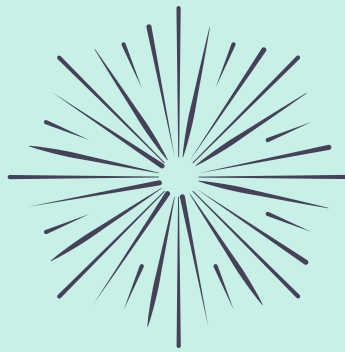
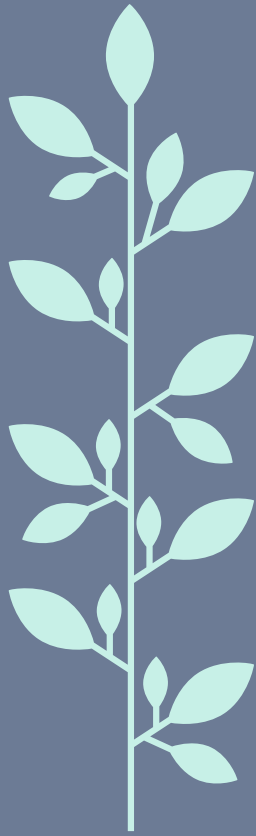


# LIVING OUR VALUES AND PRINCIPLES:

*Exploring Assessment  
Strategies for the Scholarly  
Communication Field*



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A list of errata is maintained on the homepage for this publication, <https://educopia.org/living-our-values-and-principles/>.

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## Introduction

Through the [Next Generation Library Publishing project](#) (2019-2022), Educopia Institute, California Digital Library, and Stratos, in close collaboration with COAR, LYRASIS, and Longleaf Services, seek to improve the publishing pathways and choices available to authors, editors, and readers through strengthening, integrating, and scaling up scholarly publishing infrastructures to support library publishers. In addition to building publishing tools and workflows, our team is exploring how to create community hosting models that align explicitly and demonstratively with academic values.

This research explores the relationship between today's varied scholarly publishing service providers and the academic values that we believe should guide their work. We begin with a brief definition of the academic mission and then briefly probe how profit motivations have come to dominate the current scholarly publishing marketplace. We consider and analyze how academic players from a range of stakeholder backgrounds have produced a broad range of "values and principles" statements, documents, and manifestos in hopes of recalibrating the scholarly publishing landscape. We contextualize this work within the broader landscape of assessment against values and principles.

Based on our findings, we recommend that academic stakeholders more concretely define their values and principles in terms of measurable actions, so these statements can be readily assessed and audited. We propose a methodology for auditing publishing service providers to ensure adherence to agreed-upon academic values and principles, with the dual goals of helping to guide values-informed decision making by academic stakeholders and encouraging values alignment efforts by infrastructure providers. We also explore ways to structure this assessment framework both to avoid barriers to entry and to discourage the kinds of "gaming the system" activities that so often accompany audits and ranking mechanisms. We close by pointing to work we have recently undertaken: the development of the [Values and Principles Framework](#) and [Assessment Checklist](#), which were issued for public comment in July-August, 2020 on *CommonPlace* (hosted by the Knowledge Futures Group).

We are grateful for the generous support of this work by Arcadia - a charitable fund of Lisbet Rausing and Peter Baldwin. We also deeply appreciate the engagement so many had with an early version of this paper during its public review period in the spring of 2020, then titled "Encouraging Adherence to Values and Principles." We incorporated feedback from that review period into this publication before its finalization and release in October 2020.

## The Roots of Misalignment

Academic institutions exist to advance knowledge and improve society through the application of that knowledge. To these ends, faculty and researchers in universities and other academic settings regularly conduct research and disseminate their findings and conclusions. Reaching audiences that can engage with and use these scholarly outputs is a desirable outcome—one that, ideally, should also benefit the researcher and the academic institution.

However, today's institutional reward structures, coupled with dominant publishing industry practices, more often serve to undermine the wide circulation and usage of scholarly output. In stark contrast to the diverse marketplace of small, independent societies and university presses that constituted the academic publishing system prior to the 1970s, today, a handful of for-profit, external service providers own and control most of the infrastructure supporting scholarly research and publishing—along with most of the academy's research outputs.<sup>1</sup> Academic researchers often engage in the system as a gift economy, while commercial publishers deliberately take advantage of these “gifts” to reap profits. And academic publishing, which once was a cottage industry with low-to-no profits, now numbers among the world's most lucrative industries. Information and knowledge is packaged as a luxury commodity, and its dissemination is carefully guarded and highly monetized.

**...today a handful of for-profit, external service providers own and control most of the infrastructure supporting scholarly research and most of the academy's research outputs.**

The external control exercised by large, profit-driven publishers and publishing infrastructure providers significantly impacts what (and who) is published, how much it costs to publish, and who can afford access to what is published. And their dominance continues to expand, including through acquiring smaller companies and academic products (e.g., Mendeley, SSRN, Digital Commons, Aries Systems, F1000, etc.) and through collecting and selling massive amounts of user data via evaluation and predictive analytics services. This expansion signals a dangerous loss of control by the academy over both its own academic output and the ways that academic output is measured, analyzed, and ultimately used.<sup>2</sup>

<sup>1</sup> See e.g. Larivière, Vincent; S. Haustein; and P. Mongeon. (2015) “The Oligopoly of Academic Publishers in the Digital Era,” PLOS One: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0127502>; See also Alejandro Posada and G. Chen. (2018) “Inequality in Knowledge Production: The Integration of Academic Infrastructure by Big Publishers” *ELPUB 2018*, Jun 2018, Toronto, Canada. <https://hal.archives-ouvertes.fr/hal-01816707v1>; Schonfeld, Roger C. (2018) “Big Deal: Should Universities Outsource More Core Research Infrastructure?” Ithaka S&R Issue Brief, DOI: <https://doi.org/10.18665/sr.306032>.

<sup>2</sup> For more information about this well-documented shift in scholarly publishing, see Fyfe, Aileen; K. Coate; S. Curry; S. Lawson; N. Moxham; C. M. Røstvik. 2017. “Untangling Academic Publishing: A history of the relationship between commercial interests, academic prestige and the circulation of research.” Zenodo. <http://doi.org/10.5281/zenodo.546100> and Aspesi, C.; N. Allen; R. Crow; S. Daugherty; H. Joseph; J. McArthur; and N. Shockey. 2019. *SPARC A Roadmap for Action: Academic Community Control of Data Infrastructure*. <https://osf.io/preprints/lissa/a7nk8/download>. See also the errata on our [publication homepage](#) for an error corrected on Nov 5, 2020.

There are ample choices beyond the “oligopoly” of conglomerates, including numerous for-profit, non-profit, and university-based options. However, efforts to encourage authors and researchers towards these options have proven challenging in part due to the array of stakeholders involved, the ways their perceived needs are met by the current system, the fact that these alternative operations are under-resourced, and the power of the conglomerates. Clearly differentiating between these groups and their approaches has been challenging for authors, subscribers, and publishers alike. Concerned communities of action have sought to do so in part through defining, authoring, and releasing a genre of publication we categorize here as “values and principles documents.”

## Documenting Values-Based Expectations

Groups of scholars, researchers, technologists, publishers, and librarians have recognized and documented the way industry consolidation has reduced competition and reinforced commercial entrenchment, yielding escalating costs of publishing infrastructures and platforms as well as the academy’s loss of control of its outputs. Some of this documentation has been in journal articles and blog posts, but an additional layer has emerged as a relatively new genre of publication in our field: “values and principles documents.”<sup>3</sup> These documents tend to highlight values-based expectations within scholarly communication that differentiate mission-driven and profit-driven activities. Such differences have critical implications for access, not just for the academy (where university output and data about that output is increasingly owned and controlled by commercial entities) but also for the broader public who could (and arguably should) be served by academic knowledge-production sites.

Values and principles documents related to scholarly publishing emerged in the mid-1990s and ballooned into a sizable genre by the early 2000s. They have been issued as open letters, declarations, petitions, statements, policies, and manifestos. These documents have often centered on the core issue of “open,” including advocating for publishing open access content in open source platforms and code bases. The FORCE11 Scholarly Commons Working Group began compiling the [Charters List](#) to keep track of these documents in 2015. The list now contains more than 100 declarations, charters, and other documents in the fields of technology, research, scholarly communication, data, and publishing. Notably, over half of the documents included in this list were created between 2014-19.

These values and principles documents have tended towards “opt in” statements. They often rely on loose and coded terminology (e.g., “community led” or “community governed”) that attempts to differentiate between academic values-driven publishing activities and profit-driven publishing activities. Most of these documents have been issued, not by a standards-making body or accepted authority, but usually by attendees of

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<sup>3</sup> A broad range of other industries and fields use “values” and “principles” documentation (also often called “charters” or “declarations”) to help set expectations and define practices. Some of these documents are formalized as codes of conduct and concretize the ethical requirements of a job or role (e.g., the Hippocratic Oath). Others are less formal, but can exert a powerful influence over practitioners (e.g., the Manifesto for Agile Software Development).

a hosted event or a set of participants in a community or association. Compliance with these documents has been both voluntary and unregulated; signatories to a set of principles may work in direct conflict with those principles without fear of professional repercussions.<sup>4</sup>

How might we move from today's thoughtful and thought-provoking but unenforced (and largely unheeded) statements toward a set of actionable practices that can significantly influence the decisions made by authors, subscribers, and publishers? And what might be the hidden costs and impacts of such a move? To answer these questions, our project team analyzed some of the most influential values and principles statements and publications that have emerged in our field.

## Methodology

Our team canvassed English-language, web-circulated values and principles documentation in the area of academic publishing. We sought to identify approximately ten examples that we could compare, contrast, and synthesize. Our goal was to better understand how current statements are structured and why they have been well known and supported theoretically in our field, but not acted upon in measurable ways thus far. We did not try to identify the "best" documents or select a random sample, but rather selected statements on a range of topics (open science, scholarly infrastructure, digital preservation, data management) that library publishers grapple with today. We acknowledge accordingly that this study is exploratory and that these sources are not meant to be representative of the full spectrum of values and principles documentation in scholarly publishing.

We established an [Annotated Bibliography](#) (authored primarily by Brandon Locke) representing several categories of information, including 1) selected values and principles statements about scholarly publishing; 2) publications about values and principles in scholarly publishing; and 3) examples of values and principles documentation utilized in other fields. We vetted this list with several groups, including the [Next Generation Library Publishing](#) project team and advisory group, and the [Community-led Open Publication Infrastructures for Monographs](#) (COPIIM) project team.

As we analyzed the set of academic publishing values and principles documents, we also produced a [Values and Principles Matrix](#) and a set of [Values Definitions](#) (both authored by Sarah Wiperman) to capture the core values each document either implied through its principles or explicitly stated as a value. This visual chart provides an at-a-glance synthesis of the commonalities and differences we see in this initial set of nine documents and the basic values and principles each outlines. It also highlights 12 areas of alignment, or core

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<sup>4</sup> The potency of values and principles statements in academic publishing could increase substantially if they were explicitly targeted to a specific audience and if they included a clear expectation of enforceability. We have identified several strong initiatives to translate "principles" into "practical requirements" including FORCE11's long standing work in this area, as well as the FAIR Guiding Principles, and the Jussieu Call for Open Science and Bibliodiversity, both covered later in this paper. Such work is still in the early stages of broad adoption or operationalization. See e.g., Bosman, J, et al 2017. "[The Scholarly Commons - principles and practices to guide research communication](#)," *OSF Preprints*; [GO FAIR](#) and FAIRification framework, and [Key Selection Criteria of the French Open Science Committee](#).



values, that seem to be held by most of the groups that have produced this type of documentation in our field. While not all of the documents' principles perfectly aligned as core values, most were close enough to be able to be categorized based on the actual values or language used in the original documents. We used the categories from the Values and Principles Matrix to focus our deeper analysis of the nine selected values and principles documents.

Many of the documents address a specific portion of the scholarly communication lifecycle, such as best practices for preservation or journal licensing; others provide broader standards for infrastructure and services. Some of the documents discuss how communities/users might employ these principles in their own practices; others focus on how a service provider might be evaluated by its communities/users. All of them set forth principles on which communities and providers could be aligned and what successful alignment might look like, but with very few exceptions, left open important questions of accountability and how values translate into actions in practice.

The following sections examine this selection of documents and some of the consistent values they express. Each section represents a common value found across this selection of documents and presents the principles that support those values. We selected the following documents for this in depth analysis: Principles for Open Scholarly Infrastructure (Bilder G., Lin J., Neylon C., 2015); Vienna Principles (OANA, 2016); FAIR Principles (GO FAIR, 2016); Principles of the Scholarly Commons (FORCE11 Scholarly Commons Working Group, 2017); Principles and Values (Redalyc-AmeliCA, 2019); Next Generation Repositories (COAR, 2017); Digital Preservation Declaration of Shared Values (Digital Preservation Services Collaborative, 2018); Declaration of Rights and Principles to Transform Scholarly Communication (Schneider R.A., UCOLASC, 2018); and Good Practice Principles for Scholarly Communication Services (COAR/SPARC, 2019).

## Value 1: Representation in Governance and Control

Document	Representation in Governance and Control Principles
<a href="#">Principles for Open Scholarly Infrastructure</a> (Bilder G., Lin J., Neylon C., 2015)	<ul style="list-style-type: none"> <li>• Coverage across the research enterprise</li> <li>• Stakeholder governed</li> <li>• Non-discriminatory membership</li> <li>• Transparent operations</li> <li>• Cannot lobby</li> <li>• Living will</li> <li>• Formal incentives to fulfil mission &amp; wind-down</li> </ul>
<a href="#">Principles of the Scholarly Commons</a> (FORCE11 Scholarly Commons Working Group, 2017)	<ul style="list-style-type: none"> <li>• The scholarly commons is an agreement among knowledge producers and users. <ul style="list-style-type: none"> <li>• The commons is developed by its members through their practice.</li> <li>• There is global commitment and participation in the commons' long-term viability and preservation.</li> </ul> </li> </ul>
<a href="#">Next Generation Repositories</a> (COAR, 2017)	<ul style="list-style-type: none"> <li>• Distribution of control - Distributed control, or governance, of scholarly resources (pre-prints, post-prints, research data, supporting software, etc.) and scholarly infrastructures is an important principle which underpins this work. Without this, a small number of actors can gain too much control and can establish a quasi-monopolistic position. Distributed networks are more sustainable and at less risk to buy-out or failure.</li> </ul>
<a href="#">Good Practice Principles for Scholarly Communication Services</a> (COAR/SPARC, 2019)	<ul style="list-style-type: none"> <li>• Good governance - The service has strategic governance that allows community input on the direction of the service and operational governance with community representation and decision making power.</li> </ul>

Many of the values and principles documents discuss how governance structures can help to build trust within the communities they serve. For these groups, a trustworthy governance system generally is one that a) cannot be co-opted or overtaken by the interests of a few players and b) puts the interests and voices of its community members first. There is consensus among these documents that user communities for products and services should have agency in their development and governance, including seats at the table and, ideally, decision-making power.

“Principles for Open Scholarly Infrastructure” is the most blunt in its recommendations, stating an organization or service provider should recognize “it doesn’t have a right to exist beyond the support it provides for the community” (and should plan accordingly), and that it should “not confuse serving itself with serving its stakeholders.” “Next Generation Repositories” is much less precise in its governance principle and chooses to focus more on the need to prevent monopolistic (or quasi-monopolistic) control over scholarly communication resources by a few actors. Both of these documents recommend governance structures in which much of the control of infrastructure is ceded to the users or communities it serves. Similarly, “Principles of the Scholarly Commons” makes a general

call for "the commons" to be "developed by its members through their practice," which, while vague, also stresses a community-led and controlled scholarly system. In having representative, stakeholder-focused governance structures, the provider/organization is, essentially, taking a back seat and putting its community/users in the driver's seat.

Unlike the other documents, "Good Practice Principles for Scholarly Communication Services" aims to provide not only recommendations for how to establish or improve governance systems, but also ways for consumers to make decisions about providers. In doing so, it sacrifices a clear vision of what the governance system would look like in favor of defining the relationship between the "community" (undefined) and the provider, on both strategic (advisory) and operational (decision-making) levels. While "Good Practice Principles" provides a good starting point for what "good governance" might look like and a relatively low bar for entry, it leaves a lot of open questions about what effect these principles might have and upon whom.

## Value 2: Sustainability

Document	Sustainability Principles
<a href="#">Principles for Open Scholarly Infrastructure</a> (Bilder G., Lin J., Neylon C., 2015)	<ul style="list-style-type: none"> <li>• Time-limited funds are used only for time-limited activities</li> <li>• Goal to generate surplus</li> <li>• Goal to create contingency fund to support operations for 12 months</li> <li>• Mission-consistent revenue generation</li> <li>• Revenue based on services, not data</li> </ul>
<a href="#">Vienna Principles</a> (OANA, 2016)	<ul style="list-style-type: none"> <li>• Validated Progress: Scholarly communication should promote both the production of new knowledge and the validation of existing knowledge.</li> <li>• Innovation: Scholarly communication should embrace the possibilities of new technology.</li> </ul>
<a href="#">Principles of the Scholarly Commons</a> (FORCE11 Scholarly Commons Working Group, 2017)	<ul style="list-style-type: none"> <li>• (Use of) external systems or technology, including reward systems, must not harm the commons. <ul style="list-style-type: none"> <li>• The form research is disseminated in is determined by the needs of the research itself.</li> <li>• All activities and outputs that take place in in the commons remain in the commons.</li> </ul> </li> </ul>
<a href="#">Next Generation Repositories</a> (COAR, 2017)	<ul style="list-style-type: none"> <li>• Sustainability - Institutions and research organizations will be major participants in the global network, contributing to the long term sustainability of resources.</li> </ul>
<a href="#">Declaration of Rights and Principles to Transform Scholarly Communication</a> (Schneider R.A., UCOLASC, 2018)	<ul style="list-style-type: none"> <li>• Affordability and Sustainability - We endeavor to balance providing affordable services to the widest possible communities with sustainability of the content we protect.</li> <li>• Empowerment - We encourage capacity-building in our partners, members, and the larger digital preservation community to sustain our shared goal.</li> </ul>
<a href="#">Principles and Values</a> (Redalyc-AmeliCA, 2019)	<ul style="list-style-type: none"> <li>• The open academy-owned non-profit non-subordinate sustainable and with responsible metrics publishing model ought to be strengthened.</li> <li>• Open Access sustainability by means of cooperative work schemes and a horizontal distribution to cover costs.</li> </ul>

Most of the values and principles documents that discuss sustainability do so in the capacity of financial sustainability. “Principles for Open Scholarly Infrastructure” covers this in the most detail and equates financial sustainability with trust: “An organisation that is both well meaning and has the right expertise will still not be trusted if it does not have sustainable resources to execute its mission.” Most notably, this document emphasizes “mission-consistent revenue generation” in which any revenue sources considered should be consistent with the organizational mission and should, as an example of this, be based on services and not data, which it calls a community property. “Digital Preservation Declaration of Shared Values” takes a slightly different approach and also looks at financial sustainability from the consumer side, connecting sustainability to the affordability of its services. In addition, “Digital Preservation Declaration of Shared Values,” “Next Generation

Repositories,” and Redalyc-AmeliCA’s “Principles and Values” all rely on some sort of cooperative, shared network to ensure sustainability, financial and otherwise. While all of these documents underscore the importance of user communities in making products sustainable and successful, they are also relatively vague and open to interpretation about how this would actually be implemented; it is unclear how exactly costs and resources might be distributed across networks in order to ensure sustainability.

“Vienna Principles” and “Principles of the Scholarly Commons” both have principles that relate to sustainability from the standpoint of knowledge production and dissemination. In “Vienna Principles,” this means both validating previous work as well as innovating and experimenting for the future; in “Principles of the Scholarly Commons,” this means providing stability and protecting “the commons” in order to ensure its continuation into the future.

## Value 3: Succession Planning and Sunsetting

Document	Succession Planning and Sunsetting Values
<a href="#">Principles for Open Scholarly Infrastructure</a> (Bilder G., Lin J., Neylon C., 2015)	<ul style="list-style-type: none"> <li>• Living will</li> <li>• Formal incentives to fulfil mission &amp; wind-down</li> </ul>
<a href="#">Digital Preservation Declaration of Shared Values</a> (DPSC, 2018)	<ul style="list-style-type: none"> <li>• Stewardship Continuity - We will collaborate to help identify new locations for content when one of the undersigned organization's stewardship cannot continue.</li> </ul>
<a href="#">Good Practice Principles for Scholarly Communication Services</a> (COAR/SPARC, 2019)	<ul style="list-style-type: none"> <li>• Succession planning - If the service is a nonprofit, the organization's bylaws state the conditions and terms governing how the organization may be transferred or wound down. If the service is provided by a for-profit entity, the contract/agreement should not be assignable to another entity without the client's express permission.</li> <li>• Easy migration - User-owned or generated content can be easily migrated to another platform or service upon termination of contract, without any additional fee from the service provider.</li> </ul>

In addition to governance and sustainability, some of the values and principles documents also cover what happens when the organization, product, or service provider ceases to exist or transfers to another organization. “Principles for Open Scholarly Infrastructure” discusses the need for a living will and “formal incentives to fulfil mission & wind-down” as part of governance. A living will would detail what happens when the organization winds down and under what circumstances that would happen, and, notably, the authors argue that the organization should have incentives to do so by completing its mission. “Good Practice Principles for Scholarly Communication Services” (2019) similarly emphasizes the need for succession planning and discusses how nonprofit and for-profit providers might accomplish this, but also takes into account what should happen if individual users/members choose to leave the community or service for any reason (“easy migration”). This document is geared more toward helping a prospective user/member to vet potential providers and less toward describing specific service provider practices. “Good Practices” is also the only document to distinguish between for-profit and nonprofit providers and explore how a user might evaluate each on succession planning. The Digital Preservation Services Collaborative’s “Digital Preservation Declaration of Shared Values” provides some succession planning in the form of “stewardship continuity,” pledging that signatories will work together to try to find new locations for content if one can no longer continue to be a steward.

## Value 4: Equity, Diversity, and Inclusion

Document	Equity, Diversity, and Inclusion Principles
<a href="#">Principles for Open Scholarly Infrastructure</a> (Bilder G., Lin J., Neylon C., 2015)	<ul style="list-style-type: none"> <li>• Coverage across the research enterprise</li> <li>• Non-discriminatory membership</li> </ul>
<a href="#">Principles of the Scholarly Commons</a> (FORCE11 Scholarly Commons Working Group, 2017)	<ul style="list-style-type: none"> <li>• Participation in the production and use of knowledge should be open to all who wish to participate. <ul style="list-style-type: none"> <li>• The commons welcomes and encourages participants of all backgrounds.</li> <li>• The commons is open to all participants who accept its principles.</li> </ul> </li> </ul>
<a href="#">Next Generation Repositories</a> (COAR, 2017)	<ul style="list-style-type: none"> <li>• Inclusiveness and diversity - Different institutions and regions have unique and particular needs and contexts (e.g diverse language, policies and priorities). A distributed network of repositories will aim to reflect and be responsive to the different needs and contexts of different regions, disciplines and countries.</li> </ul>
<a href="#">Digital Preservation Declaration of Shared Values</a> (DPSC, 2018)	<ul style="list-style-type: none"> <li>• Inclusiveness - We strive to adopt and promote inclusive practices in the partnerships we form, the collections we preserve, and the organizations we serve.</li> <li>• Technological Diversity - We develop and deploy a variety of platforms and technologies to create a heterogeneous network that spans diverse geographic, technical, and institutional environments.</li> </ul>
<a href="#">Principles and Values</a> (Redalyc-AmeliCA, 2019)	<ul style="list-style-type: none"> <li>• Diversity of scientific journals is necessary, hence pressure to homogenise them ought to be stopped.</li> </ul>

Many of the documents address issues around equity, diversity, and inclusion to some extent as part of what they value, but, as with many other categories, it is not always clear in what ways these values would be enacted in practice. Each document's values around equity, diversity, and inclusion are quite different from one another: Redalyc and AmeliCA's "Principles and Values" calls for diversity of scientific journals and to put an end to their homogenization; "Digital Preservation Declaration of Shared Values" emphasizes technological diversity and stresses the need for inclusive practices "in the partnerships we form, the collections we preserve, and the organizations we serve;" "Next Generation Repositories" calls for repositories to be responsive to these "particular needs and contexts" of "different institutions and regions;" and "Principles of the Scholarly Commons" simply calls for open participation.

Distilling these values to their most basic concepts, all the documents agree that scholarly systems are not built within a vacuum and declare that there is, therefore, a great need to build infrastructure and partnerships that are both representative of the users and communities they serve and responsive to their varying needs. "Principles for Open

Scholarly Infrastructure” does not specifically pull out equity, diversity, and inclusion as a value but does address this concept by stressing the need for “coverage across the research enterprise” (stating that “research transcends disciplines, geography, institutions and stakeholders” and infrastructure should do the same) and “non-discriminatory membership” (in which any stakeholder group is welcome to join and the “process of representation in day to day governance must also be inclusive with governance that reflects the demographics of the membership”).



## Value 5: Transparency

Document	Transparency Principles
<a href="#">Principles for Open Scholarly Infrastructure</a> (Bilder G., Lin J., Neylon C., 2015)	<ul style="list-style-type: none"> <li>• Transparent operations</li> </ul>
<a href="#">Vienna Principles</a> (OANA, 2016)	<ul style="list-style-type: none"> <li>• Transparency: Scholarly communication should provide open and transparent means for judging the credibility of a research result.</li> <li>• Quality Assurance: Scholarly communication should provide transparent and competent review.</li> <li>• Evaluation: Scholarly communication should support fair evaluation.</li> </ul>
<a href="#">Principles of the Scholarly Commons</a> (FORCE11 Scholarly Commons Working Group, 2017)	<ul style="list-style-type: none"> <li>• The rewards for participating in the commons are access, opportunity, and attribution.               <ul style="list-style-type: none"> <li>• Provenance of objects in the commons should be transparent and persistent</li> <li>• The commons has no intrinsic hierarchies, rankings, or reward systems</li> </ul> </li> </ul>
<a href="#">Digital Preservation Declaration of Shared Values</a> (DPSC, 2018)	<ul style="list-style-type: none"> <li>• Openness and Transparency - We share information about costs and technologies openly.</li> <li>• Accountability - We are responsible to each other and the broader community for employing ethical and transparent preservation practices.</li> </ul>
<a href="#">Declaration of Rights and Principles to Transform Scholarly Communication</a> (Schneider R.A., UCOLASC, 2018)	<ul style="list-style-type: none"> <li>• No free labor</li> <li>• No double payments</li> <li>• No hidden profits</li> <li>• No non-disclosure agreements</li> </ul>
<a href="#">Good Practice Principles for Scholarly Communication Services</a> (COAR/SPARC, 2019)	<ul style="list-style-type: none"> <li>• Transparent pricing and contracts - The service's contract conditions and pricing are transparent and equitable, with no non-disclosure agreements included.</li> </ul>

Most of the documents discussed transparency in terms of agreements, pricing, and/or practices. In this grouping of documents, “Principles for Open Scholarly Infrastructure” and “Digital Preservation Declaration of Shared Values” both turn the lens of transparency inward, encouraging organizations/providers to build trust by being open about their internal operations and practices. “Principles for Open Scholarly Infrastructure” connects this more directly to governance structure and also notes that privacy laws could constrain operational transparency. “Digital Preservation Declaration of Shared Values” seeks transparency by being upfront about costs and technologies but also brings in the idea of

accountability, citing that service providers also have a responsibility to be ethical and transparent in their practices.

On the other hand, “Declaration of Rights and Principles to Transform Scholarly Communication” and “Good Practice Principles for Scholarly Communication Services” both discuss the kind of transparency requirements on which users/subscribers could evaluate organizations/providers with whom they contract (and the “Declaration of Rights and Principles to Transform Scholarly Communication,” focuses explicitly on negotiating with publishers during journal license renewals). Of particular note, both of these documents call for no non-disclosure agreements, signalling that they would also like users/subscribers to be able to be transparent with others about the contracts they sign and the terms to which they agreed.

“Principles of the Scholarly Commons” and “Vienna Principles” both discuss transparency of the system as a whole, calling for transparent assessment and participation. “Vienna Principles” explicitly calls out the way that the system can establish more trust among its participants and consumers through transparent practices.

## Values 6 & 7: Openness and Interoperability

Document	Open Principles	Interoperability Principles
<a href="#">Principles for Open Scholarly Infrastructure</a> (Bilder G., Lin J., Neylon C., 2015)	<ul style="list-style-type: none"> <li>• Open source</li> <li>• Open data (within constraints of privacy laws)</li> <li>• Available data (within constraints of privacy laws)</li> <li>• Patent non-assertion</li> </ul>	
<a href="#">Vienna Principles</a> (OANA, 2016)	<ul style="list-style-type: none"> <li>• Accessibility: Scholarly communication should be immediately and openly accessible by anyone.</li> </ul>	
<a href="#">FAIR Principles</a> (GO FAIR, 2016)	<ul style="list-style-type: none"> <li>• (Meta)data are retrievable by their identifier using a standardised communications protocol.                             <ul style="list-style-type: none"> <li>• The protocol is open, free, and universally implementable.</li> <li>• The protocol allows for an authentication and authorisation procedure, where necessary.</li> </ul> </li> <li>• Metadata are accessible, even when the data are no longer available.</li> </ul>	<ul style="list-style-type: none"> <li>• (Meta)data use a formal, accessible, shared, and broadly applicable language for knowledge representation.</li> <li>• (Meta)data use vocabularies that follow FAIR principles.</li> <li>• (Meta)data include qualified references to other (meta)data.</li> </ul>
<a href="#">Principles of the Scholarly Commons</a> (FORCE11 Scholarly Commons Working Group, 2017)	<ul style="list-style-type: none"> <li>• Research and knowledge should be freely available to all who wish to use or reuse it.                             <ul style="list-style-type: none"> <li>• The commons is open by default.</li> <li>• Scholarly objects and content in the commons is FAIR: findable, accessible, interoperable and reusable by humans and machines.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• The commons is agnostic regarding form and technology.                             <ul style="list-style-type: none"> <li>• The commons exists independently of technology, funding, and business models that support and enable it.</li> <li>• The commons accepts all contributed objects that adhere to its guidelines on an equal basis regardless of form, genre or approaches.</li> </ul> </li> </ul>
<a href="#">Next Generation Repositories</a> (COAR, 2017)	<ul style="list-style-type: none"> <li>• Intelligent openness and accessibility - Scholarly resources will be made openly available and in accessible formats, whenever possible, in order to increase their value and maximize their re-use for the benefit for scholarship and society.</li> </ul>	<ul style="list-style-type: none"> <li>• Interoperability - Repositories will adopt common behaviours, functionalities and standards ensuring interoperability across institutions and enabling them to engage in a common way with external service providers.</li> </ul>

<p><a href="#">Digital Preservation Declaration of Shared Values</a> (DPSC, 2018)</p>	<ul style="list-style-type: none"> <li>• Openness and Transparency - We favor open technologies, standards, and protocols.</li> </ul>	<ul style="list-style-type: none"> <li>• Portability/Interoperability - We recognize that digital preservation involves moving data across systems and time. We design and maintain our services to maximize the integrity of the content and ease by which we transfer this content.</li> </ul>
<p><a href="#">Declaration of Rights and Principles to Transform Scholarly Communication</a> (Schneider R.A., UCOLASC, 2018)</p>	<ul style="list-style-type: none"> <li>• No waivers of OA Policy</li> <li>• No delays to sharing</li> <li>• No closed metadata</li> <li>• No long-term subscriptions</li> <li>• No permanent paywalls</li> <li>• No deals without OA offsets</li> <li>• No new paywalls for our work</li> </ul>	
<p><a href="#">Good Practice Principles for Scholarly Communication Services</a> (COAR/SPARC, 2019)</p>	<ul style="list-style-type: none"> <li>• Open standards - The service uses open APIs to enable interoperability, and adheres to open standards. Ideally, the platform is based on open-source software, but in cases where it is not, user-owned content is managed according to well-established, international standards.</li> <li>• Open content - Content, metadata and usage data are immediately, openly and freely available in machine- readable format via open standards, and using licenses (like CC0 or similar) which facilitate reuse.</li> </ul>	<ul style="list-style-type: none"> <li>• Open standards - The service uses open APIs to enable interoperability, and adheres to open standards.</li> </ul>
<p><a href="#">Principles and Values</a> (Redalyc-AmeliCA, 2019)</p>	<ul style="list-style-type: none"> <li>• Open Access has neither future nor meaning unless research assessment systems evolve.</li> <li>• Open Access consolidation demands the transition to digital scientific communication.</li> <li>• Financial investment in Open Access ought to be in line with its benefit for society.</li> </ul>	

Every single one of the documents discussed openness as a value in some way, whether that be supporting open access, open data, open source, or other open practices within their respective fields. For many of the documents, openness is also a promise, indicating that whatever products or services come out of these ventures will be open to everyone as well. Almost all of the documents additionally call for interoperability, and because many tied interoperability to openness, these elements are also combined here. While interoperability tends to lend itself more to technical aspects, it does speak to a desire to

have systems that can work with one another and not be beholden to a particular suite of products or providers. All of these themes are consistent with and reinforce the “governance” principles that sought to minimize the dominance of any particular group in the system. Valuing open outputs and open structures helps to ensure that those outputs and structures are owned by everyone and control is distributed.

The challenge with the Openness and Interoperability values and their associated principles is shifting them towards clear standards and consistent measurability. Unlike many of the other values we analyzed, many of the components named in the values and principles documents could be assessed, both with yes/no and numeric or percentage-based answers. However, with the exception of the “Declaration of Rights and Principles to Transform Scholarly Communication,” none give concrete guidance on how scoring might work or how different publishers and service providers might openly demonstrate their compliance.

## Value 8: Reproducibility/Reusability

Document	Reproducibility/Reusability Principles
<a href="#">Principles for Open Scholarly Infrastructure</a> (Bilder G., Lin J., Neylon C., 2015)	<ul style="list-style-type: none"> <li>• "To ensure that the community can take control if necessary, the infrastructure must be 'forkable.' The community could replicate the entire system if the organisation loses the support of stakeholders, despite all established checks and balances." [See "Open"]</li> </ul>
<a href="#">Vienna Principles</a> (OANA, 2016)	<ul style="list-style-type: none"> <li>• Reusability: Scholarly communication should enable everyone to effectively build on top of each other's work.</li> <li>• Reproducibility: Scholarly communication should provide reproducible research results.</li> </ul>
<a href="#">FAIR Principles</a> (GO FAIR, 2016)	<ul style="list-style-type: none"> <li>• Meta(data) are richly described with a plurality of accurate and relevant attributes.               <ul style="list-style-type: none"> <li>• (Meta)data are released with a clear and accessible data usage license.</li> <li>• (Meta)data are associated with detailed provenance.</li> <li>• (Meta)data meet domain-relevant community standards.</li> </ul> </li> </ul>
<a href="#">Declaration of Rights and Principles to Transform Scholarly Communication</a> (Schneider R.A., UCOLASC, 2018)	<ul style="list-style-type: none"> <li>• No copyright transfers</li> <li>• No restrictions on preprints</li> <li>• No limitations on author reuse</li> <li>• No impediments to rights reversion</li> <li>• No curtailment of copyright exceptions</li> <li>• No barriers to data availability</li> <li>• No constraints on content mining</li> </ul>

The documents in this category all focus on the basic need for infrastructure, scholarship, and data to be reproducible and reusable. "Principles for Open Scholarly Infrastructure" is unique in that it connects the ability to reproduce to the user community's ability to have control over its own infrastructure. This also relates to the principles around succession planning and what should happen when an organization or provider no longer supports its services and systems. "Declaration of Rights and Principles to Transform Scholarly Communication" focuses on authors' and others' abilities to reuse works as well as the ability to mine content and access data. By removing barriers to reuse, these principles ensure that reuse can occur but do not necessarily call for the works to be reused or shared openly, which helps to distinguish this value from "open." As a whole, this value can be seen as a precursor to the "open" and "interoperable" values, in that it lays a legal and technical foundation for openness.

## Value 9: “Public Good”

Document	Public Good Principles
<a href="#">Vienna Principles</a> (OANA, 2016)	<ul style="list-style-type: none"> <li>Public Good: Scholarly communication should expand the knowledge commons.</li> </ul>
<a href="#">Next Generation Repositories</a> (COAR, 2017)	<ul style="list-style-type: none"> <li>Public good - The technologies, architectures and protocols adopted in the context of the global network for repositories will be available to everyone, using global standards when they are available.</li> </ul>
<a href="#">Digital Preservation Declaration of Shared Values</a> (DPSC, 2018)	<ul style="list-style-type: none"> <li>Advocacy - We aim to inspire stakeholders at every level to engage, invest in, and sustain preserving our collective cultural heritage and academic record.</li> </ul>
<a href="#">Principles and Values</a> (Redalyc-AmeliCA, 2019)	<ul style="list-style-type: none"> <li>Scientific knowledge generated with public funds is a common good and access to it is a universal right.</li> <li>Science’s social impact is the foundation of Open Access’ existence.</li> </ul>

All of the documents in this category connect their work and openness to the public good and advocacy, which serves as an additional driver for their values. While working toward the “public good” is certainly a noble aspiration, there is still the question of what that actually means and what that would look like in action. All companies, for example, would likely say they are working toward the public good, and no companies would likely see themselves as working against it, even if others do. Because of the subjectivity of this value, the principles vary widely and have varying degrees of specificity. Of all of the categories, this value is likely the most difficult to describe and qualify—how does one demonstrate the valuation of the public good? Looking to recent designations and documentation created to evaluate “Benefit Corporations,” or B-Corps in the US context, may be helpful for this work.

## Other Values

Additional values surfaced in this analysis that were unique to one document or shared among two of the documents. We briefly cover these below.

**Value 10: Data Collection and Use:** As previously noted, “Principles for Open Scholarly Infrastructure” says that revenue should come from services, not data, and “data related to the running of the research enterprise should be a community property.” “Good Practice Principles for Scholarly Communication Services” additionally calls for “fair data collection,” meaning that data is only collected from users when it is necessary to run the service. This document also stipulates that data collection practices should be “clearly and publicly articulated.” Given the growing importance of data in predictive analytics, clear articulation of expectations around data collection and usage is integral and crucial to ensuring publishers and service providers are exercising appropriate alignment with the academic mission.

**Value 11: Stakeholder Relations:** “Vienna Principles” and “Digital Preservation Declaration of Shared Values” specifically discuss principles around stakeholder relations, particularly around collaboration. “Digital Preservation Declaration of Shared Values” calls for collaboration among organizations that share its values, whereas “Vienna Principles” more generally encourages collaboration between researchers and their stakeholders, “such as patients and doctors, students and teachers.” “Vienna Principles” also includes a unique principle and value around “understandability,” with the idea that researchers should create and adapt communication for their various stakeholders in order to create dialogue and understanding. While many other documents discussed collaboration in some form (especially as related to sustainability), these documents were the only ones to at least somewhat articulate what they value when they form a collaboration or work with a stakeholder.

**Value 12: Discoverability:** “Vienna Principles” and “FAIR Principles” both discuss how research outputs should be not only accessible but discoverable. “Vienna Principles” discusses discoverability broadly, emphasizing the need for scholars to be able to find information easily so that they might “efficiently and effectively identify research that is relevant to them” and also find feedback on their own work. “Findable” is the first component of the “FAIR Principles” and the first step in (re)use, according to that document. Where “Vienna Principles” states why discoverability or findability is important, “FAIR Principles” shows how to make this possible for both humans and machines (e.g., through unique identifiers, rich metadata, indexed metadata, etc.).



## What's Missing?

While most of the values contained in the documents could be organized into common groupings, the principles themselves vary widely in terms of specificity. Most do not set clear expectations, let alone explicit ways to gauge and measure stakeholder behaviors against these expectations. Without these features, the documents cannot easily be used to guide authors and subscribers towards publishers who align with these values, and in turn, they are unlikely to incentivize publishing service providers to act in compliance with these principles.

A higher level of specificity is present in "[Declaration of Rights and Principles to Transform Scholarly Communication](#)," (UCOLASC 2018) in which all of the named principles are partnered with clear and measurable actions.<sup>5</sup> It is no accident that this declaration was authored specifically to guide the concrete decisions made by one university system regarding journal price negotiations with commercial publishers. Documents that focus more on specific principles, however, may lose the definition of larger, common goals. For example, the "Declaration" has clear, well-defined principles but does not necessarily state the values on which these principles are built.<sup>6</sup>

Balancing the "big picture" with specific, actionable details is perhaps best accomplished by the [FAIR Principles](#) (2016) and the [Exemplarity Criteria](#) (Ouvrir la Science, 2019). FAIR puts forward definitions of larger values (findable, accessible, interoperable, reuseable) but also provides very specific principles regarding how those values might be achieved and assessed and a FAIRification Process to support FAIR implementations. The Exemplarity Criteria for Funding from the National Open Science Fund, which is based on the 2017 [Jussieu Call](#), provides a specific set of criteria for platforms, infrastructure, and content, that are ranked according to three levels, and that are designed as guidance for national investments in France under the National Plan for Open Science and the National Open Science Fund.

Documents with broader scopes and less specificity are useful in their own right. These documents can help to set direction and define what is important to a community. Particularly when groups are first ideating and testing concepts that are unfamiliar, or when multi-stakeholder groups are seeking common ground, such documentation is a foundation block upon which any further action must rest.<sup>7</sup> Once these documents exist, communities can define what the implementation of their espoused values and principles

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<sup>5</sup> Comparing this with LIBER's principles document, "[Open Access: Five Principles for Negotiations with Publishers](#)" (2017), reveals a similar level of actionability in the principles set forth.

<sup>6</sup> As a different type of example, another document, the "Principles of Transparency and Best Practice in Scholarly Publishing" (OASPA), provides a list of very specific principles based on one value: transparency. This document clearly lays out the ways in which publishers and journals can be more transparent but, again, does not describe transparency as a larger value.

<sup>7</sup> See e.g. the work of Nicky Agate et al, and HuMetricsHSS in developing the Values Framework Workshops, which guide groups through the process of defining their values: <https://humetricshss.org/your-work/workshop-kit/>.

**Specificity helps make it possible to move from a general shared sentiment to concentrated action.**

would look like in practice. Specificity helps to make it possible to move from a general shared sentiment to concentrated action with measurable outcomes.

Most of the documents we reviewed (with the exception of "succession planning" in "Good Practice Principles for Scholarly Communication Services") did not address differences in organizational structure and how those might influence the implementation of values and principles by different players. A broad range of stakeholders—emergent and established, nonprofit and for-profit, small and

large—have a role to play in the current scholarly communication system, but fundamental differences in their organizational objectives and abilities may necessarily impact how they can respond to and enact certain values and principles.

Take the organizational type, for example, which includes dozens of categories such as corporation, foundation, government, non-profit, or cooperative. These are legal designations that create explicit boundaries around the way an organization can behave, including whether or not it can lobby, what role(s) investors can play, how transparent its financial records must be, and where its profits are allowed to go. There is no "right" or "wrong" type of organizational formation for scholarly publishing, but different types of organizations may not be able to adhere to principles in exactly the same ways. They may likewise require different types of principles-based evaluation. Take "community-led governance" as an example. A 501c3 not-for-profit organization in the US is required to have a governance board and officers who bear fiscal and legal responsibility for the entity and oversee its policies and procedures. If a 501c3 implements its board and officers such that its community members are fairly represented therein, it should be able to demonstrate that it has "community-led governance" via its policies and practices. A for-profit organization is structured quite differently, and it has "owner(s)" and "shareholder(s)" who serve as the entity's formal "governance" or decision-makers. A for-profit may develop specific policies and procedures that provide community members with concrete decision-making roles in order to demonstrate that it has operationalized a "community-led governance" structure. A university-hosted program is embedded in a not-for-profit educational organization, and as such, ultimately answers to that university's Board of Trustees or similar body. A university-hosted program can develop policies and practices that, if approved by the host, enable the program to be governed by its community members. These three organizational types are common in the US (and beyond, though they use different names and have slightly different legal expectations), and each can commit to "community-led governance" but only through explicit documentation and intentional design. A blanket "one-size-fits-all" or binary approach to assessing implementation of and adherence to principles simply will not accommodate and address the spectrum of operational concerns involved in different service provider environments.

Finally, the use of the "public good" as a value and its explicit alignment with "open" values often comes across as fuzzy and ill-defined in current principles documentation. Sometimes, this term is used according to the economic definition of "public goods" or "common-pool resources" (which economists such as Elinor Ostrom and Mancur Olson describe as either exclusive or inclusive commodities or services that are of general benefit to all); other times it references a more general sense of public well-being. Assessing the latter is possible but often very challenging. Carefully defining what is meant both by "open" and "public good" will help to shift these terms from relatively vague concepts to demonstrable actions and outcomes.

## Lessons from Existing Efforts

In our research, we sought to understand a broad range of examples of values- and principles-based evaluation structures both within and beyond the scholarly communication field. Below, we provide an overview of several relevant approaches that we believe can serve as models and cautionary tales about implementing assessment strategies that are intended to show an organization's alignment with a set of principles.

### Nonprofit Assessments

The nonprofit sector in the US is replete with examples of values- and principles-based evaluation frameworks. For example, the [\*Standards for Excellence: An Ethics and Accountability Code for the Nonprofit Sector\*](#)<sup>®</sup> and its associated accreditation programs provide specific benchmarks and measures in six major oversight and governance areas, including 27 different topics that together, help to show and reward success in "building capacity, accountability, and sustainability" in an organization. These standards and the related assessment techniques were initially developed as a project of Maryland Nonprofits, which continues to serve as the host for this program. They are used officially in six states with formal audits and accreditation methods. The program helps to inform a nonprofit about ways to mature and grow its stability in best practices, and with three-year audit cycles, it can help to show an institution's progress over time. The accreditation is also used by some foundations and agencies to determine a nonprofit's readiness and eligibility for funding through grants and contracts.

Both the format and the concepts used in the "Standards of Excellence" documentation provide a useful corollary and model for scholarly communication evaluation processes. The conceptual backbone for the document is a set of "fundamental" values defined as "honesty, integrity, fairness, respect, trust, compassion, responsibility, and transparency." Based on these values, "Standards of Excellence" then puts forward six core areas, each representing a common function and/or expectation within nonprofit management (e.g., "Finance and Operations"). Each of these six sections opens in turn with a "Guiding Principle," (e.g., "Nonprofits should have sound financial and operational systems in place and should ensure that accurate records are kept. The organization's financial and

non-financial resources must be used in furtherance of tax-exempt purposes. Organizations should conduct periodic reviews to address accuracy and transparency of financial and operational reporting, and safeguards to protect the integrity of the reporting systems.”<sup>8</sup>) and then describes a range of evidence an institution can use to benchmark

**This evidence is not framed in a one-size-fits-all way but rather includes examples of what would satisfy each requirement.**

and demonstrate compliance. This evidence is not framed in a one-size-fits-all way, but rather includes examples of what would satisfy each requirement. Audits are performed by the “Standards for Excellence” organization with fees based on organizational income.

Somewhat similarly, the “[Principles and Practices for Nonprofit Excellence](#)” was developed by the state of Minnesota as a set of accountability and management indices for nonprofits. In this documentation, there are 11 accountability principles and 192 management practices that provide general guidance for nonprofits. First published in 1994 and revised in 2013, this framework focuses on first defining each accountability principle, and then providing descriptions of the explicit functions that a nonprofit “must” or “should” do. Geared more as a training tool than an audit mechanism, the framework is partnered with additional tools and resources that can be used by nonprofits to mature their practices over time. They are explicitly “not intended for use by funders or by government to evaluate organizations,”<sup>9</sup> and there is no way to benchmark or demonstrate changes in compliance over time. These “Principles and Practices” have been adopted and/or adapted by more than a dozen additional states but without any formal branding or rules around what the “Principles and Practices” must contain.

Another model is provided through the “[Trusted Digital Repositories](#)” standard (ISO 16363), which was developed to provide an audit framework to help certify repositories providing long-term preservation services against the [Reference Model for an Open Archival Information System \(OAIS\)](#).<sup>10</sup> This work began around 2000, when RLG and OCLC conducted research to provide implementation guidance for repositories that wanted to demonstrate their compliance with the then-emerging international standard, OAIS. The RLG-OCLC team first issued a jointly authored research report, *Trusted Digital Repositories, Attributes and Responsibilities* (2002), and shortly thereafter began to define criteria to help to gauge the

## Trusted Digital Repositories Assessment

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<sup>8</sup> See: Standards for Excellence: An Ethics and Accountability Code for the Nonprofit Sector: “Finance and Operations, Guiding Principle.” <https://standardsforexcellence.org/Home-2/code>, Last accessed 10-19-2020.

<sup>9</sup> See Principles and Practices for Nonprofit Excellence: “Advice for Users.” <https://www.minnesotanonprofits.org/resources-tools/principles-practices-for-nonprofit-excellence/about-the-principles-practices>. (Last Accessed 10-19-2020.)

<sup>10</sup> OAIS was developed in 1996 by the Consultative Committee for Space Data Systems (CCSDS) as an abstract model and framework for archives with long-term preservation ambitions. OAIS became an ISO standard in 2002 (ISO 14721). See <https://public.ccsds.org/pubs/650x0m2.pdf> for the 2012 Magenta Book. (Last accessed 10-19-2020.)

reliability of digital archiving and preservation repositories against the OAIS standard. A task force in the US comprising members of the RLG-OCLC and the National Archives and Records Administration (NARA) assembled and co-authored an audit and certification framework, publishing it in 2007, as *Trustworthy Repositories Audit & Certification: Criteria and Checklist* (TRAC).

TRAC was designed to help digital repository solutions, including those run by third-party, academic-library, national, and research center entities, to demonstrate that they were “capable of reliably storing, migrating, and providing access to digital collections.”<sup>11</sup> The framework measured three distinct components of repository infrastructure: its technical architecture, its actual handling of digital objects, and its organizational details (e.g., accounting, legal, and governance functions). In 2012, a formalized ISO standard (16363) based largely on TRAC was issued as the “Trusted Digital Repository (TDR) Checklist”.

Implementation of this audit and certification process has not been entirely smooth or without controversy. Other nations created their own audit frameworks, including the nestorSEAL (Germany) and DRAMBORA (UK/DigitalPreservationEurope), yielding confusion regarding which standard(s) a repository should pursue in order to demonstrate its value to potential members, clients, or investors. Further complicating the landscape, in the US and Canada, the Center for Research Libraries began providing TRAC audits for between \$60,000-\$80,000 by 2008. The high cost quickly became a barrier-to-entry for most community-based repositories and institutional repositories alike, and the broader research community questioned the validity and worth of these audits. Many US- and Canada-based repositories conducted self-audits or peer-to-peer audits and posted their results publicly in order to demonstrate their reliability while avoiding additional cost.

Following the 2012 release of ISO standard 16363 (TDR), the international community also produced a standard to govern its implementation by auditors (ISO 17021-1: 2015, “Requirements for bodies providing audit and certification of management systems”). The authors of ISO 16363 (TDR) created “Primary Trustworthy Digital Repository Authorisation Body (ISO-PTAB)” as a new body based in the UK and involving international preservation experts. This body became the first entity officially accredited to perform ISO 16363 audits in 2017.

Concerns do remain that the audit framework can be a barrier to entry for new players and that it may unfairly penalize smaller players, financially disadvantaged regions of the world, and non-profit and academic-institution hosted solutions that are intentionally seeking to reduce costs for a set of functions that are notoriously challenging for institutions to fund. However, the need for the accountability and reliability of repositories claiming long-term preservation functions is significant, and funders and clients of repositories need mechanisms to guide and affirm their investments and trust.

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<sup>11</sup> “Trustworthy Repositories Audit and Certification : Criteria and Checklist” (OCLC and CRL, 2007). Available: [https://www.crl.edu/sites/default/files/d6/attachments/pages/trac\\_0.pdf](https://www.crl.edu/sites/default/files/d6/attachments/pages/trac_0.pdf) (Last accessed 10-19-2020.)

Additional audit frameworks, including ones specific to data repositories ([Data Seal of Approval](#) and the [ICSU World Data System](#), as well as the Research Data Alliance's harmonization of both in the "[Core Trustworthy Data Repositories Requirements](#)" or CoreTrustSeal) have continued to emerge as well, with some expressing concerns about the growing complexity of (and costs associated with) demonstrating compliance in this field. Of particular interest to our project is the CoreTrustSeal's current process and pricing for auditing. CoreTrustSeal auditors are all recognized leaders in the field of data science, and they contribute their reviews as volunteers and at no cost. This currently limits the expenses for the CoreTrustSeal to administrative and maintenance costs. In contrast to most auditing frameworks, being reviewed for the CoreTrustSeal costs EUR 1,000 to the repositories that apply for this designation.

## Data Science and Open Science Accountability

In the last few years, several data science groups have explored how to move from principle-based statements to principle-based accountability measures in specific topical or national contexts. Two notable examples of this work are the [FAIR Guiding Principles](#) (2016) and the [Jussieu Call for Open Science and Biodiversity](#) (2018). In both of these cases, the principles were developed by researchers, scientific publishing professionals, and collections management professionals, and both began with relatively specific principles.

The FAIR Guiding Principles began as a grassroots, focused effort in data science to ensure that data are Findable, Accessible, Interoperable, and Reusable (FAIR) for machines. Initially released as a scholarly publication in *Scientific Data* in 2016, the FAIR principles are clear and actionable. As an example, F1 (or Findable-1) states "(Meta) data are assigned globally unique and persistent identifiers."<sup>12</sup> The principle is supported by several paragraphs of context, plus a list of sources and providers. The principle provides enough room for data repositories or other entities to determine what unique and persistent identifier(s) to use, but makes clear that every dataset must have one as a base condition for FAIR. By 2018, FAIR published additional guidance documents to assist data managers in the use of the principles, and by 2020, tools and infrastructure, including the three point FAIRification framework and a series of working groups, support its broad implementation. There is not a specific assessment process for FAIR compliance; the articulated vision of this effort leans towards a distributed model, as evidenced by its Implementation Networks model.

The Jussieu Call for Open Science and Biodiversity was established in Paris in 2018 by French Open Access and Public Scientific Publishing task forces of Bibliothèque Scientifique Numérique. The French Ministry of Higher Education, Research, and Innovation supported this work through the following statement, which it issued on July 4, 2018:

*In general, the scientific community must regain control of the publishing system, in the spirit of the Jussieu Call for Open Science and Biodiversity. It must make efforts to involve reputable actors who develop a less concentrated*

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<sup>12</sup> See <https://www.go-fair.org/fair-principles/> (Last accessed 10-19-2020.)

*publishing environment, obeying the principles of open and ethical access, particularly in terms of transparency, governance and intellectual property.*<sup>13</sup>

In 2018-2020, the French Open Science Committee’s working groups responded to this statement by developing criteria that could guide the investment strategies made by the National Open Science Fund. The resulting “[Key Selection Criteria of the French Open Science Committee](#)” now includes 44 total exemplarity criteria that are split across two main categories: the operation of platforms and infrastructures, and editorial content. Each of these criteria are assigned to one of three levels: Essential, Highly Recommended, or Desired.<sup>14</sup> So, for example, in the first category, or operation of platforms and infrastructures, there are six total criteria around “governance.” Each criteria is assigned within one of the three levels. As seen in Figure 1 below, which is a short excerpt from the Key Selection Criteria, some criteria show a maturation pathway through the three levels, and other criteria do not.

**Exemplarity criteria for the operation of platforms and infrastructures**

ESSENTIAL (13 criteria)	HIGHLY RECOMMENDED (5 criteria)	DESIRED (3 criteria)
<b>Governance</b>		
Clear definition of governance institutions, their objectives, relationships and ways of functioning	Establishment of science bodies (e. g. a scientific council) that are regularly renewed (with a limited mandate).	Governance with the widest possible national, European and international geographical, linguistic and disciplinary diversity depending on the vocation of the structure.
Participation in the governance of user and scientific communities represented in their diversity.	Dynamics of dialogue and cooperation with initiatives and actors in the field.	
	Regular review of the infrastructure or platform roadmap.	

**Figure 1: Key Selection Criteria of the French Open Science Committee (excerpt)**

While the Key Selection Criteria have originated with the specific use case of guiding the French Open Science Committee’s investments, these criteria and this model may prove extensible to other environments seeking clear ways to differentiate between communities/organizations that are “obeying the principles of open and ethical access,” and those that are not.

<sup>13</sup> See <https://www.ouvri.lascience.fr/exemplarity-criteria-for-funding-from-the-national-open-science-fund/> (Last accessed 10-19-2020.)

<sup>14</sup> Notably, the commonly cited “Principles for Open Scholarly Infrastructure” (Bilder, Lin, Neylon, 2015) deeply influenced these criteria. See <http://dx.doi.org/10.6084/m9.figshare.1314859> (Last accessed 10-19-2020.)

## Observations

Like so many audit frameworks, the Standards for Excellence, and the set of preservation and data science repository standards (including CoreTrustSeal, GoFAIR, and the Key Selection Criteria) each have to strike a tough balance. They seek to provide enough structure and information to engender trust, guide investments, and incentivize alignment with shared principles and standards, but not so much structure and information that it creates artificial barriers to entry for these marketplaces.

With this in mind, how can the broader scholarly communication landscape mitigate these challenges while also building a stronger and more assessment-ready framework to help guide the growth of our industry and its many diverse players?

## Defining and Measuring NGLP Values

The Next Generation Library Publishing project (2019-2022) is currently establishing and piloting a new [Values and Principles Framework](#) and [Assessment Checklist](#). This Framework and Assessment Checklist is being designed around two core use cases: 1) to enable scholarly publishing infrastructure providers to provide evidence of their adherence to a shared set of principles and values in academic publishing, and 2) to enable investors (funding agencies and clients) to assess potential infrastructure providers in part by their demonstrated adherence to the principles and values that most matter to them.

Our goal is to incentivize stronger alignment between infrastructure providers and academic principles and values. If successful, this work could significantly alter the scholarly communication landscape by enriching the knowledge and expectations that investors have, and by providing new ways to understand and document the behavior, capabilities, and intentions demonstrated by providers through their actions and policies. Below, we describe some of the features we are incorporating into this work. The initial draft was released for public review in August-September 2020, and our team plans to issue the revised Framework in early 2021.

## Robust, Community-Generated Values

The foundation block for the model and toolset are an agreed upon and well-defined set of common values, authored and vetted by researchers, subscribers, users, publishers, and publishing services providers. These values build upon the decades of thought and work that is documented in the existing declarations, petitions, policies, manifestos, and principles documents we have reviewed.



## Measurable Principles

We are also developing specific, measurable principles for each articulated value. Wherever possible, these do not rely on binary or dualistic measures, but instead make room for a spectrum of activity that may reveal different levels of compliance. A successful assessment strategy should both recognize the spectrum of practice enabled in a healthy, competitive marketplace, and ultimately incentivize all players within it to work in greater accordance with the academic mission.

## Assessment Flexibility

As evidenced in the values and principles documents we have reviewed, different communities purposefully select different values and principles based on their own needs and desires. The framework and tool seek to accommodate this by not rigidly defining only one “right and complete” set of components with which an entity should comply. Instead, a community will be encouraged to use the Values and Principles Framework to choose which values and principles are most meaningful to them. Once those selections are made, they will be directed to the Assessment Checklist items that correspond to those values and

**Different communities purposefully select different values and principles based on their own needs and desires.**

principles, and they may select the relevant assessment items that match those values and principles. The Framework and Assessment Checklist are not meant to function as a “one-size-fits-all” approach; they provide a base from which communities can select and refine their own principles and criteria and measurements according to each community’s articulated priorities.

In keeping with this, we are currently mapping the beta Framework and Assessment Checklist to a variety of existing values and principles statements (e.g., Good Practice Principles for Scholarly Communication Services, Vienna Principles, Principles for Open Scholarly Infrastructure) and to the leading set of audit tools currently available (e.g., FAIR, CoreTrustSeal, Key Selection Criteria of the French Open Science Committee).

Once an entity has completed an audit with any of these frameworks, that audit will almost inevitably include substantive overlap with other frameworks. Completing multiple assessments in order to earn “Seals” or other designations may become necessary for some repositories, and cutting down on the repetitiveness of this activity (and the expense of time it takes) would be desirable for all involved. We are testing the feasibility of mapping to-and-from an extensive Assessment Checklist to make it easier for communities and organizations to show their compliance with the relevant tools, criteria, and seals in their field. This way, if they answer a question for one assessment framework that is also

contained in another framework of interest, that content automatically pre-populate the overlapping items.

## Benchmarking

Our model seeks to provide benchmarking to enable a community/organization to compare its current assessment against its previous assessments, and also against designated and anonymized or confidential peer communities/organizations. This will enable comparisons to be made at the system level; it will also encourage and make visible increases in compliance over time.

## Transparency

The framework aims towards transparency in all of its creation, processes, and documentation. Any scoring, benchmarking, and/or other data will be clearly explained and tied back to specific questions. The intent of this framework is not punitive, but generative, and we aim to have its outputs include tools and guides that can help institutions improve their adherence to the values and principles over time.

## Accounting for Organizational Differences

The framework will explicitly seek to ensure different organizational types that work in this space are not penalized within this assessment framework. For example, the governance model an entity can deploy may depend, in part, on the sector of its operation (e.g., academic, government, nonprofit, or commercial). If a value around governance includes a principle for which compliance demands that the entire company hosting a product is community governed, that will eliminate entire sectors. If instead, that same value includes a principle that focuses on the governance of a specific product, service, or component, that may enable every sector to demonstrate some level of meaningful compliance. Differences in those levels and types will be visible and defined such that each sector's strengths and weaknesses are shown in balance, not in isolation. Similarly, newcomers and institutions with vastly different resources will not be held to standards that penalize them unfairly (e.g., we seek to ensure that emergent players are not held to a "high bar" that ultimately serves as a barrier to entry).

## Hosts, Assessors, and Auditors

As per above, this framework will not seek to be punitive; its main goal would be to help each entity working in scholarly communication to reach towards and achieve greater compliance over time with academic values and principles. To achieve that goal, the framework itself must be managed in keeping with those values and principles. The host organization for the framework; the facilitation of the framework's creation, revisions, and governance; the care and consideration given to the data generated and used in the

framework; the cost of managing the framework and tool; who is able (and trained) to perform an assessment; and the costs associated with an assessment number among the important questions that will need to be answered as this framework is piloted during this project.

## Reviews and Revisions

We recognize the quick pace of change in the field today, and we acknowledge that if this framework is successful, it may speed the pace of that change. Even the best standards are always and already written in the past. Unless they are continually updated, they may or may not be geared appropriately for the present. To avoid the rigidity that can come from developing a set of values that ultimately will be applied to a future we cannot predict, we are also building into the values, principles, and metrics a regular evaluation period and process for updating.

## Conclusion

This paper lays out both the rationale and a plan of action regarding how values and principles documentation might be better activated to forward the academic mission and to magnify the impact of scholarly research. Our work has identified a broad range of projects and groups wrestling with how best to identify, document, and improve adherence to shared values and principles within scholarly communication. It has also closely examined the resulting documents, identifying some initial shared values and principles, and studying both the strengths and insufficiencies in those documents. By turning to examples in a variety of fields where “values and principles” documentation is paired with audit and certification mechanisms, we have seen how these help to guide investments in other fields.

What might be the relevance of such a tool within the scholarly communication landscape? This sort of tool could help scholarly communication communities to explicitly articulate what they need and expect from infrastructure providers. It could also help infrastructure providers better understand the needs, desires, and values of their clients and partners. When expectations are transparently communicated, all parties benefit, including the infrastructure providers, their funders, and their clients and partners.

We are glad we are not alone in this journey towards actionable values and principles. Such international initiatives as [Invest in Open Infrastructure \(IOI\)](#), [Mapping the Scholarly Communication Landscape](#), [Global Sustainability Coalition for Open Science Services \(SCOSS\)](#), [FAIR Principles \(and Go FAIR\)](#), [Community-led Open Publication Infrastructures for Monographs \(COPIM\)](#), and [TRIPLE](#) as well as national initiatives such as the [French Open Science Committee](#) and the US-based [Open Platform Initiative](#) are working with and alongside our project team to discuss and test approaches to assessing adherence to values and principles statements in the scholarly communication landscape.

We look forward to continuing to connect with stakeholders engaged in this work across the scholarly communication landscape. Please, help us to improve our thinking and action as we continue to explore the feasibility and desirability of moving from principles and values statements to an evaluation framework that helps to assess the work of players across this space against the values and principles that drive the academic realm.

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