number of datasets made public per year.
- Percentage of staff and grantees in compliance with requirements.

NIST will utilize data from PubMed Central, other reference sources, grant and cooperative agreements, and contract reports to determine compliance; compliance will be enforced through annual performance reviews at both staff and management levels.

DMPs of extramural scientists seeking funding will be evaluated, and the quality of DMPs will be considered in funding decisions.

## **9. PUBLIC-PRIVATE PARTNERSHIP**

NIST will take advantage of PubMed Central, which is an existing and accepted public-private partnership. Its primary means of disseminating the results of federally funded research is through private, peer-reviewed journals rather than through reports published by the federal government. The use of a non-proprietary archival language maximizes interoperability between public and private

platforms, making creative reuse of metadata and contents of publications possible. The same potential for reuse exists for NIST's data and associated metadata. Value to all stakeholders is enhanced, and unnecessary duplication of existing mechanisms is avoided. The impact of federal research investments is maximized through public access to the results of that research.

## **10. INTERAGENCY COORDINATION**

NIST will coordinate with other agency partners through the following mechanisms.

- NIST is participating in the interagency publications and data implementation working groups convened by OSTP to enable interagency coordination in responding to the requirements of the February 2013 public access memo.
- NIST is an active participant in the Federal Networking and Information Technology Research and Development (NITRD) program, including the Big Data Senior Steering Group. More than 15 Federal agencies and offices currently participate in the Senior Steering Group and its sub-groups for data technologies, research projects, challenges and competitions, and workforce development.
- NIST has established an interagency Technical Advisory Group to provide input on the pilot Common Access Platform reference implementation for integrated access to distributed data repositories (see section 7 above).
- NIST is coordinating with NIH for the use of the PubMed Central publications repository and adherence to established PubMed Central requirements.
- NIST will explore the development of a research data commons, a federated system of research databases, along with other Departments and Agencies for storage, discoverability, and reuse of data with a particular focus on making the data underlying the conclusions of peer-reviewed scientific publications resulting from federally funded scientific research available for free at the time of publication.

## **11. PUBLIC NOTICE**

NIST will work with other executive agencies in publishing a generalized announcement of the public access plan in the Federal Register soliciting comment from federally funded researchers, universities, libraries, publishers, users of federally funded research results, civil society groups and the general public. NIST will post its final Public Access Plan for public comment on the NIST website.

## **12. UPDATE AND RE-EVALUATION OF THE PLAN**

The plan will be evaluated annually and updated as necessary until NIST's Public Access Policy is implemented.

## **13. TIMELINE FOR IMPLEMENTATION**

Key milestones are outlined in each implementation category below.

		<b>DATA</b>	<b>PUBLICATIONS</b>
<b>POLICY</b>			
FY13	August 2013	Submit draft plan to OSTP	Submit draft plan to OSTP
FY14	March 2014	Feedback received from OSTP	Feedback received from OSTP
FY14	May 2014	Submit revised draft plan (data and publications combined) to OSTP	
FY14	June 2014	NIST staff review of NIST Public Access Plan	
FY15	December 2014	NIST Public Access Policy effective	
FY15	December 2014	NIST Public Access Plan posted for public review	
FY15	January 2015	Address public comments in NIST Public Access Plan and Policy, as appropriate	
<b>INFRASTRUCTURE</b>			
FY13	August 2013	Data Management Plan (DMP) template drafted	
FY14	November 2013	Initial pilot Enterprise Data Inventory (EDI) system operational per OMB M-13-13	Letter of Intent submitted to NIH to utilize PubMed Central as NIST repository
FY14	February 2014	Initial draft of NIST extensible metadata schema for scientific data	
FY14	May 2014	DMP Tool demo development	Draft Business Process for internal Editorial Review System
FY14	June 2014		Draft reviewed by Editorial Review Boards and NIKE working group
FY14	July 2014	Develop metadata registry and handle resolver for Common Access Platform (CAP)	
FY14	August 2014	Full DMP Tool development	Interagency Agreement with NIH established for deposit of peer-reviewed publications in PubMed Central
FY14	September 2014	Demonstrated EDI concept to Data Policy Group and stood up EDI Customers Working Group	Processes and plans developed to facilitate submission of NIST-authored journal articles to NIH PubMed Central.

		<b>DATA</b>	<b>PUBLICATIONS</b>
FY15	November 2014	Develop data-type registry for CAP	Pilot for depositing example journal types to PubMed Central established
FY15	December 2014	Data citation recommendations made	
FY15	December 2014	Standard language developed Terms and Conditions for grants and contracts	
FY15	February 2015	Enterprise Data Inventory (EDI) operational	
FY16	October 2015	Common Access Platform (CAP) operational	Editorial Review System for publications operational

<b>PROCESSES</b>			
FY15	October 2014	Data Management Plans required for all NIST-funded research	
FY15	February 2015	Metadata for publicly available datasets entered into EDI (and datasets shown in data.gov as appropriate)	
FY16	October 2015	Standard language regarding public access to data and publications included in Terms and Conditions for grants and contracts	
FY16	October 2015		Submission of NIST intramural journal articles to repository is operational
FY17	October 2016		Submission of NIST extramural journal articles to repository is operational

		<b>DATA</b>	<b>PUBLICATIONS</b>
<b>OUTREACH AND EDUCATION</b>			
FY14	October 2013	Information and input web site launched	
FY14	December 2013	Pilot OU Town Hall outreach event	
FY15	September 2014	Initial educational resources in place	NIST Town Hall meeting, NIST Connections articles, FAQs on internal website
FY15	December 2014	Pilot training session(s) to get feedback on EDI	
FY15	September 2015		NIST Town Hall meeting, NIST Connections articles
FY16	October 2015		Meetings with individual awardees and NIST contacts to discuss public access to research data and publications generated via grants and contracts

#### **14. RESOURCES**

NIST has identified base funding resources within its Scientific and Technical Research and Services Appropriations in order to ensure initial implementation, scale-up, and continued operation of the NIST system to make publications and data publicly available.

#### **15. DOCUMENT HISTORY**

Approved by OSTP and OMB, 04 December 2014

Draft posted online, 03 April 2015.