NEW AMERICA

EDUCATION POLICY | LEARNING TECHNOLOGIES

LINDSEY TEPE

THE CASE FOR OPEN USE POLICIES

Realizing the Full Value of Publicly Funded Information

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About the Authors

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USEFUL INFORMATION IS FREE TO USE—NOT JUST TO VIEW

On July 14, 2015, New Horizons, the fastest spacecraft ever launched from Earth, finally reached its destination after nine and a half years of travel. As the craft began to transmit information over three billion miles back to this planet—a process that, over a year later, is still ongoing—scientists were presented with images, data, and other information that had never been seen before. John M. Grunsfeld, NASA's associate administrator for the science mission directorate, said, "this is truly a hallmark in human history."[1]

The information collected by the New Horizons mission will help fuel decades of publicly funded scientific research, uncovering new facts about this solar system and others throughout the universe. Universities around the world will build upon this research, and use it to train aspiring astronomers and planetary scientists. These findings will spread into public school classrooms across the nation, sparking the imaginations of the next generation of scientists.

The American people financed the $700 million mission to Pluto, and its discoveries have been made freely available for them to use. This was not inevitable. Permission to use the information could have been delayed, granted to just a select few, or limited to those who could pay a fee for use. These restrictions would constrain the pace of research and learning, and limit the ability of the public to share in this milestone of human discovery. Unfortunately, these kinds of restrictions on information produced through public funding are all too common.

The Pluto mission is perhaps one of its more striking efforts, but the federal government collects, produces, and distributes more information than any other organization in the United States. It also invests over $120 billion every year in public and private organizations to conduct research.[2] This information is a valuable national resource, as well as a critical educational one. Ensuring that it useful to the people who paid for it should be an animating principle of the government's work.

Whether this information takes the form of Global Positioning System (GPS) data, public school proficiency rates, groundbreaking findings across science and medicine, or evaluations of the country's economic performance and workforce growth, it fuels the nation's ideas about society, culture, economics, government, and the world. "Ideas should freely spread from one to another over the globe," wrote Thomas Jefferson, "for the moral and mutual instruction of man, and improvement of his condition."[3]

The barriers to public use of information stifle scientific advancement, social innovation, cultural understanding, and public education—in short, the ability to learn and progress as a nation.

Unfortunately, much of the government's information is inaccessible, due to faulty federal policies and a failure to act upon policies that are already in place. Even when information is made available, it is often delayed or provided in ways that do not allow the public to use it to its fullest potential. The barriers to public use of this information stifle scientific advancement, social innovation, cultural understanding, and public education—in short, the ability to learn and progress as a nation.

As our democracy has grown in size and scope, laws and regulations have been passed to fulfill Jefferson's promise, providing the public greater access to the work of their government. Information technology has exponentially increased the amount of available information, and provided the means for its distribution. The last eight years in particular have seen significant progress in making this work available to the public.

But while being able to view government information is an important first step, it is not enough. To entirely realize its potential, the public must be fully able to use the information. The distinction is crucial. Simply viewing information is passive, keeping the government in control and the citizen at a remove. Using information—allowing people to download, copy, keep, analyze, or reuse it for any purpose—gives those who paid for it full rights to think about it, share it, and ultimately create more information, for everyone's benefit.

The federal government must adopt policies and regulations that allow people to both view and use its information. In other words, "open use policies" should be the default for managing public information. Open use policies would begin with the assumption that all information produced by the federal government, and information produced with federal funds, should be publicly accessible and fully usable. Making information more useful should be a core element of the government's public mission.*

* There would be clear exemptions from this rule, as with information that is critical to national security.

GOVERNMENT INFORMATION SHOULD BE USEFUL TO THE PUBLIC

Collecting information has always been part of the federal government's mandate, starting with the Constitution's requirement to conduct the decennial census. The scope of its information collection expanded rapidly throughout the 1900s, with the introduction of the income tax in 1913. Entry into the First World War in 1917 increased the role of the federal government across industries, including transportation, shipping, manufacturing, and food production. New Deal programs, starting in 1933, expanded the government's reach into a variety of new areas, including finance, housing, and public works. Entry into World War II in 1941 accelerated this expansion.[4]

Each of these developments increased the scope and purpose of the federal government, and came with new information gathering and record keeping responsibilities. Program management was fragmented, however, as was the management of the growing amount of information each program collected and produced. Concern over the sheer quantity of information being gathered resulted in the Federal Reports Act of 1942, which centralized approval for any additional agency information collection requests from the public. The law required government agencies to submit requests for information collection to the Office of Management and Budget (OMB), housed in the Executive Office of the President, for approval.[†] The Paperwork Reduction Act of 1980 strengthened the OMB's role in approving information collection requests.

The paperwork focus of that 1980 law, however, overshadowed a much more interesting provision within it. One of the primary roles of the OMB is to develop, implement, and evaluate policies for agency management, which include policies for information management. Even with a reduction in paperwork, the government still collected a tremendous amount of information, and would continue to collect more. Therefore, the Act directed the OMB to develop policies that would "maximize the usefulness of information collected by the Federal Government."[5]

Unfortunately, the Paperwork Reduction Act did not specify that policies should prioritize the usefulness of this information for the public. The OMB instead directed agencies to place "maximum feasible reliance on the private sector,"[6] essentially promoting the private ownership and

[†] At the time, the Office of Management and Budget was known as the Bureau of the Budget, established in 1921 as a part of the Department of Treasury.

management of information over public access.[‡] "While information policy sounds as controversial as motherhood and apple pie," the *Washington Post* reported in 1989, "it has been a contentious issue in recent years as the Office of Management and Budget established policies favoring the private sector over the government." In that article, Jerry Berman, then-director of the Information Technology Project for the American Civil Liberties Union, said, "the benefits of electronic information systems are not being equitably or widely shared by the public at large."[7] He described multiple examples of stalled efforts for government to make its own information publicly accessible. Worse yet were examples where government information was being managed by the private sector and the public was required to pay for access. For example, "in the case of the Federal Maritime Commission," Berman said, "electronic versions of some or all of its records have been compiled for about five years at private expense and sold to customers."[8]

The eventual reauthorization of the Paperwork Reduction Act in 1995 marked a clear course correction from the private control of public information. The purpose of the legislation was clarified, amending the Act to state that it was 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" (emphasis added).[9] This information included "any communication or representation of knowledge such as data, or opinions in any medium or form, including textual, numerical, graphic, cartographic, narrative, or audiovisual forms."[10] Outsourcing the management of public information to private organizations, some of whom charged the public to access that information, clearly did not ensure the greatest possible public benefit. Instead, ensuring that government information was useful to the public officially became a core principle of the federal government's work.

One example of making this work available to the public is the evolution of the Global Positioning System. In 2000, GPS' Standard Positioning Service (SPS) was made fully useable to the public, paving the way for tremendous innovation in navigation tools. When the U.S. launched the GPS project in 1973, however, the information was exclusively available to the Department of Defense. It wasn't until ten years later, when a commercial airliner was shot down by a Soviet interceptor after flying off course and into prohibited airspace, that President Ronald Reagan directed the information to be made publicly available. Initially, GPS was not fully usable for the public—service was intentionally degraded for civilian use. In 2000, when President Bill Clinton announced that the United States would stop degrading GPS service, he said, "This increase in accuracy will allow new GPS applications to emerge and continue to enhance the lives of people around the world."[11]

> **Ensuring that government information was useful to the public officially became a core principle of the federal government's work.**

One further legislative initiative to improve access to government information laid the groundwork for the current administration's efforts. On May 18, 2000, Senators Fred Thompson and Joseph Lieberman launched an "online, interactive web project to improve the access of the American people to their government."[12] This E-Government Project was designed to solicit public input on how to improve the use of new technologies to improve access to government information and services, and culminated in the passage of the E-Government

[‡] The OMB releases its guidelines through what are known as circulars distributed to department and agency heads (OMB policies only apply to the executive branch, not the legislative or the judicial branches). "OMB Circular No. A-130: Management of Federal Information Resources," provides guidance on implementing key aspects of the Paperwork Reduction Act in regard to managing federal information.

Act of 2002.[§] The law contained many lofty goals to improve electronic government services, but it necessarily included provisions to maintain the accessibility, usability, and preservation of government information. It sparked some progress, but there continued to be clear gaps in how information was managed and made available across agencies.

When Barack Obama became president in 2009, his administration prioritized making government information more useful, for the first time emphasizing the need for more open availability of information.[13] To that end, one of the administration's first initiatives was to increase the openness of one important kind of government information—data—through the launch of data.gov. In its announcement of this new online platform designed to help the public find, access, and download data sets with information on housing, health, energy, governance, education, and more, the White House said, "these efforts have helped unlock troves of valuable data—that taxpayers have already paid for—and are making these resources more open and accessible."[14]

The effort began modestly, with each government agency identifying just three of its most useful data sets to publish on the platform. (Today, each has made varying levels of progress toward this goal.) Then, on May 9, 2013, the president issued an executive order which put into place one final requirement for government data: by default, it must be made open and machine-readable, that is, available in a format that can be easily processed by a computer.[15] Doing so, the executive order explained, would help realize "the social good that can be gained from opening Government data to the public."[16] To maximize the usefulness of this information, with the greatest possible benefit, the Obama administration ensured data were publicly accessible and fully usable through policies that promote open use.

Definition:

Open Data is free, and made available for users to download, copy, keep, analyze, or reuse for any purpose.

Today, government data are free by default, and made available for users to download, copy, keep, analyze, and reuse for any purpose. These open use policies have not yet been fully implemented, however. Data are still not universally available, dissemination is not always timely, and data are not consistently made available in usable formats. Further, data are just one kind of information. Other information produced by the government is less open, from reports and studies to records and written communications. In some cases, information is not publicly available at all. While the majority of government information does not require permission to use (most work created by government employees is not subject to copyright), limiting public access effectively prohibits the public from fully using it.

At the same time, the government has created clear inconsistencies in its treatment of information produced in different contexts. Different policies govern information produced by employees and information produced by others through federal funding. All information produced with federal funding should be treated consistently, ensuring the greatest possible public benefit. Open use policies for non-government employees must grapple with the additional challenge of copyright.

[§] This act builds upon the Clinger-Cohen Act, which, among other things, shifted oversight of the federal government's procurement of new technologies from the General Services Administration to the Office of Management and Budget. For more, see Jeffery W. Seifert, "Government Information Technology Management: Past and Future Issues (The Clinger-Cohen Act)," Congressional Research Service, January 15, 2002.

THIS INCLUDES FEDERALLY FUNDED SCIENTIFIC RESEARCH...

Today, the government invests more than $120 billion every year in research and development, much of it in universities and laboratories across the country.[17] This funding began in earnest after World War II, when the U.S. wondered "how to ensure that science and engineering would continue both to expand the frontiers of knowledge and serve the American people," according to a history of the National Science Foundation (NSF).[18] To meet this challenge, Congress supported the rapid growth of what in 1948 became known as the National Institutes of Health (NIH), and it created the NSF in 1950. Investment accelerated in the 1960s, with funding jumping from $405 million in 1960 to $1.7 billion in just ten years.[19]

With such a rapid increase in federal research funding, grant management became fragmented, as did the management of the resultant information. The government worked to centralize oversight of grant agreements made with external institutions such as colleges and universities, hospitals, and other non-profit organizations. In 1976, the OMB released uniform standards to govern these grant agreements to "advance the public interest,"[20] replacing the varying requirements that had previously been adopted by different agencies.[21] Streamlining the requirements provide timely, as federal investment in research has only continued to grow.

Even more than the information produced by the government, information policies established for federally funded scientific research have tended to favor the private sector. During the 1960s and through the 1970s, commercial publishers, recognizing the potential for profit, purchased academic journals that had previously been run by academic societies and other non-profit organizations. "Faculty authors provide the content of academic journals and faculty editorial boards do many of the editorial tasks for the journal publishers," wrote Glenn McGuigan and Robert Russell in a 2008 article on the business of academic publishing, noting that those authors usually are not paid. Publishers play a "mediating role," according to McGuigan and Russell, packaging the information and selling it back to the institutions where many of those same faculty members work.[22] Over the years, the industry has consolidated to three main publishers, and costs to subscribers have risen to the point where even Harvard University Libraries are scaling back subscriptions.[23]

Initially, it was not an act of Congress but the initiative of one agency that began to reverse course. In the early 2000s, NIH, seeking to increase the public benefit of scientific information, launched PubMed Central, an online archive for biomedical research. In a move that would dramatically

increase the archive's size and impact, in September 2004 NIH proposed that the research supported by its funding would need to be submitted to PubMed Central, to be made publicly available within six months of publication. The proposal "sought to accelerate the pace of discovery, provide additional capabilities to NIH in managing its research portfolio, and enhance public access to biomedical literatures."[24] While the policy clearly highlighted the need for public access, it did not provide a path forward for the public to fully use this research.

The first NIH public access policy, released in May 2005, was scaled back due to pushback from the private sector and researchers interested in commercializing their work. The resulting policy was voluntary, and the timeline for submitting research was increased from six months to within a year of publication. While the policy encourages researchers to make their work available as soon as possible, this encouragement has proved less than effective: from 2005 to 2007, only 12 percent of the estimated 80,000 NIH-funded academic articles published annually were submitted to PubMed Central in their final form, with an additional seven percent submitted as manuscripts.[25]

In 2008, Congress made the NIH public access policy mandatory through a provision within the Consolidated Appropriations Act of 2008, and the

Sharing Federally Funded Research Under the Federal Purpose License

In 1976, the Office of Management and Budget issued a statement that made clear that the government "reserves 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."[1] This regulatory language has been referred to as the federal purpose license. As Michael Carroll, a law professor and leading copyright lawyer at American University, has explained, "this license is granted prior to the creation of the copyrighted work, and it comes into effect as soon as the work is created."[2]

Though this authority exists, there is very little evidence that the government has regularly exercised it. The National Institutes of Health (NIH), rather than using the federal purpose license, chose a different and less controversial legal route, requiring in its initial grant agreement with researchers permission to display the work on PubMed Central. It guarantees the public the right to see the information, but does not provide any right to use it.

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[1] Office of Management and Budget, "OMB Circular No. A-110: Uniform Administrative Requirements for Grants and Agreements With Institutions of Higher Education, Hospitals, and Other Non-Profit Organizations," September 30, 1999, **https://www.whitehouse.gov/omb/circulars_a110**.

[2] Michael Carroll, "Complying with the National Institutes of Health Public Access Policy: Copyright Considerations and Options," Joint SPARC, Science Commons, and ARL White Paper, February 2008, **http://sparcopen.org/wp-content/uploads/2016/01/COMPLYING-WITH-THE-NATIONAL-INSTITUTES-OF-HEALTH-PUBLIC-ACCESS-POLICY.pdf**.

policy went into effect in April of that year.[26] The law required online submission of NIH-funded research to PubMed Central within a year of its publication. This new, mandatory policy saw an immediate increase in submissions: NIH estimated at the time that 26 percent of final published articles and another 30 percent of manuscripts were submitted in the first five months alone.[27] (See box: Sharing Federally Funded Research Under the Federal Purpose License.)

On February 23, 2013, the Obama administration released a new memo, directing each federal agency awarding more than $100 million in research and development grants to develop a plan to increase access to the research it funds.[28] With joint oversight by the OMB and the White House Office of Science and Technology Policy, each agency developed plans for fulfilling this new requirement and began to put into place public access policies similar to those of NIH. Agencies were encouraged to collaborate, due to the costs of building new repositories. The Department of Veterans Affairs, the Agency for Healthcare Research and Quality, NASA, and others have made use of the PubMed Central repository as a starting point for their own databases.[29]

Today, government-funded research must be made freely available within a year of its publication. However, much scientific research remains hidden within paywall journals, even work produced through public funds. Research articles that are available are still largely only free to see, not to use. Unlike the Obama administration's open use policies for data, this public access policy only allows people to view federally funded scientific research papers, and only after up to a year's delay.

The government's prioritization of public access policies in this domain, however, has come at a time when the scientific community is beginning to push for open use policies for this research. An open use policy would ensure that scientific information is free by default, and made available for users to download, copy, keep, analyze, and reuse for any purpose.

In April of this year, Vice President Joseph Biden highlighted the promise of open use policies for meeting his administration's "cancer moonshot." Speaking to a group of researchers, he asked them to imagine what would happen if barriers to cancer research were broken down, and the findings of public investment were freely available and fully useable. Cancer researchers would have the ability to immediately access each other's work, seek to replicate promising findings, and republish further results, possibly accelerating progress toward a cure. Doctors around the world would have immediate access to view and use the most recent research. While our system has resulted in tremendous successes, he said, "this is not the system that will get us to our goal faster."[30]

Definition:

Open Research is free, and made available for users to download, copy, keep, analyze, or reuse for any purpose.

To maximize the usefulness of this information, with the greatest possible public benefit, the government should ensure that federally funded scientific research is made available to both view and use through open use policies. All information produced with federal funding should be treated consistently, and it is clearly in the public interest to make this information open.

... AS WELL AS EDUCATIONAL RESOURCES CREATED WITH FEDERAL FUNDS

The federal government funds colleges and universities, hospitals, and other non-profit organizations to produce other kinds of information, beyond scientific research. This funding often results in the creation of information with significant educational value. Until recently, however, these educational resources and other information produced have not been made publicly accessible or freely usable.

In 2011, Congress funded a $2 billion program jointly administered through the Departments of Labor and Education (ED)—the Trade Adjustment Assistance Community College and Career Training (TAACCCT) Program—that focused on retraining workers who had lost their jobs due to global shifts in trade. In the past, Labor had funded multiple institutions around the country to develop similar training programs, essentially funding duplicative educational resources. With TAACCCT, Labor and ED decided to try something new. The agencies required that any information created with program funds would need to be made open. The information—educational materials that included assessments, textbooks, curricula, diagnostic tools, and more—would be "available to everyone in the world free, under a Creative Commons license. The materials will become, to use the common term, open educational resources, or OER."[31]

Definition:

Open Educational Resources are free, and made available for users to download, copy, keep, analyze, or reuse for any purpose.

This was one of the first examples of an open use policy for information created with federal funds by non-government employees. It was an ambitious project, and the first of its kind at that scale. In the first few years, community colleges and others who had received funds had to make sense of what open licensing meant for their work. Creative Commons (see box: Creative Commons and Open Licensing), a nonprofit organization that wrote the open content licenses Labor and ED required, provided support to grantees. A further challenge that had not been addressed initially was where this information would

Creative Commons and Open Licensing

Open content licenses were born in the Digital Age, designed as an alternative to the default of "all rights reserved" in current copyright law. Founded in 2001 and inspired by the movement toward open software licensing, Creative Commons—an international nonprofit organization with affiliates in over 85 countries—developed and maintains the most well-known of these open content licenses, which it makes available for free.

Content creators can affix a Creative Commons license to their work, granting the public legal permission to use it. The most permissive of these licenses is the Creative Commons Attribution (CC BY) license, which allows others to download, copy, keep, analyze, or reuse the information for any purpose. The only requirement is to credit (or give attribution to) authors for their work.

Governments around the world have employed Creative Commons licenses to clarify the terms for public use of content created through public funds. The Departments of Labor and Education are just two examples of public institutions in the U.S. using this standard for sharing information.

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This license allows users to download, copy, keep, analyze, or reuse the original work for any purpose (even commercially) as long as the original work is credited. This is the most accommodating of licenses offered.

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Attribution-NonCommercial-ShareAlike
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be stored and made available to the public; unlike at NIH, a repository like PubMed Central had not been created prior to the program to house the materials.

Today, this information is housed on Skills Commons, an online repository for open resources, which was launched in August 2014 by California State University with support from the TAACCCT program. Skills Commons supports organizations receiving federal funding through TAACCCT to produce high-quality versions of their final resources to share. There are now over 700 institutions contributing their OER to Skills Commons, and the information housed there continues to grow. With the open licenses affixed to the information, other organizations can adapt the resources to meet their needs and share those modified versions as well. It can be a challenge to track the many ways materials are reused, but Skills Commons highlights many examples of materials' reuse and revision. Community colleges have shared online courses on computer skills, added interactive components to trainings on lab safety, adapted PDF and Word versions of lessons into e-books, and more.

In December of 2015, Labor expanded its open licensing requirement from the TAACCCT program to all of its competitive grant programs. Any organization that applies for and receives funding from Labor to produce information (much of which has clear educational value) is now required to openly license it.[32] It is the first department to adopt this kind of agency-wide open use policy, which it did by adding the licensing requirement as a small technical change to the OMB guidance on grant agreements.**

ED has also moved to adopt an open use policy for all of its competitive grant programs, but chose to use a different process. After introducing the requirement for a couple of other individual grant programs, it released a public notice in November 2015 proposing that all recipients of direct competitive grants be required to openly license the materials they produce.[33] This process treated the open licensing requirement as a new rule for grantees, as opposed to a minor technical change. A new rule is subject to much more stringent requirements. The public has the opportunity to submit comments, which ED must review before it drafts the final rule, and the OMB must ultimately approve it.†† As with the move toward open use for data and research, the move toward open use of educational resources at ED has been met with pushback from those interested in commercializing their work.[34] It remains to be seen whether the rule will be issued, or if private interests will prevail.

Today, there is no consistent, overarching open use policy in place to regulate educational resources created with federal funds. Other agencies, including the Department of State, the U.S. Agency for International Development (USAID), NIH, and NSF, have begun to explore this kind of open use policy. The fragmented approaches of different agencies, however, are introducing a great deal of inconsistency in information management.

The government should ensure that educational resources produced with federal funds are made available to view and to use, allowing for open use of this information as a default. Just as with information produced by government employees and with federally funded scientific research, all information produced with federal funds should be treated consistently. Open use policies will ensure that this information serves the greatest public interest.

** Making a technical amendment to guidance from OMB Circular A-110 avoided the need for public rulemaking.

†† As of the publication of this report, ED has reviewed nearly 150 public comments.

TO FREELY USE THIS INFORMATION, IT MUST BE OPEN

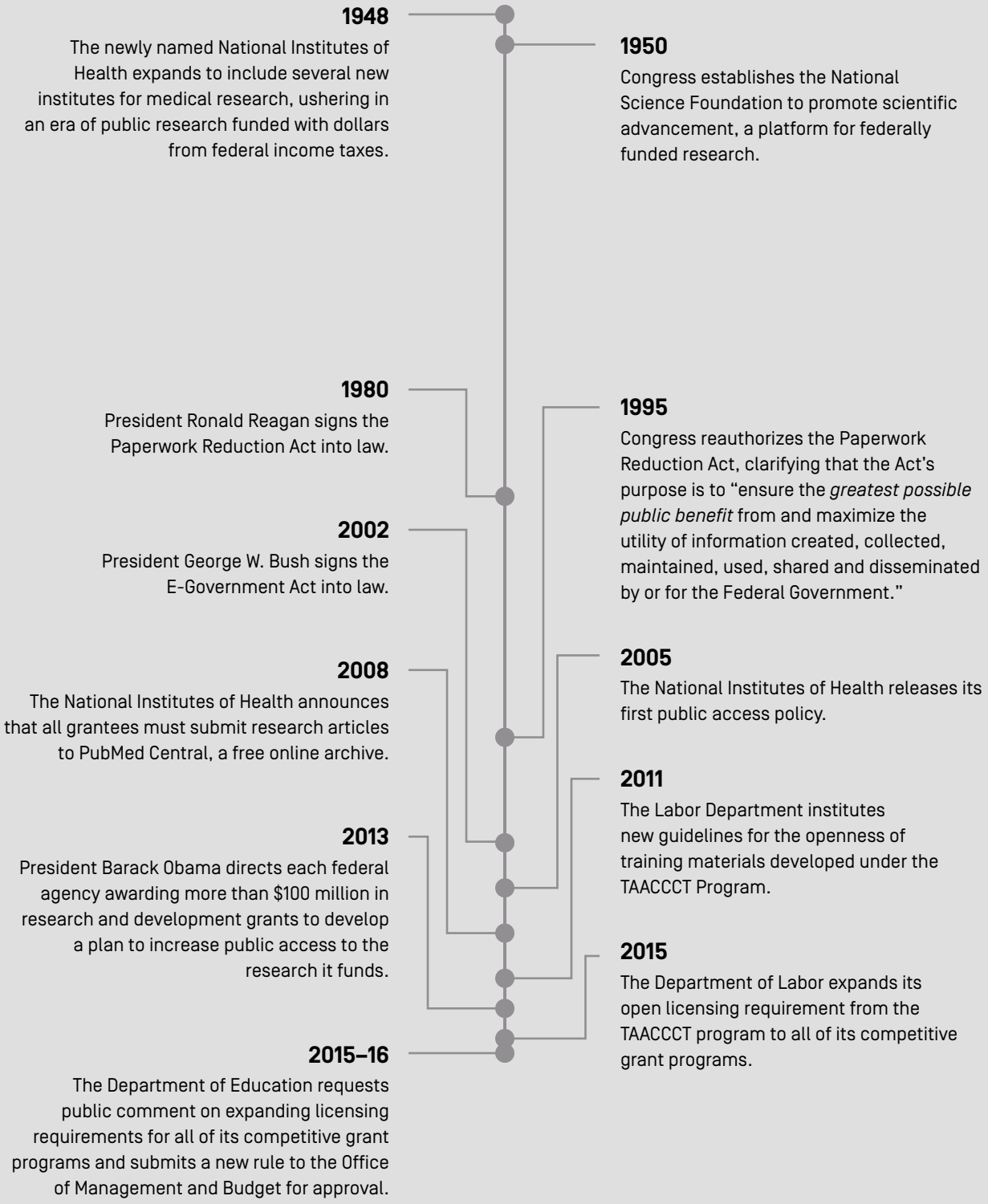
The government has taken a number of important steps toward making its information more useful to the public. Congress has pushed the executive branch to make its information more accessible to the public through legislation, and the Office of Management and Budget has worked at the direction of the president to articulate clear information policies to govern the practices of agencies.

But progress has come in fits and starts, and there is still work to do. Because different kinds of information have been treated differently based on what kind of information it is and who created it, policies and regulations have inconsistently evolved. Under the Obama administration, enormous strides have been made toward open use policies for data, though other kinds of information have not been as clearly prioritized. Federally funded scientific research is now governed by public access policies, but this only grants the public permission to view that information, not to fully use it. Other educational resources created with federal funds are potentially subject to different emerging open use policies being developed by different agencies.

The government has also muddied the waters by sometimes confusing "free" with "open." One such example is the president's "Open eBooks" initiative, made possible through public-private partnerships with prominent book publishers, which donated thousands of popular children's e-books. The initiative provides a tremendous service for the nation's low-income students in classrooms across the country, providing free access to thousands of book titles. But the materials are certainly not publicly accessible to everyone, nor are they fully usable. The books are also not open—you cannot download and keep a copy for yourself, nor can you make a copy of the book and republish it, or translate it into another language and make it available online. The imprecise use of the word diminishes understanding of what *open* means.

The current ambiguities in the public's rights to different kinds of information produced and funded by the government need to be addressed. Piecemeal policies that are irregular and inconsistently applied are not sufficient. The federal government needs to adopt uniform open use policies to manage its information, ensuring the greatest possible public benefit.

Figure 1 | Timeline: Advances in Making Publicly Funded Information More Accessible and Open



HERE'S HOW WE GET THERE

Government information is a national resource as well as a critical educational one. Lawmakers and leaders have slowly created the structures necessary to ensure that information is appropriately managed and openly accessible through the use of new technologies. Updating key legislation, clarifying policies and regulations, and improving implementation and evaluation will ensure that the public can fully use this information.

Congress should update laws on access to publicly funded information.

Congress has taken different approaches to legislating the management of government information. One approach has been to focus on specific topics or kinds of information. A current example before the 114th U.S. Congress is the Fair Access to Scientific and Technology Research (FASTR) Act, which focuses on advancing open use of federally funded scientific research. This kind of legislation solves an immediate issue with access to a particular type of valuable information, but it does not address the larger inconsistencies in the treatment of government information.

The alternative is to enact broad, comprehensive legislation. The Paperwork Reduction Act of 1980 provided a framework for information management across the government, and its 1995 reauthorization clearly articulated the principle that government information should be made useful to the public. Similarly, the E-Government Act consolidated many special interest bills, taking a more comprehensive approach to managing information to improve electronic government services. It has been more than two decades, however, since the Paperwork Reduction Act was reauthorized, and the E-Government Act has never been reauthorized.

While modifications have been made to these two pieces of legislation over the years through the passage of other laws, the major legislation governing how the nation's information is managed is out of date. Congressional lawmakers should revisit these two pieces of legislation, with the following goals:

1. Require all information produced by the federal government and through the use of federal funds to be clearly marked with the permissions the public has to view and use the content.

2. Enforce clear open use policies for all materials produced by employees of the federal government, beyond data. While the majority of this information is not subject to copyright, Congress should ensure that it is made accessible for the public to fully use.

3. Adopt a clear open use policy for federally funded scientific research, as well as other information produced through federal grant agreements. Congress could take one of two approaches in developing an open use policy:

    - It could explore adopting standard open licenses that are already widely used and easily understood, such as the Creative Commons Attribution (CC BY) license.

    - Since grant agreements are currently subject to OMB Circular No. 110, which includes language for a federal purpose license, Congress could explore using the federal purpose license to grant the public permission to view and use intangible property produced through grant funds.

4. Authorize and appropriate adequate funding to support the implementation of open use policies across the executive branch.

The next administration should create standardized and consistent expectations for open use of information across all federal agencies.

The Obama administration has built upon precedent to advance open use policies for information produced with federal funds. Agencies have explored the value open use policies can have to the public. The next administration should consider how its policies, regulations, and guidance could increase open use of information so it can be freely shared to advance work in science, technology, education, and other fields.

The Executive Office of the President has a critical management role in this work, through the Office of Management and Budget. OMB can broadly regulate the policies of agencies across the executive branch, and can play an important role in advancing open use policies. It can also help the public to better understand how to use government information by providing guidance, tracking implementation, and investing in research and evaluation. OMB should:

1. Require agencies to clearly mark government information with the permissions the public has to view and use the content.

2. Clarify existing guidance on information created with federal funds. OMB could take one of two approaches:

    - Expand upon the technical amendments to its guidance adopted by the Department of Labor, providing a consistent open use policy for all agencies for grants that result in the production of intangible property.

    - Interpret the federal purpose license as allowing the public open use of all intangible property produced through grant funds.

3. Track adoption and implementation of agency open use policies. This includes those designated as open data policies, open access polices, open licensing policies, and policies using similar terminology.

4. Invest in research and evaluation of implementation, compliance, and impact of open use policies across agencies.

The U.S. has reached a new horizon for sharing knowledge, since new technology enables not only unprecedented images of outer space, but ways of easily sharing all sorts of information across the globe in ways that Jefferson could never have imagined. Open use policies can help make this free exchange of information and ideas a reality.

Notes

[1] Kenneth Chang, "Pluto's Portrait From New Horizons: Ice Mountains and No Craters," *New York Times*, July 15, 2015, http://www.nytimes.com/2015/07/16/science/pluto-flyby-photos-reveal-mountains.html.

[2] Mark Boroush, "U.S. R&D Increased in 2013, Well Ahead of the Pace of Gross Domestic Product," National Science Foundation, September 28, 2015, https://www.nsf.gov/statistics/2015/nsf15330/.

[3] "The Founders' Constitution," The University of Chicago Press, Vol. 3 (Article 1, Section 8, Clause 8, Document 12), http://press-pubs.uchicago.edu/founders/documents/a1_8_8s12.html.

[4] Harold C. Relyea, "Paperwork Reduction Act Reauthorization and Government Information Management Issues," Congressional Research Service, January 4, 2007.

[5] Paperwork Reduction Act of 1980.

[6] Judith Havemann, "Paperless Agencies on the Horizon," *Washington Post*, December 7, 1989, https://www.washingtonpost.com/archive/politics/1989/12/07/paperless-agencies-on-the-horizon/b3e4cc54-8c09-44e6-af8f-48d803d5e1b0/.

[7] Ibid.

[8] Ibid.

[9] Paperwork Reduction Act Reauthorization 1995.

[10] Office of Management and Budget, "OMB Circular No. A-130: Management of Federal Information Resources," Nov. 28, 2000, https://www.whitehouse.gov/omb/circulars_a130_a130trans4.

[11] President Bill Clinton, "Statement By The President Regarding the United States Decision to Stop Degrading Global Positioning System Accuracy," White House, May 1, 2000, https://clinton4.nara.gov/WH/EOP/OSTP/html/0053_2.html.

[12] E-Government Project Launched," U.S. Senate Committee on Homeland Security and Governmental Affairs, May 18, 2000, https://www.hsgac.senate.gov/media/e-government-project-launched.

[13] President Barack Obama, "Memorandum—Transparency and Open Government," White House, January 29, 2009, https://www.whitehouse.gov/the_press_office/TransparencyandOpenGovernment.

[14] "Open Government Initiative," The White House, https://www.whitehouse.gov/open.

[15] President Barack Obama, "Executive Order—Making Open and Machine Readable the New Default for Government Information," White House, May 9, 2013, https://www.whitehouse.gov/the-press-office/2013/05/09/executive-order-making-open-and-machine-readable-new-default-government-.

[16] Ibid.

[17] Mark Boroush, "U.S. R&D Increased in 2013, Well Ahead of the Pace of Gross Domestic Product," National Science Foundation, September 28, 2015, https://www.nsf.gov/statistics/2015/nsf15330/.

[18] "National Science Foundation History," National Science Foundation, https://www.nsf.gov/about/history/.

[19] Philip E. Myers and Marie F. Smith, "Research Administration in History: The Development of OMB Circular A-110 Through Joseph Warner's COGR Subcommittee, 1976–1979," *Journal of Research Administration* 39, no. 2 (Fall 2008): 15–32.

[20] Ibid.

[21] Office of Management and Budget, "OMB Circular No. A-110: Uniform Administrative Requirements for Grants and Agreements With Institutions of Higher Education, Hospitals, and Other Non-Profit Organizations," September 30, 1999, https://www.whitehouse.gov/omb/circulars_a110.

[22] Glenn S. McGuigan and Robert D. Russell, "The Business of Academic Publishing: A Strategic Analysis of the Academic Journal Publishing Industry and Its Impact on the Future of Scholarly Publishing," *Electronic Journal of Academic and Special Librarianship* 9, no. 3 (Winter 2008), http://southernlibrarianship.icaap.org/content/v09n03/mcguigan_g01.html.

[23] "What If All Research Papers Were Free?" The Brian Lehrer Show, March 15, 2016, http://www.wnyc.org/story/what-if-all-research-papers-were-free/.

[24] Analysis of Comments and Implementation of the NIH Public Access Policy, National Institutes of Health, September 30, 2008.

[25] Ibid.

[26] Consolidated Appropriations Act of 2008.

[27] Ibid.

[28] John Holdren, "Increasing Access to the Results of Federally Funded Scientific Research," Office of Science and Technology Policy, February 22, 2013, http://www.whitehouse.gov/sites/default/files/microsites/ostp/ostp_public_access_memo_2013.pdf.

[29] Scholarly Communication Program, "Public Access Mandates for Federally Funded Research," Columbia University Libraries, August 19, 2016, http://scholcomm.columbia.edu/open-access/public-access-mandates-for-federally-funded-research/.

[30] Lindsey Tepe, "Is Open Access to Research Biden's Answer to Curing Cancer?" *Forbes*, April 22, 2016, http://www.forbes.com/sites/lindseytepe/2016/04/22/open-access-for-cancer-research/.

[31] Kevin Carey, "The Quiet Revolution in Open Learning," *Chronicle of Higher Education*, May 15, 2011, http://www.chronicle.com/article/The-Quiet-Revolution-in-Open/127545.

[32] Lindsey Tepe, "A Christmas Story: Sharing Educational Resources at the Department of Labor," *EdCentral* (blog), New America, February 1, 2016, https://www.newamerica.org/education-policy/edcentral/oeratlabor/.

[33] Lindsey Tepe, "The Department of Education's Plan to Go Open—Open Educational Resources, That Is," *Slate*, November 12, 2015, http://www.slate.com/blogs/future_tense/2015/11/12/the_department_of_education_embraces_open_educational_resources.html.

[34] Lindsey Tepe, "The Divide Over 'Open:' ED's Open Licensing Rule Causes Conflict on Campus," *Forbes*, January 12, 2016, http://www.forbes.com/sites/lindseytepe/2016/01/12/the-divide-over-open/#72e5549a61c2.