

Discovery to Delivery: enabling an unmediated resource discovery and delivery service in a collaborative context

ABSTRACT:

Introduction: Established in 1978, CAVAL is a not-for-profit consortium of eleven Australian academic libraries, offering a range of specialised products and services for the benefit of its members and for other libraries in the region. The CAVAL Reciprocal Borrowing Program, enabling higher education staff and students a simple and effective means of borrowing from the print collections of all participating libraries on a walk-in basis, has been coordinated by CAVAL for over 35 years. In addition, from its Melbourne base, CAVAL administers the purpose-built CARM (CAVAL Archival and Research Material) storage facility, preserving and providing access to over a million research volumes deposited into the CAVAL Shared Collection by member libraries, for the benefit of future generations of scholars.

Method: In recent years, the number of physical loans transacted between libraries in the Reciprocal Borrowing Program has declined, commensurate with similar declines in lending from their own collections, and partly due to new services such as the BONUS+ request and delivery service. Although these trends are expected to continue, it is anticipated that an ongoing need for physical books will continue in a reduced "long tail" manner. Libraries are buying less and less print, but a portion - particularly in some specific disciplines - remains available in print only. Additionally, as university libraries face continuing budget challenges, services and solutions which optimize access to print collections are needed to improve the cost-effectiveness of both past and ongoing investment in print resources. The use of sophisticated search and discovery systems can enable technical interoperability between disparate library systems to provide un-mediated identification and delivery of materials, and to promote their use in a collaborative resource sharing environment. In response to changes in the use of print both within and between academic libraries, CAVAL has initiated a pilot implementation of the Relais D2D (Discovery to Delivery) software, involving three of its member libraries, and incorporating access to the CAVAL Shared Collection. The pilot system offers un-mediated discovery and request from the collections of the participating libraries and delivery of physical print resources to eligible users via their home libraries. Similar to the service offered by some Australian libraries through the BONUS+ consortium, the Relais D2D software is operational at a number of large US library networks, including Uborrow and BorrowDirect. However, the D2D software is not based primarily on the use of a common library management system, but instead utilizes the NCIP protocol to enable interoperability between different library systems.

Results: This paper will describe the aims, implementation and outcomes of the CAVAL D2D pilot, from the experience and perspective of both CAVAL and the participating libraries. The paper will review the pilot process, its strengths and weaknesses, and examine the outcomes in terms of enhanced access to print materials and the potential benefits for both the libraries and their users.

Conclusion: The paper will conclude with a consideration of the pilot outcomes in the context of the changing landscape of the sharing of print resources between academic libraries, and will look at how discovery and request systems might not only displace traditional co-operative lending programs but also create potential for new service models and partnerships.

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Introduction

This paper describes the implementation of a resource-sharing service that uses enhanced search and discovery across the library collections of multiple institutions. Using and exploiting sophisticated interoperability protocol techniques, the data is filtered in real-time so that the user is only presented with relevant and available resources. The details of requested items are passed to the supplying library without any mediation being required.

CAVAL Reciprocal Borrowing

The CAVAL Reciprocal Borrowing Program, which provides higher education staff and students with a simple and effective means of borrowing from the print collections of participating libraries on a walk-in basis, has been co-ordinated by CAVAL for over 35 years. CAVAL is a not-for-profit consortium of eleven Australian academic libraries offering a range of specialised products and services for the benefit of its members and for other libraries in the region. These include the administration of the purpose-built CARM (CAVAL Archival and Research Material) storage facility, preserving and providing access to close to a million research volumes deposited into the CAVAL Shared Collection by member libraries, for the benefit of future generations of scholars (Jilovsky & Genoni, 2014).

In recent years, the number of physical loans transacted between libraries in the CAVAL Reciprocal Borrowing Program has declined, commensurate with similar declines in lending from their own collections, and partly due to new un-mediated services, such as the BONUS+ request and delivery service (see <https://bonus.newcastle.edu.au/>). Although these trends are likely to continue, it is anticipated that an ongoing need for physical books will continue in a reduced “long tail” manner. Libraries are buying less and less print, but a portion - particularly in some specific disciplines - remains available in print only. Additionally, as university libraries face continuing budget challenges, services and solutions which optimize access to print collections are needed to improve the cost-effectiveness of both past and ongoing investment in print resources.

Inter-library Loans and Resource Sharing systems

Libraries were exchanging inter-library loan requests well before automated systems were developed. The first automated ILL (inter-library loan) systems were implemented in the 1990's using the ISO-ILL protocol, ISO 10160. This protocol has recently been reviewed and a new standard, ISO 18626, has been developed and published (MacKeigan 2014). This is designed to be used across a new generation of inter-library loans and resource sharing systems to provide broad based interoperability and easier access.

These systems use sophisticated search and discovery mechanisms to enable technical interoperability across disparate library systems, and can provide new services such as the un-mediated identification and delivery of materials. With a long background in facilitating and co-ordinating reciprocal borrowing, it was a natural step for CAVAL and its member

libraries to explore new resource-sharing possibilities in a collaborative resource sharing environment, responding to changes in the use of print both within and between academic libraries.

CAVAL & Relais D2D

CAVAL has been providing services to Australian libraries using the Relais ILL software since 2009, through a partnership with Relais International, a Canadian based library systems vendor (see <http://www.relais-intl.com/>). This has made the use of the Relais D2D (Discovery to Delivery) software for a pilot un-mediated resource sharing service for CAVAL Member libraries a logical system choice. The pilot, involving three member libraries, and incorporating access to the CAVAL Shared Collection, commenced in late 2013. The aim of the pilot system was to offer un-mediated discovery and request from the collections of the participating libraries and delivery of physical print resources to eligible users via their home libraries. The Relais D2D software also has the potential to handle the sharing of digital resources, and although this has been excluded from the pilot system it is likely that this will be explored in the future.

The functionality offered through the Relais D2D software used in the CAVAL pilot is similar conceptually to the service offered through the BONUS+ consortium (Anderson & Wilson, 2010). BONUS+ is an Innovative Interfaces “InnReach” based consortium consisting of 13 academic libraries across Australia and New Zealand, with a pool of over 6 million volumes available for borrowing by member institution staff and students. It has been operating in full service mode since October 2007. In North America there are several large library consortia that operate un-mediated resource sharing systems using the Relais D2D software. However, unlike the InnReach software, the D2D software is not based on the use of a common library management system, but instead utilizes the NCIP protocol to enable interoperability between different library systems. The Relais D2D implementations in North America include the following;

- Borrow Direct – 11 academic libraries – see <http://www.borrowdirect.org/>
- PALCI - E-ZBorrow – 50 academic libraries – see <http://www.palci.org/palci-services/>
- CIC – Uborrow – 13 academic libraries - see <http://www.cic.net/projects/library/reciprocal-borrowing/uborrow>
- GWLA - Greater Western Library Alliance, 33 academic libraries - see <http://www.gwla.org/about-gwla>
- Marina – 24 Public Library systems in Maryland, United States

The BorrowDirect consortium comprises eleven Ivy League academic libraries: – the universities of Columbia, Penn, Yale, Brown, Cornell, Dartmouth, Princeton, Harvard, MIT, Chicago and Johns Hopkins. Since its inception in 1999, BorrowDirect has successfully filled over 1.8 million user requests, with over 230,000 books, music scores, and other returnable library items being supplied per year. Recent innovations include direct shipping to users, with the option for a fee-based priority service (Collins 2014).

The Pennsylvania Academic Library Consortium (PALCI) consists of nearly 70 academic and research libraries, private and public, in Pennsylvania, New Jersey, West Virginia, and New York. The E-ZBorrow Service has been the keystone service of the PALCI Consortium for 15 years. It allows students, faculty, and staff at the participating institutions to discover and borrow books and other library materials from the unique collections of other PALCI libraries.

The CIC (Committee on Institutional Cooperation) libraries run a service called U Borrow, that offers rapid access to over 90 million books from the collections of 13 university libraries in the mid-west of the United States and the Centre for Research Libraries. The relative proximity of CIC partners, as well as the commitments made by each institution, allow books to be delivered through U Borrow far more rapidly than through traditional interlibrary loan programs.

CAVAL D2D Pilot

The aim of the CAVAL D2D pilot has been to implement and operate an un-mediated resource sharing service across CAVAL member libraries. At the commencement of the project the phases envisaged were;

- Initial Phase: simple access via a URL and a handful of patrons (library staff) from each library. This was to enable the system and workflows to be tested and alternatives explored.
- Expansion Phase: NCIP authentication added along with access through library Discovery layers. At the same time agreed workflows, policies and procedures would be developed and documented, and operational staff trained.
- Test Phase: roll-out pilot to selected groups of patrons, monitor and adjust end-to-end processes as needed, collect usage statistics.
- Evaluation Phase: review usage, develop recommendations for enhancements or adjustments for the ongoing production environment.

The project began with a series of information sessions with staff from interested libraries. These were followed by exploratory meetings to consider how and when the pilot would operate, and what the parameters might be. In October 2013 two libraries – RMIT and the Australian Catholic University - confirmed their active participation, and several others asked to be kept informed of progress. In addition CAVAL committed the CARM Shared Collection to be included as a resource target in the pilot, and the project was officially underway.

Detailed planning with the participating libraries commenced in November 2013. In December the Australian Relais Hosted Service hardware was upgraded to add capacity for the D2D service to run alongside the Relais ILL services for Australian customers. This was followed by the installation of the D2D software and configuration of the back-end system. Regular meetings between CAVAL and Relais technical staff and operational and technical staff from the pilot libraries commenced in January 2014. Steady progress was made throughout 2014, although it soon became apparent that additional development would be required to implement the seamless interoperability required and that therefore the project would be more complex than initially envisaged. The progress is summarised below;

- January, February: several face-to-face and web meetings were held with pilot participants to demonstrate the detailed functionality, configuration choices, particularly relating to patrons and authentication, NCIP and other technical interoperability.
- March, April: preparation and initial configuration of interoperability between systems for Patron authentication. Setting up of logins, test URLs, preliminary testing. Review of D2D forms and customisation of forms, particularly for the staff interface. Discussion of circulation rules and policies. Preparation of a pilot test plan – including documentation, and workflows and procedures for staff and patrons for testing.

- May, June: the University of New South Wales (Sydney) joined the pilot group. The methodology for seamless integration between Ex Libris Primo (Discovery layer) and D2D, using a Primo tile was demonstrated. Preliminary discussions around the back-end integration of D2D and ILL systems for library staff.
- July, August: focus on configuration of library management and discovery systems of the participating libraries. Each of these was different, with two libraries having recently migrated to the Ex Libris Alma system. Following some in-depth analysis it was determined that some enhancements to both Alma and Relais D2D would be required. First concurrent testing across the participating libraries.
- September, October: further concurrent testing. Detailed work commenced on specification of and development of the back-end integration between Relais ILL and D2D. A fourth CAVAL member library joined the group as an observer.
- November, December: meetings of the pilot group focussed on system policies and service branding. A decision was made to brand the system as 'CAVALBorrow', thus making the D2D system a clear extension of the CAVAL Reciprocal Borrowing program, known to many students simply as CAVAL.

Live operations commenced on 4th December 2014, with staff and students from the University of New South Wales (Sydney) able to access the CARM Shared Collection, the RMIT Carlton Library and the Brisbane and Ballarat campuses of the Australian Catholic University. Both RMIT and the Australian Catholic University expect to be able to expand their pilot participation quite quickly, following the resolution of some outstanding technical issues. The goal is for staff and students across the three universities to be able to borrow items from all campuses in a fully operational environment by the commencement of the 2015 academic year.

The CAVAL D2D Pilot Group, consisting of representatives from each participating library and CAVAL, met regularly throughout the project. For the first six months or so, the main discussions were around technical aspects and particularly interoperability. Later, following some concurrent testing sessions, the group moved to broader policy issues such as loan periods, and system configuration around patron emails and other procedural issues. In considering loan periods, for example, it was apparent that there are variations around what individual libraries use for physical loans and for ILL, and the implications of loan periods offered in the CAVAL Borrow network needed to be co-ordinated. Finally, the Pilot Group also focussed on the branding of the service. While some libraries felt that branding was unnecessary as the service was to be embedded so deeply in their discovery layers, a consensus was reached to incorporate CAVAL in the brand, reflecting the familiarity with the CAVAL Reciprocal Borrowing Program in Victoria: – known often to students simply as "CAVAL". CAVALBorrow was launched as the name of the network to highlight the main function of the network and to emphasize its complementary function to the existing Reciprocal Borrowing Program.

Outcomes of the Pilot

Although the development of the CAVALBorrow resource sharing network through the pilot project described above took longer than anticipated, the outcome is a system that incorporates a number of innovations and delivers unmediated, seamless access to users across disparate library system environments. This was achieved through strong

collaboration between CAVAL, working on behalf of its partner libraries, with Ex Libris and Relais International.

In order to achieve the necessary interoperability across disparate systems, detailed analysis around the information to be passed between the systems was required. It was essential to drill down to document exact data details and formats, and thorough testing at each step was essential. Data is passed between discovery layer, link resolver, ILMS, authentication and Inter-library loan systems at each participating library. The outcome for the user is that there are no “dead ends”: – if a request can’t be fulfilled within the local library, it is passed through to the D2D system, and if it can’t be fulfilled within the D2D network it is passed through to the ILL system.

Software development was necessary by both Ex Libris and Relais International to enable the Alma systems at UNSW and RMIT in particular to interoperate with Relais D2D using the NCIP protocol. This took some time, as did the development and implementation of enhancements within the Relais D2D software to complete the back-end integration of Relais ILL and D2D, as stipulated by UNSW. Following the completion of these upgrades there was a process of testing and acceptance before cutting across to the production environment. The integrated Relais ILL-D2D system is now installed and operating at the University of New South Wales and at CAVAL’s CARM Centre.

Key components in the success of the pilot process, especially through a much greater than envisaged timeline, were strong project management, and regular formal and informal communication across management, operational and technical staff of all participating organisations. The development of close working relationships, the mutual coordination of resources and the willingness of all participants to be flexible with timescales were also important. A commitment to participate in regular meetings and early agreement on the scope of the project assisted with the development of a shared understanding of the additional technical development and interoperability testing that was required

Future Directions for Resource Sharing

Strategically, the D2D pilot implementation has been important to CAVAL for a number of reasons. In keeping with CAVAL’s brief to promote benefit to libraries through collaborative activity, the pilot has presented an opportunity to establish and build a resource sharing network of member (and potentially non-member) libraries, to make the most cost-effective use of their previous and continuing investment in print resources. In the process, CAVAL has taken the initiative not just to undertake the technical implementation and support of the Relais D2D software, but to identify and engage libraries to participate in a resource sharing partnership, working through the many necessary conceptual, policy and procedural steps to establish unmediated requesting and delivery of books as a service.

In the short to medium term future, the plan for the CAVALBorrow network is to transition from the initial pilot phase into a fully operational system, offering unmediated request and delivery between the staff and students of all campuses of all participating institutions by the commencement of the 2015 academic year. Beyond this, the network will be opened to other institutions to join, to encourage the building up of a critical mass of participating libraries and the resources which they can make available to others in the network.

In addition, the CAVALBorrow service also enables CAVAL to restate and enhance the value of two of its core member services: - Reciprocal Borrowing and the CAVAL Shared Collection. As noted previously, the traditional walk-in reciprocal borrowing model which has served CAVAL member libraries well for 35 years has seen a steady decline in usage over the past ten years. This has been attributed in the first instance to similar declines in lending patterns within the libraries themselves, brought about by factors such as a general recourse to electronic resources in all forms, greater library investment in e-book rather than print, and the availability of more convenient alternative interlending services and platforms.

In particular, the advent of the BONUS+ resource sharing system amongst some academic libraries (using the Innovative Interfaces InnReach software) has had a direct impact on CAVAL walk-in reciprocal borrowing. Several BONUS+ users are also CAVAL members, and their academic staff and students are therefore enabled both to access and borrow from libraries in person via CAVAL Reciprocal Borrowing, and also to request items directly from these and other libraries, and have them delivered to their home library for borrowing. The BONUS+ service has demonstrated that unmediated request and delivery has the ability to displace the traditional in-person borrowing of library materials, as it evidently provides a more convenient alternative, is quick and simple to access, does not require prior registration at the host library, and of course does not require the user to travel to the host library to borrow the item. The trade-off against this is that the user is dependent on the efficiency of the libraries' delivery systems, insofar as it may take some days for the item to be retrieved from the supplying library and despatched to the user's home library.

Consequently, the introduction of the CAVALBorrow service has significant strategic potential for CAVAL members and non-members alike, as it provides greater flexibility and choice for access to print materials. With the availability of CAVALBorrow, CAVAL members are now potentially able to offer their user communities the options of unmediated discovery, request and delivery of items as well as continued access to the traditional in-person Reciprocal Borrowing service, enabling the user to elect whether to have the item delivered, or to retrieve the item personally according to their needs and convenience. In addition, the NCIP functionality at the heart of the CAVALBorrow system also has the potential to streamline and enhance the existing Reciprocal Borrowing Program, as it offers the potential for in-person borrowing without the need for a secondary patron registration at the host library.

While member libraries with Innovative Interfaces library management systems installed have had access to both unmediated request and delivery as well as walk-in reciprocal borrowing for some time, the establishment of CAVALBorrow – with its ability to transact request and delivery seamlessly across disparate library systems – now enables all CAVAL members to make such a service available regardless of the library management system they are running.

The secondary benefit of the CAVALBorrow implementation from a CAVAL perspective is in its potential to foreground and encourage use of the CAVAL Shared Collection. Consisting of almost one million volumes deposited in perpetuity by CAVAL members over the past twenty years, the Shared Collection was included as a resource target in the pilot implementation as a means of improving the visibility and accessibility of the collection. Hitherto accessible via Libraries Australia or in some cases via members' local discovery layers, access to the resources of the Shared Collection via CAVALBorrow is seamless, as a search not fulfilled locally is carried over to the other library collections in the network, the CAVAL Shared Collection being presented simply as one of these. The coupling of discovery and request

also means that the user can request a Shared Collection item directly from the desktop, streamlining the retrieval and delivery process from the CAVAL end and avoiding the cumbersome task of a separate ILL request via a different system.

Ultimately, the benefit of the CAVALBorrow service to CAVAL members is that it affords a means of establishing a larger resource sharing network of both members and non-members alike, employing relatively simple operating policies and mechanisms. As the functionality of the software is not tied to any one library management system, it is quite feasible for the CAVALBorrow network to expand well beyond the immediate CAVAL membership to include any Australian or New Zealand academic library, and in so doing to build up a greater mass and variety of print resources accessible by institutional communities. Beyond this, there is great potential for the establishment of a quasi-national resource sharing network, not only by building up the number of CAVALBorrow libraries, but by linking this service with BONUS+. CAVAL has already initiated discussions with the BONUS+ management to explore the potential for collaboration across the two networks, and a proposal to work towards the interoperability of the two systems has been well received. Exploratory discussions have been held between the vendors of each product - Relais International and Innovative Interfaces - to work out how to transact requests and fulfilments across the two networks, established as they are on quite different operating systems and principles. The long-term vision is that that requests which can't be filled within one network can be passed automatically across to the other, resulting in access to a significant greater pool of resources for both services, flexibility in the choice of a resource sharing system, and the potential to grow the consortium overall. CAVAL is positioned to support and act as an intermediary where necessary in pursuit of this initiative.

Conclusion

It has taken twelve months for the CAVAL D2D pilot to move from a test environment between library staff to being available to library patrons in a live environment as the CAVALBorrow service. While the pilot phase has been longer than envisaged, this was primarily due to the greater than expected complexity involved to configure and develop interoperability between the component library systems and the Relais D2D software. The pilot implementation followed loosely behind the implementation of the Ex Libris Alma system at two of the three libraries involved in the pilot, and as a relatively new system this required a significant amount of development work on the part of both Relais International and Ex Libris. The addition of the UNSW library as a partner mid-way through the pilot - and their merging of Relais ILL and D2D back-end operations - added further delays, but nonetheless achieved a level of integration between the two which has not been done before.

Despite the delays, the pay-off has been a considerable amount of ground-breaking innovation in the development of the Relais D2D software and its interoperability with Alma in particular, so that it is henceforth a straightforward and proven exercise for any new Alma library to join the CAVALBorrow network. The CAVALBorrow network has been established in the context of the changing landscape not only of print resource sharing systems but of library management systems in general, resulting in the development of innovative and sophisticated service models which can be scaled into the future.

References

Anderson, Greg & Wilson, Katie, 2010. It's a BONUS Plus!: collaborating to share library resources across Australasia. ALIA Access 2010 Conference, (Brisbane, Qld 1-3 September, 2010).

Collins, Peter D, 2014. Lessons from eCommerce. IFLA Document Delivery and Resource Sharing Satellite Meeting, France, August 2014.

Jilovsky, Cathie & Genoni, Paul, 2014. Shared collections to shared storage: the CARM1 and CARM2 print repositories, *Library Management*, Vol. 35 Iss 1/2 pp. 2 – 14.

Mackeigan, Clare, 2014. The future of interoperability for ILL and resource sharing. IFLA Document Delivery and Resource Sharing Satellite Meeting, France, August 2014.