# Journal publishing systems: outsource or in-house?

Is it best to host your electronic journals on your own in-house online platform, or to outsource the service to one of the several vendors competing for your business in this area? A quick look at the academic publishing world shows that different managers in different publishing companies have reached different decisions. The largest journal publisher, Elsevier, has its own proprietary system, ScienceDirect, that has almost as big a brand in the academic community as the company itself, while the second largest, Springer, has chosen to outsource to MetaPress. In the midfield, Oxford University Press decided some years ago to switch from its own in-house system to HighWire, while at Cambridge the Press continues to rely on its Cambridge Journals Online system. And while most small publishers generally outsource, there are plenty of exceptions such as Portland Press (Biochemical Society) or Symposium Journals.

What principles and processes can we use to guide this decision? This article originated in a discussion on an ALPSP mailing list about the likely best strategy for small publishers, but in fact the decision-making framework I describe here would be much the same regardless of size of organisation.

The journal publishing system in 2007

It is not necessary for our argument (and probably redundant for the *Learned Publishing* audience) to describe the journal publishing system in any great detail. It might be helpful, though, to spend just a moment considering some of the most important components to remind ourselves of the range of features required.

There are two main customer-facing parts of the system, the manuscript submission and tracking system and the publishing delivery platform. Between these sits the publisher's production workflow system (which does of course interface directly with customers at some point). Increasingly closely integrated with the delivery platform are the publisher's business systems - notably the subscriptions management system, e-commerce and accounting - and marketing systems including CRM (customer relationship management). And we recognise that publishing systems are open to the wider web, with various levels of integration of third-party systems such as CrossRef, bibliographic databases, other databases (such as GeneBank), and so on. For instance, newer article submission systems can link references in the manuscript to the cited articles via a number of different databases to make it easier for reviewers and editors to do their jobs, and the final article will be part of a web of forward and backward citation links to other publishers' sites (via CrossRef) and bibliographic and fulltext databases. While this article focuses primarily on the core publishing delivery platform, it is important to remember these connections, particularly as the trend is towards closer integration of the delivery platform with the upstream systems (e.g. to facilitate online publication immediately on acceptance, with this version later replaced by the 'ahead of print' version and ultimately by the final formatted and paginated version).
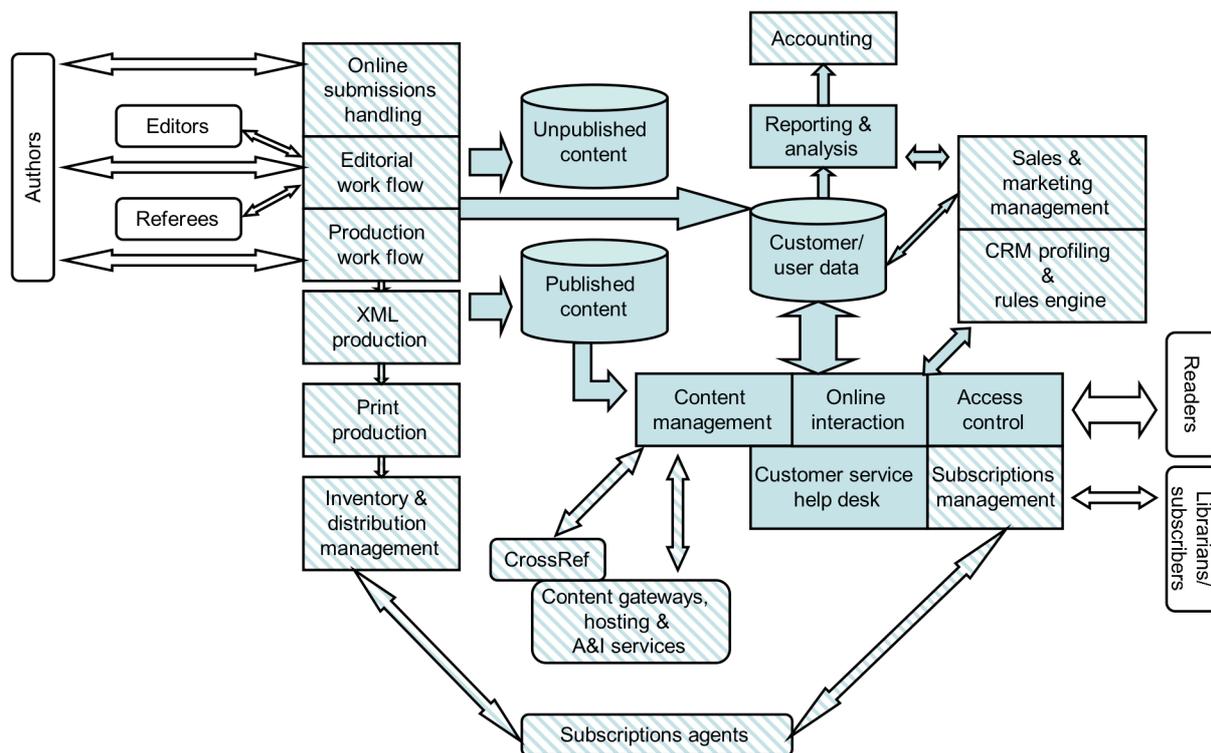
Figure 1. The main components of a journal publishing system and their interaction (Copyright Lloyd Fletcher, used by permission)

Buy or build?

It is commonly held, in IT development and procurement, that you should build systems that deliver core processes that differentiate your service, but buy 'off the shelf' systems to automate commodity processes. Differentiating your service means differentiating it to your *customers* – authors, readers, librarians – in order to gain some competitive advantage. This might be a service that was easier to use, delivered benefits that other systems did not, or perhaps was more clearly branded. It makes sense to devote strategic resources and to retain control of these core processes. A commodity, on the other hand, is by definition a good or service capable of little or no differentiation – in other words, it should make little difference to the consumer from which seller they buy it[1] (a bag of sugar is a classic example.). With these processes you want reliable, low-cost automation.

Looking at the electronic publishing of journals, many of the components are clearly commoditised. For instance, choices in web hosting (at the hardware level), and much of the production workflow, are unlikely to differentiate your journals. On the other hand, other aspects are still capable of creating differentiation: examples include the user interface, ease

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[1] Some economists and business writers point out that pure commodities are very rare in practice, since they can always be wrapped in a set of services that can provide differentiation, and it is generally in the seller's interest to do this. So, while the price of 'raw' web hosting is approaching something close to zero, vendors differentiate their offerings through services such as data security, recovery speed, and so on. Nonetheless, I think it remains helpful to retain the concept of commodity processes that, if nothing more, offer much less opportunity for differentiation.

of use, integration with other user tools (e.g. bibliographic databases or reference managers), search & discovery tools, integration with the publisher's business and marketing systems such as CRM (customer relationship management), and reporting and analysis systems.

This simple analysis might suggest that – all else being equal – publishers should outsource the upstream and infrastructure elements, while retaining control over the development of the core delivery platform. Indeed, this is pretty much the strategy that some of the larger publishers such as Elsevier, Wiley, and Blackwell have adopted.

But of course, in practice, all else is rarely equal. Another pair of related factors to take into account are the degree to which your journal content fits the standard academic journal model, and the amount of non-journal material that you want to host alongside (and integrate with) your journal content. The more closely your journal matches the standard model, the more easily it will fit into the standard (read: cheaper) outsourced solutions. Conversely, if your journal contains a lot of non-standard content, such as magazine-type material, or depends significantly on advertising (requiring sophisticated ad-serving and reporting techniques), or is developing online interactive features (perhaps online continuing education, or 'community' features) or customisation, then it will be harder to find an off-the-shelf solution to fit. Similarly, even if your journal has completely standard content, if you wish to integrate it with other non-journal content, perhaps to create a 'community' site for research workers in its field, then this will not be easy to do with the simpler off-the-shelf journal hosting solutions.

Finally, there are questions of cost and of technical and managerial capability; these are discussed at the end of this article.

Comparing journal hosting systems

In deciding whether to host your journals in-house or to outsource, it will be useful to conduct a detailed comparison of the options, which might include the in-house as well as one or more outsourced options. It is important to look at not just the technical features but also the service (and service level guarantees) that the in-house and outsourced options respectively offer.

In comparing systems for clients, we have found it worthwhile to compare up to several hundred detailed features, grouped under the following headings:

- **General information**: for instance, in relation to external vendors, what is the size of the vendor and the level of resources it can deploy? How many journals or articles are hosted by it at present, and how closely do these publications resemble your own? What is the vendor's track record, and what do its customers say about it?

- **Navigation & interface**: broadly speaking, how easy is it to use the system? We would look at both browsing and searching; customisation and personalisation options; and so on. It is also important to verify that the system will meet web accessibility access standards[1].

- **Content production & workflow**: does the system offer a fully automated uploading process that will integrate with your production system? Which file types are handled? Will the system automatically export content to third parties (e.g. Abstracting and Indexing (A&I) services)? What quality assurance tools are there? What reports are available?

- **Content delivery**: how are tables of contents, abstracts, and full texts delivered – are there multiple formats (PDF, HTML, hybrid, PDA/smartphone)? What external and internal linking arrangements are possible (e.g. forward and backward reference linking, links to external databases, links within the article such as to and from

references)? How easy is it for users to download bibliographic references into local reference managers such as EndNote, and which reference managers are supported? What alerting options exist? What ad-serving facilities are there?

- **Access control, authentication and administration**: what authentication options are there (e.g. username/password, IP range, IP blocking, domain name, trusted proxy, Athens, Shibboleth, web crawlers)? How easy is this for the publisher, the librarian, the consortium administrator, the partner society's administrator and the individual to use and maintain? How easily will it integrate with the publisher's subscription management and accounting systems?

- **Reporting**: this is an important area that will distinguish the lower-end options (whether in-house or outsourced) from more sophisticated solutions. Marketing to readers, authors and librarians increasingly depends on the publisher having detailed information on usage (including non-usage, such as turnaways and denials), analysed in various different ways. The ease of use of the reporting tools for librarians is another important area that can win you or lose you friends in the library community. Other reporting areas include production and advertising. What report delivery options are there (e.g. do you have to log in and run a report, or can you set up a report and have it emailed to you on your chosen frequency)? And increasingly important, how easy is it to integrate the system with your own marketing systems, such as customer relationship management (CRM), if you have them? Are reports COUNTER compliant?[2]

- **Technology & hosting**: is the hardware modern, reliable, fit-for-purpose and scalable? What is the anticipated development cycle (i.e. how often are updates and new versions released)? What arrangements are there for data security, backup and disaster recovery? How is the website performance monitored? Is there a high-speed global delivery network? And how easy is it to interface with other systems (e.g. submission, production, subscriptions, marketing, ecommerce, etc.)?

- **Support**: What level and type of support will be offered to end-users, librarians and the publisher's staff? During which hours (in your time zone) is support available? What is the response time? What training will be provided? How extensive and usable is the documentation?

- **Service levels**: what service levels are offered (e.g. percentage uptime, support and service levels, system response times, turn-round times for uploaded articles, other production schedules, etc.)? Are they backed by contractual undertakings (with penalties for non-compliance) or merely indicative service levels?

- **Other factors**: the vendor might have particular strength in, or knowledge of, a specific subject domain (e.g. AIP Scitation in physics, or HighWire in North American biomedical society journals). The not-for-profit status of some suppliers might be attractive to not-for-profit publishers.

Outsourcing options

Broadly speaking, the market offers two ranges of service. At the cheaper end of the market, there are off-the-shelf solutions offering simpler solutions with fewer customisation options. Examples[2] include Ingenta, MetaPress and Atypon Link (previously Extenza). The Public

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[2] Note that systems have to meet COUNTER Release 2 standards to qualify as COUNTER compliant. Some vendors have described themselves as COUNTER compliant while only meeting the earlier COUNTER Release 1 standards. The full list of recognised compliant systems can be found on the 'Compliant Vendors' page of the COUNTER website (www.projectCounter.org).

Knowledge Project also offers a hosting service based on its Open Journal System. These types of service can be very cost-effective if a more basic service meets your needs. Potential disadvantages include the lack of customisation, limited reporting options, a lower level of publisher- or journal-specific branding, a smaller range of supported business and marketing models, weak advertising support, and a much lower level of contractual service level agreements.

At the other end of the market, there are more fully-featured services such as those offered by HighWire Press and Atypon Premium. These will largely address and remove the disadvantages mentioned above, though naturally at a higher cost.

Between the two extremes, there are suppliers such as Allen Press, AIP Scitation, bepress and others.

In-house options

There are three main approaches to developing a system for hosting journals in-house:

- Build your own system from scratch (probably using and integrating a mixture of open-source and commercial modules, e.g. operating system, database, webserver, search engine, and so on). This offers the greatest degree of customisation, but is by far the highest-risk option.

- Commission an experienced vendor to build or customise an existing system to your needs. An example would be Blackwell's Synergy system, which was developed by Atypon.

- Install and customise an off-the-shelf software package, such as Public Knowledge Project's Open Journal System.

Costs and capabilities

There are three key questions a publisher needs to answer before adopting an in-house development strategy. First, does the publisher have the *management* expertise available to specify and build a world-class system and keep it at the forefront over time? (If it's not world-class then it's unlikely to deliver much competitive advantage.) This expertise would include the ability to understand and articulate the users' needs (current and future), to have a broad understanding of the technology including its current capabilities and future trends, and strong IT project management skills.

Second, does the publisher have the necessary *technical* expertise? There is strong demand for people capable of building world-class web platforms, and smaller publishers in particular may find it hard to recruit and retain the right level of technical staff. If you have a small IT department, will they be able to provide the 24x7 support necessary for a global service?

Lastly, how do the total costs of ownership of the two approaches compare? In general, the cost argument has increasingly favoured 'buy' rather than 'build' for most classes of software, including publishing systems. This is partly because of the increasing rate of change of technology, and partly because companies are becoming more rigorous about factoring in the true life-cycle costs of the build option. For example, some estimates place the post-implementation (i.e. maintenance) costs at 70% of software costs.

Every publisher's situation is different and will need to be evaluated on its own merits; we believe, however, that most small publishers (with, say, 10 or fewer titles) with relatively standard types of journal will likely find it better to concentrate their resources on publishing issues such as editorial development and marketing, rather than on in-house system development.

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References

[1] Web accessibility standards include the World Wide Web Consortium's Web Accessibility Initiative (often abbreviated to just "W3C") and the "Bobby AA/AAA" standards (actually a commercial service, see http://www.watchfire.com/products/webxm/bobby.aspx). See http://en.wikipedia.org/wiki/Web_accessibility for an overview of web accessibility issues.

[2] Vendors mentioned in the text can be found at their websites: Ingenta (www.ingenta.com); MetaPress (www.metapress.com); Atypon (www.atypon.com); Public Knowledge Project/Open Journal Systems (http://pkp.sfu.ca/?q=ojs); HighWire Press (http://highwire.stanford.edu/); Allen Press (www.allenpress.com); (http://scitation.aip.org); (www.bepress.com).