

## **Replacing print with e-journals: can it be done - a case study**

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### **Introduction**

The management of access to e-journals at Cranfield has developed significantly since the first journals were made available electronically to the Higher Education Community. This article describes how such resources are managed, and how well they are being accepted at what is a largely postgraduate university. Of the 3200 students, almost 80% are postgraduate and Cranfield campus has an entirely postgraduate population with average student age of 29. The main subject areas include aeronautics, engineering, manufacturing and management. Biosciences, agriculture and defence studies are the main areas of teaching and research at the other two campuses at Silsoe (School of Biosciences), and Shrivenham (The Royal Military College of Science). Major sources of income include contract research and short courses, but there is also a significant proportion of funding from Government. In terms of libraries, there is a separate Library service at each site (at Cranfield, there is a Main Library and the Management Information Resource Centre within the School of Management).

### **Management of electronic journals**

In response to the first Pilot Site License Initiative, Cranfield campus library service formed a group set up to look at the strategy behind moving increasingly towards electronic access to resources, not just in terms of e-journals, but also the integration of databases, inter-library loans, acquisitions policies etc. In hindsight, the group probably should have been called the 'hybrid library group' but it was named 'Agile'. The concept of 'agility' was developed out of the 'just in time' approach in manufacturing where companies seek to gain competitive advantage by quickly moving into new areas of demand and dealing aggressively with change.

The first 'Agile' sub-group, the 'electronic journals and current contents group' (still only at Cranfield campus) was formed specifically to look at how to implement and market e-journals.

Owing to the rapid expansion in access to electronic journals, and the fact that, instead of campus subscriptions, Cranfield were soon able to sign University agreements covering all three sites (following the establishment of NESLI), the e-journals group expanded to include representatives from all three library services and became a larger group of about 18 members.

As is traditional, certainly at Cranfield, and owing to the size of the group, a sub-group has recently been formed - the e-journals policy group. In fact it is a 'super-group' - a smaller and more strategic body set up to look at thorny issues such as selection and cancellation policies across the University (i.e. what happens if one of the three campuses wishes to pull out of a deal for which all have so far contributed.) The formation of this group was a symptom of the problems with bringing together three entirely separate services with subject interests that does not overlap completely. The policy group also aims to have a strategic view of the future.

In terms of selection of deals, budgets for e-resources are not devolved to departments, and it is possible to move money from one budget to another. This probably makes it easier to be agile in terms of selecting appropriate deals for users. The main barrier to quick positive responses to deals is however still financial. In terms of planning, the policy is to continue cancelling paper copies of titles, to try and save money for impending or desired e-journal deals.

The move from paper to electronic has been taken for granted as a logical progression, and so the question, 'why would we want to replace print with electronic' was addressed early on. Various obvious reasons for wanting to get into electronic journals were identified: improved access would be advantageous for customers both on and off-campus (with the increase in part time and off-campus users); shared costs for single deals across three campuses should provide savings, and of course e-journals are cheaper to produce aren't they? In fact in 1999 the cost of electronic only subscriptions ranged from between 65% and 150% of paper price <sup>(1)</sup>. In 2000 the range was between 85% and 115% of the paper price <sup>(2)</sup>.

Other perceived benefits included the increased number of titles available; the availability of user statistics for electronic access to allow better analysis of titles taken and access to titles just in time rather than just in case. Finally and most importantly, there is a belief at Cranfield that it is what the users want, a view partially borne out by survey data reported below.

Clearly one of the things that is liable to influence the views of users is the method of accessing e-journals. The initial debate over how access should be offered looked at provision via a single list, a publisher list, or the OPAC i.e. integration with other resources. The initial decision was to use OPAC access although in the current interim stage there is, appropriately perhaps, a hybrid solution, which will also be discussed later.

Obviously an important factor in provision of access to electronic journals from the OPAC, is the OPAC itself. Unicorn was implemented (with its web OPAC) in December 1998, so that was clearly an important milestone in the strategy.

Initially it was decided to create a set of trial OPAC links. For items already in stock records were simply edited; for serials not previously taken, records were initially created in-house, but later as volumes increased, MARC records were purchased from a supplier. In terms of the decision of whether to maintain single records or separate records depending on the format of the journal, it was felt that the advantages of the former outweighed those of the latter, specifically for 'patron convenience' and 'maintenance' as defined by the CONSER Working Group <sup>(3)</sup>. The needs of the user out-weighing the pedantry of the cataloguer.

Concentrating briefly on bibliographic record purchase, an important issue was the title hit rate. It was found that the single hit rate on the database, (i.e. where there was a single record for a particular ISSN) was around 5%. So if a batch of say 150 titles were sent off for matching against the database, on average the first file would come back containing six or seven records in MARC exchange format which could be loaded into the system

immediately. It was necessary to undertake further identification for the other records. This showed a major weakness of using a bibliographic record supplier for this purpose (an advantage in other circumstances): there were often different records for the same title in different formats (paper, online, microfiche). Unfortunately it was not possible for the supplier to add the new fields required to each record (e.g 856) and so once loaded, record editing was required.

In the electronic link MARC field, not only was the URL added, but also two subfields, the first describing the particular service being used, so that users know where they are going (also useful for staff to identify any access problems), and the second a holdings statement, essential in terms of information provision. The idea was that users should not be put off e-journals because they had wasted time being unable to find a specific volume. As the 856 field was created initially, the link was checked there and then, so at least the holdings statement was accurate at the start.

In terms of the ongoing accuracy of this holdings statement and in fact URL checking more generally, the accepted view is that keeping up to date with both is very time consuming. The service has therefore decided on a two pronged approach. For holdings statements, if Library staff or customers find an anomaly then it will be changed but checks are not routinely made - a reactive policy. For checking URL links it was initially decided to run a job within Unicorn to output a list of URLs in a suitable format for loading into a link checker. Problems were noticed with this - e.g. Elsevier journal URLs are all re-directed - so for all ScienceDirect titles the link checked document states that a large proportion of links 'may have moved'. A more effective solution is currently being sought.

The current full text services being offered via the OPAC now include, ProQuest (ABI/Inform, Applied Science & Technology Index, Medline) and InfoTrac as well as the e-journal titles available from the deals with Blackwells Science, Elsevier

(ScienceDirect), Emerald (MCB), IEL (IEE,IEEE), Kluwer, American Chemical Society, as well as titles available directly from publishers.

For checking the journals on the two database products, because of the frequent changes, a couple of people have taken on the responsibility of trying to keep up to date with changes (in amongst their other duties). So far links from about 2800 titles have been created.

Another early decision made by the e-journals group was that, to begin with, only full-text titles would be added to OPAC. For those titles where it is only possible to gain access to contents pages, a link would not be established at this stage.

So why was this method of access chosen? The initial debates in the electronic journals group were around whether single access or multiple access routes should be provided. The consensus was that multiple methods of access to e-journals should be provided but a single method should be marketed. The answer to the question 'how do users wish to access the information' needs to be balanced against how easy this method is to manage, and indeed how easy it is to explain to users. It was decided that a single method would be easier to explain, but more importantly it also fitted the strategy of integrating access to information via the OPAC.

Like any Library system, Unicorn comes with a ready made search engine. All of the data within the OCLC e-journal records is searchable via a word or text search, or via a separate periodical search at the same time as in-house journals. So benefits have been gained by having full OCLC records (e.g. with searchable subject headings, previous titles etc.)

Another reason for using the OPAC is that users are familiar with the interface and the search mechanisms within Unicorn. A vital factor is the ease with which inter-library loan staff are able to check whether a requested journal is in stock. ILL staff need to be able to have a single place where they can check (rather than having to check the OPAC

and then a separate web list of electronic titles). Over the last five years the number of inter-library loan requests made at Cranfield campus has fluctuated between 17,000 and 22,000 requests each year so ease and speed of searching is important. It is also an additional method of making users aware of e-journals. A lot of users continue to request titles via ILL that are available electronically in full text. In these cases, the library response is to both automatically generate letters from the ILL system and also provide a separate tick sheet describing which electronic service should be used for the requested journal. ILL request screens have also been edited to try and encourage users to check the system for e-journals prior to making an external request. The hope is (and there is some early evidence of this reported below) that the increase in access to e-journals is being balanced by a decrease in the number of inter-library loans.

The decision could have been made to give users the choice of access – with records on the OPAC and a separate journal list on the web outside the system. This would have meant the maintenance of two lists of journals, a resourcing overhead that it was considered better to avoid.

So, with the newly acquired web based OPAC the decision was to expand the use of the OPAC as a gateway to information. To allow links from the retrieved catalogue record not only to a shelfmark location for journals within the library, but also to the full text of the journal in electronic format. After all, e-journals are as much in the library as the journals on the shelves.

As part of this strategy of using the OPAC, Cranfield has recently implemented Hyperion, a digital media archive. This is an add-on module of Unicorn that allows the loading, storage and retrieval of full-text digital media (scanned material, images etc.) Once again expanding the OPAC, which has now developed from a simple 'gateway' into a 'portal'.

To accompany access to e-journals a number of Hyperion projects have started, including the loading of a number of different types of resource (for example, working papers in

PDF, images in the form of slides, course notes and press photographs). Owing to the interest generated by Hyperion, the staff structure within the Information Systems team has been adapted to cope with these new electronic developments. This is something that appears to be happening elsewhere evidenced by the various 'electronic services librarian' posts being advertised.

Hyperion, along with AERADE, Cranfield's web portal (and part of the Edinburgh Engineering Virtual Library - EEVL service), is allowing the Library to gain a central role in areas of Teaching and Learning that have previously been difficult to break into.

In terms of OPAC as portal, the question is how far to go? The US Government has a policy of providing free access to reports on the web (e.g. NASA, Federal Aviation Authority, Dept of Defense, Dept of Energy etc.) and there are other series also available (AGARD/RTO - [Research & Technology Org.]). Should time be taken to forge links to these kinds of material or simply accept that these have now become databases, and are therefore have to be searched separately (until a cross-searching mechanism is mature enough to use).

Once all appropriate e-journal links within the OPAC have been created, the Library service will be in a position to review access. It will be possible to extract journal title and URL fields and create a separate list of titles later (if there is a demand). Putting records on the system allows the service to be flexible and agile if there is a need to consider creating alternative access methods.

As implied earlier, a different access method *is* offered to e-journals (although this alternative was fairly simple to set up): access via an electronic resources page. This page not only covers e-journals but all electronic databases. For access to e-journals from here, users have to know publishers or database suppliers if they want to use this page effectively but if they know where they want to go (i.e. if they've been there before), then it is likely to be quicker.

One disadvantage of accessing e-journals from the OPAC is that direct linking to a journal means that a user misses out the 'search' stage of the e-journal supplier (although in a large number of cases this may also be an advantage). Conversely, in some cases it is only possible to link to a login page, so the link between the e-journal record and the full-text of that journal is not immediate and requires further searching via the supplier interface.

Further disadvantages include the need for record updating (e.g. changing availability etc.) but clearly this problem is not restricted to delivery via the OPAC. If a URL stem changes however, it may be easier to use the Library system to globally edit the records.

Another issue that Cranfield is likely to have to face is the problem of what to do if a bundled journal deal has to be cancelled. It is likely that the records will be kept on the system but moved to the shadow catalogue (hidden from users) ready for reinstatement if the deal is taken up again, but this may depend on what archival access can be negotiated.

### **Training and marketing**

Training and marketing is a central issue when discussing electronic journal provision. It was felt that before embarking on wholesale training and marketing of services there had to be significant numbers of e-journals available, hence the initial delay in this process. Initially, therefore, it was considered a good thing that often it was necessary to sign up to deals that allowed access to all of a particular publisher's output.

In terms of user awareness, apart from talking about e-journals during induction, the service runs a course entitled: 'Getting the most from Electronic Journals' which is fairly heavily subscribed. It is quite likely in the future that as students and staff become more generally aware of, and familiar with electronic journals, the course will no longer be required. Some may argue that it is rather artificial to undertake training around a format, as opposed to a subject approach. Owing to the size of the University, it is possible to undertake a lot of individual tuition as and when required. The need for a more coherent



and effective awareness programme is something that the Library Marketing Group has been tasked to do.

### **Views of users**

So what are the views of our users? - Is it possible to replace paper with e-journals from a user point of view?

Two user surveys have been carried out at two different sites looking at the use and acceptance of electronic journals.

The first, carried out at Cranfield campus as part of a Masters thesis <sup>(4)</sup>, looked at user satisfaction with e-journals among PhD students. The second, a study by graduate trainees at RMCS with a slightly different focus was entitled '*Assessing the user awareness of e-journals*' <sup>(5)</sup>.

At Cranfield, 20 PhD students were interviewed, studying subjects ranging from 'icegrowth simulations on aircraft wings'; 'antibiotic production from bacteria'; to 'cultural sensitivity of managers'). Very few respondents were novice users, all those interviewed were library users, and all had used electronic journals previously. The study at RMCS was on rather a larger scale but concentrated on user awareness. It also looked at all levels of user (rather than simply PhDs) and so in many areas is not directly comparable. At RMCS only 65% of respondents had used e-journals, although 77% were aware of their existence.

At Cranfield, almost half had heard about e-journals from the library during their induction tour, some of those had also heard from colleagues. Another quarter had only heard from colleagues. The rest had come across e-journals by accident, although this category was generally made up of those who had received notification from the ILL team that an e-journal was available so it could be argued that these respondents had also heard via the Library, therefore making 72%.

Only one person at Cranfield had heard about e-journals from their supervisor. This was not really a surprise, but the problem is being addressed.

In terms of the publicising of e-journals - over half of the respondents at Cranfield thought the Library could do more to publicise the e-journal service. It is hoped that the new academic year will mark a huge shift towards the use of e-journals where there is a critical mass available at the time when students are starting their courses. At RMCS various suggestions were made by respondents for promotion of e-journals, the most popular of which was email notification, followed by training, and then interestingly the creation of access via the Library catalogue - a process which has now started at RMCS. Other suggested methods included leaflets, posters, and journals lists.

Interestingly several students at Cranfield pointed out that as postgraduates, it is up to students to turn up to training sessions but also to take the initiative to find out about new services.

From where are e-journals accessed? Three quarters of the Cranfield respondents use e-journals from outside the library. This was not surprising as it was assumed to be one of major benefits, and it may be one factor explaining why figures for total visits to the Library have dropped 24% over a single year. Time saving was given as the main reason for using e-journals from departments.

It was interesting to see the Cranfield responses to the question on how users access e-journals. Two thirds chose the Library web-site (i.e. via publisher/supplier), as opposed to the OPAC - many were not aware of the links from the OPAC. This too is not surprising. At the time of the survey, the service was waiting for all of the OPAC links to be available on the system before their presence was advertised. Hopefully, again, this proportion has changed with the new academic year.

In terms of ease of access, most respondents at Cranfield did not see any serious problems with having to access a number of electronic journal sites, although they had

only used a chosen few regularly. On the other hand over a third of Cranfield respondents did find using a selection of publishers sites problematic. All respondents at Cranfield thought a single web-site or gateway would be highly beneficial to searching.

Related to this, there is the danger of users only using a single source e.g. Elsevier ScienceDirect and nothing else. This is similar to the experience during the implementation of the BIDS system – when users assumed that everything they would need would be available via a single service. Clearly user education is important here.

Responses on satisfaction with the range of e-journals at Cranfield were split 50:50. Half felt that the range was completely or reasonably satisfactory and half were dissatisfied, but this also followed in responses on print journals. Those who found the e-journal range unsatisfactory, were also not satisfied with paper journal range (often peripheral titles not available) so format was not the relevant factor.

In terms of backfiles, the majority of respondents at Cranfield were not satisfied with the backfiles that were available. Most respondents called for several decades worth of material to be added to satisfy their needs. In fact this is borne out by data acquired from the Cranfield BIODOC project (where all journals for our Biotechnology School were cancelled and replaced with unlimited inter-library loans and rapid document delivery.)

## **Figure 1**

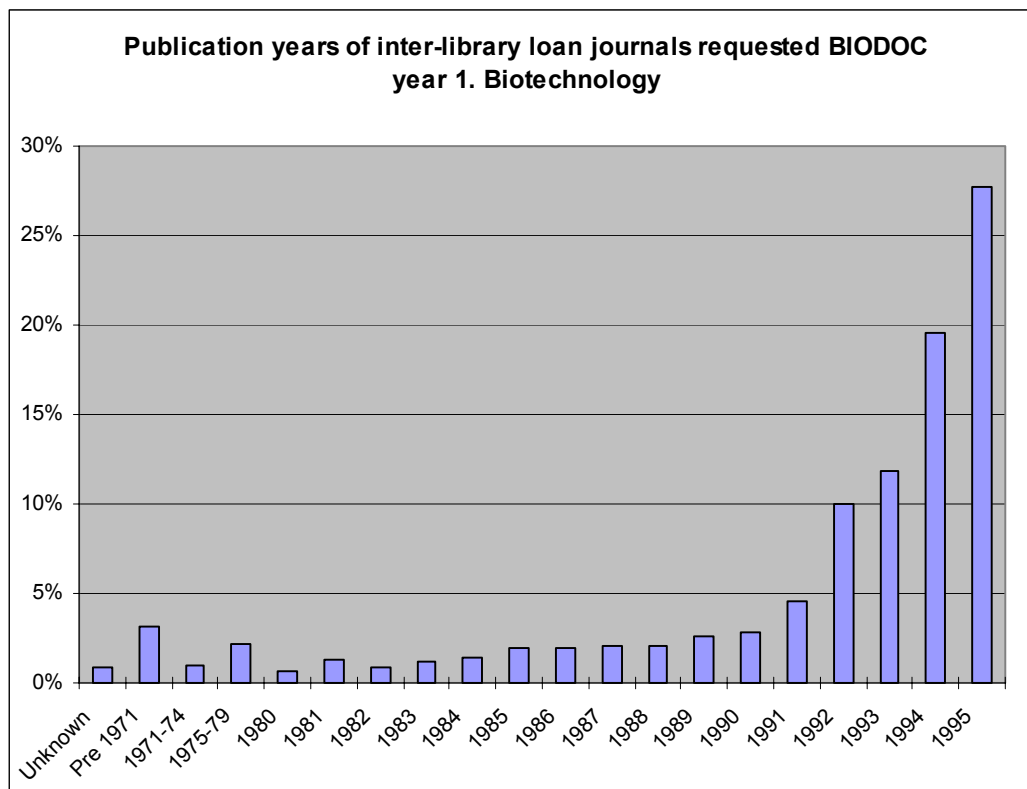
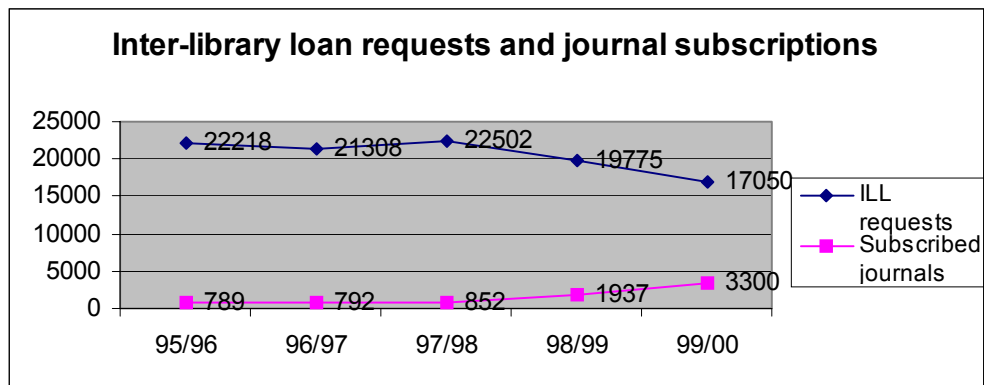


Figure 1 <sup>(6)</sup> shows that the majority of ILL requests made were for material published in the last 5 years, (about 74% in BIODOC year 1) but there is still significant demand (26%) for older articles. It was recently reported that the available archive provided by electronic journal publishers ranged from between one and 15 years, with an average of 4.5 years <sup>(7)</sup>.

Hopefully the ability to pay for e-journal deals will be helped by a decrease in no. of inter-library loans requested by students. When Cranfield respondents were asked whether they'd noticed any change in the number of ILLs placed since starting to use e-journals, half said they were submitting fewer ILLs - placing more quality requests or were engaged in more specific targeting. A couple of students illustrated a fact that had been of some concern - that they were now placing more ILL requests due to increased awareness of new journal titles. Others said that the number of ILLs they had requested had not changed.

Fortunately at the moment, certainly at Cranfield, there is evidence of ILLs dropping as journal titles available increase as can be seen from figure 2. Over the last two years there has been a 24% drop in the number of ILL requests placed. It is interesting that when the number of journal titles available is also considered, this 24% may be the result of the 287% increase in the number of journal titles taken.

**Figure 2**



So in simple terms, as the number of journal title subscriptions have increased, ILLs have come down. Again the hope is that once the marketing aspects are right, ILL figures will fall even further while the number of e-journals available for access will stay the same or even decline if deals allow more selectivity.

In terms of overall preference, there were differences between Cranfield and RMCS respondents. Over half of users at Cranfield already prefer e-journal to print journals, and only 20% now prefer paper. The remaining 28% wanted both. One user commented that, 'an e-journal is easier to find, but paper better to use'. In fact the two collections complement each other - it is certainly true that some journals are more effective in paper format, while others are more effective as electronic. At RMCS, (where responses came from all levels of user, and only 4% from PhD students), 66% of respondents prefer to use print journals while 32% preferred electronic. Only 2% favoured both.

The clear benefits as described by users actually mirror the original assumptions, as well as illustrating some of the findings of the Superjournals project <sup>(8)</sup>. Improved access - no

longer necessary to leave the office; improved availability - no longer dependent on library opening hours (will Libraries be open for less time in the future?); e-journals save space; e-journals save time; more titles available. Multi-user access and timeliness were also mentioned by RMCS respondents.

Problems outlined by respondents to both surveys included: hardware and software issues (e.g. displaying via Adobe Acrobat; difficulty with printing); loss of browsability (mentioned few times); speed of access; lack of currency. A large proportion found it impossible to read lengthy text on screen, although a general view at Cranfield was that these problems did not cause insurmountable obstacles.

Some Cranfield respondents said that the number of publishers sites on the Library web-site was confusing - students would prefer single web-site for searching all journals, and that there was still a need for more relevant journals to be added to e-collections.

Surprisingly, few respondents from either survey mentioned the trouble of having to use a variety of passwords to enter e-journal sites. Clearly IP authentication and Athens have alleviated the situation.

### **Information strategy**

The concept of E-journals are now enshrined in the University Information Strategy:

‘With an increasing number of printed journals being published in electronic format, LIS staff, in consultation with departments and schools, will investigate enhanced access to, and improved delivery of, electronic journals to researchers desktops’ <sup>(9)</sup>.

The Strategy also states that as well as the newer electronic services, there will also be traditional paper based services running in tandem, as part of the hybrid library service: ‘The aim is to provide cost beneficial access to, and delivery of, recorded knowledge in support of the University's research strategy. For the foreseeable future LIS will support

research activities by the provision of hybrid library services, which will provide access to both printed and electronic information resources' <sup>(10)</sup>

## Conclusion

So, in answer to the original question 'is it possible to replace paper with electronic access' the Cranfield answer would be both 'yes', and 'no'. Yes, in the sense that certainly Cranfield campus users would cope with, and benefit from the format, and 'no', in that at the moment, publishers are making it very difficult for libraries to take electronic only options, (with no cancellation policies).

This ambiguous answer to the original question is not surprising as we are still in the early stages of the development of e-journals, and clearly there are a lot of outstanding issues to be addressed, many of which have not been explored here. A lot will change over the coming months, for example new pricing model, new publication models and new procurement models, all of which will provide a continuing challenge to the managers of the hybrid library.

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# Replacing print with e-journals: can it be done - a case study

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2003-09-30T13:49:57Z

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Simon Bevan, Satu Nieminen, Ruth Hunn, Michelle Sweet. Replacing print with e-journals: can it be done - a case study. *Serials*, Volume 14, Number 1, March 2001, pp17-24

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