Hello, I’m the new co-editor of C&I. I’ve been a member of the committee since 2011 and helped organise the CIG12 conference in Sheffield. I am really excited about this new role. In my day job, I work as Cataloguing team leader at Sheffield Hallam University.

I’ve really enjoyed working on C&I 170 and would like to thank Heather for her support and also all authors for finding the time to produce articles for this issue.

In this issue we look at developments with discovery layers and other interesting developments with the catalogue interface. I hope you find this issue both useful and interesting. It is definitely a really important and developing area for libraries.

Future issues this year will be on social media and cataloguing, authority control and RDA. If you have an interesting idea for an article or something you wish to share, please do consider writing, or encouraging others to do so!

Best wishes

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Sheffield Hallam University is currently undertaking a review of next-generation library management systems (LMSs). As part of that exercise I have considered discovery services and interfaces on the market and looked at developments in discovery/OPAC display. This article reviews the main options available and offers suggestions as to what factors libraries may wish to consider when evaluating discovery services, concentrating on products which are deployed in the UK; there are others which are worthy of consideration such as Bibliocommons\(^1\), eXtensible Catalog\(^2\), and Visualizer\(^3\) from VTLS.

As electronic resources began to grow as a proportion of collections, traditional OPACs became more limited as a means of directing users to the resources they required. Federated search, searching across a number of discrete databases from a single interface, became popular around the millennium but was only partially successful. Cross-searching databases with differently structured metadata produced patchy and incomplete results. Federated search may have been most useful in highlighting to the user which databases to search.

Around 5 years ago, as libraries were finding that traditional OPACs were not able to guide users to non-print materials and articles, and that federated search was not a satisfactory solution, ‘web-scale’ discovery services began to emerge, built around unified indexes of licensed scholarly publications combined with metadata for the local catalogue and other local content, with a Google-like simple search box, and a consolidated, single result list. In the intervening years they have become increasingly popular, particularly with Higher Education libraries, where it is common to deploy a discovery service separate from the OPAC, and often from a different supplier to the library’s LMS. First to market was OCLC’s WorldCat Local in 2007, followed by Serials Solutions’ Summon in 2009, and in 2010 EBSCO Discovery Service (EDS), Innovative Interfaces’ Encore Synergy and Ex Libris’ Primo Central. All are considered below.

Library system vendors have updated OPACs in recent years to have a fresh look and feel and functionality similar to the discovery services, with faceted search limiting and web 2.0 features, and in some cases the ability to ingest other local data (such as digital repository data) alongside catalogue metadata. For example,

\(^1\) http://www.bibliocommons.com/
\(^2\) http://www.extensiblecatalog.org/
\(^3\) http://www.vtls.com/products/visualizer
see Capita’s Prism⁴, or SirsiDynix’s Enterprise⁵. However these products remain hampered by their inability to offer access to licensed 3rd party or article level data. The 'web-scale' discovery services promote discovery across the whole library collection, not just catalogued material.

A question that should be asked of discovery layers is whether they are making use of RDA (Resource Description and Access) to enhance displays. RDA is organised based on FRBR (Functional Requirements for Bibliographic Records), "Identifying 'user tasks' which a library catalogue should make possible and a hierarchy of relationships in bibliographic data"⁶ RDA supports clustering of bibliographic records (‘FRBR-isation’) to show relationships between works and creators, and make users aware of different editions, translations or physical formats.

There are broadly, 2 categories of ‘discovery layer’ distinct from the OPAC

1) powerful search interfaces on top of locally built indexes, (potentially with data from different sources), created and maintained by the library.

2) vendor-hosted indexes, including items the library has no local metadata for, but to which the library can add its own local data (the 'web-scale' discovery services).

The library has more control over category 1, and over how local metadata is indexed and searched, but category 2 is generally required to provide access to resources at article level. The leading products in both categories are considered below.

**Discovery interfaces on local databases**

Blacklight - [http://projectblacklight.org/](http://projectblacklight.org/)

Blacklight is an open source product, not affiliated or coupled with any LMS⁷. It can provide a discovery interface for any index built using Apache Solr. The Solr index can include data from several sources, e.g. catalogue, digital repository or other collections.

Blacklight has a clean, modern interface which is customisable. It offers faceted browsing, relevance based searching (with the ability to locally control the relevancy algorithms, as opposed to the proprietary relevance

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⁴ [http://www.capita-softwareandmanagedservices.co.uk/software/pages/libraries-prism.aspx](http://www.capita-softwareandmanagedservices.co.uk/software/pages/libraries-prism.aspx)

⁵ [http://www.sirsidynix.com/enterprise](http://www.sirsidynix.com/enterprise)


⁷ [http://projectblacklight.org/](http://projectblacklight.org/)
algorithms used by the web-scale discovery services considered below), bookmarkable items, permanent URLs for every item, and user tagging of items. There is a variety of filter options and sort options – language, format, location, topic etc. Availability of items can be looked up in real time from the LMS. Like the ‘web-scale’ discovery services considered below, Blacklight can present the user with formatted citations.

Blacklight is used by a large number of libraries in the USA, including University of Virginia, Stanford University, Johns Hopkins University, and WGBH (all of which have contributed to the product’s code).

In the UK, University of Hull uses Blacklight for their institutional repository - [http://hydra.hull.ac.uk](http://hydra.hull.ac.uk) and also offer a Blacklight version of the library catalogue, [http://blacklight.hull.ac.uk/](http://blacklight.hull.ac.uk/) alongside Hull’s Millennium OPAC. However as Blacklight cannot provide access to databases, full text articles etc, University of Hull also offer Summon.

**VuFind - [http://vufind.org/](http://vufind.org/)**

VuFind was developed by Villanova University and was released in July 2010. Like Blacklight, it is open source software and not affiliated or coupled with any LMS. VuFind is however marketed and supported in the UK by PTFS Europe, primarily as the discovery interface for the Koha LMS.

VuFind also uses a Solr index and can index locally sourced metadata from disparate sources, including but not limited to the library catalogue. It presents a simple, Google-like interface with keyword searching. It can also be deployed as an interface layer via APIs to search Summon, EDS or Primo.

VuFind is modular so it is up to the user how many features and functions to implement. Its open source nature allows technically minded users to modify modules or add new functionality.

Over 100 institutions are using or evaluating VuFind. Institutions running live instances include the London School of Economics, the National Library of Ireland, Yale University, Birkbeck College and University of Kent.

VuFind offers limiting by facets including format, call number, language, author, and genre. Other features include suggested resources and searches, browsing, creating lists, texting, e-mailing, tagging, and commenting features, persistent URLs, and multi-language capability.

However, as with Blacklight, VuFind cannot index 3rd party data or provide access to databases, full-text articles etc.

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8 [http://vufind.org/wiki/installation_status](http://vufind.org/wiki/installation_status)
Another discovery layer which can harvest data from the library catalogue and other sources but does not offer an index of 3rd party database content is Aquabrowser from Serials Solutions.

Aquabrowser is a well-established product used by more than 700 libraries worldwide. It is offered as a hosted service.

Aquabrowser offers library-configurable relevancy ranking and faceted browsing, with unlimited facet categories. Item availability is retrieved from the LMS in real time. Aquabrowser can integrate with most LMSs, offering "the most extensive ILS support of any discovery layer" and it also offers web 2.0 social features.

The Aquabrowser interface presents a tag cloud to the left of results, and facets to the right. The interface was revolutionary when first deployed nearly a decade ago, but is now somewhat dated. Few libraries are now deploying Aquabrowser for the first time as the ‘web-scale’ discovery services or open source rivals offer superior functionality.

Web-scale discovery services

Vaughan summarises what ‘web-scale’ discovery services offer as content, discovery, delivery, and flexibility (i.e. LMS and other system agnostic). Using any of these services the user can search beyond what is owned/licensed by the library - which presents both pros and cons.

All of the ‘web-scale’ services offer integrated chat widgets, icons to represent content types, full-text searching, relevancy ranking, limiting and sorting and permalinks. All allow search boxes to be embedded in other websites.

In all cases, cataloguing takes place in the LMS – metadata is not created directly in the discovery service. Hence, all the ‘web-scale’ discovery services treat metadata from different sources differently, which can cause issues with search and retrieval. Han points out that to maximise functionality of discovery services, libraries should review current cataloguing practices to better serve users’ needs.

9 http://www.serialssolutions.com/en/services/aquabrowser/features


Serials Solutions’ Summon is a hosted, cloud-based, multi-tenant system. Summon is used by over 500 libraries worldwide and 16 in the UK. It is not coupled with any LMS at present and can be used in tandem with many different systems. Summon does require regular catalogue data updates (as do the other discovery services, if deployed separately from an LMS), but can look up availability of holdings from the LMS in real-time. As with any of the discovery services if deployed separately from the LMS, the lack of integration with the LMS means users are not presented with a direct link to reserve/renew items, or check their account. However Serials Solutions is developing a new "Library Services Platform" or next-generation LMS, Intota, which is expected to be fully integrated with Summon.

The Summon service is built around a central index which includes, alongside local catalogue records and data harvested from other local sources (e.g. digital repositories), content from 3rd party suppliers of databases and e-journals. Serials Solutions highlights as unique to Summon the large amount of Abstract and Indexing database content, available to libraries subscribing to these databases.

The user is presented with a simple search interface and results are returned quickly, with facets to the left of the screen for narrowing search results.

If the library wants to offer a different interface to the default, Summon can integrate with Serials Solutions’ own Aquabrowser, and also offers a suite of open APIs for use by third party vendors. A library can build its own interface using Summon’s API or use an existing interface such as VuFind or Blacklight to search Summon.

Summon default interface is easy to use and intuitive. However, there are resources which are not indexed, and the service fails to link to some resources, particularly those provided by EBSCO. (Conversely, EBSCO’s EDS is poor in providing access to resources provided by ProQuest, the parent company of Serials Solutions).

Summon works well on mobile devices. The refinement options from the left of the screen move to the top of the mobile screen quite neatly. However, third-party content linked to from Summon often does not display as well on a mobile screen. This is not a problem with Summon itself, and indeed this is also the case when using any of the other ‘web-scale’ discovery services on a mobile.

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There is a new release of Summon approximately every 3 weeks. Unlike Primo, World Cat Local and EDS, it was built from scratch, not based on an existing product.

Summon is primarily marketed to academic libraries and a subscription is based on Full-Time Equivalent student count. Implementation typically takes 2-3 months, though can be done in as little as 6 weeks.

Unique to Summon is the ‘database recommender’. Using this feature the library can promote databases whose full text is not available via Summon using keywords which when searched on by users can link to those databases.

Part of the Summon service is a statistics package including reports on number of searches performed, and commonly used search terms.

Summon's effectiveness depends on what type of resource the user is are looking for, and whether they need 'just enough' information, or everything available on a topic. The needs of undergraduates can be contrasted with those of researchers; the latter will still need to use databases outside Summon.

Primo Central - http://www.exlibrisgroup.com/category/PrimoOverview

Ex Libris’ Primo Central, like Summon, is built around a unified index of aggregated data. From a single search box users can explore local collections, and 3rd party resources, presented in a single, relevancy-ranked list. Not all subjects are covered as well as others in the Primo Central index. Primo however can also perform federated searching in addition to searching the central index.

Primo can be used with any LMS but is integrated with the Ex Libris LMSs Aleph and Alma. Users in the EU are unable to use any other discovery layer with Alma. Primo Central harvests bibliographic data from Alma daily, and looks up holdings and availability in real time. Primo has over 1200 users worldwide 14.

Primo Central is sold as a hosted, cloud-based service, though it can also be locally deployed. It is built on the Primo system which was launched in 2005. Primo is relatively expensive to licence, compared with competitor services. Pricing is based on Full-Time Equivalent students and number of local records indexed.

The Primo interface can be extensively customised; APIs allow libraries to more or less build their own interface.

Unique to Primo is the bX recommender service for scholarly articles, directing users to content other users have viewed based on what the user is looking at, built around usage logs.

14 http://www.exlibrisgroup.com/category/PrimoOverview
Primo is easy to use, like Summon presenting a relevancy-ranked list of results that can be narrowed by selecting facets from the left-hand pane.

Primo also looks good and works well on mobile, but the mobile site does not offer the full range of functionality of the service.

Usage statistics are provided as part of the service. A new version of Primo is released quarterly.

**EBSCO Discovery Service - [http://www.ebscohost.com/discovery](http://www.ebscohost.com/discovery)**

EDS is not coupled with any LMS, and EBSCO has not announced plans to develop a library services platform. (However EBSCO is partnering with SirsiDynix, Capita and Innovative Interfaces to offer its centralised index to users of the LMSs provided by those vendors).

EBSCO’s stated aim is to give as good a user experience and functionality as searching academic research databases.

EDS is another hosted, cloud-based service. Subscription pricing is based on the institution’s Full-Time Equivalent student count and level of service (number and types of local resources indexed). EDS offers content from nearly 20,000 providers.

The library can customise the interface to a degree, including the institution’s own corporate colours and logos.

EDS offers a single search box to search the library catalogue and databases. The interface is based on the long-established EBSCOHost platform (launched 1994). Content includes Netlibrary eBooks. Link resolution is not required for EBSCO content, though it is for non-EBSCO content.

Results are ranked by relevancy by default and result sets can be limited using facets in the left pane. Unlike the other ‘web-scale’ services, EBSCO explains the relevancy algorithm used on its support website. Since 2011, EDS has offered a level of FRBR-isation in search results.

Additional resources to search can be added in the right pane (federated search). Other features include RSS feeds and email alerts, spell checking and citation formats. Results are returned quickly.

In my testing I found EDS was not optimised for mobile screens as well as some of the rival services.

Perhaps because it aims to meet the needs of postgraduate and academic researchers as well as the simpler searching needs of undergraduates, EDS is not so intuitive and easy to use as Summon or Primo, and as noted above, access to ProQuest databases is poor.

[^15]: [http://www.EBSCOhost.com/discovery/about](http://www.EBSCOhost.com/discovery/about)
EBSCO claims to offer superior metadata to the rival ‘web-scale’ services, and also to offer more searchable full-text. EBSCO claims "the overwhelming majority of the most respected indexes do not provide their metadata to any discovery service"\(^\text{16}\)

Statistical reports are provided with EDS. For EBSCOHoest databases, these include number of sessions and searches, number of abstract views and number of full-text article requests.

An EDS implementation typically takes 8-10 weeks. EDS may be a good choice for libraries which are already familiar with, and subscribing to content on the EBSCOHoest platform, with which EDS is integrated. As with the rival services, there are gaps in coverage in some subject areas, e.g. law, market research, but the coverage is improving (also as with the rival services).

**WorldCat Local - [http://oclc.org/en-UK/worldcat-local.html](http://oclc.org/en-UK/worldcat-local.html)**

OCLC’s WorldCat Local is built around the WorldCat database (as of 18 Jan 2013 containing bibliographic data for 775m articles and 233m books). WorldCat Local also provides access to OCLC licensed full-text databases via WorldCat, with a federated search component for non-OCLC licensed databases.

WorldCat Local interoperates with local LMSs for retrieval of real-time item availability, and is fully integrated with OCLC’s WorldShare LMS. OCLC’s link resolver is built in to WorldCat Local.

Like the other ‘web-scale’ services, WorldCat Local offers relevancy ranking of results, facets for limiting result sets, enriched content including book jacket covers and descriptions/contents pages, web 2.0 social features and links to Amazon and Google Book Search.

WorldCat Local does FRBR-ise results, but reaction to this is mixed. Editions and formats are grouped together but the most popular rather than the latest edition is shown in the summary of results.

WorldCat Local searches all of WorldCat (unless scoped to only search locally) and sends local search results to the top of the list. Some resources are promoted better than others in WorldCat Local search results.

The centrally indexed WorldCat record is displayed and not the library’s local bibliographic record. Indeed WorldCat Local works best if a library uses OCLC for cataloguing; otherwise frequent batch loads of catalogue records are required to keep the service synchronised with the local catalogue.

WorldCat Local is priced lower than the rival ‘web-scale’ services (pricing based on library user population). It is used by 399 libraries worldwide but presently by fewer than 10 libraries in the UK. Unlike the rival services, WorldCat Local is marketed at all types of libraries rather than focussing on the academic sector. A typical

\(^{16}\) [http://www.ebscohost.com/discovery/technology/platform-blending](http://www.ebscohost.com/discovery/technology/platform-blending)
WorldCat Local implementation takes 2-3 months. A suite of statistical reports is provided, and the mobile version of the service works well.

There are quarterly WorldCat Local releases. The WorldCat Local product is currently undergoing a re-architecture and the new version will be released in early 2014.


Encore Synergy from Innovative Interfaces is integrated with the Millennium and Sierra LMSs, but can be used with other systems.

Encore Synergy offers faceted search, and relevancy ranking, together with social features.

Facets are presented to the left of the screen and optionally a tag cloud and more services to right of results (this can make for a cluttered screen). In my testing Encore Synergy did not work as well on a mobile screen as some of the other discovery services, simply displaying the standard interface on the smaller mobile screen.

Unlike Summon, Primo Central, EDS and WorldCat Local, Encore Synergy does not offer an integrated catalogue and article search – they need to be searched separately, though in the same interface.

Encore Synergy has no centrally aggregated index but instead accesses publishers and aggregators in real-time through web services, a form of federated searching.

**Conclusions and looking to the future**

According to Luther and Kelly\(^\text{17}\) discovery services can be evaluated on content (scope and depth, richness of metadata, frequency of updates), search (simplicity of interface, quality of results etc), fit (ease of implementation, compatibility with existing systems, responsiveness etc of vendor), and cost.

Interoperability with the LMS/OPAC is an important consideration in selecting a discovery service. However the OPAC as a separate entity may be dying; neither Alma nor Intota offer an OPAC distinct from the discovery service. As Breeding puts it, traditional OPACs are usually still made available alongside the discovery service because "I continue to hear voices of dissent from not just librarians, but also from groups of library users with more complex requirements"\(^\text{18}\). However these traditional OPACs are getting older all the time and not being actively developed. Lorcan Dempsey said in 2012 "There is a renaissance of interest in the catalog and catalog data. Yet it comes at a time when the catalog itself is being reconfigured in ways


which may result in its disappearance as an individually identifiable component of library service." Dempsey

cites facets and FRBR-isation as ways to "make the data work harder".

Technical support for the discovery service is another consideration. Open source tools may need more
management/configuration/technical expertise (though there are companies which offer support at a cost). The
proprietary services depend on the service provided by the vendor, which may be as relevant a consideration
as functionality. Libraries may also be looking for an active user community - all of the services considered
above have an active email list where users will support each other.

The differences in content between the services should be considered when selecting a service, but they are
becoming less pronounced as the vendors strike more deals with content providers. It should be borne in mind
that there will always be some content not indexed by any of the discovery services, and for that reason, some
libraries may still see a role for some degree of federated search.

The library should always ask, "how does a discovery service enable your users to find the resources they
need?" Focus on the user experience is critical - even if it breaks professional standards.

In conclusion, Paul Stainthorp is correct in his assessment of the ‘web-scale’ services that “the differences
between [them] are not that significant….thinking that …there are some ‘good’ and some ‘bad’…is probably
wrong. It’s not really about the product, it’s about the willingness of the vendor to overcome problems, and
about their attitude to their customers” Stainthorp also highlights de-duplicating via FRBR and known-item
searching as weaknesses common to all services.

A difficult task but one that should be attempted is to make sure a solution is future-proof. Libraries should
monitor vendors’ development plans for discovery services. Ken Chad advises reference to Gartner’s
technology trends for 2013 which include moving to mobile, moving to the cloud, actionable analytics, and
strategic Big data (aggregation of data from discrete sources).

Looking to the future, particularly regarding metadata, it will be interesting to see the results from NISO’s Open
Discovery Initiative which “aims at defining standards and/or best practices for the new generation of library


20 http://paulstainthorp.com/2011/05/17/how-commercial-next-generation-library-discovery-tools-have-nearly-got-it-right/

21 http://www.slideshare.net/kenchad/jibs-discovery-servicesfeb2013kenchad

22 http://www.gartner.com/newsroom/id/2209615
There are signs in the market of a move to integrated systems, bringing the LMS and discovery services together (e.g. Alma and Primo, Intota and Summon, WorldShare and WorldCat Local; none of these LMSs will work with a discovery service from another provider). From the vendor’s point of view this offers more control of the solution space and systems that are easier to support. From the library’s point of view an integrated solution could offer cost savings and simplified configuration and workflows. This is a developing situation and it is difficult and may be dangerous to predict medium or long-term trends.

http://www.niso.org/workrooms/odi/
Introduction

Library management systems were some of the first systems to take advantage of the web in the late 1990s\(^1\), as a means of providing easier access to library catalogues and opening up the collections. As the web developed through the first decade of the 21\(^{st}\) century, though, it became apparent that the web interfaces used for the OPAC were limited in their capacity to present the riches of our catalogues to their full extent. Existing interfaces were capable of being tweaked, to considerable degree in some cases, but lacked the flexibility that was evident on other websites, and particularly other websites offering information services\(^2\). The library catalogue was no longer the primary place to discover information, but one of a number of sources, and OPAC interfaces have needed to rise to this challenge.

The concept of a 'next-generation' OPAC interface has emerged, with the development of a range of new products from the library management system vendors, and the concurrent development of new thinking on what makes a good OPAC in the information age\(^3\). These interfaces have, in many cases, broken the direct link between the underlying catalogue and its interface, often requiring a copy of the catalogue to be made and updated for the purpose of providing access. Whilst this has demanded new detailed processes be put in place it has also provided much of the flexibility that was previously lacking. The interfaces have adopted search techniques commonly found on other websites (e.g., faceted browsing), and also sought to place catalogue records alongside other sources of information (e.g., journal article information) to present a coherent and full picture of available resources to the end-user.

The emergence of next-generation interfaces has not been solely commercial, but has coincided with active open source development of technical solutions for libraries that can be considered on an equal footing with commercial products for those looking for a new interface\(^4\). Blacklight is one such development: a close equivalent would be VuFind. This article describes Blacklight's background and capability and then focuses on its specific implementation at the University of Hull.

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3 Wisniewski, J 2009, 'Next-Gen OPACs: No Time Like the Present', Online, 33, 5, pp. 54-57  
4 Singer, R 2008, 'IN SEARCH OF A REALLY "NEXT GENERATION" CATALOG', Journal Of Electronic Resources Librarianship, 20, 3, pp. 139-142
Blacklight was first created at the University of Virginia (UVa) in 2007 as an offshoot of a project to provide access to a digitized collection of 19th century documents⁵, the project developing the Collex software suite⁶ for this purpose. The Library was at that time seeking a next generation OPAC, and adapted Collex to meet its specific needs – Blacklight was born. UVa recognized that the long-term sustainability of this new interface, like many open source initiatives, required the development of a community around the software, to stimulate further development and foster wider adoption. The software was made publicly available in 2008 and the community has steadily developed since that time. The software has a website – http://projectblacklight.org - and there are an increasing number of implementations around the world⁷. Software releases, the measure by which system development can be gauged, have been regular and well managed across the community, and the latest release is now Blacklight 4 (released November 2012).

Technically, Blacklight is essentially an interface over a Solr index⁸. Solr is itself a widely used open source indexing technology from the Apache Foundation, building on the commonly used Lucene search technology. It is from Solr that Blacklight gets its ability to offer faceted browsing, relevance ranking, and full-text searching. Solr is also the basis from which the name Blacklight derived.

\[
\text{Solr + UVa = Blacklight}
\]

Blacklight is not just a set of screens over the underlying index, though. It adds its own flexibility in how the index can be displayed. Four principles underpin what Blacklight seeks to enable:

- Any type of record or metadata can be presented, so long as it can be indexed by Solr (which effectively means any records with a structure)
- Items can be presented with object-specific behaviour. In other words, images or manuscripts can be displayed differently to books. This allows different items to be displayed to their best advantage.
- Discipline-specific views can be presented, enabling items to be displayed to particular audiences in ways that may suit them best.
- Local modifications can be easily added to suit local needs and views onto the catalogue

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⁵ See: http://www.nines.org/
⁶ See: http://www.collex.org/
⁷ See: https://github.com/projectblacklight/blacklight/wiki/Examples
⁸ See: http://lucene.apache.org/solr
These principles derive from Blacklight’s origin, in a project addressing the varying requirements for presenting 19th century documents. Flexibility has been at the core of Blacklight ever since.

The first two principles also slightly belie Blacklight’s primary role as an OPAC interface. The majority of current implementations have as their focus the delivery of MARC records, as indexed into Solr using a utility called solrMARC\(^9\). However, many of these implementations also include a variety of other records within their Solr index, for example archival EAD and MODS metadata records. A good example of the variety of items that can be presented is the Rock ‘n’ Roll Hall of Fame\(^10\), whose collections encompass a very wide range of materials that they wished to provide access to through a single interface. Other implementations hold no MARC at all, but have as their focus different types of material entirely.

Notwithstanding this, Blacklight offers a range of functionality akin to many other OPAC interfaces, as follows:

- Personal search history
- Persistent links to all items (and search requests for repeat searches)
- Results sorting via a number of options (configurable to suit need)
- Export as a citation
- Support for Unicode and non-Roman scripts

Additionally, Blacklight enables the use of external services that may be of use, for example:

- Links to social media services (the list is configurable) for sharing
- Export to bibliographic management systems (RefWorks, EndNote, etc.)
- RSS and Atom feeds for all searches
- Embedded Google APIs (allowing the inclusion of a link to Google Books, for example)

The various implementations available to view on the Examples page of the Blacklight website demonstrate how the different features can be exploited. Reviewing these, a common look and feel will be noticed, as the software comes with a basic design. However, others demonstrate that almost wholesale change can be carried out to suit local needs. Following work undertaken at the University of Hull, a decision was taken with version 4 to adopt a design toolkit, Bootstrap\(^11\), as part of the default software. Bootstrap was created by


\(^11\) See: [http://twitter.github.com/bootstrap/](http://twitter.github.com/bootstrap/)
Twitter, and enables simpler customization, increasing the flexibility of the system still further.

Blacklight@Hull

The University of Hull first encountered Blacklight in 2009, as part of involvement in a wider project developing an adaptable digital repository solution – the Hydra project\(^\text{12}\). With its ability to surface different types of record Blacklight suited the needs of Hydra as a way of presenting the mixed item type collections held within many repositories. Our implementation of Hydra during 2011 thus used Blacklight as the default interface to the University of Hull institutional digital repository\(^\text{13}\).

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\(^{12}\) See: http://projecthydra.org

\(^{13}\) See: http://hydra.hull.ac.uk
Noting the primary use for which Blacklight was being used elsewhere, though, as an OPAC interface, we also decided to explore how we might use Blacklight as a next-generation interface over our Millennium catalogue. The University was fortunate to be awarded JISC-funding for this prototype implementation in 2010\(^\text{14}\), which sought to assess the feasibility of this approach. An addendum to the project explored how we might bring catalogue and repository records together to surface both through the single Blacklight instance. The project was successful on both counts, and gave us the impetus to explore further how we might use Blacklight for the catalogue and other collections (e.g., archives) as well as the repository.

**Blacklight and Millennium**

A production version of Blacklight over Millennium was produced during the summer of 2012. The primary reasons for instigating this were twofold:

- we wished to explore how we could provide a next generation interface for our users and gauge their reaction to this, without necessarily incurring the expense of one of the commercial offerings
- we wished to exploit the experience of working with Blacklight through the prototype and repository work to deliver a fully-working Blacklight catalogue, with a view to informing how we might develop our discovery options in the future

The work involved was broken down into two halves: the development of a process to export records from Millennium into the Solr index on an ongoing basis; and the development of the interface itself.

**Exporting records and mapping fields**

Blacklight requires that a copy of the catalogue records to be presented is made, and indexed using Solr. Implementing Blacklight we initially took a full copy of the catalogue to provide the initial seeding of the index. Subsequent to this, a process that sends new records, updates and deletions to Blacklight was instigated.

In both cases the mechanism for exporting records starts with running relevant reports within Millennium, using its Create Lists facility to ensure only those records currently displayed on the catalogue were captured. The export of the entire catalogue, containing over 800,000 records, was done in four batches. These were then transferred manually via a shared network drive to the Blacklight server where they were indexed using solrMARC. This process in itself did not take that long, and a working version of Blacklight was available early on in the project.

Subsequent to this an automated process was developed using a scripting language called Expect\(^\text{15}\) that has

\(^{14}\) See the project’s final report and blog at http://blacklightathull.wordpress.com

\(^{15}\) See: http://www.nist.gov/el/msid/expect.cfm
been used by a number of institutions for similar purposes. Two specific reports have been set up, one to capture new and updated records and one to capture deletions. These run nightly. The Expect script then exports the results from these reports and ftps the records to the Blacklight server where they are processed accordingly, and the index updated. Emails are sent to Library and IT staff to inform them of what changes have been made so a QA check can be made against known cataloguing activity the day before.

A key aspect of the deletion process is ensuring that we do not remove the records from Millennium before they are captured for the overnight update and deleted from Blacklight. As such, records are suppressed on Millennium rather than deleted, and a batch deletion is carried out on a monthly basis. Only certain staff are able to delete to prevent accidental deletions taking place.

A separate process is being used to export e-resource records from the ERM module. These are non-MARC records, but are structured, and have been fed into the same index for use in Blacklight.

There have been odd occasions where the overnight process has not worked correctly. This has resulted in minor discrepancies in the two copies of the catalogue. Whilst this has not proved to be problematical thus far, we plan to re-take an entire copy of the catalogue to Blacklight periodically to ‘catch-up’ on these discrepancies, whilst monitoring the situation to assess the frequency of this required.

In order to ensure that what appears in Blacklight is the information required, some time was spent making sure that the data from the MARC record output, including that from the fixed fields within the Millennium system, was mapped to the correct Solr index and display field. This was important to make sure the options in the facets offered were correct and to make the display work better. One element currently missing is the ability to browse authors, but so far this does not seem to have generated any comments from users. However, Blacklight has provided the ability to begin a search by browsing format, location and subject in a much easier way than with the Millennium catalogue.

**Interface development**

A decision was taken early on in our implementation to make use of the Bootstrap interface toolkit. This was informed by the desire to deliver a fresher interface to the current catalogue, and one that could sit easily alongside other web environments our students would be using. It also provided additional flexibility of presentation to allow us to explore options in how the catalogue was presented.

The development itself made use of an agile development process. An initial specification for the design was created and a rough implementation of this put together. There then followed a series of cycles of comment and further implementation until the interface was completed. This enabled ongoing discussion on what worked and didn’t work in the interface and, it has to be said, a number of changes of mind once an initial idea
had been seen in action.

The front page of the catalogue is deliberately designed to stand out, whilst the results pages are consciously uncluttered. Book cover images are sourced from Syndetics.
Figure 4. Blacklight@Hull single record page

The display, as can be seen, is quite different to the Hydra repository implementation, and highlights the different look and feel that Bootstrap offers. The other main difference between the two is the emphasis on search in the OPAC, where most facets only appear following a search, compared with the equal presentation of both within the repository. This was implemented in the OPAC on the basis of usability findings from Blacklight implementers in the US. Future user feedback will inform whether this is the best option over time.

Whilst records are copied to Blacklight in batches, the display of availability is a live lookup in Millennium using Z39.50. The use of Z39.50 in this way, and similar use of this approach in the Talis Aspire reading lists system, has led to some issues regarding the number of concurrent accesses the OPAC can take which we continue to monitor. However, the user experience does not appear to have been adversely affected.

The new interface was made available alongside the existing OPAC interface in October 2012\textsuperscript{16}.

Blacklight usability

As part of the JISC project in 2010 we carried out usability testing using an interface similar to the one now used for Hydra. Feedback from this indicated a liking for the uncluttered design of the front page, whilst highlighting that the search box needed clear prominence. When viewing results a large body of (student) interest was expressed in the ability to generate a citation for an item in a range of formats. The major concern related to the way relevance ranking works (it is a configurable part of how Solr works) and preferences

\textsuperscript{16} See: http://blacklight.hull.ac.uk
indicated for how results should best be ordered.

No formal usability testing on the new interface has yet been carried out. However, comment and feedback has been possible since the interface was launched, and has been very positive.

- “The new interface is a lot more user friendly, I find it easy to navigate my ways around to exactly what I want. It looks more modern and simple. The old style was just confusing and boring.”

- “Have just accessed the Blacklight version of the library catalogue for the first time via my iPad, and was offered the opportunity to download the App for quicker access in the future. I wasn't expecting that! Brilliant!”

The latter comment highlights a further advantage of Bootstrap, the provision of responsive design. This enables the OPAC to adapt to the device it is being viewed on, including mobile and tablet devices.

**Future developments**

With the ability to serve up different types of records, Blacklight offers the opportunity to allow a single point of access to many collections. Key possibilities include the catalogue, the repository, and the archives catalogue: other departmental catalogues could also potentially be included. We have also recently adopted Summon, and Columbia University has used Blacklight to present catalogues alongside Summon results as separate results lists. Set against this is the possibility of incorporating everything in Summon in one results list. Key to deciding which approach will suit best will be identifying the benefits of managing a local index and, hence, the merits of developing Blacklight further.

Future plans for the use of Blacklight as OPAC await confirmation. The feedback has highlighted additional functionality that could usefully be added, not least to mirror Millennium user functions such as requests and bookings: these are being added to further our understanding of how this next-generation interface can serve our needs. Overall, using Blacklight has provided a valuable opportunity to review our OPAC and wider discovery options, and what it is most useful to provide. It has also demonstrated the continuing viability of using an open source option, in terms of both the technology and community this offers.
In this article, I will describe how we integrated our catalogue data within the Summon discovery layer. I will look at how it is indexed, search and displayed. I will give an overview of the searching and modifying options available and examine how well these features work with library catalogue data. I will also look at usage analytics and usability testing as an approach to evaluating a discovery layer as a catalogue search tool.

At Hallam, we are keen to ensure that our students can access our information resources using the latest discovery options available. In 2010 we evaluated the discovery system market and after careful consideration decided to choose the Serials Solution Summon discovery platform. We specifically liked the idea of the "Single search box" which had been identified in student surveys as something students wanted. It would be able to offer a unified search for journal articles, library catalogue data and other resources. Our library catalogue data has approximately 420,000 bibliographic titles.

Marc mapping

Like most Summon installations, we decided to include Library Catalogue data in the discovery layer. In order to do this, we first needed to complete a MARC21 mapping exercise to map the MARC21 fields we used with those available in Summon. Summon does not support the full range of MARC21 tags, so we therefore needed to find suitable alternative fields to map some data to. For example, in Summon, there was no equivalent 245|h [gmd]. We have used the gmd option extensively for format information and so regarded it as important enough to be mapped to a 500 note field. This meant that it would be keyword searchable and also display.

Content mapping

We used the fixed field material types in Millennium to map to the 41 content types which are available to Summon customers. You cannot set your own content facet values, but it is now possible to rename content facets locally. Mapping was quite straightforward: an exception was the need to have a streaming video facet. Our collection includes a significant amount of online video content and so needed to push the user group to support the introduction of a “streaming video” content type. We also requested that our full-text availability facet be expanded to include all online content such as online video. This also ensured that the resource icon would have the online "sunburst" symbol and made online video easy to identify.

The content type facet you map to will determine the icon displayed with the resource. Visually, icons are not always that easy to identify but results do also have a content label under the resource description. All customers use the default content icons.
Daily updates

We needed to find a mechanism for sending daily catalogue updates to Summon for processing. We wanted to send a MARC21 update file to Summon 15 minutes after staff services closed each day. We purchased the Millennium Scheduler software to facilitate this process. This allowed us to set up a daily task which would search for new records, updated records and records with a delete code and then ftp the data to the Summon site for processing. We hoped that this would be a fully automated process. However, due to not being able to express a relative date in the Saved search in Millennium and the need to supply a unique file name to Summon, this operation requires routine human intervention. We discovered that it can take about 72 hours for catalogue data to be updated in our Summon instance. It is quite frustrating not to have real time updates. There can also be specific problems with this. For example, the publisher withdrew the digital rights to a popular eBook. It was flagged for deletion in the ILS, but showed in Summon for a number of days. There is also no notification service from Summon to inform libraries that their data has been received and processed. In order to minimise any data slippage, customers are recommended to send a fresh load of catalogue data every quarter.

Matching and merging of records in Summon

The Summon service contains content from a variety of providers, including over 7000 publishers and over 100,000 journal and periodical titles. It uses a match and merge system to deliver a single Summon record for articles. The Summon service will also apply a match and merge process to print and electronic book content and print and electronic journal titles. In order to merge two records the following criteria must be met:

1. A unique identification number must match, e.g. ISBN, OCLC, LCCN.
2. The publication year must match and the record must have only one publication year.
3. The title must be at least a partial match

Searching in Summon
There are two approaches to searching in Summon, known locally as “Library Search”. Most users start with the “Single box” from the Library gateway page, enter in a search term, view results and then opt to refine by a set of facets on the left hand side e.g. Items available online, Peer-reviewed, Content type, Publication date, Library location, Date, Author, Subject terms, Language, Genre, Region, Time period. Facets are not hyperlinks, they are boxes that require ticking to select. Most searches will return a high number of results, so use of the facets would seem necessary. This creates a two-step approach for the user. Each time the user performs a search or adds a facet which includes catalogue data, Summon will do a live look up of circulation data from the ILS, which can sometimes slow the search down.

Using facets to refine a results list is central to the Summon experience. Users need to do quite a lot of scrolling to view them all, e.g. our subject facets are quite low down the list. The content type facet is a key refinement. Locally, our default search will exclude both Book reviews and Newspaper articles. The initial result set will deliver the 6 highest result content types. All other content types will require the user to select the “More” button to pull up the full list for the search. Some library catalogue content such as video or audio material will often appear in the "More" section. We have set the content type list to alphabetical order rather than by highest results order, to create a consistent list order. The Usability Committee’s recommendations for Summon improvement (2011) available from the Summon Community wiki, comment that facets look "more like navigation tools than limiters" and suggests some improvement.

"Advanced search" offers more specific types of searching. You can enter search terms such as subjects, words from the title, author/creator, ISBN/ISSN, journal title or date range. You can also limit to results available online, peer reviewed or items from the catalogue. It can generate a more precise result set with less need for use of facets. Using the Advanced search for author/creators will deliver much better results. Summon supports phrase searching and the use of Boolean operators.

**Summon and Library of Congress subject terms**

Summon’s approach to Library of Congress Subject headings has some limitations over the standard catalogue. The terms from the Library catalogue data are keyword searchable in Summon. From an initial search it will then take all the 6xx subject strings, for example:

```
Architecture -- United States -- History -- 1900-2000
```

Then separates each element into the following facets:

```
Subject – Region – Subject –time period
```

This will create a range of facets which can be used to refine a search to produce a shorter result set.

However, the relationship between the topic and its subdivisions is lost. Controlled vocabulary from other
resources such as journal articles will be blended into these facets and can create synonyms in the list.

When you look at a specific resource in the result set you will see that it offers links to Subject terms. However, it does not retain the relationship between the topic and its subdivision. The term "Tourism -- Environmental aspects" from the example below is now two headings, if I select "Environmental aspects" it will launch a new search for that term.

**Sustainable tourism: a global perspective**
by Harris, Rob; Griffin, Tony; Williams, Peter
... This book offers an introduction to the concepts of sustainable tourism. Tourism, Ecotourism, Environmental aspects

Searching in Summon will not expose users to any Library of Congress Authority records or links. Sheffield Hallam's standard catalogue offers Library of Congress Authority control for names and subject terms. However, users who input a non-preferred term into Summon will not be directed to the actual Library of Congress term. This can be a problem in certain searches. At Hallam, users have been searching for “film scripts” and it would be helpful for them to be instructed to use “Motion picture plays”.

**Google-like searching**

Some Google-like features are available in Summon. An autocomplete feature can be switched on which will make suggestions as it matches against the searching history of the entire Summon customer base. We have decided against using this as it could suggest titles that we do not have in the collection. This could cause issues with “known item” searching rather than topic searching.

A Google-like feature which we have activated is the related search suggestion list. From the user's search, Summon will offer suggestions based on real-time Summon usage data across its entire customer base and might guide users to related concepts and expanded queries. See example:
Searches related to **twitter**

- twitter microphone for the masses
- twitter marketing
- twitter power tweets as electronic word of mouth
- twitter journalism
- twitter power
- twitter politics
- twitter and journalism
- twitter arab spring

It does not always deliver suggestions, but it can generate some interesting search terms.

**Book, eBook and full-text indexing**

We export our MARC21 eBook records from the catalogue into Summon. However, we have also switched on our holdings for major eBook collections in the Summon knowledge base. This means that the titles are then exposed to full-text or table of content indexing where possible from the Summon service. This does mean that we often have a duplicate eBook link, like this one below. The first link goes direct to the resource, the second one goes to the link resolver. This doesn't seem to be a problem for users.

The Summon service has indexed the full-text of books from the HathiTrust Digital Library, a group of libraries who are participating in the Google Books scanning project and other mass digitisation initiatives. This means that any of our library catalogue content in Summon, which is within the HathiTrust collection, will be full-text searched. At present, we have just over 46,000 titles which are being full-text searched in this way. This is definitely a good thing for our users as it will provide a huge number of additional search terms. When results are returned specifically due to full-text searching rather than the bibliographic data, the Preview display will state "**why is your search result here?** Your query matched the full-text indexing" This can help explain any strange results from full-text searching.

Titles exposed to full-text indexing will appear as a merged record for both the eBook and Print book title.

**Testing complex and embedded systems**

by Pries, Kim H and Quigley, Jon M

2011, ISBN 1439821402, p. 312

"An Aubuch book" – t.p. Using combinatorial approaches, this book aims to testing organizations to perform meaningful testing. The text... Complex computer systems, Testing

- Book: AVAILABLE, 1 week, 004.21 PR (LEVEL 2), Adsetts Main Collection
- eBook: Full Text Online
**Discipline scoped searching**

Summon contains a huge quantity of indexed content, at Hallam we have over 55 million online results. The size of the collections can create issues for searching. This could be addressed by activating the Discipline search option. There are 59 disciplines which come from a combination of discipline classification sources: Columbia University’s Library of Congress Classification hierarchy, Ulrich’s and the Serials Solution knowledgebase. It would enable you to create a scoped search box widget and might be used in a subject page. We have not opted for this at Hallam as we felt the disciplines do not match our subject profiles and not all content was indexed. In theory, if you applied a search for "stress fracture" using the Medicine discipline you would then get very different results to using the Engineering discipline.

**Presenting catalogue records in Summon**

The preview icon will allow users to see further information about the resource. It can either be set to show bibliographic data from the Library Catalogue record, or a Summon “Details page” can be activated and configured. This can include a LibraryThing rating, Table of contents Summary and/or reviews from Syndetics (if the library has a subscription). Custom messages such as lending policies can also be displayed.

We have opted to have the preview content from the Library Catalogue as we felt that it was important for users to see bibliographic content from the local catalogue record.

Summon uses direct linking to resources when the content type is eBook or eJournal and there is just one 856 field in the record. Whilst this is very helpful to most users, it means that when there is a single 856 field it is possible to navigate to the Library Catalogue record.

**Usage analytics and usability testing**

It is really interesting to analyse the usage data that is available from the Summon Support Center. It will allow you to see how users are searching for catalogue content. You can search by date range and look at the top 500 searches. This will reveal whether users have used single or multiple word terms, phrase searching, wildcards, book title, author and word from title or a Dewey number search. Unsurprisingly, I noticed that the most popular search is “Research methods”.

We are also using a Google analytics tool developed by Matthew Reidsrow from Grand Valley State University in order to further examine user's search behaviour. It provides information such as the type of link user's select (Document, Image, Preview, Summary), clicks based on position in the results list (84.9 % select the highest positioned result) and the content type they select (56% journals, 21% books, 13% eBooks). (Data from February 2013)
Usability testing is also a really important way to find out the strengths and weaknesses of a Discovery layer such as Summon. Matthew Reidsrow (2011) describes how usability testing might be conducted and why it is important to help improve the search results screen for users. At Hallam, we are conducting similar usability tests on a regular basis by asking users to perform a range of searching tasks.

**What next?**

At Hallam, we made a strategic decision to promote Summon “Library Search” as the main catalogue interface. It is even used on the stand alone Catalogue terminals within the library. Whilst, the standard catalogue is available and is used, it is not considered helpful to promote two search tools. I feel that the integration of a library's resources into a single Discovery layer is the desired goal. It also has many benefits such as full-text searching of book content. However, I would like to see our current discovery layer evolve further to ensure that a library’s catalogue data and local collections are easily discoverable within the vast result sets on offer in the discovery layer. Serials Solution announced Summon 2.0 in March 2013, it will be a major refresh to the Summon search interface and will offer significant improvements.

**Reference list**


**Further information**

Sheffield Hallam University library gateway
[http://library.shu.ac.uk/](http://library.shu.ac.uk/)

Columbia University Libraries Hierarchical Interface to Library of Congress Classification
[https://www1.columbia.edu/sec/cu/libraries/bts/hilcc/categories.html](https://www1.columbia.edu/sec/cu/libraries/bts/hilcc/categories.html)

Hathi Trust Digital Library
[http://www.hathitrust.org/](http://www.hathitrust.org/)
This article looks at UEL’s experiences as an early adopter of Alma and user of Primo version 4. After making the decision in 2011 to become an early adopter of Alma, in August 2012 UEL became the first European academic institution to start using this new cloud based Library Management System as a real life solution.

During the past few decades, the UEL experience of cataloguing and indexing generally typified the majority of academic institutions across Europe. During the late 1980s and early 1990s, catalogue records were moved from card to microfiche. By the mid 1990s records had been transferred to an automated library management system starting with an early version of Talis. The process of automation progressed during the following decade, leading towards the implementation of Aleph in 2009.

The promotional information about Alma for prospective cataloguers or metadata librarians emphasises the potential for collaborative metadata management. This is attributed to the integral central knowledge base (CKB) which allows metadata to be shared as part of resource management which means that cataloguing is not undertaken in isolation. Metadata can be pulled from external sources. Many cataloguers will of course already be aware that this service was already possible in Aleph through Z39.50. However, through that gateway it was necessary to enter each individual institution. Alma helpfully condenses the workflow by removing this step and allowing the Librarian to enter directly into multiple sites at the same time. The end result is that the Librarian is theoretically now able to travel longer and further, sometimes for free within an environment that has been branded the Community Zone.

Alma actively supports the trend towards open access and metadata which is already in progress and evident through channels available from organisations such as the Open University, the University of Southampton and the Library of Congress. This is one of the key areas where Alma is likely to have its greatest impact - on cataloguing workflows - also known in Alma terminology as Metadata Management. The encouraging nature of this observation must however be tempered by the acknowledgement that the quality of the records available for download varies greatly. It remains true that records which are purchased are more likely to be of a higher standard.

Librarians already familiar with Alma’s immediate predecessor, Aleph, are likely to find the learning curve required for Alma to be relatively intuitive. Even if you are a total newcomer to using Metadata within such a sophisticated true cloud-computing solution, it is unlikely that any librarian familiar with modern automated library management systems will take long to get to grips with using it. Alongside this reassurance there is practical assistance in the form of custom written help guides. The downside to these help guides is that they use the suppliers’ new (preferred) terminology. This has made the need for a detailed glossary as important as
the guides themselves when using the documented help available.

Using the Resource Management module within Alma highlights the need for good core cataloguing skills. It is evident that users must have a fundamental understanding of MARC records in order to achieve the desired bibliographic outputs. Generally, the preparation of elements is not difficult due to the level of thought put into the system by the developers. However, having the guidance documentation and if possible a good systems team close at hand facilitates the learning curve and the overall cataloguing experience during the first few attempts.

The main visual differences for the Librarian in using Alma is that the bibliographic and holding records are distinct in this system (See Figures 1 and 2 below). The holding record is in MARC format and displays the classification. When ordering items, ALMA automatically creates a holding record which needs to be edited on receipt of the new item. This latter requirement has been less than helpful to the experience of team members less familiar with MARC format. The explanation given is that they view the changing holding record as somewhat complicated. On the other hand team members have been appreciative of the fact that with this system there is less typing involved, which in turn theoretically reduces the risk of errors. Once the holding record is in place the only remaining task required of the Acquisitions Operator is to ensure the addition of barcodes.

![Figure 1: example of Physical item catalogue record (MARC)/Bib record](image-url)
The metadata management system (i.e. cataloguing) in Alma supports multiple metadata formats, including MARC, Dublin Core and MODS. Our experience of using Alma as a live solution has made it clear just how much consideration has been given, by its developers, towards meeting the expected needs that will accompany the fast moving trend towards an increasingly digital future particularly in reference to collection resource management. Although Alma is now live, some of the main workflows in use during this early stage are not yet static. Changes are made on a regular basis through monthly releases and we are already aware that the cataloguing procedures, as described above, are likely to be subject to change in the near future. The current flexibility of the system and the scope for change has facilitated the ongoing development and transition of our internal practices and processes. A fact that is illustrated by our current activities to facilitate the process of implementing embedded order data (EOD).

Despite the dynamic aspect of the workflows, the requirement for adherence to procedures and processes is essential. The impact for the Metadata Librarian is that is possible to develop and maintain greater consistency and reliability in reference to the bibliographic outputs. This is supported by a feature that despite its benefits of consistency, we hope will soon be revised, due to the fact that it has had some unfavourable effects on staff time and service levels. When the required workflow is not followed correctly records become locked, which means that they can only be edited by the last viewer or editor. The impact of failing to follow these procedures has therefore proven to be off-putting for staff members who are still in the process of developing their familiarity with Alma as a new Library management system.
Alma does provide an element, particularly appreciated in comparison to other systems, which is viewed as a bonus by all team members involved in cataloguing. It is now possible to restore earlier versions of a record because the system automatically archives all saved versions of records thereby allowing the Librarian to revert back to, select and reinstate previous versions of records. This is a practical feature available in various other cloud computing storage solutions, which in Alma has been cleverly incorporated into the metadata management system providing a very useful metadata safety net.

One final cataloguing or metadata experience based observation with reference to Alma, before we move on to Primo 4, is that the community zone remains a work in progress. In its current incarnation, the extent to which, and how, it will contribute to the future clarity of ownership is an obvious point for debate. As metadata standards develop there is the potential that MARC will be the cataloguing language of the past. However, it remains to be seen whether RDA will reach far enough or if the cataloguing community will need to move forward in investigating new standards, learning and creating new languages.

UEL uses Primo as its resource discovery platform which has been branded at UEL as Library Search. Primo harvests metadata from Alma on a daily basis. Each item must have a holding record associated with a bibliographic record in order to appear in Primo. The UEL journey towards the implementation of version 4 of Primo has run in parallel to the progression towards Alma.

During the late nineties, the UEL systems team operated two separate interfaces. In 2009, UEL migrated to Primo 2 and this was implemented working alongside the Web OPAC. This transition was made as part of the Library and Learning Services strategy, in recognition of the growing requirement to facilitate the technical developments transforming the management of information resources. Central to this strategy was the requirement for an integrated solution for electronic resources. Primo 3 followed in 2010 with the enhanced elements of Bx, BibTip, Syndetics and Primo Central. In July 2012, prior to going live with Alma, UEL implemented Primo 4. Instead of searching through multiple front-ends, UEL library service users are able to search through one front-end which provides an experience that meets the typical search facility expectation, the primary one of which is speed. It has become clear that users of the UEL information resources are highly motivated to use and reuse the resources by the provision of consistent discovery and delivery.

Primo uses a system of integrated facets enabling the user to start with a fairly broad search and then to refine it to match their requirements by selecting facets. At the same time it carries out federated searches of different subscription databases on multiple platforms simultaneously. Our experience has been that it has taken longer for undergraduate students to actively appreciate the benefits of facets whereas Postgraduate students, particularly as researchers, have already developed their familiarity and awareness. The latter is also true of Academic staff. Of additional benefit to Academic staff and researchers is the
fact that Primo also harvests data from ROAR, which is the institutional repository of open access publications at UEL. This data is contributed from it to the Primo Central index for discovery purposes. As a research archive, ROAR preserves and disseminates scholarly work created by members of the UEL. It exists as an online publication platform that offers free permanent access to anyone.

Where Primo displays search results showing several items to have identical bibliographic records, it applies a process of de-duplication before displaying a single merged record. Primo handles different representations of the same titled work, such as a book, film or CD by implementing FRBR (Functional Requirements for Bibliographic Records) and collecting these results into a single display group. This enables people to search in a familiar Google style by using a single search box to search through all the sets in a range of databases.

FRBR has yet not proven to be the desired universal remedy. The legacies of variable standards within past cataloguing records in combination with historic inconsistencies can also lead to the provision of inappropriate or irrelevant results. Future advances such as the introduction of Resource Description Access (RDA) which is designed to complement FRBR and minimise the effect of these inconsistencies, will hopefully advance the situation.

Our final observation in sharing our experiences would be that whilst Primo has so far shown itself to be a useful solution towards the goal of maximising the potential of Alma, the reverse is also true. Alma, which focuses on the digital rather than print resource, is likely to beneficial to the ongoing progression of resource discovery solutions such as Primo. Future or next generation library management systems will have the advantage of seeing what everyone else has done and the various mistakes made en route. In theory this should enable them to build more attractive solutions. At present, there are no other cloud based alternatives to Alma. In time this will undoubtedly change and it may be Alma that provides a model for future cloud-based library management solutions which allow for fast dynamic developments focussing on active and practical input from the Library community.

Links for reference

http://www.dlib.indiana.edu/~jenlrile/metadatamap/seeingstandards_glossary_pamphlet.pdf - Glossary of Metadata Standards

This article is based on a presentation given in September at the NAG conference in York.

The Mining Institute is based in Newcastle upon Tyne with a collection of around 65,000 items covering mining of all types, worldwide, plus allied industries such as the railways, shipbuilding, and canals. There are books, journals, maps and archives plus a few objects stored across a large building in a variety of sequences.

Open source was an obvious choice for a library running on a very small budget. I had been impressed by the presentation of OS at Umbrella in 2011, and had researched it further through LISA thanks to access via CILIP. To fulfil the specification we needed, a traditional LMS was being quoted at £15-20,000; a completely impossible figure. The trustees were pleased to hear there was an option without a yearly fee and with more flexibility in the program. We had previously had a very poor experience with a standard LMS and then difficulties in extracting our data, so we wanted independence and complete ownership of the entire catalogue.

We experienced a complete crash of our previous system in November 2011 and solutions from Support were not helpful. We were very lucky to have some outstanding ICT volunteers who were prepared to put a great deal of time into retrieving the data. The Institute has a very strong volunteer team with over 12,000 volunteer hours per year.

Initially we planned to use Koha, but then during the decision process we took on the libraries of the Stephenson Locomotive Society (North East) as well as the Tyne Industrial Archaeology Group to add to the existing two collections of the Robert Stephenson Trust and the Mining Institute’s own books. Each of those collections needed to display the owner of the item on the catalogue, and some collections are lending (to their own members) as a further complication. We decided to effectively create branches within one building to keep the collections separate whilst still displaying all the items within one search and shelving them together. This was beyond the capacities of Koha so we began to explore Evergreen.

Evergreen had the technical capacities, however the cataloguing input screen was much more intimidating and completely MARC based which would not fit well with our volunteer cataloguing team. We are using volunteers to catalogue report series; I create a standard template and then they change the report title, authors, report number, pagination and year for each report. This needs to be as user friendly as possible, rather than only showing codes. Koha displays the MARC coding but also gives an explanation for each tag.

The unexpected suggestion from our lead ICT volunteer, James Watson, was to merge the capabilities of the two programs giving us the power of Evergreen with the user friendly interface of Koha. This did take considerably more time than expected to get both running on Windows together! It was also a steep learning
curve for me as I had never encountered the MARC behind the catalogue previously and it had only been touched upon very briefly in the MA course cataloguing module. Learning about indicators and authority records took me a while to process but I did get some amazing help from other librarians via LIS-Link and Twitter. People were extremely patient and kind, giving their time and expertise to answer my questions and help me get started.

The main problems we encountered were actually due to errors and issues with the old data. It was poorly organised in the existing file structure behind the program, and there were also a huge number of missing records where the catalogue record had never been saved up to the server as the old program closed down faster than the record could be saved creating “ghost records” with blank content. To me as a librarian, the quality of the old data was simply not satisfactory and I decided to implement a full item by item stock check. This is obviously a massive task, especially alongside my enquiries work, but as a sample showed that up to a third of the books on a shelf were not on the catalogue, so it was the only option. I now have a target of 15 books a day (thanks to Katie Flanagan’s blog question: [http://librariankatie.blogspot.co.uk/2013/01/special-collections-cataloguing-targets.html](http://librariankatie.blogspot.co.uk/2013/01/special-collections-cataloguing-targets.html)) to be reclassified, catalogue record checked/created from scratch, and reshelved. Alongside this I can highlight items with conservation needs or those which could be removed from the collection.

The new system was named JAMIE, and all the records finally migrated. Currently, all the records from the previous system display, and those which have been checked through the stock check process show as being on shelf with items. It has been a larger project than we anticipated; we estimate it would have cost £25,000 to develop the program, although we believe it could now be replicated for around £6000 p.a. per site from the lessons learnt from our implementation. It has been really satisfying to work directly with the software developers to suggest user-friendly changes and adjustments. Even better, this can continue into the future with further changes as needed as the library grows and develops.

User feedback has been good so far; the catalogue is available at [http://opac.mininginstitute.org.uk](http://opac.mininginstitute.org.uk) please do try it out. Further improvements are continually being added, and items are gradually appearing as the stock check continues. User visits to the site are rising rapidly along with further enquiries and requests for copies and items. I only hope we do not fall victim to our own success as time spent answering requests means less time available for cataloguing!

The Institute has also been invited to join SUNCAT and so we are checking our journal holdings. Our long term goal, once the stock-check is complete, is to also join COPAC and advertise the holdings of the library more widely.
Introduction

A library can be a place of discovery, collection, curation and learning. In many ways, facets of the traditional library user experience are analogous to games. There are rules of use, challenges, players of different abilities, rule-keepers and obstacles to surmount, even the fact that libraries offer finite resources introduces scarcity into the mix which is a compelling game mechanic.

By amplifying some of these inherently game like facets or mechanics, and augmenting them with more explicit interactions that are game-like such as competition and reciprocity we arrive at an experience which is gamified. In gamified experiences we’re using structures that make games work, to catalyse, augment and enhance interactions between patrons and in effect, shape their behaviour to promote positive outcomes.

Game components

- Goal Based Activity
- Choice / Control Paradoxes
- Mastery
- Points and Rewards
- Narrative Immersion
- Leaderboards
- Set Collection
- Attractive Interfaces
- Virtual Currencies

One significant positive outcome of using the game facets above could be promoting the use of the library, another could be sparking social interactions or even getting the patrons to meaningfully connect and contribute to the enrichment of a resource. Incentivising tasks such as reviewing a book which ordinarily have no recognition of a contribution associated with them can also be quite compelling.

The story of Librarygame

Back in 2010, at Running in the Halls, we were a small independent company interested in the library world. Without an in-depth knowledge of how library systems function behind the scenes and without any assumptions of what is possible, we began looking at crafting a system specifically for libraries which would act as a motivator of behaviour and fit within the ecosystem of the library management system and catalogue.
For years we were appalled with the poor usability present in OPACs and how far behind we thought they were in terms of accessibility and aesthetics, so we considered improving upon them and doing things better and using our expertise in the areas of making games with the polish and lustre that we would give to our corporate clients.

We didn’t seek to replace any existing systems but looked at finding ways of augmenting them. Affecting the user experience positively and creating something which users would love, was an infinitely larger motivation factor for us than writing another piece of software.

Our aspiration was and still is simple, to create a game that was far reaching and generic enough to be enjoyed by *many*, while maintaining the perspective on how we could make something like this scale sustainably. To do this, we started our journey by conducting our own user research and prototyping our vision in visual mockups and approaching libraries which we were familiar with, namely our town library and the University we once studied at, the University of Huddersfield. We wanted to specify as much as we could before we ended up at the coding stage.

*Fig 1. Image of mockups / low fidelity paper sketches / high fidelity wireframes*
**Design goals and current status**

In pitching and ultimately designing a library game that used our finding from the research stage, our primary design goals were as follows:

- Providing an enhanced discovery tool and interface to help patrons find items that they would enjoy and find beneficial.
- Enhancing usability and accessibility through design.
- Transforming a solitary experience of a library patron into a social one.
- Marketing the activities in the library on the most used social channel of patrons.
- Compelling users to use the library more through user psychology.

Early on we also decided that we would cater for *Academic* and *Public* Libraries very differently, and tailor interfaces, interactions and even visuals which were more in line with user expectations. *Orangetree* for Public Libraries and *Lemontree* for Academic Libraries were born.

At present in the UK we have been running the pilot Lemontree version in one academic library [http://library.hud.ac.uk/lemontree](http://library.hud.ac.uk/lemontree) with two Russel Group academic libraries in the later negotiation stages for delivery in the 2013–2014 and over 40 public libraries, comprising of consortia, associations, and other academic libraries around the world who are very interested in working with us.

**What is librarygame**

In a nutshell Librarygame’s flavours, Lemontree and Orangetree, are bits of software which interact with the library systems already in place. These can include the catalogue, the LMS, any third party enhancements, eBook portals, eResource delivery mechanisms and even things like physical access points (turnstile, barriers and card readers).

To begin playing the game a patron would sign up to the flavour of Librarygame which their library has signed up to using their library card or library authentication credentials to verify they are in fact who they say they are.

As they go about interacting within the library (whether online, in app or in person) their activity is tracked automatically by Librarygame and used as the basis of participating in game interactions. These interactions could include visits to the library, checking out books and other items as well as engaging with such activity with a friend or at particular times. Let’s say you visit the library during lunch times or with a friend this is a respectively significant factor in determining whether you get a lunchtime user achievement badge or your points get multiplied for visiting with friends.
Engaging with desired user behaviour both passive and active (adding reviews to the collection, human powered suggestion to other users) will also accumulate points and eventually lead to achievements, these in turn can be shared or highlighted within Librarygame or on the users most used social channels such as Facebook, Google+ and Twitter.

![Image of badges](image)

*Fig.2 Image of badges*

A player’s contributions over time and their points are tracked and presented to them using two progression indicators. One is durational and is effectively a tree which is nurtured over time and another is a shorter term progression indicator which is their library card activity over a certain period (a fortnight in Academic Libraries, and a month in Public Libraries).
**Fig. 3** Image of Lemontree

**Fig. 4** Image of card
Due to its close integration with library systems, a lot of the chore-like aspects of a system such as this, such as the process of manually entering details of books taken out, or stopping to check in onto a digital system (such as the experience of using Foursquare) are removed from the equation and there is little or no scope for patrons saying they’ve done something they haven’t. We can also extract item information to come up with unique achievements such as the Horror badge if you’ve read lots of Stephen King and Clive Barker.

What we’re trying to do

In the context of readership development and catalogue enrichment other attempts have been made but improving upon them by iteration, refining and remixing them into a cohesive whole is definitely something which we are very actively working on and committed to.

With Librarygame:

1. We’re rewarding those who are already using the library with enhanced utility in the form of an accessible, attractive and playful discovery interface laden with user contributed content. User contributed content enhances the discovery and rewarding for existing behaviour engenders loyalty.

2. We’re marketing the library effectively on frequently used social channels, harnessing the incredible power of social proof in shaping and guiding non-user and existing patron behaviour. People effectively gravitate towards activity when they see other people engaging with it, without a meaningful presence on such networks we think it’s a challenge for the library to stay connected and occupy the mindshare of its users.

3. We believe we are enhancing the user experience and this is leading to happier more engaged patrons. In librarygame, patrons derive personal enjoyment from completing challenges related to items and activities within the library and participating in reading conversations,—reading lists and quests are some of the ways which we continue to redefine and shape these experiences.

Discovery—enhancing the discovery interface

One of the luxuries of being present in the physical space of libraries is that you can walk in and serendipitously stumble across items you may never have considered checking out, at your leisure. It’s a crucial part of the physical library experience and a beautiful experience layer to assist discovery which is sadly lacking in digital interfaces. Historically digital interfaces have a tendency to force users to start their journey with a plain search and limited browsing access to the content of the books themselves.

With a de-emphasis of physical collections in many libraries, especially academic libraries it becomes even more important to signpost significant books and e-resources using alternative means and categorisations, and make recommendations actively, recommendations which seek the user.
Fig. 5 Image of Bookshelf view

Fig. 6 Image of Friend stream
The social discovery and recommendations layers by peers can also signpost useful resources and allow great reference points to percolate.

What we’ve learnt

The inception of the product Librarygame in its current iteration, also owes a good deal to the need for libraries (particularly public libraries) to find new ways to develop relationships with their core audience of readers. We think there are a number of things to bear in mind about this. We were mostly interested in enhancing the discovery interface and injecting a bit of playfulness and microsocial interaction into otherwise dry solitary experiences. Our goal was to make those interactions more memorable and engaging and we think we’ve in part achieved that and have a long journey ahead to evaluate and iterate upon our first experiences. However these are some of our observations so far:

Designing interactions around human curiosity

Some of the assumptions based on our expertise and common sense knowledge of designing experiences were that as humans:
• We like attractive interfaces, and ugliness isn’t an excuse that something has utility.

• We like discovering what others are doing, curiosity drives our exploration.

• We like recommending things, if we like something we like to tell others we like it.

• We like being rewarded for good behaviour.

• We like playful interactions over non playful ones.

• We like visualising our personal behaviour and showing invisible connections.

These have all held up and are in line with what lemontree users have been asking for. Sometimes designing bearing in mind the points above is a challenge because the evolution of a system incorporating such factors takes time and isn’t just about engineering software, it’s about curating content to fit around the experiences. People aren’t machines and don’t behave predictably either, unintended usages of the systems you develop are inevitable.

**Gamification has to be meaningful**

Gamification has its detractors. Some argue that poor gamification systems can affect a reader’s intrinsic motivation and decry that once you remove the extrinsic rewards (badges, points and prizes) then levels of intrinsic motivation are also affected. There are three simple counter arguments to this.

1. On the one hand this assumes a lack of sophistication on the part of the player, in our experience poor gamification is totally ignored and the library system is unaffected.

2. Librarygame is partly geared towards users of low intrinsic motivation to begin with, so to be able to nudge them into action is paramount and to be able to provide an element of utility in the form of a discovery layer is what users will find useful and worth coming back to, regardless of the game activities.

3. A blended approach to meaningful gamification takes time and there is simply no way of effectively knowing what works and what doesn’t unless you try it out. Without trying something out it’s impossible to say if it would work or not and being afraid of change doesn’t pave the way for iterative innovation.

To us, meaningful gamification is certainly not just tacked on game mechanics, it’s not just reliant on the language of badges, points leaderboards etc. but physical presence, harnessing the power of reciprocity and social proof. It’s about nudging users to contribute and meaningfully explore their relationship with the library by enriching it with their own contributions, setting personal challenges and using the interface and human powered recommendations to start their exploration of the collection. This blended approach is one way of nurturing intrinsic motivation levels over time and sustaining interest too.
Which is why feedback from academic staff and the players themselves as well as librarians who talk to the players has been the most insightful indicator of where we should focus our gameplay improvements and enhancements on. Talking to other partners has also given us a roadmap of where we could take the system design aspects in the future.

http://librarygame.co.uk

http://rith.co.uk

Come to Umbrella with us

CILIP’s bi-annual conference has had quite an overhaul - and it’s looking exciting! (It even has an unconference.) So CIG is all the more pleased to have been involved in the planning and to be able to sponsor two delegate places. These include the fee for both days of the conference, as well as one nights’ accommodation at George Kenyon Hall on Tuesday 2nd July and attendance to the drinks reception at The Museum of Science and Industry (MOSI). Additionally, CIG also covers travel expenses up to £50. Due to limited places these bursaries don't include the conference dinner. (Delegates can book this themselves separately via the CILIP Events team.) For more conference details and the programme see: http://www.cilip.org.uk/umbrella2013/programme/pages/default.aspx.

Applicants must be CIG members (though CILIP membership is not required). We would like conference delegates to attend at least one session related to cataloguing, classification, metadata etc, and write a report/summary to be publicised on our blog and/or journal. Your application (ca. 200 words) should demonstrate why you would like to attend, how you would use your attendance to highlight or promote CIG and why you would not be able to attend without CIG sponsorship. Please submit your application to Esther Arens (esther.aren@gmx.de) by Friday, 19th April 2013.
‘I really enjoyed reading *The Hundred-Year-Old Man Who Climbed Out of the Window and Disappeared*, what else would you recommend I read?’ A familiar question asked in libraries every day and one that would probably receive a different answer based on the knowledge and reading preferences of the librarian behind the desk. Now that particular reader could easily have gone to Amazon to look up ‘Customers who bought this item also bought’ to find something similar, but as many still believe, being a member of your local library is about belonging to your community and benefiting from the knowledge contained within its resources and staff. With libraries under threat today, evolving to become hubs of our communities, delivering more than just a lending service, but community events and interaction opportunities, is something many are looking to achieve to keep their doors open. You could say that librarians are almost acting as connectors between people and knowledge, sharing their love of books to feed our imaginations, building our knowledge bases, allowing us to share our experiences with others.

Libraries can encourage users of all ages to discover a love of reading through exposure to the diversity of their collections. Not only do they engage the reader and nurture a lifelong relationship between the user and library, but ultimately can maintain or increase circulation figures, which is certainly important in today’s climate.

With such vast collections held within so many public libraries, being able to showcase what is available is challenging. Whilst displays in libraries encourage readership of chosen subject areas, being able to offer that totally bespoke, on-demand recommendation service to library users would certainly relieve the pressure on librarians and lead the reader on a path of discovery and enjoyment. Until now, there hasn’t been a cost-effective service available for libraries, but a new service has recently been developed by LibraryThing, the people behind the online community of 1.5 million book lovers, called BookPsychic.

This is an online recommendation tool for library users, based only on items available within the library’s collection, including books, ebooks, audio books, large print books and DVDs. It is fully embedded within the OPAC, and can be launched from there or the library’s homepage, allowing users to dip in and out as they wish, or set up an account by signing in through Facebook, Twitter, LibraryThing or the library’s account system. Setting up an account brings additional benefits as personal ratings by the user on books they have recently read, using a star grading system, are stored and used to suggest new titles of interest. The more the user rates, the better their personal recommendations become as BookPsychic starts to get an understanding of what they enjoy reading. So it can seem like BookPsychic is almost reading their minds – their personal crystal ball!
Example of a Catalogue entry featuring BookPsychic and similar titles it suggests if you like Life of Pi

At the beginning of the year, Southampton Libraries became the first UK public library to subscribe to the service. With a network of eleven libraries across the city and two mobile libraries serving a population of 237,000 people within the city, they have over half a million resources available for their members. Ensuring the complete pool of resources is utilised though, rather than just skimming the top layer of most popular ones, is a problem many libraries can relate to nationwide, but something that BookPsychic is helping Southampton Libraries to achieve.

Allison Kirby, the Development Librarian at Southampton Central Library commented that there were several reasons why they decided BookPsychic was the tool for them. Firstly they wanted to provide a personalised
recommendation tool for their library customers. They also wanted to provide staff with a tool to help recommend alternative or similar titles to customers, if the title they required was on loan to another customer. At the same time, they wanted customers to increase their use of the catalogue to search out titles or similar books on a variety of subjects or fiction titles. BookPsychic would provide a highly visual interface that would draw people in to try it, without realising they were searching the library’s catalogue. All of these reasons, they hoped, will lead to an increase in their circulation figures overall.

The installation process was straightforward and mainly carried out by email. The library had the option to embed BookPsychic within their catalogue, or display it on their homepage. What they were also able to achieve was to link it to their reservation service, so they were also able to offer a seamless process of searching for titles, evaluation through cover images, synopses and reviews, to locating it at any of Southampton’s branch libraries and reserving it online. As Allison commented, it offered

‘…a seamless process – making it easy for customers to find books they wanted from their local library. There is also an excellent search facility where you can search for individual titles by author, title or keyword’.

So for a user going into Southampton Central Library today, or logging on to their website remotely, using the system is very easy and straightforward. If they don’t wish to set up an account, they can just do a straight search on a title to check it is held within the library and to see what else is recommended relating to that title. By clicking on any of the book covers displayed, they can see the publication date, author’s name and read a brief synopsis. There is also the option to find out more about that title, which takes the user directly into the library’s catalogue to the full bibliographic record, including availability information at the various branches around Southampton. As the library’s catalogue links to LibraryThing, users can view hundreds of reviews via BookPsychic to help assess the suitability of a title, should the user need more assistance. Plus Southampton has further bibliographic information provided by another vendor.

Another useful feature within BookPsychic is the pre-set genres which allow users to browse through pre-determined subject collections of books available from the library. These range from Biography & Memoir, Fantasy, Health & Wellbeing and Science Fiction, to Romance and History, as well as more conventional genres such as Fiction and Non-Fiction, Children’s Books and Young Adult. This useful tool can also be used by librarians looking to build a display of titles and as Allison says

‘The preset genres are very useful and enable the customers to receive specific recommendations that include a mix of formats including books, audio books and DVDs’.

As Southampton Libraries have only been using the service for a relatively short amount of time, they are currently in the process of devising training and awareness programmes for staff about BookPsychic. They will be encouraging staff to show customers how it works and they will be promoting the benefits of the
service directly to customers too. With user statistics and tracking facilities, the staff will be able to see how many of their users have set up accounts, or just used it for a quick search, so evaluation of the service will be easy over time as it becomes more established.

From a personal point of view, Allison says

‘I find BookPsychic very easy to use, especially when rating items (a star system) that helps to build up your personal recommendations in genres of your choosing. All the information you need to decide if the book is right for you is there including the book jacket, bib details and synopsis of the story, other titles available by the author, plus a link to the library catalogue to find out if it’s available for loan and from which library has a copy.’

So for Southampton Libraries, their catalogue is starting to be explored more and given a voice through the star ratings of their own library users, backed up by the database of enthusiasts who make up the LibraryThing community around the world. The benefits to their library customers will become apparent as more library members open accounts and staff can start using it as a recommendation tool. Perhaps what is interesting about the approach of Southampton Libraries is that they refer to their library users as customers, and as any other business would regard customers, their needs evolve over time, as technology offers new ways of doing things, and their library is always looking for ways to keep their customers engaged so that they keep coming back through their doors.

We should value our libraries and continue to embrace their evolution in the age of e-books and online access. After all, they are one of the few free public spaces that we have left where you can while away a few hours and leave more knowledgeable or enlightened than when you entered.

To view Southampton Public Libraries catalogue, visit http://www.bookpsychic.com/1067/southampton-city-libraries

Or to find out more about BookPsychic, please contact Bowker UK Ltd by telephone on 020 7832 1770 or by email on sales@bowker.co.uk, or visit our website at www.bowker.co.uk.
On Monday 4th March the Wellcome Library launched Codebreakers: makers of modern genetics, a new online research resource. The £4m pilot project includes correspondence, notebooks, illustrations, ephemera and published material from the Wellcome Library and partner institutions at Cold Spring Harbor Laboratory, King’s College London, University College London, Glasgow University Archives and the Churchill Archives Centre.

Twenty archives have been made accessible and we will continue to add to these. Included are the papers of Francis Crick, James Watson, Maurice Wilkins and Rosalind Franklin as well as archives of the Eugenics Society made available by kind permission of the Council of the Galton Institute, the papers of JBS Haldane, and the collections of Guido Pontecorvo and his students Malcolm Ferguson-Smith and James Renwick, plus over a thousand digitised, mostly 20th century books, covering the science, history, social and cultural aspects of genetics and related disciplines.

It is the aim of the Library to digitise our entire holdings, incorporating related content from other libraries, making these resources freely available to a world-wide audience. Although users can still search all three separate catalogue silos we have promoted access to both analogue and digital material through a single search using our Encore discovery tool. [http://www.iii.com/products/encore.shtml](http://www.iii.com/products/encore.shtml)

The creation of a major free dataset covering public health based on the reports of the Medical Officers of Health (MOH) in Greater London with over five thousand reports published between 1848 and 1972 is already underway while a digital version of the trade journal Chemist and druggist is in the planning stage and due for release late 2013.

A major digitisation programme on the theme of mental health and neuroscience will begin in May 2013. This will see a second major theme-based resource along the same lines as Codebreakers.

The diversity of the collections at the Wellcome Library has resulted in three separate systems being used for managing published works, images and archives. The metadata describing these diverse resources plays a key role in the discovery of the digitised collections and unifying the systems and schemas in order to achieve that proved to be a major challenge.

At the planning stage we decided to use our existing descriptive metadata and to extend, rather than replace, existing systems, filling in the remaining gaps with new systems as necessary. Key systems already in place were the library management system (Sierra), a discovery front-end (Encore), an archives management system (Calm), an image catalogue (Miro), and a preservation and digital asset management system (Safety Deposit Box). Encore and SDB were each enhanced by software development and new systems components.
to the mix included a workflow management system (Goobi), a content management system (CM7), Image server (IIP Image) and a bespoke digital asset ‘Player’ which was developed for us by Digirati.

The integration of these systems is deliberately one of loose coupling and reliance on exchange of XML data with some creative data mapping and inevitable compromises along the way between ISAD (G) and MARC21. We have completely harvested descriptive metadata from the archives system into the LMS.

Figure 1  Screenshot showing the facets in Encore

Encore facets search results in a number of ways - by collection, format, date, language and to identify material that is in closed store, on open shelves or online. Encore also offers a facet for ‘Digitised content’ and wherever there is a digitised book, archive or artwork, there is a ‘View online’ icon offered. This opens up the item in the digital Player which responds to the type of item viewed. For example, a digital book can be navigated by a thumbnail image of each page, by selected chapter or section of a book, and in some cases multiple volumes from the Contents menu. Zooming and full-screen display work on mobiles and touchscreen tablets as well as desktop PCs. Another key element of the Player is the ability to download items, bookmark images for later
and even embed the player on your own website. Wherever possible digitised content is available to
download for free. Depending on the item type there are options to download high-resolution and low-
resolution images, parts of zoomed-in images, or PDFs.

Descriptive metadata used in the digitisation programme originates in one of our own catalogues or in the
case of archives it may additionally be supplied by third parties and then loaded to our archives catalogue.
From there it is harvested and loaded to the Sierra database. After batch data export from Sierra as XML and
some further manipulation using MarcEdit individual bibliographic records are fed into our workflow tracking
system (Goobi). Administrative metadata is added there for the digitised material and with QA completed
Goobi triggers ingest of the metadata together with the related images into our DAM repository (SDB) which
allocates the files and deliverable units unique SDB IDs. These IDs are used to identify the images required
by the Player in response to user requests made from the Encore results screen.

In 2011 we had revised our cataloguing policy moving from single or, more accurately, hybrid records to
having separate records for most of our electronic resources. The separate records approach meant that new
records had to be created for much of the material earmarked for digitisation. The exceptions were video and
sound resources for which separate records already existed and our iconographic and archival material which
had been excluded from the policy. A one-to-one relationship between the record in the catalogue and the
digital object held in the repository SDB meant that each deliverable unit required a corresponding
bibliographic record. This record would provide the basic metadata for ingesting into Goobi, while the system
record number would provide a unique reference for file naming.

For the genetics books project, we used the original print records to derive new electronic records which we
then suppressed until the digital objects became available for viewing. Some global changes were made to
the cloned records to incorporate the codes and values applicable to an electronic resource but, in general,
the descriptive metadata were not altered. We did, however, add a GMD, [electronic resource], to the record’s
title field in accordance with AACR2. Structural and administrative metadata, including any restrictions on
access, would be manually recorded in Goobi and incorporated into the METS and were, therefore, not
required in the bibliographic record.

Where there were no records for a print or analogue version, or where they were unsuitable, the records had
to be created from scratch. In the case of the Medical Officer of Health (MOH) reports, the original hard copy
reports had been catalogued as serials with one bibliographic record representing each local administrative
district. However, the serials records could not provide the detailed bibliographic descriptions considered vital
for retrieval. In particular, the years covered by each report could not be included in the record in such a way
as to enable users to find a report for a specific year. As each report had its own distinctive title, we felt the
best solution was to catalogue all 6,000 of the digitised reports as monographs. This decision also meant that
the one-to-one relationship between the bibliographic record and the digital object was upheld.

Having separate records for the digitised versions meant we could use a Sierra non-MARC field code (Material type) to identify each digital format such as an e-book, e-journal, or e-video. New icons were designed and associated with the relevant codes to help catalogue users identify their preferred format with ease. Encore used the same codes to allow users to facet their search results by format. Another Sierra field (Bib Location) held codes that could be used to facet by location producing a results set limited to either all online material including digitised content or to just digitised content.

In the MARC record, the value in position 6 of the Leader told the player what type of resource to expect based on record type, e.g. language material, manuscript language material, or projected medium. From this it could determine whether it should be displayed as a succession of single pages, as in the case of a digitised book, or as a video. A new local variable-length field was created to hold a free-text identifier for each digitised set. Originally, this was done for purely administrative purposes but a new purpose for it was discovered when we realised we could use it in combination with the records’ subject headings to set up canned searches within the digitised collections. Finally, a human-readable identifier for each object was added to another local field and used as a ‘process title’ in Goobi.

Initially, it was hoped that the digital MOH reports catalogued from scratch would be described to a high standard in the catalogue. However, as the project moved from set-up to the production stage, detailed cataloguing became unsustainable. Instead abbreviated-level records with encoding level 3 were created programmatically using metadata derived from a spreadsheet and a catalogue record template. Since the material was to be OCR’d at the time of scanning it was expected that any loss of descriptive metadata would be mitigated by the full-text searching capabilities that might be provided in the future.

One of the biggest challenges came with the proposal to digitise the trade journal, Chemist and druggist. The ‘deliverable units’ in this case would be single issues of which there were around 6,000. Unlike the MOH reports, the journal issues had no titles of their own and could only be separately identified by their chronology and enumeration. The single bibliographic record for the serial would need to link to all 6,000 digital objects in a one-to-many relationship not previously encountered by the player. Creating individual bibliographic records for every issue was rejected owing to the negative impact this would have on user experience of the catalogue. A solution is yet to be found but it is likely to involve further software development. In the meantime, the journal will be hosted by the Internet Archive.

Our archival resources presented, perhaps, the biggest challenge of all. Full ISAD (G) descriptions of the archives were held in Calm. Previously, only item-level descriptions had been converted to MARC 21 and harvested into the catalogue in order to enable the physical items to be requested for consultation by users.
With the digitisation of archival collections came the desire to ingest all levels of the collection description into the catalogue and to re-create the hierarchies in a navigable display in Encore. Mapping metadata from the archives database into MARC was a complicated process and, inevitably, required compromises to be made by both cataloguers and archivists. Even where a reasonably tight mapping could be achieved, the fields did not always display in an order that seemed logical to users of archive databases and to change the order for archives would have changed it for all other resources.

![Figure 2 Screenshot showing the collection hierarchy](image)

We continue to learn from experience and would welcome your feedback to help inform and improve future projects.
Useful links:

Codebreakers can be accessed from the Library website here: [http://wellcomelibrary.org/](http://wellcomelibrary.org/)

Our blog on Codebreakers is here [http://blog.wellcomelibrary.org/2013/03/codebreakers-makers-of-modern-genetics/](http://blog.wellcomelibrary.org/2013/03/codebreakers-makers-of-modern-genetics/)


For the systems and suppliers mentioned the links are:

Encore and Sierra are from Innovative Interfaces Inc [http://www.iii.com/products/encore.shtml](http://www.iii.com/products/encore.shtml)

Calm is from Axiell [http://www.axiell.co.uk/calm](http://www.axiell.co.uk/calm)


Goobi by Intranda [http://www.intranda.com/goobi](http://www.intranda.com/goobi)

Miro by System Simulation [http://www.ssl.co.uk/](http://www.ssl.co.uk/)

The `Player` was developed by Digirati [http://www.digirati.co.uk/](http://www.digirati.co.uk/)
At the beginning of 2010, the life of a cataloguer and indexer at (what was then) the BFI National Library was a relatively straightforward one: come into work, select some books about film and television to catalogue, head for home afterwards. The work we did was visible to users of both the Library Reading Room and via the OPAC; we were appreciated in a vague: “I’m-not-sure-what-you-do-but-I’m-sure-you’re-very-good-at-it” way within the organisation.

And then there was change. Or rather, there were lots of changes in a relatively short space of time. The BFI changed, the Library changed, and while our backs had been turned the world of collections management and data standards had changed. The focus had altered, and it was focusing, conversely, onto you (as cataloguers and information managers) or people like you, people who want to know what we have – our users and potential users. And the once rather staid BFI became one of the more radical adopters of this approach through the BFI National Archive Collection Policy\(^1\) and a database nicknamed CID.

At the start of 2011, the BFI still had over thirty-five diverse datasets and different databases – information about various parts of the BFI’s collections were inaccessible to users both inside and outside of the organisation. There was no overall identifiable or accountable centralised point of responsibility for all the information being generated. A strategic overview had long been lost and the results were: duplications of data, a lot of outdated paper-based processes and no common data structure or terminology. Change had to happen.

The BFI National Archive Collection Policy was published in November 2011 and set out to address in a sensible and cohesive manner what we collect and how we document it – across all the collections. A commitment was made to improving the documentation and data standards of our collections; building an information architecture that was fit-for-purpose across the organisation. Creating the organisational framework in which to implement the policy, included some of the once rather humble BFI National Library book cataloguers becoming Information Specialists.

An organisational commitment to data standards, consistency and quality needed to be supported, and who better than information professionals? Tasked with owning the information used across the organisation to describe its collections or cultural activities; the librarians’ core skills of information and data management were to be applied to all the BFI’s collections. The Information Specialists team remit is to take responsibility for

\(^1\)BFI Collection Policy, BFI, 16 November 2011
ensuring all BFI collections, knowledge resources and cultural outputs are documented to high and consistent standards across the organisation. And the tool with which to do this was the BFI Collections Information Database (CID).

The aim of the BFI Collections Information Database (phase one) was to bring together the BFI’s myriad moving image collection datasets into a single database:

- Archival holdings (approximately 1.4m items)
- Filmographic records (800,000 records)
- Subject index/thesaurus (50,000 entries)

Plus additional data from previous projects and initiatives (approximately 170,000 records).

One of the biggest decisions to be made was - how to structure the collections within this database? Most of the databases within the organisation had traditionally relied on single level or ‘flat’ data structures. The data was arranged to the very specific needs of different, but relatively small, groups of internal users. The challenge was to bring together and organise vast amounts of data into a meaningful structure, which would work both inside and outside of the organisation. Which brings us to the BFI’s first encounter with FRBR – or rather a FRBR-based data structure, the EN 15907:2010.

First published in 1998 by IFLA, the purpose of FRBR was to be a “…conceptual reference model” rather than provide a data structure upon which to build a database. FRBR can be considered radical enough to excite the collective imagination, but simultaneously for cataloguers, too vague to give easy answers. However, the challenge was there – make FRBR ‘real’. Therefore, the BFI’s first encounter with FRBR hasn’t been bibliographic, but, due to the predominant collection being moving image based, cinematographic.

Through the European Committee for Standardization (CEN), EN 15907 is the work of a group of European film archives with the aim of developing a comprehensive metadata model to enable archives to capture and enhance much of existing data already held in their filmographic databases. The other major intention of EN

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2 Film identification – enhancing interoperability of metadata – element sets and structures, CEN (European Committee for Standardization), 2010


4 http://filmstandards.org/fsc/index.php/Main_Page
EN 15907 is to increase the ability to share data amongst both film databases and other information systems. Signed off in 2010, the BFI was to become the first major implementer of the new standard.

Adapted from FRBR, to capture all possible data and cataloguing requirements for cinematographic entities, EN 15907 starts at the top level with the Cinematographic Work, a Variant level for the different versions (for example: Blade Runner and Blade Runner: The Director’s Cut), the Manifestation level, which separates the different media types and the Item level to describe the physical objects or files. All these different levels have in their turn Agents who influence, instigate or collaborate on them (people or organisations) and Events that make them happen (information about exhibition). [See Figure 2]

After the initial mapping was made, it was felt that the data model could be refined further to meet the BFI’s needs. Instead of the Variant level the BFI has used: Works, Manifestations and Items.

**Work** [defines any moving image creation]

Includes: cast, credits, genre, subject, synopsis and shot list.

**Manifestations** [describes an embodiment of the Work and provides contextual information for the Item]

Includes: format, language, colour, dates, place and running time.
Figure 2. The first mapping of BFI data to EN 15907

**Item [object-level records and technical data]**

Includes: format descriptions, gauge, sound details, colour descriptions, running time/duration/footage, acquisition history and status of the Item within the collection.

As is the nature of change, nothing happens in isolation. That is to say, not only was the BFI trying to embed new Collections and Documentation policies, the organisation was going through a re-structure and the development of CID was not only to house data about the collections but facilitate the implementation of a workflow system for the BFI Conservation Centre in Berkhamsted.

The project was initiated in November 2008, ADLIB appointed as the supplier in March 2010 and development started in August 2010. CID phase one was an opportunity in tenacity, creativity and in some cases ingenuity from both sides, in which a strong working relationship has developed. It was also an opportunity for a major technical initiative to be led by collection and information professionals, rather than IT.

The chosen system supplier ADLIB already had system modules that were compliant with both SPECTRUM
and ISAD(G) and provided a framework from which the extra system development - needed to implement both a workflow and a hierarchical data structure for the cinematographic records - could be built.

A project team was set up to create the links between the sets of filmographic and technical data that could then be imported into CID’s hierarchical Moving Image data structure. Other datasets for Persons and Institutions (Agents), Events and a Thesaurus were also established to embed the authority controls needed to maintain the BFI’s collections data. As the system developed, a schedule of training and support documentation was rolled-out throughout all user groups. Initially led by ADLIB at the time of launch, on-going support and training for CID is now led and co-ordinated by the Information Specialists team.

Whilst work on integrating all the collections was simultaneous, the first dataset planned for import into CID was that of Special Collections. This brings us to the BFI’s second encounter with a FRBR-like hierarchical structure – ISAD(G)\(^5\).

ISAD(G) was first published in 1996 and revised in 2000. Initially conceived as a means of achieving conformity in archival documentation, rather than as a cataloguing standard, it has been gaining a growing acceptance within archives in the United States and the UK in recent years.

Whilst, like FRBR, ISAD(G) uses a hierarchical structure, the terminology for the levels is different and the intention of the hierarchy is to create layers of description that go from the general to the specific. What ISAD(G) shares with FRBR is that information is not duplicated and that it is recorded once at its relevant level and that these levels of description are clearly linked.

The bulk of the work was in the mapping of the Special Collections data to ISAD(G) compliant fields that already existed within ADLIB’s archive modules. The majority of the legacy data consisted of flat object records that met internal archive needs but offered little in terms of transparency, consistency or accessibility to other users. The smaller datasets for Posters and Designs, and Stills had similar issues, plus digital images that needed to be accommodated as well.

After the pre-planning, data import of the Special Collections datasets was started in the summer and completed by September 2012. Work commenced immediately by Special Collections staff in documenting the recently acquired collection of one of the Britain’s internationally renowned filmmakers Ken Loach, in CID using ISAD(G). The records provide exhaustive information, are easily navigable via the hierarchical structure and are immediately accessible to users via CID, both internally to staff and to the public. Until CID plans come to fruition to provide the collections information in CID online by spring 2013, the public’s access to the BFI's Collections Information Database is via the research terminals in the Reading Room of the BFI.

One of the BFI’s organisational changes was a commitment to changing the nature of the Library’s offer to its users. The teams within the Library were restructured, the Library moved from the main offices at Stephen Street, near Tottenham Court Road to the BFI Southbank (previously known as the National Film Theatre), there was a project to digitise its four million plus press cuttings collection and the Library removed its membership requirements and became free to all who want to use it. The final part of CID phase two, was to integrate the Library’s OPAC into CID. This brings us to the third encounter with FRBR and this time RDA⁶.

Or rather, this last part is about the decision to not implement RDA. If the time was right for what seemed like radical change in the documentation of BFI collections, why not return to FRBR’s bibliographic roots and implement RDA?

Firstly, the very practical reason of the project timetable: February to December 2012. The ambitions for CID phase 2 were primarily to enable access to the BFI’s collections in one database and from this link the records of the related collections to those of the cinematographic works, through shared terminology and data.

Secondly, the bibliographic levels of description used by the Library to describe its holdings are relatively simple. All main important bibliographic elements are captured plus subjects, name keywords relating to persons, organisations, events, and moving image titles. Some of RDA relating to supplementary content and physical description has been adopted within the Library’s revised cataloguing guidelines; however, the main area of work will be in the linking between the bibliographic records and the moving image records now that both are in CID.

Currently, RDA would not create any greater understanding of the Library’s collections, which implementing EN 15907 and ISAD(G) have achieved for the moving image collections and Special Collections.

RDA as a standard can seem flawed and at times obtuse; currently it fails to provide cataloguers with an attractive alternative to AACR2, which whilst out of date and in need of revision, is still widely respected and understood as a cataloguing standard. However, it would be wrong to ignore (or try to ignore) RDA. Full implementation by the British Library by the end of 2013 and the enthusiasm for it within the open linked data community means that an engagement with RDA, even if limited, needs to be established; if information professionals are not the best placed and best capable of making this work and guiding data and databases into the 21st century, then who is?

The BFI is one of the foremost film archives in the world and its collections place it amongst the UK’s National Collections. The BFI Collections Policy formalised the principles of using a broadly shared framework of

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standards to acquire, dispose, document, conserve and ultimately make accessible the rich and diverse holdings of the BFI. With equal importance given to documentation and accessibility, the core principles by which cataloguers have plied their trade are now embedded as an organisational requirement across all the collections. However, the BFI Collections Policy would be difficult to implement without the right tools being in place first.

The BFI Collections Information Database has created both challenges and opportunities. The BFI finally has its major collections accessible via one database: moving image data, BFI National Archive data, Special Collections and the BFI Reuben Library. Though this leads to the on-going challenge of the legacy data and data-cleaning for a while to come, at least there is now both an organisational (through the Information Specialists) and technical framework (through CID) to be able to assess, plan and undertake the work. Being the first to implement the FRBR based, EN 15907 has also provided many challenges: data mapping, user education and training and implementation, but again the opportunities to now share data with other similar organisations will prove invaluable.

One of the biggest opportunities has been for information professionals to guide, determine and manage the principles and practice of standards and quality with which we have always plied our trade – not marginalised or misunderstood, but now core to all the collections.

Visit to the British Film Institute Library, London

Monday 29th April 2013, 2.30-4.30pm

The visit will include a presentation and tour of the BFI Reuben Library, a discussion of the FRBR-based hierarchical metadata structure for cinematographic works and the use of ISAD(G), AACR2 and RDA to catalogue the collections, as well as a demonstration of the CID database (developed and supplied by ADLIB).

This is a free event. To book a place please contact Claire Sewell at ces43@cam.ac.uk

Please note that places are limited to 20 so book soon to avoid disappointment.
Any book that is ‘essential reading for LIS students taking information organization courses, at undergraduate and postgraduate levels, information professionals wishing to specialise in the metadata field, and existing metadata specialists who wish to update their knowledge’ has high expectations. In 8 chapters it manages to address the key points of what is metadata, why it is needed and what metadata structures we use now and could use in the future.

With a clear introduction to highlight the key points and many illustrative examples each chapter contains a lot of useful information as to how information resources can be managed. Though the main focus is how metadata is used in libraries the book also covers metadata use in museums and archives. Throughout it stresses the importance of considering the wider digital environment and how we must be a part of that.

FRBR and RDA are examined, especially in chapters 2 (information resource attributes) and chapter 7 (metadata standards). The examples that illustrate the key FRBR user tasks are clear; less so the entity-relationship model. Some may find the discussion of entities, relationships and attributes and the overview of RDA just what they need to make the breakthrough in understanding. Other more specialised books would probably do this better. The description of other metadata standards such as Dublin Core and xml was helpful in showing that RDA is only part of a much wider framework of tools that can be used to create metadata.

The layout was clear and the illustrations (mainly screen shots) were useful and helped to break up the text. The references at the end of each chapter and further reading section were comprehensive, but it was let down slightly by not having a glossary of the many technical terms.

Arguably it is difficult to make a book about information resource description an exciting read. There were times the reader could get bogged down in too much detail about the history of cataloguing rules and the development of AACR2. It is worth persevering with as there is enough useful information for it to be a worthwhile read, especially for LIS students and new professionals.
Published on 4 March 2013, ISO 25964-2 deals with interoperability between thesauri and other vocabularies, especially the principles and practice of mapping between them. Types of vocabulary to be considered include classification schemes (including those for records management), taxonomies, subject heading schemes, name authority lists, ontologies, terminologies, and synonym rings.

Interoperability is defined as the ability of two or more systems or components to exchange information and to use the information that has been exchanged. Plainly this ability is fundamental to the workings of the information networks we rely on so much, and even more to the development of the Semantic Web (SW). Two levels of interoperability apply to thesauri:

a. presenting data in a standard way to enable import and use in other systems (dealt with in ISO 25964 Part 1, which was published in 2011)

b. complementary use of vocabularies, such as providing mappings between the terms/concepts of one thesaurus and those of another (covered in ISO 25964 Part 2)

Unless mappings are prepared with care as recommended in ISO 25964-2, any SW inferences based on them are liable to deliver misleading conclusions to the unsuspecting Web surfer.

The full title of Part 2 is Information and documentation - Thesauri and interoperability with other vocabularies - Part 2: Interoperability with other vocabularies.

Important topics covered in the standard include structural models for mapping, guidelines on mapping types, and how to handle pre-coordination (which occurs especially in classification schemes, taxonomies and subject heading schemes).

The overall focus of ISO 25964 is on thesauri, and with the exception of terminologies, comparable standards do not exist for the other vocabulary types. Rather than try to standardize them, Part 2 deals only with interoperability between these and thesauri. Thus the clause on each vocabulary type presents:

- Key characteristics of the vocabulary (descriptive, not normative)
- Semantic components/relationships (descriptive, not normative)
- Where applicable, recommendations for mapping between the vocabulary and a thesaurus (normative).

In the case of ontologies, terminologies, and synonym rings, mapping to or from a thesaurus is not often useful.
Other forms of complementary use are recommended. This is especially true of ontologies, which in the context of the Semantic Web can be deployed in combination with thesauri. ISO 25964-2 clarifies in some detail the differences between thesauri and ontologies, with examples to illustrate the potential for interoperable function.

**Practical implementation and continuing work**

What about SKOS, the complementary W3C standard for publishing Simple Knowledge Organization Systems on the Web? Happily the development teams responsible for SKOS and ISO 25964 (respectively) have maintained a close working relationship throughout, leading to good compatibility between the standards. Jointly they have gone on to establish a table showing correspondence between ISO 25964 and SKOS/SKOS-XL data models, now freely available from the ISO 25964 Secretariat site at http://www.niso.org/schemas/iso25964/. Although not formally part of either standard, this table is dependent on both of them. It is an example of how the user community continues to develop practical tools to support the emerging Semantic Web.

**Getting hold of a copy**

In the UK you can purchase either or both parts of ISO 25964 from BSI (telephone 020 8996 7555; website http://shop.bsigroup.com/en/, search for “ISO 25964”. Please note you may have to wait until 4 April before Part 2 is released on the BSI site). If you live overseas, get them from the national standards body in your country e.g. AFNOR, NISO or DIN. Alternatively you can order one directly from ISO in Switzerland at http://www.iso.org/iso/store.htm. You can also view the documents at some public/academic libraries, which subscribe to the BSOL database (with the full text of more than 50,000 British and adopted European and international standards).

Journal editors may request a review copy from ISO’s Head of Marketing, Roger Frost <FROST@iso.org>

**Project Organization**

Development of the standard was managed by a Working Group known as ISO TC46/SC9/WG8, which has participants from 17 countries: Belgium, Bulgaria, Canada, China, Denmark, Finland, France, Germany, New Zealand, Russia, South Africa, South Korea, Spain, Sweden, UK, Ukraine, and USA. The Group is chaired by Stella Dextre Clarke of the UK, and its Secretariat is provided by NISO (USA). Active members have included: Sylvie Dalbin (FR), Johan De Smedt (BE), F. Javier García Marco (ES), Michèle Hudon (CA), Daniel Kless (DE), Traugott Koch (DE), Jutta Lindenthal (DE), Marianne Lykke (DK), Esther Scheven (DE), Douglas Tudhope (GB), Leonard Will (GB), and Marcia Zeng (US).

For more information, see http://www.niso.org/schemas/iso25964
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