



Smithsonian Astrophysical Observatory

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The authors of this letter are the Project Scientist and Program Manager of the Smithsonian/NASA Astrophysics Data System (ADS), a Digital Library portal for researchers in Astronomy and Physics, operated by the Smithsonian Astrophysical Observatory under a NASA grant since 1992. The ADS maintains bibliographic databases containing more than 9.2 million records covering Astronomy and Physics. The main body of data in the ADS consists of bibliographic records and full-text scans of much of the astronomical literature which can be browsed or searched via a sophisticated search interface. Integrated in its databases, the ADS provides access and pointers to a wealth of external resources, including electronic articles hosted by publishers, data catalogs and archives. ADS is used daily by every working astronomer and by an increasing number of other scientists. The ADS is available at <http://ads.harvard.edu>

(1) Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?

Because virtually all working astronomers have access to the the modern and historical literature in the field, and open access can be defined as having free access to content, an analysis of the field of Astronomy research can be used as a proxy for what the benefits of open access can be. Our 2005 study [1] of the field finds that open access to the journals combined with an efficient retrieval system increases the research efficiency of the entire field by about 5%. Open access enhances the discoverability of the literature, and accounts for a substantial fraction of this increase in research efficiency.

(2) What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?

Intellectual property issues are orthogonal to the matter of open access and should be addressed separately. We have no specific recommendations on this matter.

(3) What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?

Our experience has shown that a centralized approach, where a single repository is in charge of maintaining content for an entire discipline is preferable. Scientific research takes place in a discipline-centered environment rather than in an institution-centric one. 10,000 chickens can't pull the wagon that a single horse can.

(4) Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?

Yes! ADS is one such system. Our collaboration with private (publishers) and public (federal agencies) partners is an example of the collaborative environment which supports research in Astronomy and Physics. ADS filled a very practical research need when it was introduced 20 years ago. Its success was due to a variety of reasons, among them that the community behind it has been technically adept at handling digital information and willing to share its findings and data.

(5) What steps can be taken by Federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives? What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities? How should Federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to Federal science funding?

Federal agencies should ensure that basic publication metadata is open and accessible to all parties involved in scholarly publication. At a minimum, Dublin Core metadata (title, authors abstract, publication information) and references should be made available using digital library standards and protocols. Federal agencies should mandate the creation and dissemination of this core metadata, and be prepared to pay for this via the proper funding channels (contracts and grants).

The research enterprise also benefits from the creation and dissemination of discipline-specific metadata which is crucial within a field and which should be supported through the funding of additional curatorial resources.

(6) How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden

and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?

Publication fees are but a small percentage of the total research costs, which are for the most part already funded by the Government. Shifting the funding model from subscription-based to author-pays will simplify both access and payment systems. Grants should explicitly and routinely pay for publication charges. Overhead rates which now fund library subscription fees can then be lowered by an equal amount.

(7) Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?

Yes.

(8) What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?

The best solution is to have no embargo period, as the cost for publication is already covered in the author-pays system.

[1] Kurtz, M. J., Eichhorn, G., Accomazzi, A., Grant, C. S., Demleitner, M., Murray, S. S. 2005, "Worldwide Use and Impact of the NASA Astrophysics Data System Digital Library," The Journal of the American Society for Information Science and Technology, Vol. 56, p. 36, doi:[10.1016/j.ipm.2005.03.010](https://doi.org/10.1016/j.ipm.2005.03.010)