
The Public

Knowledge

Project and Open

Journal Systems:

open source

options for small

publishers

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ABSTRACT. *This article provides an overview of the Public Knowledge Project (PKP) and its open source software development projects, with a particular focus on Open Journal Systems (OJS), an online journal publishing platform now used by over 11,500 journals around the world. OJS is just one of many examples of software and services that provide new and cost-effective alternatives, especially for small scholarly societies and commercial publishers. The development of online publishing, open source software, and virtual communities are together opening up new opportunities for scholars, researchers, societies, small publishers, and librarians to reassert their independence and control over the publishing process, and provides a wider range of options than has ever existed before.*

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Public Knowledge Project

The Public Knowledge Project (PKP)¹ was established in 1998 by John Willinsky who, at that time, was a member of the Faculty of Education at the University of British Columbia. PKP's ongoing research program investigates the social, economic, and technical issues entailed in the use of online infrastructure and knowledge-management strategies. The central objective of PKP is to improve both the scholarly quality and public access to the body of research knowledge in a sustainable and globally accessible form.

With the realization that one of the obvious impediments to making scholarly research more accessible to a larger public audience was the lack of a readily available and easy-to-use online publishing platform for independent, non-commercial, or society-operated academic journals, PKP became actively involved in the development of publishing software. The first release of Open Journal Systems (OJS) appeared in 2001, and was soon followed by two other PKP software packages: Open Conference Systems (OCS) and Open Harvester Systems (OHS). OHS is an Open Archives Initiative Protocol for Metadata Harvester-compliant tool that collects, indexes, and aggregates metadata (i.e. descriptive information) from any OAI-compliant source. For example, the International Network for the Availability of Scientific Publications (INASP) has used OHS in conjunction with OJS (which is also OAI-PMH-compliant) to create national journal portals in the developing world as one part of its Journals Online project.²

All PKP modules are developed and released as open source software under the GNU General Public License version 2. Anyone is able to download and use the software at no charge. Users are also free to

modify or customize the software for their local purposes or requirements. The intent of open source software projects is to encourage everyone to make these improvements in a manner that allows them to be contributed back to the original code so that all users may take advantage of improvements and new features. In this way, open source also provides a form of peer review of the underlying programming code, helping to ensure a higher level of quality and security than can often be achieved by closed source systems. PKP has written its software in a manner that makes it easy for anyone with programming skills to write code contributions in the form of 'plug-ins'. These can be easily incorporated with the main code base, encouraging wider participation in the project. PKP software users, especially for OJS, can select from an increasing number of plug-ins that provide additional features and functionality. One of the most recent plug-ins contributed to OJS performs a virus check on all document files submitted to a journal. PKP's user community also makes other important contributions, including language translations, user documentation, and training materials.

In 2005, John Willinsky and PKP entered into a partnership with the Simon Fraser University (SFU) Library, and the Canadian Centre for Studies in Publishing (CCSP), also located at SFU. Several hundred journals were already using OJS software by that time. What had started as an offshoot of an academic research project had evolved into an ongoing software development initiative with a rapidly growing community of users. The SFU Library provided its technical infrastructure and systems expertise, especially with the development of open source software, to the undertaking. The CCSP had already contributed a full subscription module to OJS and also brought its professional publishing expertise to the initiative.

Further enhancement and development of the OJS and other PKP software as open source, technically sound, well-documented, and easily implemented software was made possible through a variety of funding sources, most notably the Canadian Foundation for Innovation-funded Synergies project.³ A variety of grant funding agencies, Canadian

and international foundations, fee-for-service agreements, plus collaborative partnerships with software developers, journal editors, researchers, librarians, and funding agencies have also been key to the success of the PKP software.

Adoption of OJS and other PKP software has grown tremendously during the past five years. In January 2012 the number of OJS installations exceeded 11,500. There are approaching 2,000 OCS installations. OJS is currently available in 24 languages with all translations originating and maintained as community contributions. The PKP Support Forum has almost 4,000 members, and provides a venue where questions are answered, problems discussed, and other information is exchanged in an open and collaborative environment.

Open Journal Systems (OJS)

OJS is PKP's flagship software module. It is a fully featured journal management and online publishing platform that has been undergoing continuous enhancement and improvement for almost 10 years. At its core is a workflow management process that assists with every stage of receiving submissions, managing the peer-review process, and editing and preparing content for publication. Although many OJS journals have adopted a full open access publishing model, OJS also has a subscription management module that supports subscription-based journals and also offers a delayed open access option.

Once an issue is ready for publication, OJS provides a web-based publishing platform that makes all journal content immediately and readily available in a variety of formats, such as PDF, HTML, ePub, or even audio and video. It is possible to include links from an article to supplementary files, such as supporting research data. An array of reading tools is also provided, offering a range from utilities that support a variety of article citation formats, and provide a way to notify colleagues, email the author, or share a link to the article through social media networks, or to links to related items such as other works by the author, to related documents, and so on. Journal pub-

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lishers or editors have the discretion to decide what reading tools they want to provide for their readers. Other web-based features such as RSS feeds and links to associated blogs have also started to appear in many OJS journals.

There are many interoperability features in OJS that support the visibility and discoverability of journal articles, or work with external services to support various journal management activities. OJS metadata is readily available to many services including Google and especially OAI-PMH-compliant services. OJS supports a variety of import/export requirements and provides direct output to CrossRef, DSpace, PubMed, and the Directory of Open Access Journals (DOAJ). OJS also interoperates with e-commerce solutions such as PayPal and Moneris, allowing for the online payment of donations, associated society membership fees, subscriptions (both individual and institutional), article pay-per-view, author open access submission fees, and more.

All PKP software is fully documented and includes user guides, online instructional videos and a wide range of reports, including guidance on customizing OJS, improving a journal's indexing and visibility, translating the software, importing and exporting content, and more. All of these resources are available on the PKP website and are released under a Creative Commons license, allowing for free use, reworking, and redistribution. Increasingly, members of PKP's user community are also developing and contributing instructional and other resources for use by others. PKP School⁴ is a more recent initiative, providing online, self-paced classes to learn about the most effective use of PKP software. Using a 'freemium' model, all courses will be freely available to anyone interested in enhancing their understanding of the software, but a fee-based assessment and credentialing process will also be available, providing official 'PKP Certification' for successful participants. This will provide some additional funding to support the ongoing development of the software, but will also provide individuals developing their own technical expertise with some official recognition of their achievements.

In the 2008 study, 'A Survey and Evaluation of Open-Source Electronic Publishing Systems' by Mark Cyzyk, and sponsored by Johns Hopkins and the Open Society Institute (OSI), four open source e-publishing systems were examined, including DPubS, GNU Eprints, HyperJournal, and OJS. The study rated the PKP software the most highly in all categories:

[I]t is worth mentioning Open Journal System's ease of installation and comprehensive functionality to support the goal of modeling and implementing the operations of a scholarly publication, from author-initiated submission, through peer review, to editing, production, public publication and final archiving.⁵

The results of this study, and related reports and feedback from other software users, have provided solid evidence that PKP is making a significant contribution to the emergence of an important alternative in the field of scholarly publishing and communication.

OJS community

The OJS community is a very diverse one. Many OJS journals are born digital and open access, and have never relied upon subscriptions or other fees. They also tend to be widely distributed, with many located in developing countries with a growing need to participate in the global scholarly and scientific discourse, both as consumers of research, but also as producers. Many are very independent and operate on very limited budgets that rely heavily on in-kind support from institutions, editors, reviewers, and anyone else associated with their publishing activities. Most continue to operate outside the boundaries and market interests of the traditional commercial vendors.

In March 2009, Willinsky and Edgar surveyed⁶ 2,748 OJS-based journals; 998 or 36% responded. The key findings included:

- 6% of the respondents identified themselves as commercial publishers, 32% as scholarly societies; and 62% belonged to what Willinsky coined as 'independent scholar publishers'.
- 83% had an open access publishing policy,

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plus another 8% adopted a delayed OA policy.

- Average first copy cost for an article was \$188 (compared to an RILIN 2008 estimate of \$1784).

It is tempting to typecast all OJS journals as open access publications associated with independent scholar publishers, but it would be just as misleading to focus on the large multinational publishers that often dominate the descriptions and discussions of the commercial publishing sector. It is worth noting that 32% of the respondents identified themselves as scholarly societies and 6% as commercial publishers. They have adopted OJS as their publishing platform because it provides them with a cost-effective and fully functional alternative to the traditional, proprietary systems.

The following list of scholarly societies currently using OJS is only a partial one, but is illustrative of the diversity and range of those participating in the PKP community:

- American Society for Microbiology (ASM)
- Association of Canadian Archivists
- Australian Computer Society
- Open Medicine (Canadian Medical Association (CMA))
- College Book Art Association
- Society for Participatory Medicine
- Society for Socialist Studies

A large society such as ASM elected to use OJS as a way to test an alternative publishing platform for some of their educational journals; Open Medicine is an independent and open access medical journal that was established by CMA members concerned with conflict-of-interest and editorial independence issues that arose with the long-standing CMA Journal; the other societies reflect both disciplinary and geographic variation, but they do share some common attributes – they are relatively small, often with focused interests, and like many in the OJS community, they have limited budgets and publishing resources.

The following list of publishers currently using OJS is also a partial one:

- Atlantis Press
- AOSIS Open Journals

- CoAction
- Cold Spring Harbour
- Equinox
- MultiMed
- Old City Press
- Page Press
- STM Journals

As with the scholarly societies using OJS, these publishers cover a diverse range of scholarly disciplines. Many are relatively new and some are located in the developing world. However, there are also some recognizable and well-established publishers. UK-based Equinox Publishing⁷ was founded in 2003 and now publishes over 40 journals primarily in humanities and religious studies. In five short years, CoAction Publishing⁸ based in Sweden has grown to over 20 journals and has become a significant player in the open access publishing community. Cold Spring Harbor Laboratory Press⁹ has been publishing books, journal, proceedings and more since 1933, and is making innovative use of OJS as an online monograph platform and e-commerce system.¹⁰

Publishers often customize the appearance of the software to such an extent that it is not immediately recognizable as an ‘out of the box’ OJS installation. Customization is one of the frequently cited benefits of using open source software, although without resident technical expertise it can make software maintenance and upgrading a challenge. PKP always suggests to users that they evaluate carefully the pros and cons of making extensive changes to the software. Those with development skills to undertake OJS software changes are also encouraged to do so in a manner that will also enable the code to be contributed back to the main code base so that other users can benefit from these improvements.

OJS-based hosting and support services

PKP has noticed the emergence of OJS-based service providers that are not offering the full array of publishing support but focus only on the software and associated technical infrastructure that is required. Perhaps the best example is Scholarly Exchange¹¹ founded in 2002 by Julian Fisher. Scholarly Exchange has developed an interesting

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sustainability model based on a basic hosting fee and a shared revenue agreement derived from advertising and donations for each journal that wishes to participate in this program. They currently list 30 participating journals on their website.

PKP, in conjunction with SFU Library and SFU's Canadian Centre for Studies in Publishing also offers a journal hosting and custom software development and support service.¹² Over 360 journals are currently hosted and customers include independent scholarly publishers, scholarly societies, commercial publishers, and non-governmental organizations (NGOs). Both open access and subscription-based journals use the service. The partnership with SFU's CCSP group provides access for interested journals to a more complete range of traditional publishing services such as copy-editing and subscription management.

PKP's interest in providing OJS-based hosting services is twofold. Direct experience with the operational and production aspects of journal publishing provides a continuing source of feedback on ways to enhance PKP's software. It also provides a revenue stream that contributes to the ongoing development and support of the software.

Another interesting manifestation that has become very evident in the OJS community is the increased role of academic libraries, especially in North America, in providing journal hosting and related support services. A 2008 survey by Karla Hahn with responses from 80 members of the Association of Research Libraries indicated that 44% were already providing journal hosting services, and another 21% were in the planning stages.¹³ A 2010 survey conducted by a Canadian open access group with 33 responses primarily from the Canadian Association of Research Libraries found that 55% were already hosting journals, and another 24% were considering this service.¹⁴ A substantial number of these sites are using OJS as their hosting platform.

Other open source options

The evolving scholarly publishing ecosystem continues to provide new and cost-effective

alternatives, especially for small scholarly societies and commercial publishers. In addition to OJS, there are other purpose-built open source solutions such as DPubS, GNU Eprints, and HyperJournal. More recently, journal publishing systems are being developed using popular content management systems such as Drupal and Wordpress. In addition to the PKP presentation on OJS at the June 2011 SSP Annual Meeting Session on Free Open Software: An Untapped Resource for the Small Publisher, Neil Schlager demonstrated a Wordpress-based platform for journal publishing. Another interesting example is Annotum,¹⁵ as described by another article by Carl Leubsdorf in this issue of *Learned Publishing*,¹⁶ a Wordpress-based theme that intends to provide all of the publishing workflow functionality and easy-to-use online authoring tools that will support the NLM journal publishing Document Type Definition (DTD).

When considering the growing array of new options available for supporting the publication of a journal, it is important to apply due diligence. Many of the criteria that would be used to select a traditional service provider can often be just as readily applied to these new options. How do your requirements compare with the functionality available in these alternatives? How easy is it to use the system? Is it well documented? Is technical support available? What do current users have to say about it? One of the biggest advantages with an open source solution is that you can simply download and evaluate the system. If you have access to technical expertise, you can literally review the software line by line and determine whether it is well written, secure, and bug free.

Support options for getting started

There are many resources and services that small publishers and scholarly societies can consult if they are considering alternative publishing platforms. PKP's website provides access to several scholarly publishing guides,¹⁷ including Shapiro's *Establishing and Publishing an Online Peer-Reviewed Journal: Action Plan, Resourcing, and Costs*,¹⁸ which provides a valuable overview of journal

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start-up costs and considerations. As mentioned previously, a growing number of academic libraries are now offering journal hosting and related support services for scholarly journals. Editors and publishers with an institutional affiliation should check if their library provides support in these areas. A variety of consultancy services is also becoming available as this publishing option expands. PKP provides an online Employment and Volunteer Opportunities board,¹⁹ where consultants post their services and journals post their requirements. PKP also provides consultancy services based on their expertise in this field. Similarly, open source projects such as OJS often have online community support forums²⁰ that are good venues for seeking assistance and finding other community members who may be able to provide answers to common technical support issues or point to additional editorial resources. As the number of journals engaged in alternative publishing expand, so too does the level of expertise and the opportunities for collaboration and sharing of experiences.

Conclusion

The participants and relationships associated with scholarly publishing have much in common with a biological ecosystem,²¹ and it is one that has become increasingly complex over the past decade. Within this scholarly publishing ecosystem, there are many important themes at play, including the increasing prevalence of born-digital publications, continued growth and interest in open access publishing models, increasing participation by the developing world in scholarly publishing, and new types of publishers and service providers. All of these factors point to rapid change, unpredictable results, and emerging opportunities for innovation and alternatives to the status quo.

The appearance of open source publishing platforms such as OJS is just one manifestation of this growing diversity. OJS helps all types of scholarly publishers deal with this rapidly evolving publishing ecosystem in a number of important ways:

- Implementing the shift from print to digital publishing.
- Addressing increased customer expectations for online publications.
- Navigating among publishing models, e.g. open access, article processing fees.
- Realizing cost-effective workflow and production management systems.
- Managing in tight financial times of high accountability.
- Retaining member and customer support in light of all of the above.

The development of online publishing, open source software, and virtual communities are together opening up new opportunities for scholars, researchers, societies, small publishers, and librarians to reassert their independence and control over the publishing process, and provides a wider range of options than has ever existed before. For some, continuing to work with a multinational commercial publisher will be the best choice they can make. For others, however, the opportunity to do it themselves, through the participation and contributions of their research communities, supporting libraries, or small-scale publishers, is now a real possibility.

Acknowledgement

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References

1. Public Knowledge Project (homepage on the Internet). Available from: <http://pkp.sfu.ca> (accessed 12 December 2011).
2. International Network for the Availability of Scientific Publications (homepage on the Internet). Available from: www.inasp.info/file/4fd988568504d4bcfa2f4cd855a07d45/jols.html (accessed 12 Dec 2011).
3. Synergies Canada (homepage on the Internet)]. Available from: www.synergiescanada.org/page/about (accessed 12 Dec 2011).
4. PKP School (homepage on the Internet). Available from: <http://pkpschool.org> (accessed 12 Dec 2011).
5. Cyzyk, M. and Choudhury, S. A survey and evaluation of open-source electronic publishing systems. Available from: <https://wiki.library.jhu.edu/download/attachments/22964/Open+Source+ePublishing+Systems+White+Paper.pdf?version=1> (accessed 12 Dec 2011).
6. Edgar, B.D. and Willinsky, J. A survey of scholarly journals using Open Journal Systems. SRC (serial on the Internet). Available from: <http://src-online.ca/index.php/src/article/view/24> (accessed 12 Dec 2011).

the appearance of open source publishing platforms such as OJS is just one manifestation of this growing diversity

7. Equinox Publishing (homepage on the Internet). Available from: www.equinoxpub.com (accessed 12 Dec 2011).
8. Coaction Publishing (homepage on the Internet). Available from: www.co-action.net (accessed 12 Dec 2011).
9. Cold Spring Harbor Laboratory Press (homepage on the Internet). Available from: www.cshlpress.com (accessed 12 Dec 2011).
10. Cold Spring Harbor Laboratory Monograph Archive (homepage on the Internet). Available from: <http://cshmonographs.org> (accessed 12 Dec 2011).
11. Scholarly Exchange (homepage on the Internet). Available from: www.scholarlyexchange.org (accessed 12 Dec 2011).
12. PKP Commercial Services (homepage on the Internet). Available from: <http://pkp.sfu.ca/commercial> (accessed 12 Dec 2011).
13. Hahn, K. Research library publishing services: new options for university publishing. Available from: www.arl.org/bm~doc/research-library-publishing-services.pdf (accessed 12 Dec 2011).
14. Morrison, H. and Owen, B. Open access journals support in Canada. A presentation at the Canadian Association of Learned Journals at Congress 2010 of the Humanities and Social Sciences. Montreal, Quebec, June 2010.
15. Annotum (homepage on the Internet). Available from: <http://annotum.org> (accessed 12 Dec 2011).
16. Leubsdorf, C. 2011. Annotum: launching a peer-reviewed journal online for free. *Learned Publishing*, 25: 99–106.
17. PKP Scholarly Publishing Guides (homepage on the Internet). Available from <http://pkp.sfu.ca/guides> (accessed 1 Jan 2012).
18. Shapiro, L. Establishing and publishing an online peer-reviewed journal: action plan, resourcing, and costs. Available from: http://pkp.sfu.ca/files/OJS_Project_Report_Shapiro.pdf (accessed 1 Jan 2012).
19. Employment and Volunteer Opportunities. Available from <http://pkp.sfu.ca/support/forum/viewforum.php?f=12> (accessed 2 Jan 2012).
20. PKP Support Forum (homepage on the Internet). Available from <http://pkp.sfu.ca/support/forum/> (accessed 1 Jan 2012).
21. 'A biological system composed of all the organisms found in a particular physical environment, interacting with it and with each other' (*Oxford English Dictionary*).

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