Digital library technology 2000
Using digital technologies to improve usability and ease of access to library resources

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Control or chaos
Library webpages layers deep, citation databases using special software, library catalogues on the web, telnetting to library catalogues, journal databases to search, emailed tables of contents, full-text and tables-of-contents only ejournals … finding where information is located through the library webpages and catalogue is more complex and difficult than it should be. After discussing the electronic services we have in place at the Agriculture, Fisheries and Forestry – Australia Library, and how we access them, I will look at new digital technologies. I will suggest ways to improve usability and ease of access to library resources.

As electronic services have been introduced, one at a time, each service is presented to users separately, usually through the library website. The reason is simple — most services come in a particular format, requiring separate descriptions. Emailed tables of contents for journals come as email to an individual. An internet based citation database needs to be accessed by a browser. There are options for some services, and the task of the electronic services librarian is to select the mix of services and delivery modes which best suits the user’s working environment. Delivery modes also need to be tailored to individual researcher’s ways of absorbing information.

Other factors influence the mixture of electronic resources that we offer to library users. Some delivery modes would suit AFFA very well, but the cost to the organisation would be too high. Some solutions encounter technical difficulties — related, for example, to inflexible firewall rules. Whatever the historical reasons, the electronic services librarian at some stage looks at the various services available to users and realises that the mixture of resources and interfaces is confusing to the user.

Librarians are organisers. Indexes, catalogues and authorities are the tools we use to create order. This is the expertise that we claim gives us a special place in the chaotic world of internet information. Librarians are now talking about metadata, XML and Z39.50. However, in the time it is taking librarians and others to formulate the details of new standards such as Dublin Core, the internet has changed. Charles Martell talks about the disembodied librarian (Martell 2000), saying that our role may not be to keep ahead of the information that is flooding the online world, but to specialise in our traditional archiving function. That will give us some time to define the standards, and apply them. We create order retrospectively so users can find things retrospectively.

Organising our little corner of the internet — the library webpages or the organisation’s intranet — is very satisfying. We know how valuable it is to our clients. We study the log files. We soon hear if something is no longer working.

In the meantime, it seems that users are coping quite well with the chaos of the internet (d’Avigdor and Cargnelutti 2000, p. 534). They certainly believe they are, although there
are interesting figures showing the reality is different. Tennant says that libraries are increasingly the resource of last resort (Tennant 2000), and he is right. Because any internet search will produce results, users believe they have answers. However, discerning users know that search engine databases cover only part of the internet. These users wonder about the quality, freedom from bias, and the authority of the information. These users value the attempts of librarians to organise electronic resources.

Control or chaos? How best to present electronic resources is at neither end of the spectrum. The organisational principles that we have built into our catalogue may still mean that no one can find a particular issue of a journal today. ‘Taming’ internet resources by organising access through the library webpages does not guarantee access today.

**Toward control: the example of electronic journals**

Electronic journals are available from many different publishers, and/or from journal aggregators. Each setup is different. Sometimes access to abstracts or tables of contents is free, but full-text access requires proof of subscription. Access points require passwords, or IP verification. Arranging access to electronic journals in a way that is transparent to library users is a challenge.

As the list of electronic journals available through our library grows, I wonder at which point I changed from ‘electronic reference’ to ‘electronic serials’. The medium has changed, and the area responsible for it has changed, but the nature of the material is the same. Using web checkers to ensure that links are working still does not prevent resources from vanishing or becoming inaccessible. Maintaining access to electronic resources is proving very expensive. Web authors soon discovered this when keeping their links up to date, so link checkers were invented. Someone needs to invent an electronic journals checker.

These issues are technical challenges. However, another challenge is not technical at all.

As electronic resource librarians, we want to advance to a time when our users can get full-text articles from current journals, whether we subscribe to the journal or not. Users are ready. Journal aggregator sites are ready. The control of money is the issue. For one hypothetical journal issue, let’s imagine that only three people around the department ask for full-text of one article. If the price is $15 per article, that issue has cost $45 this month. For some journals, that is the cost of a year’s subscription. For others, that is less than the cost of an issue. Additional costs may be incurred in the future, when other people pay again for the same article.

In AFFA, the area of the department that wishes to purchase books and serials pays for them, not the library. The library has a small discretionary budget. Charges incurred for
document delivery are invoiced. Government purchasing requirements — that all expenditure be pre-approved — mean that it is difficult for individual users to order documents directly. Services such as UnCover, inside and Kinetica already offer this function. We need to examine ways of adhering to regulations, but facilitating user access.

We can argue that our expert interlibrary loan staff can find the article cheaper within the interlibrary loan system. In Australia, we need to repeat the United States studies that Mary Jackson describes about the actual process of interlending to see how costs are incurred (Jackson 1997). Alternatively, we can take a simplistic view. No one ever counted the cost of teaching the working population how to use a keyboard satisfactorily, when computers became commonplace. If we find a way for our users to pay for a document directly, within the library we will save staff time. The cost to AFFA is likely to be higher. However, with the increasing requirement of clients for short turnaround times, it may be worth it.

Communication strategies — dealing with good and bad news

Access to known electronic resources is not guaranteed. However, if we set up access to a resource, and researchers do not know about it, that resource is wasted. Providing relevant information to an ever changing workforce, especially short term contractors, is a challenge. Even the permanent workforce moves rapidly from project to project, and someone working on a new project may not find the appropriate resources. How can we communicate to our researchers the range of resources currently available, and how they can access them?

Our primary communication tool is the Webzine. AFFA’s internet section produces a daily zine that is emailed to all staff. We use it to announce the start of a new service, the loading of a new citation database, or access to a new electronic resource. It’s a simple direct method of communication. However, it’s also transitory. A month later, if a researcher suddenly needs to access an electronic document the library mentioned on the Webzine, it’s hard for them to know where to look. We need to develop paths from the Webzine back to the library catalogue.

The Webzine should be only for good news. Announcing that a particular electronic service is unavailable still, or again, is not good public relations. To communicate both good and bad news to the specific target group of users of the Electronic Reference Library databases, we use an email list. That way, bad news only reaches those whom it affects.

Some interfaces do not change very much, nor should they. AFFA has offices all over Australia. We see Canberra staff face to face in their workplace. Although we do not plan to visit our database users at Melbourne Airport, Mareeba or Bordertown, we do phone them. Visiting staff in groups of about 20 takes us a full year. It provides a great opportunity
to highlight new services of interest to that group of people. It gives them a chance to give us feedback about our services, both electronic and traditional.

User expectations
Users expect full text articles and documents. They want to avoid passwords. They want the service to do exactly what it says it will, reliably. They value simplicity and functionality. Our researchers also value local resources.

Just in time research
AFFA expects researchers to produce reports more quickly now than two years ago. Staff cuts and funding changes mean that the average length of time of a project is much shorter. Researchers now start a project, not with a comprehensive literature search, but with a search based on what they will be able to have at their desk in a week. They may have another week to absorb the content, and in the next week, they are writing. Sometimes the timeframe is shorter than that, sometimes longer. The effect is that the researcher asks for articles or books that are in Canberra. They are often prepared to go to another library to access the material, rather than wait for an interlibrary loan to arrive.

This pressure to produce a finished piece of research quickly means that clients are asking first about availability. It may be electronic, or a local physical resource. Cost is a secondary issue — some researchers would rather visit another library to browse the shelves than order fast-track document delivery. The value decision being made is that not only will the researcher find the requested items, but others too by browsing. It’s an economic decision that the value of browsing plus cost of researcher time is less than the cost of document delivery staff time plus the savings in researcher time.

Availability as advertised
Users expect that if something is advertised as being available electronically, it will be. The electronic resources librarian can set up access mechanisms to ejournals, check them regularly, yet the articles may not be available the day the user requests. The University of New South Wales Library’s study (d’Avigdor and Cargnelutti 2000) shows just how difficult it can be, and discusses the importance of managing user expectations. Some of the groundwork has been done for us — experience has taught the researcher that the internet is not a reliable medium. The attempts of electronic resource librarians to organise and provide simple access to known resources will always be frustrated by the chaos of the internet. Having another way of accessing the material is recommended where possible.

A journal aggregator provides journal checking services, and more. We use several, both paid for and free. From the user point of view, it is confusing. We point economists to
Econbase, a free electronic economics journal service provided by Elsevier. They come back to ask why they can access full-text of some journals, but not others. The reason is that we have subscriptions to some journals but not others. Users are ready for pay-by-use articles. They find it very frustrating to see a button marked Full Text, but not be able to access the article instantly.

Driving licence not needed

Our researchers have been using the UnCover Reveal table of contents service for some time. It’s simple, it works. It takes time to set up a dozen or more searches or tables of contents, because of internet response times. However, once it is set up, it only needs fine tuning when researchers’ interests change. It is a simple, reliable system.

We are now using the British Library’s inside service. This service has a long way to go before it’s easy for a researcher to drive. Someone at the British Library needs to read Neilsen’s ten good deeds in web design, or Tennant’s guiding principles for interface design (Neilsen 1999b; Tennant 1999b).

Current desktop library services

The main delivery mechanisms in AFFA bring library services ‘to the desktop’. However, discovering what is available on the desktop is not easy. Users can adapt — they soon learn that the electronic version of the phonebook is both on the intranet and in their Outlook mail. That is a service they know must exist, so they look until they find it. One problem for libraries is that users look elsewhere for a service that is available on their desktop. Jobseekers come to the library on Fridays to look at the paper copy of the Public Service Gazette. Yet it is available on a network drive on Thursdays.

Desktop services fall into distinct categories — web based, software specific, and email. Different delivery methods mean that different interfaces are inevitable. Some are better than others. The library’s role is to provide information, support and training so that it is easier for the user to find what they want — sometimes in spite of the interface.

Web based services

Several web services are available — the catalogue, the library web pages, access to internet databases, and access to electronic journals. Users are used to different interfaces at each website. Whether the design of those websites makes them hard or easy to navigate is beyond the control of the library. The library webpage pointing to a complex external site provides a helpsheet with navigation tips.
As time goes by, and more electronic records are catalogued, the value of the web based
catalogue increases. Users are able to go from the catalogue with one click to the item they
want. Setting up an internet service has benefits such as no software installation costs, and
no need for version control. Our users also access one internet based database, on fisheries
literature, without the need for passwords. When they find the citation, another browser
window opens at the catalogue record for the specific journal they are interested in.

However, there are times when specific web based services are inaccessible. The database
could be undergoing maintenance. Internet traffic might be so heavy that the user
experiences timeouts. Users expect 24 hour 7 day availability. However, sometimes that
is not the case, and the blame may go to the library instead of the remote web service. We
keep talking to our users, so that they understand what the library can control, and what it
cannot.

We provide access (both through the web based catalogue and a title list) to many electronic
journals. Most do not require passwords, as we have set the services up based on
recognition of AFFA’s IP address. It’s a service that users seek, and it’s always improving.
Managing electronic serial access has its own features:

- issues sometimes are not accessible when they are needed;
- sometimes full-text access is only granted for issues one year old;
- the most recent issues are only provided as abstracts;
- technical reasons mean that an ejournal accessible one day is not the next;
- electronic journal publishers do not send renewal notices.

Managing serials is ongoing and time consuming. Managing electronic journals is the
same.

Software specific services

Although electronic information is mainly accessed through the web, we choose to access
the databases via a proprietary Electronic Reference Library system. It’s fast, available
everywhere on the internal network, with high usage from Mareeba and Eastern Creek,
Sydney, as well as Canberra. When the researcher finds a citation, the next step is to search
the catalogue. We have set up links so that the database record says ‘This journal is held
by your library’, and a catalogue search window opens. This provides a smooth link
between software on a network drive, and the web based catalogue.
Email services

The best thing about email is that it is personal. AFFA library has access to several tables of contents services. Each individual researcher is set up for regular keyword searches, and tables of contents. Although internet access speeds mean that setting up the searches may be tedious, it is only necessary once. Researchers love their weekly emails. From a library point of view, it is a low maintenance, well targeted service. With a bit of effort, the citations can be transferred to Procite or Endnote, making it easy for researchers to manage their literature.

The personalised library

Researchers appreciate personalised email. What might the personalised library look like?

My library

Around Australia, AFFA has quarantine officers, researchers and policy makers, economists, geographical information specialists, entomologists and veterinarians. When they visit the library webpages, they all see the same thing. Imagine how it could be different:

An economist in Canberra checks the library to see if there is statistical information on the food industry. She is writing a paper on costs of paddock to plate. She searches the library catalogue, sees that the statistical CDs are located in the library. She comes to the library, finds the statistics, and emails the file to herself.

Next time she visits the library webpages, she is advised that the latest electronic issue of an Australian Bureau of Statistics food production bulletin has arrived in the library, and asked if she would like to be on the electronic distribution list. She sees that another area of the department, which works on Food Policy, has received a book on food chain management in the United Kingdom.

An entomologist from the Australian Plague Locust Commission dials in from his laptop in outback New South Wales. He has received an emailed table of contents, so he searches the catalogue to see the latest issue of the journal that has arrived in Canberra. He places a request for the journal so he will see it when it arrives, as it is not urgent. He visits the international journal database to add a new keyword search.

Next time the entomologist returns, he is greeted by name. Entomology journals that have arrived in the library that are not covered by the table of contents service are listed on the front page. A new locust webpage found by the electronic services librarian is listed for his attention. He is asked if he wants to renew some books, and asked if he wants circulating journals to wait at his desk until he returns, or to be passed to the next person on the list.
A quarantine inspection officer in Cairns has found a suspicious bee in cargo coming from New Guinea. He checks the citation database, finds an abstract with relevant identification information, cross-checks it with information provided by other departmental resources, and initiates quarantine procedures for an outbreak of Asian honey bee, which may carry a virus lethal to Australian honey bees.

Next time he checks in, he is notified that the latest zoological citation database has been loaded. There is also a suggestion that he might like to set up a keyword search on a journal database, to keep abreast of world honey bee movements.

The personalised library — it sounds like a dream, yet the technology is already in use. Advanced e-commerce sites have personalisation engines which follow the consumer as they move around the site. A cookie set on their first visit means their computer is recognised next visit. As the person makes purchases, the personalisation engine makes suggestions about similar items they may be interested in. In library terms, registering as a borrower could mean listing keywords, authors and journals to be included in a personal profile. Searches could be run regularly. When a journal arrives, the client would receive an email complete with table of contents, linked — where available — to full-text articles. The client could modify their profile at any time, as they work on new projects.

The combination of library services — alerts, journal and keyword searching, document delivery, purchasing, reference — into one electronic location, tailored to the individual searcher, is possible. All it takes is money, time and prioritisation. Information purchasing, whether to own or access the resource is expensive. If you can show your organisation some costs and some benefits, in dollar terms, the cost of personalisation software may become attractive. In fact, your organisation may have already purchased software which includes these features. Alternatively, you may be able to find the building blocks for your personalised library for free. Libraries, particularly US university libraries, have developed MyLibrary projects and are willing to share the code (Tennant 1999a).

**My document**

Are you ready for another internet revolution? Try this one.

You have probably used internet chat. You connect to a server, and chat to other people online. You have probably also heard of the upheaval in the music industry, as internet users copy pirated MP3 music files. Combine these two ideas with a piece of software called napster, and you have another way to cause fear in the music industry. Like internet chat, napster is a server environment. People log in, and napster lists the MP3 files found on each individual’s computer. People search and find music they want, and download it direct from someone’s computer somewhere in the world. The MP3 files are never held on the napster server, so copyright issues are the responsibility of the two people providing
and receiving the file. Naturally, they do not worry about details like that, or pay copyright fees.

Daniel Chudnov has invented a concept based on napster, called docster (Chudnov 2000). The software does not exist yet, but it might tomorrow. Researchers, libraries and casual users log in to the docster server. The docster server lists available full-text electronic documents on an individual’s computer. Another researcher logs into docster to look for a document. They find it, and download it.

Should this scenario cause as much panic in library circles as napster is in the music industry? Chudnov says no. In his model, the request goes to a local library docster server. It locates the document via another library’s docster server. The normal copyright process works because the libraries are involved in the transaction processing. The library does not hold the document. It provides access. The requestor receives the article within minutes. Everyone is happy. In fact, an additional benefit is the privacy that library to library requests provide for researchers.

Over time, the libraries themselves, instead of spending staff time processing document supply requests by photocopying or scanning, spend staff time scanning requested nonelectronic journal articles. This valuable integration of current document delivery systems with docster would also address the problem of accessing information that has not yet been made available electronically. If my library receives a document supply request for an article from 1960, we scan it and both provide it to the remote library, and make it available on my docster server. It is done once, and is available worldwide.

My catalogue

Napster and internet search engines raise another issue that cataloguers and indexers are ignoring. Napster does not index or categorise the millions of MP3 files in any way. It does not even discard stopwords. Users just search on whatever they think the title of the song is. The remote user may have the file name misspelled or incomplete, or they may have used an alternative title like the chorus or first line. However, because there are so many computers with this one song on, the requestor will most likely get a hit, no matter how inaccurate the request is.

Catalogues and citation databases are based on accuracy of searching. Being able to search specifically means that the researcher quickly knows if the item they are seeking is available from this source or not. The millions of hours put into assigning subject headings, keywords, making sure names are authoritative, has been a huge investment theoretically paid back by library users quickly finding what they want. Today’s library clients are using internet search strategies on catalogues (Pang 1999). Throwing every noun you like at a boolean search engine brings no results from the catalogue. Who needs to change?
If we adopt docster technology for document delivery, it would be a small step to apply unstructured searching to our catalogues. Personalised software can track a client’s movement through a website and deduce that someone interested in Asian honey bee migration patterns may also be interested in African killer bee movements. It should not be hard to adapt software to figure out that a library client searching for emissions might also be interested in carbon trading, and make that suggestion. Precision — for example, name authorities — also means that sometimes you, a trained and experienced librarian who knows your own collection, cannot find something. How much more difficult do we make it for our clients, by insisting on precision when the world around them is using computers to turn imprecise searches into sensible suggestions? Why don’t our catalogue searches provide the search results in order of the most relevant first? (Tennant 1999a).

**Simplifying desktop services**

Some services cannot be integrated to provide a simple one-stop library electronic desktop without sacrifice. Searching the networked databases is so fast that we do not plan to move to an internet version. We will wait until we discover a workable solution that is fast, reliable and is reasonably priced before we change.

Our desire to organise the chaos of electronic resources made us build a library website. Its purpose is twofold — to provide information about resources and access to those resources. The first version of our website attempted too much. We have come to realise that library users do not visit parts of our website. In our redesign, those parts will go. Instead of focusing on these questions:

What is the digital service I’m designing access to?

Where will it fit in the website structure?

we need to ask

What do users want from this digital service?

How will the website design lead them to it easily?

**Designing a library website for easy access to electronic resources**

You can design a wonderful library website, but the users may not know where it is located via the intranet. It is not easy for library clients in our building to find the library. We have made sure that finding the library website is easy.

To design a successful website, you must know what your users want. Use the logs of your current design to establish what is being used. Throw out anything that is not getting good
use. Simplify, remembering that small is beautiful. Check current website design principles including what not to do (Tennant 1999b; Neilsen 1999a). Design with updating in mind. Consider using a database, where webpages are served dynamically. The technology may already exist in your organisation. Designing a library website that is easy to update is going to save staff time every time it is modified.

Make a clear decision about where users will look first — the catalogue or the webpages? The catalogue can be accessed through the webpages, but which is the primary source of information? We decided that the thousands of hours that our cataloguers have put into developing a library catalogue of resources specifically tailored to AFFA meant that the web enabled catalogue is our primary resource. Traditionally, the purpose of the catalogue has been to help library users access resources. It is no different for electronic resources, and it means that users find most information in one place. The catalogue is enriched with information to make it easy for users to move through the catalogue direct to the electronic resource. Electronic documents are a click away. Electronic versions of journals are catalogued separately from paper ones where they both exist for a title. This allows us to include password information, and differentiate between paper holdings and electronic holdings. We take care, when downloading records from Kinetica, to ensure that the detailed information another library has input about access to FirstSearch, is removed from the record, and replaced with accurate information for our situation.

Sometimes, a catalogue record leads to a dead end. Records for electronic resources are no different from records for physical items. The records describing the databases that we subscribe to does not currently say: ‘To access this database you will need this software installed. Contact the library to have your userid and password set up.’ Making the catalogue the primary resource means we can identify these dead ends, and correct them.

The website’s purpose is to complement the catalogue. It provides background information, help sheets on how to use search software, and lists the subject areas covered by the databases. Where resources are discussed, there is a direct link. An example of resources better suited to the website than the catalogue is online newspapers. Consider what users want — is it today’s issue? Access to small regional weekly newspapers? Be careful not to reinvent the wheel if someone else has done it well — provide a link to a comprehensive newspaper list. On the same page, provide information about the dial-in full-text newspaper service only available in library. However, if your users have specific needs, tailor your webpages. Make it easy by installing a button to email reference staff.

Use the language of the medium. Instead of page after page describing library policies or services, turn it into an FAQ. Users know what they are — quick specific answers to questions. The Library FAQ can cover electronic reference tools, reference services, interlibrary loan policies and charges, purchasing and more.
Using new tools but not reinventing the wheel

When we design our library websites, deciding on whether we want a portal, a gateway or a website, deciding what information to put in what fields in the catalogue (will we put the password in a notes field?), we must keep the user in mind. A website that met our user needs three years ago is probably not suited to our users today. The internet world has changed. Designing the way we present our electronic and other library resources to our clients must be in tune with the times. We must talk to our clients about what they want to find through our website. After doing our best to meet those needs, we must test and modify it. I’m so glad Neilsen tells me we only need five people to test it (Neilsen 2000).

If you need a new tool, someone will invent it for you. All over the internet, people are facing the same problems as you, so someone will design a solution. It may be free. The ‘MyLibrary’ scenario I have painted offers more than one tool, for free. However, librarians know all about the true cost of ‘gratis’ material. It’s the same for electronic solutions. To set it up in your organisation will cost staff technical time, negotiation time with information technology services, and possibly associated software costs. The solution is not ‘free’ at all.

Control, chaos, crisis

Remember how proud you were of your first library website? Looking back on it now, you can see flaws that you could not see then — obstacles that prevented users from finding information, treasures buried four levels down. We learn from our attempts. We learn to live with chaos, and we learn that the control that we can exert over this wayward electronic world is limited.

We need to remind ourselves that the traditional library is not perfect either. We do not have access to all the books and journals that our clients want. Our catalogue is not perfect. Things go missing from the shelves. We should not be surprised that electronic resources sometimes vanish. We will certainly do our best to keep all links working, but we need to remind users that attempts to fully control even this little corner of the internet will fail.

We learn and we change. Our users’ expectations change. The organisation’s priorities change, and that also affects the way we direct our energies. People say libraries are in crisis. Libraries have been anxiously examining their role within their organisations to ensure continuing relevance. The Chinese character for ‘crisis’ is made of two characters, one representing danger, the other opportunity ‘(John F. Kennedy in Andrews 1987). If chaos represents danger, and control is the opportunity, we must find a comfortable position between the two, and we must expect to keep moving as the tension between chaos and control will continue.
References


