Springer Nature Response to NASA RfI for Public Access Plan 2023

1. How to best ensure equity in publication opportunities for NASA-supported investigators. The NASA Public Access Plan aims to maintain the existing broad discretion for researchers and authors to choose how and where to publish their results. Consistent with current practice, the NASA Public Access Plan allows the submission of final published articles to Clearinghouse for the Open Research of the United States (CHORUS), the NASA Scientific, Technical and Research Information discoVEry System (STRIVES), Astrophysics Data System (ADS), or NASA's PubSpace to minimize the compliance burden on NASA-supported researchers. These submission routes are allowed regardless of whether or not the journal uses an open access model, a subscription model of publishing, or other publication model. This flexibility aims to protect against concerns that have been raised about certain publishing models potentially disadvantaging early career researchers and researchers from limited-resourced institutions or under-represented groups. NASA policy allows supported researchers to charge reasonable publishing costs against their awards. NASA seeks information on additional steps it might consider taking to ensure that proposed changes to implementation of the Public Access Policy do not create new inequities in publishing opportunities or reinforce existing ones.

SN Response:

SN supports this position:

Most journals and their publishers do not support the zero embargo green OA route - where an unfinished Accepted Manuscript is made openly available at the same time that the Version of Record is published. Such a model is simply not sustainable: it undermines the subscription model that supports it and slows progress towards the sustainable and scalable options for public access that gold OA enables. Gold OA is the only sustainable model for trusted open access. So, SN strongly supports the following inclusion in the NASA Public Access plan: "NASA allows all Article Processing Charges (APCs) to be included in the grant proposal budget"

2. Steps for improving equity in access and accessibility of publications. Removal of the currently allowable 12-month embargo period for NASA-supported publications will improve access to these research products for all. The NASA Public Access Plan also supports making articles available in human and machine-readable forms to support automated text processing. NASA will also seek ways to improve the accessibility of publications by diverse communities of users.

SN Response:

Summary: To improve equity in access and accessibility of publications NASA needs to monitor and maximize the proportion of NASA-supported publications complying through Gold OA.

Gold OA maximizes access not only by enabling free online access to humans and machines but also by enabling re-use, re-formatting, aggregation, and other procedures to make the content discoverable, accessible and usable by diverse communities according to their specific needs. The Version of Record, which Gold OA makes accessible, is the complete, authoritative and up-to-date version of the paper, curated and maintained by publishers and editors. Our work shows that researchers prefer the VoR over the unfinished Accepted Manuscript, both as readers and authors.

So there are significant disadvantages for those that do not have access to the VoR. Therefore to maximize the equity benefits as the NASA Public Access Plan is implemented it is important that the proportion of compliance through Gold OA is maximized and monitored. The full equity benefits of the NASA Public Access Plan can only be realized when there are no paywalls around any NASA-supported VoRs. Until then less-well resourced researchers and, more importantly, **a large proportion of the US public, including many diverse user communities, public officials, students and educators,** will only have access to unfinished inferior versions of any papers that have complied with the plan via the zero embargo Green route.

3. Methods for monitoring evolving costs and impacts on affected communities. NASA proposes to actively monitor trends in publication fees and policies to ensure that they remain reasonable and equitable. NASA seeks information on effective approaches for monitoring trends in publication fees and equity in publication opportunities.

SN Response:

Summary: To monitor costs and impacts of the NASA Public Access Plan, NASA should, where possible, work with institutions and their libraries to leverage Transformative Agreements and other equivalent centralized payment arrangements. Differences in impact between green and Gold OA compliance paths and their knock-on effect on equity should be monitored.

The only sustainable publishing model requires payment of publication fees (APCs) so there should be guidance to grantees that these need to be estimated and included in their applications. The funding burden on NASA for these can be minimized if grant money is pooled with university library money and this is best achieved via Transformative Agreements (TAs) and other centralized payment mechanisms. These TAs can then be used to monitor and report on these costs to universities and funders like NASA.

TAs don't solve all sustainability and equity issues but, by combining funder and library funds, they are a strong step in the right direction that has proven to be a scalable solution that substantially reduces the administrative burden on researchers. Regardless of whether NASA grants are used to contribute to centralized TAs or to support author-mediated payments to enable Gold OA, NASA needs to budget for, and monitor, such costs.

Our work has shown that authors complying through the Gold OA route are likely to achieve greater reach and impact for their papers than if they had elected for compliance via the Accepted Manuscript route. This dichotomy has the potential to exacerbate existing inequities between NASA-fundees and/or create new ones. Researchers that are less well-funded (which is more common for early career researchers, those in fields with small grant sizes, and those at minority-serving institutions or HBCUs) can be further disadvantaged because they are more likely to have to comply via zero-embargo Green, missing out on the impact and reach of Gold OA .

Therefore we recommend that differences in impact between green and gold OA compliance paths and their knock-on impact on potentially disadvantaged NASA-investigators should be quantified and regularly reported.

4. Input on considerations to increase findability and transparency of research. NASA seeks suggestions on any specific issues that should be considered in efforts to improve use of PIDs (such as ORCID) and metadata, including information about experiences institutions and researchers have had with adoption of different identifiers.

SN Response:

Summary: Publishers are key partners in deploying and integrating metadata and PIDs to enable a more efficient, transparent and impactful open science ecosystem

Publishers are ideally placed to support increasing findability and transparency of research through policy and infrastructural support for integration of machine readable persistent identifiers (PIDs).

We would welcome the chance to work through with NASA the most beneficial PIDs and metadata and their use cases. These are *some* of the PIDs and metadata we are already including in our publications:

- **DOI** (Digital Object Identifier) for outputs/publications, i.e. eBooks, ejournals, journal articles and chapters
- **ORCID** (Open Researcher and Contributor iD) for persons, i.e. authors and editors
- **Crossref Funder ID** for grant-giving organizations
- **GRID ID** (Global Research Identifier Database iD) and **ISNI ID** (International Standard Name Identifier) for research organizations/affiliations.
- **Grant Numbers:** we collect "Grant Numbers" and incorporate them in our metadata that is also deposited at Crossref
- **Conference Series ID**
- **Clinical Trial ID**
- **Article, Issue Copyright Holder**
- **Article, Issue Copyright Year**
- **Keywords**
- **Registration, Received, Accepted, Issue Online Dates**
- **Article Citation ID**

In many of our journals we strongly encourage citations via DOI to datasets, software and protocols, with [editors monitoring compliance](#)..

We also actively contribute in multiple ways to cross-industry efforts in this area through STM, Crossref, ORCID, CHORUS (for example our participation in the [CHORUS/CSIRO pilot on research resources and facilities](#)) and others.

We recommend that NASA works closely with publishers in general, and particularly these pre-existing cross-industry organizations, to maximize the impact of the revised plan for PIDs and metadata.

5. Suggestions on sharing and archiving of software. Sites like GitHub and Zenodo offer ways to distribute and manage software. NASA is seeking suggestions on improving the archiving, sharing, and maintenance of software for reuse.

SN Response:

Summary: Publishers are key partners in improving the archiving, sharing and maintenance of software for reuse, through the deployment of processes and technologies that can make this easier for researchers (both as authors and peer reviewers) and the implementation of policies that can encourage (and potentially mandate) sharing and archiving.

We are very happy to see NASA take the lead in recognizing software as a valuable and important research output that needs to be shared following best practices. SN fully agrees with this mission and has developed several policies and practices to ensure that software developed as part of a publication is shared following FAIR principles as much as possible.

SN is currently developing a code sharing policy that will require all authors of manuscripts that declare having developed new software as part of the work to disclose the details of code sharing in a dedicated 'Code Availability' section of the manuscript. This policy is already followed in all the Nature Portfolio journals and the many BMC and Springer journals and will be rolled out in all SN journals and books in 2024.

SN has been a pioneer in supporting software/code sharing as part of the submission process and upholds high standards in code sharing by supporting authors in sharing their code with editors and peer reviewers, performing peer review of the code as part of the article consideration process and ensuring the code is shared via a PID and cited from the publication. These initiatives support the tracking and reporting of software sharing practices and are aligned with NASA's goals to ensure code is properly shared and archived.

SN has been considering how best to support the sharing of code for peer review and publication. After evaluating a number of platforms, we have partnered with the code reproducibility platform Code Ocean to support submitting authors to some of our journals with the capacity to share their code as part of the submission process. Code Ocean ensures public access and archiving of the code, while also ensuring re-use and reproducibility as the code is shared via a container that enables directly running the code in the cloud. The use of this service is provided at no cost to submitting authors, reviewers or readers and is covered by SN. Authors can also use other platforms such as Zenodo or GitHub to share their code for peer review and publication but it is important to note that GitHub is not in itself sufficient unless a PID is assigned to the code.

SN has a lot of experience in this topic and would be keen to collaborate with NASA to ensure authors are supported to share their software as part of the publication process, and follow best practices to ensure the software is checked by peers and shared via PIDs in the final publication.