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"Developments in national services for academic libraries in the UK"

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1. Introduction

For many years academic libraries in the UK have co-operated in the purchase of access to electronic information services. The origins of this co-operation can be found in the development firstly of Regional Computing Centres, which during the 1970s and 1980s provided high performance computing for groups of universities and then in the development of a powerful, shared computer network which was used to link together all UK universities. The Joint Information Systems Committee (JISC) was created by the higher education funding councils for England, Scotland, Wales and Northern Ireland in order to manage the provision of the network. Towards the end of the 1980s a group of far-sighted university librarians realised that the new high-speed network, known as JANET (the Joint Academic Network) could be used to deliver information content as well as computing power and communications. They lobbied JISC to facilitate the provision of datasets – varied databases of mainly bibliographic data which could be accessed at any university. In reality such access was nearly always through the university library.

An extremely important principle was established at this time, namely that the datasets should be “free at the point of use”. Unlike many commercial services of that time, JANET datasets would not charge by the amount of time the user was connected to the service or the number of records they decided to download. Instead the annual costs of the service would be shared between JISC and the individual universities who wished to offer it to their members. The result of this decision was that the volume of use increased massively.

At about this time, universities and their libraries had installed clusters of networked PCs on campus. These provided increasingly open access to networked services, including the JISC dataservices. So, instead of online access being the privilege of the few, it became the right of the majority.

In order to deliver what were then (and still are) huge datasets, JISC established Bath Information and Data Services (BIDS), as its name implies, at the University of Bath. Over time a further two ‘datacentres’ were established at Manchester (Manchester Information and Data Services (MIDAS), now renamed Manchester Information and Associated Services (MIMAS)) and Edinburgh (Edinburgh Data & Information Access (EDINA)). Between them, these three datacentres deliver huge amounts of electronic information to academic users throughout the UK – for example, the whole of ISI citation indexes are available through the ‘Web of Science’ service at MIMAS. Various other services offer specialist datasets and support services, including:

- AHDS (Arts & Humanities Data Service)
 - e.g. Archaeology Data Service; History Data Service
- RDN (Resource Discovery Network)

- Classified Internet resources available via 'subject gateways' such as SOSIG (Social Sciences) and EEVL (Engineering)
- CHEST
 - software 'deals' for the HE community, enabling institutions to take advantage of consortial purchasing arrangements for software etc.
- The Data Archive (at the University of Essex)
 - large sets of social sciences data
- HENSA (HE National Software Archive)
 - Free software for downloading: PC software at Lancaster University; Unix at the University of Kent at Canterbury.
- JISCMail
 - the email service for the UK HE community.

2. The Follett Review

In 1993, the higher education funding councils decided that it would be timely to set up a review of libraries in the sector. The motivation was threefold:

- concern that ever-increasing book and especially periodical prices were preventing libraries acquiring the range of material which their users needed;
- concern that, despite this problem, many university library buildings were approaching capacity while the funding needed to build large numbers of new libraries and extensions was simply unavailable;
- a perception that the time was right for libraries to change fundamentally as they sought out and seized the opportunities offered by new information and communications technologies (ICTs).

The Review was chaired by Professor Brian Follett, then Vice-Chancellor of Warwick University. The Review Committee, known as the Follett Committee, contained not only library experts but eminent researchers and teachers, and those with experience of industry and commerce. Its Report was published in late 1993 (Higher Education Funding Council for England, Scottish Higher Education Funding Council, Higher Education Funding Council for Wales and the Department of Education for Northern Ireland (1993)).

Among the Follett Report's many recommendations, there was a series of actions which the Committee regarded as important in the development of ICT-based services. Some of these related to actions which could be taken by individual libraries and institutions, such as the development of clear information strategies. But of the greatest significance were the proposals to establish a national programme of development, to explore and find solutions to some of the most pressing problems that libraries were facing – and to seize new opportunities. Led initially by the Follett Implementation Group for Information technology (FIGIT), this programme rapidly became the Electronic Libraries Programme (eLib).

3. The eLib Programme

In its first two phases eLib funded projects in the following areas:

- ◆ Electronic Publishing
 - Electronic Journals
 - Pre-prints and Grey Literature
 - Quality Assurance and Teaching
- ◆ Learning and Teaching

- On Demand Publishing and Electronic Reserve
- Digitisation and Images
- ◆ Resource Access
 - Document Delivery
 - Access to Network Resources (the Subject Gateways)
- ◆ Training and Awareness
- ◆ Supporting Studies

While many of these projects were successful in the limited terms of the projects themselves, relatively few showed the promise to convert into national services. Among those that did, the subject gateways – providing access to quality assured Internet resources in different subjects – were among the most prominent. However, the learning which took place among the projects, for example clarifying the issues which needed to be resolved if electronic document delivery was to be successful, was invaluable and set the stage for the next phase of activity.

Phase 3 of eLib, then, saw a change of emphasis with four main approaches being pursued:

- ◆ Hybrid Libraries
- ◆ Clumps or Large Scale Resource Discovery
- ◆ Digital Preservation
- ◆ Turning projects from phases 1 & 2 into services

Hybrid libraries were defined by the eLib Programme Director, Chris Rusbridge:

‘The hybrid library was designed to bring a range of technologies from different sources together in the context of a working library, and also to begin to explore integrated systems and services in both the electronic and print environments. The hybrid library should integrate access to all ... kinds of resources ... using different technologies from the digital library world, and across different media.’ (Rusbridge, 1998)

‘Clumps’ were similar to hybrid libraries in some ways, but used distributed services (based on geographic or subject consortia). They have been described as follows:

‘A complementary idea emerges when the individual library is considered in its broader context. This context may be geographic -- for example, within a metropolitan area. It may be based on subject domain, such as medicine or music. It could be created from a commonality of interest -- as for example with the major academic libraries in the Consortium of University Research Libraries (CURL). For the individual user there is a need to present these groups as if they were a single resource -- they are brought together as a ‘clump’. The clump will be presented through a consistent interface -- indeed for many purposes the user may not need to be aware that the different libraries even exist. So, for example, the ‘music’ clump could be presented as a single resource, available to users of all its constituent libraries. For some services, of course, the source library will need to be known -- for example, when the user decides to go and consult the physical stock. The management of the clump is complex, because it relies on co-operative agreements between different libraries which have different resources, different clienteles and different missions.’ (Brophy and Fisher, 1998)

Digital preservation activity was designed to cover two areas, the digitisation of material which was originally in analogue form, and the preservation of material which was 'born digital' – in other words it was originally created in digital form with no paper or other precursor. The National Preservation Office of the British Library was, and remains, heavily involved in this work.

A summative evaluation of phase 3 of the eLib programme is now available (Whitelaw and Joy, 2001). This Report concluded 'eLib Phase 3 was a successful programme which has met most of its objectives and has had significant impacts for a programme of its size'.

4. The Distributed National Electronic Resource (DNER)

In 1999, JISC determined that the electronic libraries work, the dataservices and a number of other initiatives should be brought together under the banner of the Distributed National Electronic Resource (DNER). This was defined in the following way:

'The Distributed National Electronic Resource (DNER) is a managed environment for accessing quality assured information resources on the Internet which are available from many sources. These resources include scholarly journals, monographs, textbooks, abstracts, manuscripts, maps, music scores, still images, geospatial images and other kinds of vector and numeric data, as well as moving picture and sound collections.' (JISC, 1999)

In other documents, however, JISC refers to the DNER as 'a comprehensive collection of electronic resources' (Joint Information Systems Committee, 2000a) and 'the main academic apparatus required for research and teaching in the full range of main subject areas' (Joint Information Systems Committee, 2000b). As we note below, these differences reflect different understandings of the DNER among stakeholder groups.

Be that as it may, the essence of the DNER lies in the provision of quality-assured data in a systematic and collaborative framework direct to end users in universities. In early 2001, agreement was reached to extend the scope of the DNER to include all 'further' education colleges i.e. all provision for post-age-16 education throughout the UK.

In addition to the electronic content (which includes both bibliographic resources and full text), the DNER will provide a number of services. These will include user authentication, payment mechanisms and 'fusion' of content. The last of these implies that the DNER will supply content which has been carefully selected to meet the user's needs, gathered from a variety of sources and integrated before presentation to the user. The prevention of 'information overload' will be an important challenge. Such services will be built upon the gateways (SOSIG, EEVL etc.) developed under eLib, but will become sophisticated 'portals'.

5. Evaluating the DNER

In summer 2000, a contract was awarded to the Centre for Research in Library & Information Management (CERLIM) to undertake a major formative evaluation of the DNER's development. The EDNER (Formative Evaluation of the DNER) project – with a value in excess of 1,000,000 – will run until summer 2003, and has four distinct strands:

A – The evaluation of the DNER’s development through funded development projects;

B – The evaluation of the development of subject portals, providing access to quality assured content;

C – The evaluation of the impact of DNER development projects on teaching and learning.

X – A cross-project strand, including project management and dissemination, but with a focus on trying to answer the question, ‘What is the DNER?’.

Strand C is being undertaken by the Centre for Studies in Advanced Learning Technologies at Lancaster University, a research centre based in a Department of Educational Research which is bringing expertise on pedagogy to the project. Information on EDNER is available at the project web site (EDNER, 2001).

It is still too early to announce results of the EDNER project, but some intriguing findings are becoming apparent. The DNER means different things to different people, as was apparent from the early JISC statements. Discussions with stakeholders have led us to identify a variety of models that lie behind these different views of the DNER. It may be seen as:

- A Publisher
As with any other service in the scholarly communication chain, the DNER has features which suggest parallels with both traditional and emerging models of publishing. For example, it addresses the quality assurance of content – it is selective in what it publishes – and it provides facilities to enable that content to be distributed, often with payment mechanisms.
- A Traditional Library
The DNER appears to be replicating or replacing some of the functions of traditional libraries, such as the cataloguing of content, its preservation, the provision of enquiry services and the provision of (in this case, virtual) study ‘spaces’.
- A Museum
Some DNER development projects are explicitly designed to digitise museum content. Also, the traditional museum function of organising materials coherently for themed display – as well as, again, the preservation function – find direct parallels in the DNER.
- A Digital Library
Perhaps most obviously the DNER has features of a digital library: an organization “that provide resources, including the specialized staff, to select, structure, offer intellectual access to, interpret, distribute, preserve the integrity of, and ensure the persistence over time of collections of digital works so that they are readily and economically available for use by a defined community or set of communities” ().
- A Hybrid Library
As noted above, the idea of the ‘hybrid library’ emerged during the eLib programme. To repeat Rusbridge’s definition, “the hybrid library should integrate access to all ... kinds of resources ... using different

technologies from the digital library world, and across different media". To achieve this, it must be highly sophisticated both in the intelligence it has about its users and in its knowledge of potential information sources. The DNER seeks to achieve all of this.

- An Internet Gateway
In DNER terms, gateways are effectively ordered lists of Internet resources; the eLib gateways, now part of the Resource Discovery Network (RDN), form a key component of the DNER. They are organised by subject, and constantly update their links to professionally evaluated resources.
- A Portal
Using definitions suggested within the DNER, a portal differs from a gateway in that the user is not directed to another site in response to a query (as, for example, when a URL displayed by a gateway is clicked). Rather the portal accepts the query, itself interrogates a series of resources, intelligently interprets the results (e.g. deduplicating) and then presents a result to the user. To date portals, on this definition, remain experimental. However, they are seen as a key part of the DNER, and a major strand of effort is dedicated to their development.
- A 'dot.com' company
The dot.com sector provides some lessons for characterisation of the DNER (leaving aside the financial problems it is currently experiencing). In brief: dot.coms need both a high profile brand and a high quality product; excellent marketing; robust yet simple payment mechanisms; reliable and rapid delivery mechanisms. The DNER needs all of these.

As the EDNER project progresses it will explore the implications of all these models and will monitor how they are being implemented.

6. Conclusions

The development of cooperative, IT-based, national-level academic library services in the UK now has a history going back at least fifteen years, and practitioners have considerable experience in developing such services and exploiting their potential. The Distributed National Electronic Resource represents a step-change in this area, providing a sophisticated environment which will be used to deliver innovative services direct to the end-user in a seamless fashion. The EDNER project will be observing these activities and providing informed feedback to participants to assist the development to succeed in the long term.

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