Getting Started in Electronic Journal Publishing

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Sally Morris

Contents

What is electronic publishing?

For the purposes of this resource guide electronic publishing is defined as:

- *Making the content of the journal (the full text of the articles) available online.*

This document will also (separately) address the use of electronic tools to facilitate the processes of (print or electronic), publication, for example online electronic editorial processing.

Why do electronic publishing at all?

Many journals around the world struggle to attract authors and readers, and frequently suffer from a lack of resources – both human and financial. In addition, research habits are changing and researchers increasingly expect any information to be found online, which means that a journal which cannot be located on the web may be effectively invisible. Online publication can help to address some of these issues. At the same time, many readers still seem to prefer print so you may not feel you can stop producing a print edition as well.

Publishing a journal electronically sounds very attractive. There are a number of good reasons for doing so, but it does have disadvantages too. Before committing yourself and your organisation to the effort and expense involved, it is sensible to look carefully at both the advantages and disadvantages. In the end, the decision will depend on what your main objectives are, so it is important to be clear about why you are publishing, or planning to publish, in the first place: what information you want to disseminate, and to whom.

Electronic publishing is often considered to have six advantages over print: international reach, speed, additional capabilities, lower cost, new publishing opportunities and sustainability. Each of these will be addressed below.

International reach

If a journal is available on the Internet, it is true that readers all over the world can obtain and read your journal (provided that they have the computers and Internet connections); you do not have to arrange for printed copies to be mailed to different parts of the world, which can be both expensive and slow. However, if readers are going to obtain and read your journal they need to know of its existence, and they must want to read the articles you publish. To enable readers to discover your articles/journal, you need to be visible on the main search engines (e.g. Google), and to encourage use, you really need to carry out some international promotion to raise awareness and trust in your publication.

Speed of publication

An online journal has a great advantage over a print journal, as it is possible to publish an issue as soon as it is ready, and not wait for it to be printed and bound, then despatched. What is more, you do not need to wait until you have enough articles to make up a complete printed issue. You can, if you wish, publish articles individually as soon as they are ready (or even in accepted – but not yet finally edited – form). These time savings can be very helpful to authors, particularly in fast-moving subjects such as some of the sciences where speed of publication is extremely important.

Many of the important processes of publication, however, cannot be speeded up if you want to produce a quality journal. If it is a research journal, you will still need to arrange for peer review to be carried out – and peer review (plus subsequent revision) is often the most time-consuming step between submission of an article and its eventual publication. The transmission of papers to referees, and of their reports to the editorial office, can be done instantly by electronic means, and make some time savings, but the

reading, thinking and writing of reports will take exactly the same amount of time.

It is also important to recognise that even online publication is not instantaneous; preparing the files correctly, loading them online and maintaining the online service all take time – further time is inevitably introduced if you are working with a third party host.

Additional capabilities

The online environment offers the potential to provide readers with more functionality. One key feature of online publications is the ability to search for articles – at a minimum within one journal, and frequently across multiple journals

Another feature commonly added to online journals is that of linking. This refers to the ability to go from one place online to another, at a click of a button – the most common example being the link from a citation within the body of an article to the relevant reference at the end of the article, and from there to the actual article which is being referenced.

Reference linking in scholarly journals is now increasingly being undertaken using DOIs, which are unique identification codes assigned to online articles, and which provide permanent links for the user. This is one of the international standards being developed to assist different systems to communicate and link with each other, to help with visibility and discovery of online material. The methodology of using DOIs in scholarly journals is being managed by an organisation called CrossRef (see the Glossary).

Electronic publication also makes it possible to include material which you would not include in a print journal, either for space reasons or because the material is difficult, costly or even impossible to print. Research articles online can be accompanied by the full data-sets from which the results were reached – ideally in a form which readers can manipulate for themselves. Colour illustrations may be prohibitively expensive in a printed journal, but present no such problems in an electronic journal.

Moving images, sound, or animations may also be included, although relatively few authors automatically think of providing such material at present and the technical complexities may outweigh the benefits.

Before introducing any additional features within the online journal, you must consider whether your readers (or, indeed, your referees) are likely to have the necessary software to make use of the additional material. (Non-textual files will also present the editorial office with new challenges in working out how to check and, if necessary, correct such material.) It is also worth noting that linking is generally rated very highly by readers, who find it an invaluable way of enhancing their research; however, other additional features are much less highly valued[1]. It may, therefore, not be worth spending a great deal of time and money on these.

One final consideration is that the additional capabilities which online publishing can offer may be of particular relevance to you, as the publisher, and not so much use to the user. These may involve the ease with which you can upload your content, and streamline your working practices. One particularly important new facility which online publishing can provide you with, is a tool to measure and monitor online use. (This can also be of great value to librarians so they can see how valuable your journal is to their users.) Most commercial hosts (see below) will automatically offer sophisticated usage statistics, and most of these will be COUNTER compliant (see the Glossary), which is another increasingly important international standard which online publications should comply with.

Reduced costs

It was originally assumed that publishing online introduced immediate cost savings. However, this is only true if the journal is no longer printed at all; continuing to print

even a few copies removes most of the cost savings. (See the section on "What might it cost" below).

If you decide to cease printing altogether, you may save a significant percentage of your total direct costs, although many costs (editorial and office costs, for example) will be unchanged[2] - however, most readers still seem to want print copies. The cost of administering an electronic version will also be considerably lower if you are able to make it available to everyone, free of charge (see the section on Open Access below). Depending on the way the journal is funded, however, you may need to replace subscriptions income by raising author-side charges (see below); this will require an administration system, which will reduce the savings.

The costs of publishing a journal can be split into direct costs and indirect costs. Direct costs are those where an invoice is received from an external supplier (e.g. a printer), and the journal needs to find the money to pay them. Indirect costs are those costs which are covered by the parent organisation (e.g. the staff time of the departmental secretary to manage the editorial office), and the journal may be unaware of them (although they should be recognised). Introducing online publishing may provide an opportunity to reduce direct costs (e.g. ceasing to print the journal), but is likely to increase indirect costs (e.g. more staff time).

New publishing opportunities

It is perfectly possible for an online journal to work in all respects exactly like a print journal. However, the online medium does make possible new ways of doing things – new ways of publishing, new ways of covering costs, and new processes – which may help to address the problems of a struggling journal.

New ways of publishing

There are various different models for publishing online; three of the most common are listed below. (Further details and additional models are provided in the INASP resource on online publishing models[3].)

Publish often, print infrequently

This approach may be particularly attractive if you have difficulty publishing issues on time, whether this is due to lack of funds to pay for printing and distribution, or to a shortage of articles. Online issues (containing as many or as few articles as you have available) would be published regularly and frequently, but you might only produce one, archival, print issue per year. This can help to improve regularity of publication (and thus attract more authors and readers), whilst at the same time saving some (but not all) of the print and distribution costs.

Article-by-article publication

This approach may be even more attractive if rapid publication is important to authors in your subject area. Articles would be published online individually, as soon as they are ready. In addition to offering fast publication for authors, this will bring readers back to the online journal frequently, thus increasing usage. (If you still wish to produce a print issue, you can combine this approach with the one above.)

Separate online and print content

Some journals have separated their print and online publications so that they are almost different journals – an example of this is 'electronic long, paper short' used in the *British Medical Journal (*http://bmj.bmjjournals.com/onlinefirst_date.shtml). This model publishes the full article online, but only publishes a shorter version of the article within its print journal (to save space and print costs). Some journals include additional sections within their online journal, and some exclude some materials from online version that appear in the print journal (e.g. news items, letters, etc.). However, if you decide to

publish different content in the print and the online publication, this brings extra complexity into the way of dealing with your content, which is likely to increase your editorial costs overall.

New publishing processes

Open peer review

The Internet makes it easy for readers to comment on papers after they are published by the journal. This may be done once papers have gone through the normal (closed) peer review process, or it may precede or even replace it (although the journal's editor would normally make a preliminary decision as to the article's suitability). Some journals then allow authors to modify their articles in the light of feedback – see, for example, *Atmospheric Chemistry and Physics* (www.copernicus.org/EGU/acp/). However, this makes for considerable extra complexity, and makes it essential that readers know which version of the article they are actually reading; this approach may not be welcomed in all disciplines, as scholars differ in their willingness to expose their unfinished work to their colleagues, so it is important that you know your reader/author community before making a decision.

Index

You may be able to do without an index if the website allows searching of the full text of articles, particularly if it also allows searching by specific fields (e.g. author, title). However, human indexers add considerable value – electronic searching will only find the exact word you are looking for, whereas an indexer can think of synonyms, and will not index irrelevant occurrences of the word. If you can afford it, many publishers believe that a human-compiled index is still worth having.

Challenges

Although publishing online presents many opportunities for journals, it can also present some challenges. Two of the most important challenges are presented here.

Perpetual access and archiving

This is an issue which is worrying publishers and libraries the world over. In the print environment, a library which has subscribed to a journal in the past will always have the copies to which it subscribed, even if one day it has to cancel its subscription (i.e. it retains a local holding). However the same may not be true in the electronic environment, where the library does not 'purchase' the online journal, but merely 'rents access' for a specified period of time (e.g. the annual subscription). Thus the library never holds the content locally, but relies on third-party servers to deliver the content.

Many publishers have now changed their agreements with libraries so that the library has perpetual access to any journal issues to which it subscribed; however, this means that the publisher needs to ensure good records and administration of online access to make sure that this works smoothly over time.

Print journals are relatively easy to archive (although they take up space and may deteriorate over a long period of time), but there is no easy way of archiving an electronic-only online journal. Even if the archiving library makes backup files of the journals, these may need to be updated over time as technology changes. Links to other sites – one of the most attractive features of online journals – may become inactive due to the impermanence of World Wide Web addresses (URLs)[4].

Some publishers have signed an agreement with archiving organisations (e.g. J-Stor[5]) and/or with national libraries (e.g. the Dutch Royal Library, Koninklijke

Bibliotheek[6]) to preserve their journals permanently; this has the advantage that they can also provide ongoing access to customers after they have ceased to subscribe, or even in the event of the publisher's own service failing, or of the journal or publisher going out of business.

Much work is going on in various countries to extend their legislation to provide for legal deposit of electronic materials[7] (e.g. with national libraries) in the same way as is currently required for print. For example, the UK law was updated in 2003, and in 2004 the British Library[8] started a pilot project to test deposit of online journals.

Another related consideration is the digitisation and online publishing of your historical print content. Although it is costly, there are benefits to placing all issues of your journal online so that they can be searched; there is evidence that usage of older issues increases. Some organisations will fund the digitisation on the condition that subsequent access is free[9,10,11].

Citation and definitive version

Electronic (particularly electronic-only) publication gives rise to a whole range of new questions, such as: How do you cite a reference in an electronic-only journal? Or to an article pre-published online? What do you give as the publication date for an article which is published online before the print issue is available? What is the definitive version of the journal – the online or the print? There are more fundamental issues, too, about what counts as 'publication' in an environment of potentially continually updated documents; these are all difficult and, so far, largely unanswered questions[12].

One issue that has been problematic for journals wishing to move to online-only publication has been the way that these journals are perceived by the research and academic community. In the past they have not always been recognised as credible publications by the relevant authorities when considering tenure and promotion based on publication. Fortunately this attitude is changing, and it has been assisted by the acceptance of online-only publications within indexing services (including ISI Web of Knowledge, www.thomsonisi.com/ and Medline, www.ncbi.nlm.nih.gov/entrez/query.fcgi), giving them recognition within the journal publishing community.

Citations can be made far more useful, in online journals, by linking directly to the cited item. This is facilitated by the Digital Object Identifier (DOI – see the Glossary below) which provides a much more permanent link than a URL (which can change). The DOI/CrossRef system is now being used extensively; it does not in fact require sophisticated publishing although there are charges, these are relatively small.

An illustration of how DOIs may be used in citations can be found on the BMJ website, in the area called 'Online First' (http://bmj.bmjjournals.com/onlinefirst_date.shtml) which contains articles that have been accepted, but are not yet published, or assigned an issue. On this web page, the readers are instructed to cite the articles using their DOIs and the date of publication online (both of which are given at the head of each article). In some communities this has become an accepted method of citation, but it is early days and it is still to gain acceptance in many areas of academic publishing and research.

Hosting issues

Where a journal is published online can affect its success or failure as the online site can help or hinder the journal by the technical facilities and visibility that it offers. The price of online hosting is another important consideration. There are various options open to the journal publisher.

Own / organisation website

The benefit of publishing your journal on your own website (or that of your institution) is that you have complete control over the website – the design and the 'look and feel' of the site. Although there are, of course, costs associated with this option, no external supplier is involved.

However, there are also disadvantages to publishing online this way. These may include a lack of technical skills and support for the journal, and a lack of current awareness of online publishing standards and compliance with new protocols. In addition maintenance and updating of the website may not receive enough attention if it competes with the other requirement of the institution's own website. In addition, the journal may suffer from low visibility, since it may be difficult to locate within the institution's website, and visitors will not be attracted to discover it.

Commercial host

Several commercial companies are now hosting scholarly journals on behalf of their publishers. The advantages of using a commercial host (e.g. Ingenta, www.ingenta.com, HighWire, http://highwire.stanford.edu/ are that they have a high level of technical expertise, and ensure compliance with international standards. They also frequently provide value-added benefits, for example file conversion, and supply of metadata (see Glossary) to abstracting and indexing services, as well as all the benefits of a sophisticated system which is continually being developed. They are also experienced in dealing with subscribers and access-controlled environments, and ensuring security of the online journal from hackers and unauthorised access.

Against this, there are some disadvantages. The prime one, for a journal with little access to funding, is that they charge for their services, and although most of them offer a price which is reasonable within the budgets of western journals, they may be too costly for journals from the developing world.

It should also be remembered that commercial hosts may only provide a hosting service; although they can offer advice on matters relating to online publishing, they are unable to take on the role of a publisher. However, some do offer marketing services – for additional payment – to help increase subscriptions and visibility through promotion.

Subscription agents

Some subscription agents also now offer to host online journals on behalf of publishers. Again, they offer a high level of technical competence and value-added benefits (such as file conversion).

However they are unlikely to take your online journal unless they feel able to earn sufficient revenue from sales. They will (usually) deduct the fee for their hosting from revenues that they obtain, in which case you would not have to find the money up-front.

Another potential disadvantage is that they may not be effective at increasing the journal's visibility outside their own customer base.

Aggregators

A number of companies will put your journal content online as part of a large package which they sell in its entirety to libraries[13].

Other online hosts

There are a number of organisations set up specifically to support the online hosting of journals from developing and transitional countries. A small selection of these is given below. Further information about online hosts can be found on the website of the

Association of Learned and Professional Society Publishers (www.alpsp.org/htp_dev.htm), and the International Network for the Availability of Scientific Publications (www.inasp.info/psi).

African Journals OnLine (AJOL) is an initiative originally established by INASP, and now managed within South Africa, to host African-published journals. The website contains abstracts only for most journals, but in addition it has been developed to host full-text journals where required. Currently there is no provision for charging for access (which is therefore free), but this is likely to be offered in future for journals which require it. www.ajol.info

Bioline is an initiative set up by the Electronic Publishing Trust to host online versions of journals from developing countries around the world. They will convert print journals into electronic format; however, Bioline also supports training to help publishers prepare their own e-files. Bioline only supports journals that are willing to publish under the Open Access model (see below). www.bioline.org.br

CLACSO provides support for a digital library of social science journals from member institutions within Latin America. Its digital library site hosts the full text of journals and other publications from the member organisations; the site currently operates under the Open Access model. www.clacso.org.ar/biblioteca/

Hrčak is a project of the National and University Library in Zagreb, Croatia, to host Croatian journals online. http://hrcak.srce.hr [1]

Sabinet is a South African company which hosts and sells African-published journals as a single package – access is thus restricted to subscribers, but this model does provide some revenue to the journals. www.sabinet.co.za/journals/onlinejournals.html

SciElo is another Latin American initiative which hosts full-text, Open Access journals within the biomedical and applied sciences. This platform only accepts journals which are judged to be of high enough quality – so it provides both support for publishers and also quality assurance for users. www.scielo.org

Multiple hosting

You can – of course – host your journal on multiple websites, using different hosting services. Although full-text hosting on more than one website is unusual and probably unnecessary, a common model is for your own website (or that of your organisation) to host a homepage for the journal, with detailed information about the journal, the editorial board, guides for authors, etc., but to use a commercial host (with a link to and from your homepage) for the full text content. You may, however, wish to consider also including your content in the collection of one (or more) aggregators as well[13].

Choosing an online host

Choosing an online host is an important decision for all journals, and although it is quite possible to change hosts, the decision of which to go with should not be undertaken lightly. There are many considerations to be taken into account, which are described more fully in a recent publishing Guide Sheet from ALPSP[14] but the first two questions to be asked are:

1. What technology and resources do you have within your organisation, and what do you need to buy in from external companies/suppliers?

2. How much can you afford to pay for online hosting?

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[1] Erratum 22 May 2006: Replace this text with:

Hrčak: This portal is supported by the Ministry of Science Education and Sports, developed and maintained by the University Computing Centre and based on the idea from the Croatian Information and Documentation Society. http://hrcak.srce.hr

What changes do you have to make to your procedures?

Whether you decide to do it all yourself or not, electronic publication will require you to change the way you do things[15]. It is important not to overlook this aspect.

You may need to re-examine all your processes – from receipt of submitted manuscripts to final publication – in order to make sure they are as streamlined, and in as logical an order, as possible. In fact, this exercise is often highly beneficial in improving both cost- and time-efficiency!

Editorial

The peer review, revision, and editing of articles, as already pointed out, does not become any less important if they are to be published electronically. In addition, editors may need to add (and verify) electronic links within the article, within the journal, to other publications and to additional material. The majority of authors may be able to submit their articles in electronic form, and should be encouraged to do so, as this will facilitate the editorial processes.

Electronic editorial processing software is available to manage the entire editorial process from online author submission to article acceptance. These software packages[16] can help to streamline the editorial process, but are not essential to online publishing. They have several advantages:

- There are no postal delays (or costs) for authors submitting articles, or for the editorial office, editors and reviewers during the editorial processes, since everything is managed and held online.

- The systems automate much of the correspondence (using email), which can assist the editorial office

- Most systems maintain and generate records of article progress, which may be accessible to authors as well as the editorial office (thus cutting down on queries). In addition, systems generally provide for a database of reviewers (including not just names, contact details and areas of expertise, but also records of manuscripts processed and performance); this assists the editorial team in choosing the most appropriate reviewers for each manuscript.

- Since the packages operate online, the editors, reviewers, and authors can all access the database and upload or download articles from any Internet connection worldwide, thus facilitating work when they are not in the office.

However these systems also have some disadvantages:

- They require everyone involved in the journal (authors, reviewers and editors) to have online access.

- They only save the time spent in postal delays – they do not reduce the time required to review, correct or finalise the articles.

- They require the authors, reviewers and – especially – the editorial team to be competent in using online systems, since they are not always very user-friendly.

- They require reviewers and the editorial team to have adequate computer equipment, and either to work entirely online, or to be able (and willing) to print out articles locally for reviewing, etc.

- Unless the majority of authors, reviewers and editors do make use of the software, such systems can actually increase the workload of the editorial office, who will need to load articles online themselves.

- And of course, most of them also cost money – usually in the form of a software licence fee.

Copyright

It is essential that, when acquiring copyright or the right to publish from your journal contributors – which you should always do – you make sure that you have also secured the electronic rights. It is also important to double-check that you or the author have obtained electronic rights for any other material you wish to include, such as illustrations or quotations from other publications. Examples of appropriate agreements have been produced by ALPSP (www.alpsp.org/htp_licens.htm) and INASP (www.inasp.info/psi/resources.shtml).

Production

Your methods of production (from acceptance to final published copy) are unlikely to be entirely suitable for publishing in the online environment, and this area of your activities is the one to be most affected by the introduction of online publication. It is sensible to get the articles into electronic form as early as possible; all the subsequent processing should then be done on the electronic version, and both print (if appropriate) and electronic version should be output from the same file at the very end of the process. It is highly inefficient to work on a paper version, and then convert it to electronic at the very end.

The first change is that the final articles will need to be in suitable format for online as well as print publication. The most efficient approach is to process all articles in a 'neutral' format from which both print and electronic outputs can be produced. PDF (see Glossary) files are adequate for straightforward journals, and of course this does preserve the appearance of the printed page; some systems may require the header information (title/author/abstract, etc.) in other formats (e.g. XML, see Glossary) to enable searching and indexing. For more sophisticated electronic publication, PDF files are not sufficient – HTML (see Glossary) or XML will be needed (they also produce smaller file sizes, which can be helpful for readers).

To produce appropriate files, you will need either to train staff and purchase appropriate software and computer equipment, or to identify and recruit suitable external suppliers to undertake this work; if it is done in-house, you will need to adapt the existing journal production system to ensure that the correct files are produced. If you decide to introduce additional functionality within the online version (e.g. links), you will also need to introduce production systems to implement (and to check) this.

Illustrations may cause problems if authors cannot supply them electronically, since – at some point – they need to be converted into digital files for electronic publication. If the authors cannot supply e-files for all artwork, either you or the printer/typesetter/designer need to be able to scan the artwork so that the appropriate e-files can be created for online publication.

The electronic files must be carefully checked for accuracy, as it is surprisingly easy for errors to creep in when they are converted. You will need to devise – and stick rigorously to – a system for naming the electronic files for each article, and for every table or illustration associated with that article; it is sensible to include a version numbering/dating system so that you do not use an earlier version by mistake.

When deciding to publish online you need to consider carefully whether your existing staff have the necessary level of skills to undertake the work required, and whether you have the hardware and software needed. To produce the files required you may need to outsource the work that was previously done by departmental/journal staff, or you may need to change your existing suppliers if they do not have the skills, experience and equipment to provide what you need. Alternatively, the online host may undertake some or all of the file conversion work.

If you decide to have different content in the print and online versions (e.g. colour online, black-and-white in print, etc.) you need to ensure that the production set-up takes this into account, and that you are able to manage the administration of different versions.

Marketing and promotion

Marketing, in the true sense of discovering what your market wants and then providing it, is every bit as necessary for electronic journals as it is for print journals. Many journals are not sufficiently visible – i.e. not enough people know about them, or are able to discover them – and although publishing online may help, it is vital that some promotional activity is undertaken if online publication is to achieve the goal of making the journal more visible, and thus more used.

For any journal – in print or online – conducting market research to identify what readers and authors want is essential. In addition to talking to as many potential authors and readers and possible, try to carry out systematic surveys by questionnaire. If you see electronic publication as being a way to make your journal more international, your market research should be international too. This may cost money, but not as much as you could lose if your journal fails.

An electronic journal will not sell itself, any more than a print journal. You will need to make sure that those who should be interested in reading it, and writing for it, are aware of its existence. This is not simply a matter of mailing a leaflet (indeed, many publishers report that this is relatively ineffective). If you can obtain suitable lists of email addresses, this is much cheaper than a postal mailing; be careful, however, about sending 'promotional' messages to email discussion lists (listservs), as this is considered unprofessional, and may generate a strong negative reaction, although straightforward information about journals is welcomed on many lists. You should always check the 'rules' for posting to a listserv with the listserv manager.

In addition, you could involve the editorial team in promoting the journal by, for example: (1) referring to the journal within their email signature, (2) handing out leaflets at relevant meetings, and (3) ensuring that their institutional library is not only aware of the existence of the journal, but also makes it visible to users.

Online publication relies on readers coming to the website, rather than sending the print journal to their library or their desks. Bringing people back to a website is particularly important if the journal is published infrequently or irregularly. Email alerts are a good way to tell people about the latest issue when it becomes available online, and can be set up manually (emailing the subscribers and authors yourself) or you could offer the facility to sign up to an automated alert on the journal's website. Linking to and from abstracting and indexing databases (see below), and citation linking using DOI and CrossRef (see glossary) are also important ways to bring readers to your content.

To ensure visibility to researchers and librarians you must make sure your journal is covered by the major Internet search engines[17]. Another very important way of ensuring visibility to your community is to make sure your journal is included in secondary (abstracting and indexing) databases[18]. The major services used to be resistant to including electronic-only journals, but this is no longer the case. The one often considered most influential is ISI (www.thomsonisi.com/) although their acceptance procedures are quite stringent and the number of journals they include is restricted. However, you cannot include your journal in too many such databases; identify as many as you can which are relevant to the subject matter. You may be asked to provide a free subscription, but this is a very small price to pay. If you can supply 'headers' – bibliographic details and, ideally, abstracts – in electronic form, so much the better; unfortunately, however, there is as yet no standardisation about the format in which they require them. You should also make sure that your journal is listed in *Ulrich's International Periodicals Directory*[19], which is the major reference source for librarians.

Some abstracting and indexing databases – such as Medline – require the journal's header information (metadata) in XML format (see www.nlm.nih.gov/pubs/factsheets/medline.html). If you are unable to obtain these files from your supplier, INASP have a template[20] available for use which simplifies generation of these XML documents (although it still takes time).

Once a journal is made available online, the process of gathering feedback from readers and authors can be much easier than for a printed title, as the Internet facilitates two-way communications. Online feedback forms, direct links to email addresses, and discussion forums all permit much more effective exchange of information.

Sales

Printed journals need little or nothing in the way of salesmen. Libraries decide which journals they want, and then choose their preferred channel for buying them. However, site licensing of electronic journals (see section on Site Licences below) does require detailed discussion and negotiation with each customer; this is time-consuming, and if you decide to do it yourself you are likely to need extra staff with the appropriate skills. The alternative is to have someone else, such as a subscription agent, do it for you – but you need to be willing for someone else to negotiate prices on your behalf. Bear in mind that the price for a single library may represent several subscriptions; if libraries join together to form consortia, this is even more likely to be the case.

Selling to library consortia (and other large customers) is a particularly difficult and time-consuming process, and the publisher with only a small number of journals can easily get squeezed out. Initiatives are, however, being developed to help smaller publishers work together to sell a single, larger collection of journals in these circumstances[21,22]. It may be beneficial to try to work with other publishers, whether internationally or in your own country or region, to overcome these problems

In some countries, the tax situation will be made more complicated if you are selling electronic journals; they may attract tax where printed journals do not. You will need expert local advice on this.

Subscriptions administration/customer service

If you decide to restrict access in any way (for example to paid or signed-up online subscribers, subscribers to the print version, or members of a society or association) you will need to administer this process, providing passwords or other access controls to new users, disabling those which have come to an end, and ensuring that your system can identify authorised users when they try to access the system. All of this will entail even more complicated administration than is required for a printed journal, and will require considerable technical expertise.

Customers do not need any help to use print journals; however, the situation is different with electronic journals. Some customers will forget their passwords and you will need to reissue them. Others will be unable to get access even though apparently using the correct password. Even if you make your journal available free of charge, you will find that some of your customers have technical problems in accessing or using it. Thus you will need to provide some kind of helpline for customer support, whether on the telephone, on email or both; customers will become very frustrated if help is not available at the exact moment when they need it, so the helpline should ideally be manned full-time during working hours, even if not for 24 hours a day.

Of course, if you decide to use an intermediary to provide access to your electronic journal, all of these problems will be taken care of, although naturally at a cost.

What might it cost?

It is impossible to put precise figures on the cost of publishing a journal electronically; however, it is vitally important to work out your own probable costs in full detail, and not to underestimate either the time or the money that will be required.

A summary of the cost differences between print-only, online-only and online-plus-print is given in the table below. Note that some of these are direct costs (where the journal publisher needs to find the money to pay third-party bills (e.g. external supplier costs), while others are indirect costs (paid for by the organisation). However, indirect costs should never be ignored!

Item	Print only	Online only	Online plus print
Editorial costs	Yes	Yes (no change)	Yes (no change)
Copy-preparation costs (e.g. copyediting, typesetting, design and proofing)	Yes	Yes – plus additional costs for e-file preparation	Yes – plus additional costs for e-file preparation
Printing and binding	Yes	No	Yes
Distribution	Yes	No	Yes
Marketing and promotion	Yes	Yes	Yes
Sales	Minimal	Yes – sales and negotiation of licences	Yes – sales and negotiation of licences
Customer support	Minimal	Yes	Yes
Long-term archiving and maintenance costs	Yes (warehousing and some file archiving)	Yes (e-file and online maintenance)	Yes (including print and e-file archiving)
Financial management of subscription/licence payments	Yes (if charge for subscription)	Yes (if still have subscribers to online content)	Yes (if still charge subscription for print – possible additional costs if online subscriptions are sold separately)
Financial management of author charges	Yes (if charge author fees)	Yes (if charge author fees)	Yes (if charge author fees)

Time

Someone will need to be responsible for thinking through all the questions raised in this document, and making the necessary decisions. This is not a one-time process; your electronic journal will need to be continuously monitored and managed to an even greater extent than a print journal. There will be additional complications to your production processes and new skills and procedures to be learned. If you do it yourself, your subscriptions administration and customer support will also be more labour-intensive.

Money/people

While, as we have seen, taking the 'electronic only' route will save costs on paper, printing, warehousing and despatch, these savings can very easily be offset by new costs. The areas in which you will incur costs are as follows:

- Hosting: whether you undertake to build and host your own journal website, or to pay an external provider, you will have start-up and then ongoing (development and hosting) costs.

- Equipment: you may need to purchase new equipment to manage the electronic processes.

- Online costs: you may need to increase your access to the Internet (more computers, greater bandwidth).

- Staff and training: you may need to devote some funds to building skills within existing journal staff, and perhaps to also recruit additional staff (if you undertake additional work yourself).

- Production costs: if you reduce or eliminate print you may make savings on costs such as postage, printing, warehousing and distribution. Further postage savings may be made in the editorial office if you introduce an electronic submission and peer review system. However, you may incur additional costs if you need to outsource more work (such as typesetting), or to pay for additional services from your existing providers.

It is impossible to give definite guideline costs, as there are so many variables – the number of articles received and published, the number of subscribers, the number of other journals handled by the same system, not to mention local variations in equipment, service and labour costs. Depending on the accounting principles followed by your organisation in dealing with overheads (such as accommodation, central support services such as finance, staff costs, system development and office equipment), your journal's finances may appear to benefit from a reduction in direct third-party costs (e.g. printing and distribution); some organisations may not allocate a share of internal overhead costs to the journal. However, it is misleading to ignore these overhead costs altogether in arriving at a realistic appraisal of the journal's financial health.

Of course, if you decide to charge for access, some of the additional costs could be offset by increased revenues; however, you need to be realistic in your expectations.

Sales models for online journals

Sell it yourself, and/or go through intermediaries

Making the journal available electronically is only half the story. If you rely on subscription revenue, you then need to sell the journal, which includes not only making the sale, but also arranging electronic access and managing whatever access control mechanisms you have selected. In addition, you would be wise to consider the licences which you want your customers to have; unlike print journals, electronic journals provide users with a wide range of possible uses, some of which you may not want to allow (see the section on Licensing below).

It is possible to have one or more intermediaries handle online sales for you; many subscription agents are now offering this service, for a fee, for electronic journals. This can make very good sense, as most libraries already deal with subscription agents for their printed journals. Furthermore, most subscription agents' systems offer the user the

ability to obtain access to all their electronic journals through a single access mechanism; this is obviously preferable for the user, as the alternative is having to use different websites, with different passwords, for each journal. It is obviously easiest if the agent is also acting as host for your journal; if they are not hosting your journal, you will need to provide them with basic 'header' information (metadata) for each issue in electronic form so that their users can search these on the subscription agent's site, and from there gain access your journal website. Taking this route will increase your overall costs, since you will need to pay the intermediary, but it is very likely also to increase the accessibility, and thus the use, of your journals.

Different subscription sales models

Singly or 'bundled'

If you are fortunate enough to publish a number of journals, there may be benefits in selling them as a single package (with or without the option for customers to buy them separately if they choose). The evidence shows that usage of titles to which customers did not previously subscribe can be unexpectedly high[23]. If you also publish books or other content related to the journal's subject, an even richer package could be created; you could also include links to material on other sites. Another possibility would be to collaborate with one or more other publishers to create a larger package[21,22].

Electronic version free to print subscribers

You may want to do this either permanently, or for an initial period as a form of promotion. It will require an access control system, and you will need to assign a password or other form of identification to every subscriber. Be careful not to increase the print subscription price too steeply, or subscribers will feel – with some justification – that they are being asked to cover the cost of the electronic version, whether they want it or not; this could lose you print subscribers.

Electronic version sales

You may decide to set a separate subscription price for the electronic journal. If there is a parallel print version, it is sensible to consider the relationship of this price to the print subscription. Should it be the same (since subscribers are buying the same content)? Or more (since they are getting additional benefits and features)? Or less (since your costs are, or may be, less)? You might want to offer a discount for combined print-plus-electronic subscriptions.

Electronic version sold to print subscribers for an extra charge

A number of publishers are making an additional charge to include the electronic subscription; the supplements range enormously, from 10% to 50% or more. An alternative is to consider the print subscription to be the 'add-on', charging a substantially reduced rate to those who subscribe to the electronic version only.

Individual subscriptions

The majority of print journal subscription income usually comes from libraries and institutions, but many publishers also sell at a lower price to individuals. You might want to consider offering individual subscriptions to your electronic journals, on one or more of the models outlined above. It is indeed arguable that the real benefits of electronic journals (desktop access, additional features and services) are more attractive to the individual reader than they are to the library. However, you should also bear in mind that if you offer library subscriptions, particularly on the basis of site licences, individuals may already have good access to the electronic journal through their place of work. On the other hand, low-priced individual subscriptions may be the most practical way of permitting users to access the journal when they are not at their place of work. If you

offer more than one kind of electronic subscription, and if the privileges or permitted uses differ, remember that your system will need to be able to distinguish the different kinds of subscriber at the point when they access the system.

Member subscriptions

For those societies and associations which get much of their income from membership subscriptions, and who provide members with their journal free or at a very low cost, electronic journals can present something of a problem. If members see access to their own personal copy of the journal as one of the main benefits of membership, but have access at their own desk through a library subscription at their place of work, there is a risk that they will be inclined to discontinue their membership. Society and association publishers will need to think carefully about this, perhaps offering additional electronic benefits or services only to members.

Annual subscription or any-time start

It is possible (in both print and online environments) to sell a subscription based on either an annual basis (usually a volume of the journal), or any-time start. With an annual basis, regardless of when the subscriber pays, they will be provided with the journal issues published within the calendar year (or volume); this is generally preferred by libraries (January to December) as it is easiest for them to manage. With an any-time start, customers will receive 12 months' subscription starting from the date of payment (e.g. March-February, or September-August). This may be attractive for users, but may also cause complications and additional work for the person who has to manage the subscribers. You may also find it more difficult to work out how much journal revenue to allocate if your organisation's financial year does not coincide with the subscription year.

Site licences

Universities, companies and other institutional journal subscribers are always very interested in obtaining site-wide access to electronic materials. Access which is only possible from one or more specified computer terminals in the library is very much less attractive than being able to provide it to each faculty or departmental library and office. It is therefore a good idea to work out a licensing policy, and an access system, which permits this. Defining the 'site' may be quite difficult, particularly for a multi-site organisation such as a large (possibly international) company. Pricing is a particular problem, since organisations vary greatly in size and in the potential or actual number of users. If you simply have a price based on the print subscription price, then large and small organisations will pay exactly the same, while at the same time none of them will need multiple subscriptions – so you may end up losing revenue. Some method of pricing based on numbers of users might be more equitable, although it will be more complicated to work out the appropriate price for any given customer. Although pricing for a set number of 'simultaneous users' has worked well for computer software and databases, it has not proved a popular model for e-journals. Different publishers have looked at the funding of the institution, the total number of faculty and students, or just the numbers in the most relevant department(s). In most cases, publishers have found it simplest to establish a relatively small number of 'price bands' based on these measures. As an example of price banding, see the American Physical Society website (http://librarians.aps.org/2006pricing.html).

Consortium licences

It is becoming increasingly common for institutions, particularly universities, to band together in order to make better use of their limited budgets, and to share the availability of the materials to which they subscribe[24]. This can be a very effective way of getting your journal content to a much larger community, while still only necessitating a single negotiation. Combined institutions, however, make very powerful negotiators and you need to be careful to make the right pricing decisions and not to allow yourself

unintentionally to do business at a loss. It is also difficult for a publisher with only one or a small number of journals to sell to large customers and consortia – and equally difficult for the customer. The process is no less time-consuming for one journal than for a hundred, and it requires specialist skills and knowledge. Some organisations are trying to act on behalf of many small publishers to overcome this problem. For example the Association of Learned and Professional Society Publishers, in partnership with subscription agent Swets, has established the ALPSP Learned Journals Collection[21] which acts on behalf its smaller member publishers to sell their journals to libraries and consortia throughout the world – it does not, however, offer hosting for online journals (though discounts are available on hosting services). Similarly Project Muse[22] in America, and SABINET[25] in South Africa offer publishers a service both to host their journals and to sell them (as a single package) to libraries.

Single article sales

It is often argued that, since a reader will only be interested in some articles, it would be better if he or she could buy those articles separately. While the costs of administering such a system might be prohibitive in the print environment, it is in principle much easier electronically, although the publisher does need a suitable journal system which can provide access to individual articles and collect payment, whether by invoice or by credit card.

One of the problems of this system is that individual readers are often unwilling to pay for articles that they think the library should obtain on their behalf. Publishers have feared that single article sales could reduce the demand for subscriptions, but in fact studies so far do not bear this out – if anything, this seems to tap an additional source of revenue (for example, African Journals OnLine (www.ajol.info) sold in excess of 2000 articles to non-subscribers during 2005, and a survey by ALPSP in 2005 showed approximately 25% of the publishers that offered this service ("pay-per-view") found it was becoming a significant source of revenue[26]). Most commercial hosts and numerous other intermediaries and specialist document suppliers are set up to manage such transactions; the reader needs to be able to pay by credit card online, and the intermediary will retain an amount of the payment to cover its costs.

Open Access

The traditional publishing model restricts access to the publication by requiring payment by or on behalf of the reader (subscription). However, some argue that in the online environment scholarly information should be free to the reader (Open Access publishing)[27]. It is also possible that Open Access journals will achieve higher visibility and use, since anyone can read the journal content[28].

Open Access publishing does remove the cost and complexity of access controls, although it may introduce the requirement for a system to handle author-side payments (see below), and, of course, as with any other electronic publishing model, if the publisher wishes to maintain some form of print version (for example, in response to customer demand) then the costs associated with print will be retained.

In general, Open Access simply means 'free access to online research information'. However, there are a number of formal statements which associate various other conditions with this basic idea. For more information, see www.alpsp.org/htp_openacc.htm. It is important to stress that Open Access does not require any specific commercial model – the key point is that the *user* does not pay to view the material. There are also various models of Open Access that are designed to minimise (or avoid) any impact on subscription revenue:

- **Delayed Open Access:** offering free access after a specified period. The length of

time after publication which is necessary to avoid loss of subscriptions is likely to vary depending both on the subject area (e.g. how fast-moving it is) and the frequency of publication of the journal.

- **Short-term Open Access:** providing free access to articles for a short period after publication, after which they are only available to subscribers[29]. The argument for this is that this provides immediate impact and raises citation of the articles and visibility, but does not affect subscription revenue, as people are still willing to pay for ongoing access. This may not give sufficient protection, however, for all journals.

- **Selected Open Access:** some journals make selected articles freely available (for example, editorials, newsworthy articles, etc.) whilst the rest remain behind an access control system.

- **Hybrid Open Access:** Increasing numbers of journals are experimenting with Hybrid Open Access. This means that the author can choose to pay the publication charge to make his or her article Open Access immediately on publication. Articles by authors who choose not to pay (and other content) remain behind the access barrier. Depending on the proportion of articles paid for, the publisher can gradually reduce the subscription/licence price for the remaining content. This model enables a publisher to test the author demand for OA without putting existing subscriptions/licence income at risk; many publishers are currently experimenting along these lines.

- **Partial Open Access:** It is possible to make the journal's primary research content available under an Open Access model, but to make a charge for other value-added content such as editorials and review articles, and/or for additional services. For example, several of BioMedCentral's journals (www.biomedcentral.com) charge subscriptions to cover non-primary material – so does the *British Medical Journal*.

It is important to remember that the Open Access model only works for online publications. Many Open Access journals still sell a print version on subscription; in addition to covering the costs of printing and distribution, this may also help to defray the journal's other costs.

Who pays for Open Access?

If the user does not pay, any money required to produce the journal needs to come from somewhere else. Common sources for OA journals include:

- **Funders:** many journals in developing countries already rely on funders (either international or national), whose aims may be best satisfied by making the content freely available.

- **Organisations:** as mentioned above, many parent organisations already support their journals 'in kind' by not recharging the cost of accommodation, support services, staff, equipment, etc. Some also provide direct financial support by paying for third-party costs.

- **Government funding:** some countries provide support for journals out of government funds, and governments may prefer the funding to be used to ensure greatest access to their content.

- **Author-side payments:** some subscription journals, particularly in the USA, already charge authors (page charges, colour charges etc.), although this is becoming less common; some journals in Western Africa, particularly in Nigeria, also charge authors. A number of Western OA journals rely on author-side charges: the authors pay a publication charge on acceptance (a few journals also make a smaller charge on submission). A recent study[30] shows that this is in fact a less common funding model for OA journals than it is for subscription journals.

These fees are unlikely to come from the author's own pocket. More likely sources are:

- o **Research funds:** some research grants already include publication fees, and this may become more common in future. (The money from research grants goes to authors or their institutions, who then pass it on to the journal.)

- o **Libraries:** some publishers encourage institutions (usually their libraries) to make a single annual payment, in return for which they waive or reduce publication charges for authors based at that institution.

Self-archiving

Another way of achieving widespread free access to journal content is for the author to post a freely accessible version of his or her article online. This may be a pre-print (i.e. the version as submitted to the journal - or even an earlier version), or a post-print (i.e. the version as published in a journal, sometimes even the publisher's final PDF). It may be deposited on the author's or his or her institution's home page, or in a subject-based or institutional repository (database). In the last decade the number of online repositories of articles – both subject-based and institution-based – has grown.

Subject-based repositories

These are most common in disciplines where researchers are accustomed to distributing their work to each other informally before publication, or see a need to make their research available quickly. The longest-established is arXiv, which was established in 1991 and covers some disciplines of physics and related subjects (www.arxiv.org). Initially, publishers in other disciplines often refused to consider for publication articles which had already been posted in such repositories; however, these days most publishers accept this.

Institutional repositories

A relatively recent development has been the introduction of institutional repositories. These are similar to the subject-based repositories, but are being developed to preserve the intellectual output of an institution, which often includes theses, working papers., lecture notes and teaching materials. The number of institutional repositories is growing[31,32], but the majority contain little content so far and even less in the way of journal articles. The cost to the institution of establishing, maintaining and archiving the repository also has to be taken into account[33].

Support for repositories

Some (mainly biomedical) research funders, such as the National Institutes of Health[34] (USA), the Wellcome Trust[10] (UK) and the Research Councils UK[11], are introducing new rules for the researchers whom they fund, requesting or requiring them to deposit copies of their published articles within subject or institutional repositories either on or at a specified time after publication (the latter is intended to protect journal subscriptions). In the absence of a specific mandate, few authors have so far complied – it remains to be seen whether making this compulsory will have the desired effect.

Impact on journals

It is sometimes argued that pre-prints are not a threat to publishers, since the publisher has added value to the published version (although there is evidence in physics that readers no longer turn to the final version of the journal, which casts some doubt on this assumption). The threat to the business of the journal is even more obvious when the final published articles (post-prints) are posted in repositories; this enables readers to bypass the journal entirely. It seems possible that, if all or most of a journal's content became freely available in this way, subscriptions to that journal might be adversely affected. If that happens, what will happen to the peer review and quality filtering

mechanism currently provided by journals? However, at present many publishers' policies do allow authors to deposit a version (pre-print, post-print or even final PDF) in such repositories; there is, though, growing concern about the dangers of this and some publishers are changing their policies, for example to specify a period of time from publication before which the author may not deposit his or her article. Ideally, a research funder's policy (like that of RCUK and, to an extent, NIH) should respect these embargoes – publishers only institute them in order to ensure the continuing survival of their journals.

Licensing considerations

When you sell a printed journal, it is fairly clear and well understood what your customers are and are not permitted to do with the material. However, in the electronic environment there is much less agreement about what is allowed; abuse is also far more risky for the publisher, since it is far easier to make a perfect copy of an original item in the electronic environment and distribute it widely. It is therefore sensible to draw up a statement of what customers may and may not do, which they will be asked to accept formally. This should be done whether access is paid for or not.

There are different ways of bringing the licence to the attention of the user. The individual user may be presented with a short summary on screen of what is permitted and forbidden, and you might even want to configure your system so that they have to click on a button marked 'I agree' before they go any further. When a sale is made to an institution, the customer might be asked to sign a more detailed printed licence as part of the sale. The latter approach does allow for a certain amount of negotiation if necessary, although obviously you would wish to design your licence so that it was acceptable to most of your customers without involving both them and you in the time and cost of individual negotiation.

Some of your terms and conditions of use would depend on whether or not the electronic version is free or not, but others would be applicable in any case. You would undoubtedly want to permit users to search, retrieve, and print articles from the journal; you might or might not also allow them to save individual articles electronically on their own computers. You should think about the best policy on allowing users to re-send articles, particularly electronically, to other people outside the subscribing institution – a number of publishers do allow this on a small-scale, personal basis. It is unlikely that you would want users to sell articles or redistribute them systematically on a large scale, or to mount all or possibly any of the content on other web sites.

While you will probably want a signature or other indication of acceptance of the terms and conditions when a sale is made to an institution or consortium, it is not always easy to enforce these. Within the academic and scientific communities, a culture of trust and honesty generally prevails and evidence of misuse is infrequent.

Some very useful work has been done to produce 'model' licences, or licensing frameworks, which will help you to devise a suitable licence for your own journals. All have been produced in discussion between publishers and customers, and thus try to address the concerns of both[35]. While you may not wish to use any of them as they stand, without considering carefully the implications of the various alternatives they present, they may save you a great deal of time in working out appropriate wording, and they will also help you to make sure that you don't leave anything out of your licence. One such example was devised in the UK by a group of university librarians and publishers (see www.ukoln.ac.uk/services/elib/papers/pa/licence/Pajisc21.doc). The LibLicense site also provides much useful information about licensing and licences (see www.library.yale.edu/~llicense).

Some publishers have stopped requiring their customers to sign a licence at all – instead, they have a clear statement on the journal site of what is and is not permitted. So

far, no problems have been reported with this approach, and of course it saves everyone a great deal of time and expense.

Creative Commons

The Creative Commons[36] provides a simple guide to drawing up licences for the Open Access environment. These licences grant the user wide-ranging rights to re-use the content, whilst still protecting the copyright in that content. The copyright owner can select the most appropriate version of the licence. For example, all INASP materials (including this document) are published under one of the range of Creative Commons licences, which allows re-use for non-commercial purposes, but requires that the re-user must always credit the author.

Planning for online publication

To plan for publishing a journal online there are several questions that need to be answered. The first – and perhaps most obvious – question is 'Why do you want to publish online – what are your objectives?' Only when you have identified your (realistic) objectives, can you start to plan. The following questions are indicators of the type of planning issues that you will then need to resolve, but are not intended to be exhaustive.

What are you going to publish online?

- Do you intend to continue printing the journal? If so what will the relationship be between the print and online journal?
    - o Online = facsimile of print?
    - o Online content exactly same as print?
    - o Online = print with minor changes? (e.g. colour figures online, no 'news' items online)
    - o Online = print with substantial changes? (e.g. additional articles online (or in print), longer versions of articles online)
    - o Print = archival version of online?
- Publish often, print infrequently?
- Publish article-by-article?
- Publish online-only?
- Do you intend to start with current issue, or load some (or all) archive issues?

Where are you going to publish?

- What type of platform would be most beneficial to the journal and help you to achieve your objectives?
    - o Own service
    - o Third-party host
- What are your technology requirements? (e.g. do you want to publish both the PDF and HTML version of each article?)
- What do you need your platform to provide? (e.g. do you want the e-files to be created for you?)
- Do you have the resources to run and manage your own website? Do you want to take on this responsibility?
- How are you going to identify suitable online hosts (or partners)?

What business model will you use for your online publication?

- Do you want to charge for access or not?

- o If so, how will you price access to the online journal?
- o If not, what effect on your print subscriptions do you envisage?
- o Do you need to introduce any additional funding (e.g. author-side fees)
- Licensing: what do you want to allow users to do with the online content (e.g. print, distribute, etc.)?

Resources and workplan

- What changes do you need to introduce to your current working practices?
- Do you need to outsource some activities to external companies?
- What investment do you need to make (e.g. staff, equipment, etc.)?
- How will you promote the online journal?
- What costs do you envisage – for initial implementation, and for ongoing maintenance?

Conclusions

A survey in 2005 indicated that almost 90% of journals were available online[26] and researchers increasingly expect material to be available online. This is putting pressure on journals to embark on electronic publishing and this document is intended to introduce the issues you will need to consider before making such a step.

Glossary

This is not a comprehensive glossary, but is provided to give brief information about some of the terminology used throughout this document.

CrossRef and DOI

The Digital Object Identifier (DOI) is a unique identifier for articles (and, indeed, other online content), which is associated with the article's current location on the web; when the location changes, the DOI stays the same, but the database showing the current URL with which it corresponds is updated once – this is far more reliable than hoping that all instances of the URL can be updated[37]. There are formal international standards for the operation and implementation of the DOI. The publisher needs to obtain a unique number (prefix), and then needs to assign a unique number (suffix) to each article or other item. The combination (prefix + suffix) must then be registered with a DOI registration agency. There are costs associated with this, but they vary with each registration agency. Within the scholarly publishing industry, the agency used by most publishers is CrossRef. CrossRef has developed an application of the DOI system to simplify linking from one journal to another (particularly from a reference at the end of one article to the cited article in another journal). This is increasingly used by Western publishers. Full information about DOI and CrossRef can be found on their websites: www.doi.org and www.crossref.org

Project COUNTER

This project (which stands for Counting Online Usage of Networked Electronic Resources) was originally established by publishers and universities in the UK, but rapidly became an international undertaking with involvement from library system providers as well. COUNTER is developing international standards for the creation and exchange of usage statistics for online content, so that publishers, libraries and others can combine and compare statistics from different vendors. The standard for e-journal statistics is now well established (version 2 is in place from January 2006) and standards

are also under development for other resources such as databases and e-books. See www.projectcounter.org/

HTML

HTML stands for HyperText Markup Language. An HTML file is a text file that contains markup tags that tell the Web browser how to display the page (e.g. bold). It can also include links to other parts of the document, or to other files, and to other web pages. It is the most common file format used on the Web. It is relatively simple to create HTML files, and there is considerable guidance on how to do this (with or without dedicated software) available on the Web. The website www.w3schools.com/ provides a very good introduction.

Library consortia

A library consortium is a group of libraries which have agreed to negotiate as a group with publishers and other content providers. The principle of consortia is that a group is in a stronger position to negotiate and agree terms than an individual. Consortia may be country-wide, or between a small number of institutions. They may also combine their requirements for purchasing of materials and equipment, and agree on common software and working practices. The website of the International Coalition of Library consortia contains more information – see www.library.yale.edu/consortia/

Metadata

In essence, this term means 'data about data'. More usefully, it is descriptive information about a resource (or resources). In general terms it includes what librarians used to call cataloguing data – but it can also include data about rights, etc. For online resources, it is essential to provide some computer-readable information so that users and systems can search and navigate them. For more information, see www.getty.edu/research/conducting_research/standards/intrometadata/

PDF

This stands for Portable Document Format, a proprietary format, produced by Adobe, which provides a facsimile of the designed page, and may be used for printing and for online publishing. It requires specialist software to create and read PDF files, but the reading software is free, and it is commonly used. PDF files have several benefits: for example, they retain the look and feel of the designed page, and they are difficult to change – so protect the original text and illustrations. For more information about PDF, the Adobe website is very informative: www.adobe.co.uk/products/acrobat/main.html

XML

XML stands for EXtensible Markup Language. It is much like HTML, but was designed to describe data and not the appearance of the data. For example, it identifies the 'Title' of an article, but not that it is printed in 'bold' type. One particularly important example of its use is in the automation of database collections. For this reason, several systems (e.g. Medline) require publishers to supply their content as XML files, so they can automatically input the publisher's publications into their own database (as the XML file tells the database what parts of the text are the 'title' 'author name' etc.). For more information about XML, see www.w3schools.com/xml/xml_whatis.asp

Notes and references

1. Baldwin, Christine and Pullinger, David (2000) What readers value in academic journals. *Learned Publishing* 13(4), 229-240. [DOI: dx.doi.org/10.1087/09531510050162066]

2. Tenopir, Carol and King, Donald W. (2000) *Towards Electronic Journals: realities for scientists, librarians and publishers.* Special Libraries Association: Washington DC, USA.

3. INASP (2005) *Models for Full Text Online Publishing: Resource Guide*. INASP: Oxford, UK.

4. Dellavalle, R.P., Hester, E.J., Heilig, L.F. *et al*. (2003) Going, going, gone: lost internet references. *Science* 302(5646), 787-788. [DOI: dx.doi.org/10.1126/science.1088234]

5. J-STOR was established in 1995 to provide a service to scan and maintain an archive of journals, and to make them available to subscribers. It offers different collections of journals to subscribers. For more information, see www.jstor.org

6. This national library has signed agreements with many publishers to download their content and maintain archives of it in perpetuity – see www.kb.nl/index-en.html, and also the press release about the library's agreement with Blackwell Publishers www.blackwellpublishing.com/press/pressitem.asp?ref=83

7. For an example of some international initiatives, see the paper published as an outcome of the Working Group of the Conference of Directors of National Libraries (CDNL) published in 1996 on the UNESCO website, www.unesco.org/webworld/memory/legaldep.htm

8. In preparation for implementation of the new UK Legal Deposit legislation (which will extend deposit to non-print publications, on a medium-by-medium basis), a pilot project is under way to test the feasibility of, and establish any possible problems with, the deposit of e-journals – see www.bl.uk/about/policies/legaldeposit.html#elec

9. For information about the National Institutes of Health Policy, see http://grants.nih.gov/grants/guide/notice-files/NOT-OD-05-022.html

10. Since 1 November 2005, The Wellcome Trust requires its funding recipients to make post-prints freely available in PubMed Central (or its future European equivalent) within 6 months of publication, as permitted by the publisher – see www.wellcome.ac.uk/doc_WTD002766.html

11. Research Councils UK are undertaking a review of self-archiving and developing a policy for their researchers. A draft report is available on: www.rcuk.ac.uk/press/20050921rcuk.asp

12. ALPSP and NISO (National Information Standards Organization) are working together on a project to investigate the potential problems of multiple version publishing online: see www.niso.org/committees/Journal_versioning/JournalVer_comm.html

13. Cox, John. (2004) *An ALPSP Report on the Impact of Aggregated Databases on Primary Journals in the Academic Library Market and a Review of Publisher Practice*. ALPSP: Worthing, UK

14. Powell, Andrea (2006) *ALPSP Advice Note No.33: Outsourcing Primary Journal Hosting*. Available online from http://www.alpsp.org/members/advice/AAN33.pdf (ALPSP members only).

15. Fletcher, Lloyd Alan (1999) Developing an integrated approach to electronic publishing: tailoring your content for the Web. *Learned Publishing* 12(2) 107-118. [DOI: dx.doi.org/10.1087/09531519950145922]

16. There are now several software packages for editorial management, including Manuscript Central (www.scholarone.com/products_manuscriptcentral.html), Bench>Press (http://benchpress.highwire.org), Editorial Manager www.editorialmanager.com/homepage/home.htm), and the Open Source software, Open Journals System which combines both editorial management and online publishing software (http://pkp.sfu.ca/ojs/). For more details see www.alpsp.org/htp_editoff.htm.

17. See www.selfpromotion.com/ and www.google.com/webmasters/2.html

18. OCLC compile a list of abstracting and indexing services, which is available on www.oclc.org/support/documentation/firstsearch/databases/dblist/default.htm

19. *Ulrich's International Periodicals Directory* published by RR Bowker; updated annually, see www.ulrichsweb.com

20. For instructions for XML, contact INASP (inasp@inasp.info). Other publishing resources can be found at www.inasp.info/psi/resources.shtml

21. The ALPSP Learned Journals Collection includes several hundred journals published by members of ALPSP. Details about the package can be found on

www.alpsp.org/ALJC/default.htm

22. Project Muse provides full-text online access to over 300 humanities, arts, and social sciences journals from 60 scholarly publishers. For more information, see http://muse.jhu.edu/

23. Sanville, Tom (2001) A method out of the madness: OhioLINK's collaborative response to the serials crisis. *Serials* 14(2), 163-177.

24. The website of the International Coalition of Library Consortia provides more information, see www.library.yale.edu/consortia/

25. SABINET provides a package of several hundred African (mostly South African) journals for sale as a single package to libraries: see www.sabinet.co.za/journals/onlinejournals.html

26. Cox, John and Cox, Laura (2006) *Report on Academic Journals, Publishers, Polices and Practices in online publishing: 2nd Survey 2005.* ALPSP: Worthing, UK

27. There are many websites supporting and providing information about Open Access, but one of the most useful is that of SPARC. SPARC is a coalition of universities, research institutes and other organisations mostly within the USA, but including partners around the world. SPARC publishes informative articles and a newsletter about the Open Access movement. www.arl.org/sparc/

28. McVeigh, Marie E. (October 2004) *Open Access Journals in the ISI Citation Databases: Analysis of Impact Factors and Citation Patterns. A citation study from Thomson Scientific.* Available online at www.thomsonscientific.com/media/presentrep/essayspdf/openaccesscitations2.pdf

29. The Institute of Physics (UK) undertakes some interesting Open Access initiatives. For example 'IOP Select' provides free access to articles which the journal editors have identified as particularly important. IOP also enables free access to all published articles for 30 days after publication – see www.iop.org

30. Kaufman-Wills Group (2005). *The Facts About Open Access: A study of the financial and non-financial effects of alternative business models for scholarly journals.* ALPSP/AAAS/HighWire Press. www.alpsp.org/publications/pub11.htm

31. Van Westrienen G. and Lynch C.A. (2005) Academic Institutional Repositories: Deployment Status in 13 Nations as of Mid 2005. *D-Lib Magazine* 11(5), www.dlib.org/dlib/september05/westrienen/09westrienen.html

32. ePrints, developers of repository software. maintain a record of all Open Archive Compliant repositories on their website: see www.eprints.org

33. There are various software packages for developing archives, including Greenstone (www.greenstone.org/), ePrints (www.eprints.org/) and DSpace (www.dspace.org/), all of which are Open Source

34. The National Institutes of Health (NIH) Public Access Policy, which took effect on May 2, 2005, requests (but does not require) its funding recipients to deposit post-prints in PubMed Central as soon as the publisher permits after publication, and at most within 12 months – see http://publicaccess.nih.gov/

35. An up-to-date listing of many such initiatives can be found at www.alpsp.org/htp_licens.htm#mod

36. Creative Commons is a nonprofit corporation founded in 2001 to promote re-use of intellectual and artistic works through the use of standard licence agreements. They provide a wide range of licenses for anyone to use. See www.creativecommons.org

37. Baron, Joel (1997) Why we need information identifiers. *Learned Publishing* 10(2), 132-134. [DOI: dx.doi.org/10.1087/09531519750147120]