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	The Perfect Match: Convergence of Technology and Resource Sharing **Lucina Fraser** **Ophelia Cheung**
Meeting:	**96 Document Delivery and Resource Sharing Section**
Simultaneous Interpretation:	Yes

Abstract
Ryerson University Library in Toronto, Canada, has embarked on several interlibrary loan (ILL) and document delivery projects, using technology to improve speed and convenience. The CISTI Source (Canada Institute for Scientific and Technical Information) project (2001-) was the first project to offer users control of searching international journal articles and ordering documents unavailable from our library, at time of need and at no cost to them. In mid-2003, nineteen University libraries, including Ryerson, in the OCUL consortium (Ontario Council of University Libraries) implemented a centralized installation of OCLC PICA's VDX software. Users can search worldwide catalogues simultaneously, submit and track progress of requests, and receive materials rapidly. Several libraries have moved from staff-mediated to auto-mediated ILL (user direct requesting). SFX, a link-resolver software, transfers citation information seamlessly from borrowing library catalogues to ILL request forms.
E-Reserve was officially launched in 2004. Local and distant users have easy access to library subscribed articles, scanned book chapters, and videos from the library collection streamed over the Internet. These resources are integrated with course materials within Blackboard, a course management system and the University's portal.

Introduction

Ryerson University in Toronto, Ontario, Canada, is a leader for career-focused university education, with 24,000 full-time undergraduate and graduate students (including 1,085 masters and PhD students) and with an ever-expanding Distance Education (DE) department. The G. Raymond Chang School of Continuing Education is Canada's largest, with 64,000 annual registrations. In this paper we will discuss Ryerson Library's progress from using a standalone, batch-process interlibrary loan (ILL) unit to

its current state-of-the-art system; from staff-mediated to user-initiated document delivery; and from maintaining a paper-based course readings repository to developing an integrated e-learning portal.

At Ryerson University Library, we set out ten years ago to find the best combination of resource sharing and technology to facilitate access to information in all formats, to improve staff response to patrons, and to work closely with partner institutions to maximize the information and production base available. CISTI Source, RACER and E-Reserve were projects undertaken because of their specific strengths and ability to deliver

1. a single resource for information search and delivery of full-text documents;
2. a responsive system that allows the user maximum control of the request and the document delivery process; and
3. a system that allows the user access to information in all formats, minimizes response time frame, and maximizes resource locations.

From the perspective of improving library and staff efficiency, it was important that there be fully open communication and information sharing with partner institutions and that the ILL system be fully interoperable. Equally important was ongoing interaction with users, in order to understand and respond to their needs effectively. A third objective was to reduce paper use. Apart from ecological concerns, savings in storage space as well as staff time in filing and retrieving were other considerations.
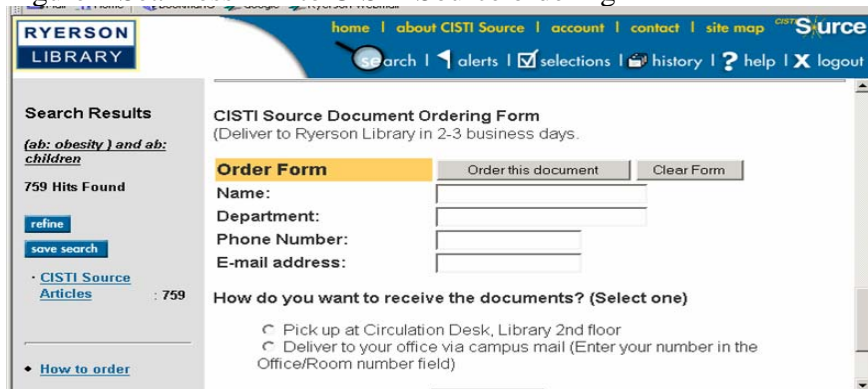
CISTI Source

In 2001, a pilot project with commercial document delivery was begun using CISTI Source (Canada Institute for Scientific and Technical Information). CISTI Source is a Canadian database covering thousands of journal articles in the fields of science and engineering. The Ryerson Engineering Department was a major requester of ILL materials. The pilot project was tested with this group. The project proved immediately popular and by 2002 the client base was expanded to include a growing number of departments, graduate students, research assistants and fourth-year undergraduate students. CISTI Source had become a valuable supplement to the library's interlibrary loan service.

Success factors

User surveys conducted in 2003 showed a 93% favourable response, with users identifying ease of use and document delivery time as outstanding benefits.[1]

1. **Ease of use**: With CISTI Source database, the user could quickly confirm whether the requested document was in the Ryerson collection and if not, submit a Web order form for the item for digital delivery (Figure 1).
2. **Delivery time**: CISTI Source then guaranteed a response delivery time of 48 hours. The digital document was delivered to Ryerson Library's ILL department through the Ariel software, and the user was notified of its arrival. Depending on the user's directions, the print-out was available for pick-up or delivered directly to the user's office by campus mail.

Figure 1 Seamless link to CISTI Source ordering

Let us compare the ease and speed of CISTI Source with traditional interlibrary loan at Ryerson. Ten years ago, delivery times could not be guaranteed because of the many variables involved (availability of materials in lending library at time of request; lending library policies; interlibrary communications, etc.). At Ryerson in 1998, the average borrowing turnaround time was over 14 days. By 2002, this average borrowing time had been cut in half but still was much slower than the then 48-hour CISTI Source delivery. [2]

Shortcomings of project

Nevertheless, in implementing the project, we had problems to overcome. Ryerson Library had not made enough progress in serial MARC cataloguing in the early days of the project to empower more detailed matching of library holdings with the CISTI Source database. As a result of broad rather than detailed cataloguing, (comparison was at the journal title level, rather than at specific issues within a journal title), it was not uncommon for users to be barred from requesting a current journal issue in CISTI Source because the system indicated that Ryerson Library had the journal title, though only the back issues. The technology was there. What was required was prioritizing and balancing of service demands, and investment of staff resources to produce the conditions for a more effective comparison.

Future CISTI Source

In order to monitor the new service, we decided to be intermediaries between CISTI Source and our users in the receipt of materials requested. We are currently reviewing whether to have CISTI Source users receive their information directly (e.g. via fax) without staff intervention.

RACER

By comparison with commercial document delivery, ILL technology is also fast changing. New systems come with robust features that improve turn-around time and provide users with ease of requesting and tracking requests.

In June 2003, the Ontario Council of University Libraries (OCUL) (a library consortium including Ryerson University) initiated a shared interlibrary loan system called RACER (see Appendix A). The RACER initiative was part of a strategy to

facilitate interlibrary loan management through improved efficiency and systems interoperability, greater resource-sharing, and faster request-response time. RACER's users can now simultaneously search worldwide catalogues, submit requests with minimal re-inputting of data, trace progress of requests, and receive materials rapidly. Ryerson Library's ILL operations thus progressed from a standalone batch process system (AVISO), to a state-of-the-art system that makes it easier to send and receive messages in real time, and includes ISO peer-to-peer messaging within the OCUL network and beyond (see Appendix A). RACER has been a success - by April 17, 2007, over 2 million requests had been made in the RACER system and several universities from the province of Quebec are now messaging in ISO with OCUL libraries. Important factors in the realization of objectives were: staff dedication, a user-centered approach to ILL, extensive collaboration among all partners and, continual advancements in the technology.

Improved efficiency and system interoperability
    In establishing RACER, the consortium implemented a centralized installation of OCLC PICA's virtual document exchange (VDX) software (see Appendix A). We have seen progressive development of features and performance with each iteration of the VDX software that the vendor releases. Augmented messaging features enable VDX to receive and interpret messages sent from non-VDX systems. OCUL customizations to include extra navigational options, context-sensitive online help, and plain language usage on RACER's screens have helped users better understand the request process. This has resulted in faster turn-around time and has also removed some initial barriers to adaptation to the product. The RACER Support Team, in conjunction with OCUL working groups, oversees these developments. They identify new system features and enhancements and regularly revisit configuration options to ensure that ILL services perform at optimal levels.
    Below is RACER's "My Requests" screen showing a glossary of standardized ISO terms and their explanations (Figure 2).

Figure 2 RACER - "My Requests" screen
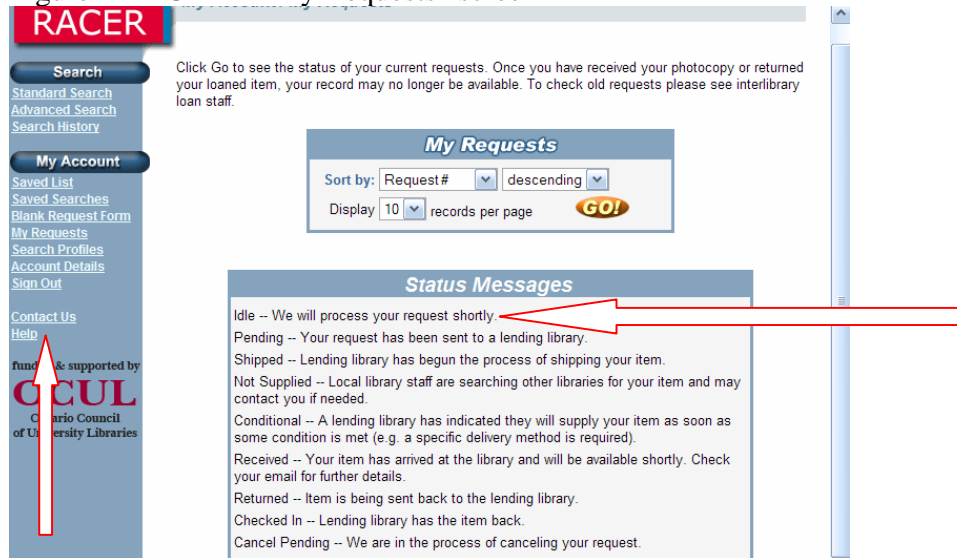
In a line next to each request, (not shown in Figure 2) users are able to see the status of ILL requests they submit. Earlier versions of VDX did not explain the meanings and may have left some end users perplexed about the request's "IDLE!" status.

Note also the "Contact Us" link (a more recent development) in the left menu, with which end users communicate with interlibrary loan staff. RACER is still a work in progress, but enhancements continue to provide more opportunities for feedback from end users.

Auto-mediated requests

Three Ontario universities (Carleton University, Trent University and University of Ottawa) have recently moved from ILL staff-mediated to auto-mediated interlibrary loan. Auto-mediated requests go directly from the end user to a potential ILL supplier, without staff mediation. Eagerly awaited, auto-mediation potentially serves users more rapidly, and frees up time for staff to process more difficult end-user requests. Sufficient time has not elapsed to form fully-conclusive opinions, however, evidence so far is extremely encouraging. Once further analyses and expected RACER upgrades are completed, Ryerson plans to join the auto-mediated group.

SFX integration

In Spring 2007, Ryerson Library will be the third OCUL university to implement SFX integration. SFX is a link-resolver developed by the company Ex Libris, for interoperability between information resources. It transfers citation information seamlessly from borrower library catalogues to electronic resources. The SFX link server appears as a "Get It!" button beside each reference retrieved by an end user's search of Ryerson Library resources (including journal databases). When an end user sees the "Get It!" button in a journal index or article database he/she can click on the button to see a menu that may include varied options, ranging from full-text viewing, to submitting an ILL request (Figure 3) for the item via RACER, if necessary.[3] The RACER ILL request form will be filled with the citation information, and the end user proceeds to complete

any other details, login to RACER, and submit his or her ILL request. This should reduce the number of steps required to request an item, and ultimately the level of end user frustration.

Figure 3 SFX in RACER menu
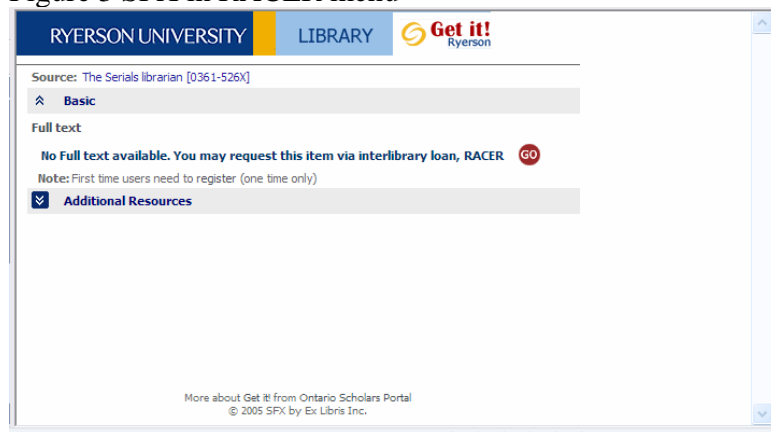
Increased sharing of resources

An OCUL RACER website supports the consortium, hosting documentation for ILL staff, and other end-user materials contributed by Ontario university partners. Through listservs, wikis and other technologies, consortium members support each other, collaborating on general policies and procedures, goals and objectives and even contributing help tools. Ryerson has been a contributor to the help tool resource kit – our latest is our Camtasia video for RACER beginners. With a new release of Camtasia, we hope to include a self-test feature, and receive feedback on the usefulness of the video.

Faster response time

RACER Ryerson users can potentially obtain articles within 1 to 5 days of request. The wait period for books is longer and varies. An item requested of Ryerson by an external institution can be ready to be sent out on the same day or the next, if a request is properly completed and systems are operating fully.

Trends to monitor

External technological developments will affect interlibrary loan operations. For example, CISTI recently announced a new service that provides instant rent-to-view access to tens of thousands of e-Books from major scholarly publishers. Ryerson itself purchases an increasing number of e-books. Despite increased user access to e-book services, to licensed e-journals and to free or open-access journals, Ryerson ILL usage has tended to increase. After a sharp increase over the last few years, ILL Lending now appears to have leveled off. ILL Borrowing by Ryerson users has experienced more recent dramatic, and as yet unexplained, rise. This may be attributable to growth in graduate studies at Ryerson with resulting higher user expectations and demand. It is safe to predict that borrower requesting levels will be sustained into the immediate future.

In RACER's next upgrade cycle, our ZPortal (end-user interface) features are expected to include relevance ranking of search results and the ability for the user to filter and sort

results (i.e. by relevance, item format, publication date, peer-review status, and language). The new RACER will be National Information Standards Organization's Circulation Interchange Protocol (NCIP) enabled. This promises to allow interoperability between the ILL system and the circulation management system. The timing of the release of this option is yet to be determined.

    Adapting to new technologies can sometimes be painful, but we have also enjoyed RACER's benefits. We see this new development as positive. The future is bright for international cooperation with VDX partners, breaking down geographical or technological barriers in achieving the goal of maximum speed and convenience for staff and users alike.

E-Reserve

Comparison with Print Reserve

    While ILL is awaiting a change in Canadian copyright law to enable desk-top delivery, Ryerson Library's E-Reserve project, officially launched in 2004, has achieved the goal of delivering course documents to students online. Print Reserve has a long history, but E-Reserve only came into being in the 1990's, with the advent of the Web technology. The disadvantages of Print Reserve are many. Staff and users know only too well the inconveniences of dealing with paper – time and labour of photocopying, retrieving and filing, and the wear and tear of paper after repeated use. Users, in particular, feel the constraints of having to come to the library physically, during its opening hours. They may have to line up for service if the Circulation/Reserve Desk is busy or have to pay fines for overdue items. It came as no surprise that the students surveyed in 2006 were overwhelmingly in favour of computer access from home or office to Reserve materials. Zero percent preferred print copies requested at Reserve Desk or course packs sold at the University Bookstore. In an earlier survey in 2005, faculty respondents equally recognized the potentials of E-reserve.[4]`

Best-practice recommendations

    Compared with other Ontario universities, Ryerson Library is not an early starter in E-Reserve. However, we have made significant progress in less than three years since we started:
1. Integration with Blackboard course management system (January 2005)
2. Adoption of SFX menu for display of article links (May 2005)
3. Video Streaming on E-Reserve (June 2005)
4. Promoting use of RefWorks for creating own reading lists (September 2007)

All of the above attempted to empower faculty users to take control of integrating course readings with their teaching materials, and to speed up students' access to assigned readings. The developments that eventually occurred were not the ones we envisaged at the beginning. These developments actually grew from realizing the importance of a tight integration between delivery of library resources and services into the course environment. These initiatives also fit in well with the best-practice recommendations mentioned in two documents cited by an article on integration issues: [5]
1. OCLC E-Learning Task Force Report (2003)

2. IMS Global Learning Consortium Resource List Interoperability Best Practice and Implementation Guide (2004)

Among the OCLC recommendations are:

   a) Search and discovery of multiple databases simultaneously
   b) Provide bibliographic tools that permit easy searching and reference completion
   c) Provide access to tools that render and present content in user-customized formats.

The IMS Resource List Guide identified the creation of resource list (i.e. E-Reserve) based on federated search of library and third-party licensed databases (see Appendix A). The first option describes how the instructor requires and desires a resource list within a course. Our initial attempt in using the E-reserve module within Blackboard and the latest initiative to integrate RefWorks with Blackboard are indicative of our efforts towards creating a single e-learning environment so that students do not have to go back and forth or leave their comfort zone, or own domain (e.g. Blackboard course page).

Blackboard integration

The choice of the Blackboard course management system as a teaching/learning portal is not a library decision. The University's Digital Media Project Office (DMP) is the Blackboard system administrator. The Library was fast enough to see the potentials of collaborating with DMP to experiment the E-Reserve module within the new Blackboard release. Ryerson Library also took on clearing copyright permission to scan documents and digitize videos for streaming, a process avoided by some libraries because of staff time and copyright cost involved. Publishers could charge almost anything. Last year, almost 80% of requests turned down by the Library were due to expenses. We paid only if the cost seemed reasonable by our guidelines (less than $2 per student and less than $300 per course).

SFX links

To reduce the instances of broken links and take full advantage of the OpenURL connector for creating links to full text documents, the Library adopted the SFX links in Reserve, yet another area seldom attempted by other Ontario universities. The SFX links are vendor-independent. The Library staff would not need to look up various publishers or database vendor sites for instructions specific to the databases. Speed and convenience for staff were taken into consideration besides benefits for users.

While some may argue that Reserve should only link to one document and not present choices to users, we believed that students would benefit from fewer instances of broken links, if given more than one choice. They would also see the library branding and figure out where to seek help. After all, the students should be familiar with the SFX menu since that was what they saw when searching library databases for relevant articles on their topics (Figure 4).

Figure 4 SFX menu in E-Reserve
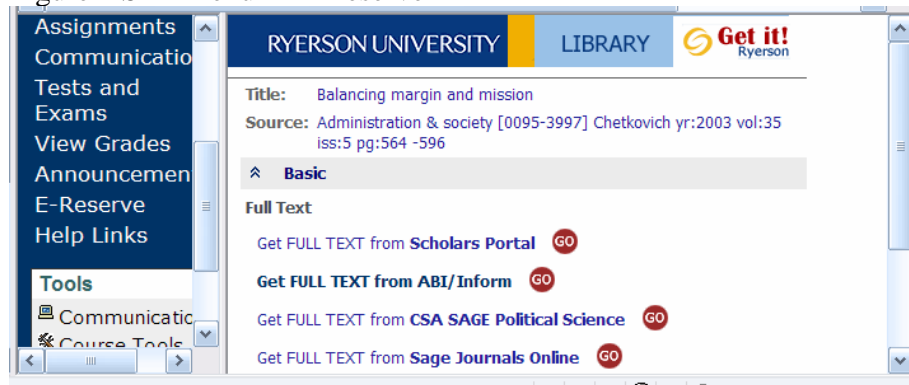
Video streaming

Collaboration with Distance Education (DE) was a step to bring non-text materials into E-Reserve. It is particularly important for students who take courses off-campus to be able to access videos off-site, at the time of need. The library could never order enough copies of expensive videos to satisfy the high demands for videos. These demands were sometimes conflicting, as there could be different sections of the same course taught by different instructors at various locations. The Library policy also does not support remote delivery of physical videotapes or CDs. Campus bandwidth was once the major technical concern. Now, what was holding back the development was copyright. The two main Canadian distributors in feature films had made it clear that they did not permit any digital transmission. Some distributors of educational videos were also cautious about the profit margins of granting perpetual digital rights to stream videos.

On the other hand, multimedia databases that the Library subscribes to increasingly include features that allow the posting of URLs to online teaching applications such as Blackboard. For example, Alexander Street Press advertised the Web2.0 features that enable faculty to post and share music lists, save and clip content from many formats, including textbooks, audio tracks, videos and images, to create comprehensive course folders. "Use them, just for a class, publish them from your institution, or share them with users around the world. Even collaborate and borrow from courses created by others". The opportunities offered by Web technology for supporting teaching and learning are unprecedented.

RefWorks trial

In line with the Library philosophy of helping users to help themselves, in May 2007, E-Reserve approached the Digital Support Librarian for a joint project using RefWorks, the citation manager software, for creating course reading lists. A marketing plan would be drafted to target a heavy E-Reserve user department such as Nursing, and show the faculty how to export stable URLs to their documents, whether these are created in MS Word or on the Web or teaching materials on Blackboard. All the instructors need to do is to have a RefWorks account and they can capture the links to full-text documents while searching the library subscribed databases. The added attraction of creating their own links is that they can export citations in the style of their choice (e.g. APA, MLA).

Depending on how they set up the permissions, students can further utilize these links to create their own bibliographies or e-mail feedback on these documents to instructors (Figure 5). It will be interesting to see how willingly faculty assume the tasks of creating and uploading links to documents themselves, leaving E-Reserve staff more time to focus their energy on complicated links, or copyright procedures.

Figure 5 RefWorks - Setting permissions of sharing
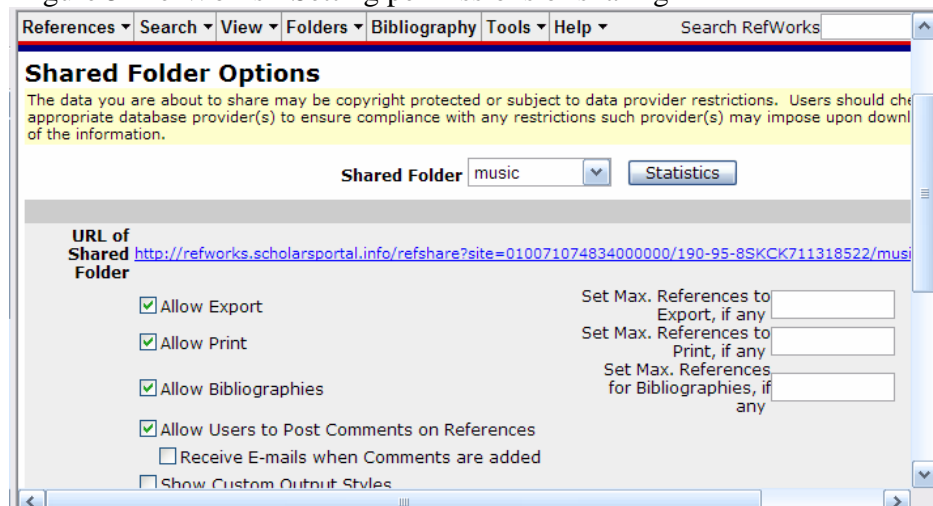
Conclusion

Access 24/7, federated search capability, system interoperability and VLE (virtual learning environment) are some of the buzz words of the new century. CISTI Source, RACER and E-Reserve at Ryerson University Library are exemplary cases of how a small library, with a small collection and ever-increasing demand for information resources strives to make the best of technology to enhance the resource sharing experience.

CISTI Source was the first attempt at providing users with a 24/7 one-stop shopping experience. They can order materials in full-text when conducting a search in a database with global scientific information. The comparison of CISTI Source data with Ryerson Library's journal collection, the link to a customized Web request form for ordering CISTI Source documents, connection to the Library's print and electronic holdings or ILL form for non-CISTI or non-Ryerson requests, were all integrated seamlessly.

RACER demonstrated how consortial investment in a shared system and central technical support made immense progress in federated searching in multiple databases, and system interoperability. The system empowers users to cross search selected library catalogues worldwide, submit ILL requests, track the status and receive e-mail notification of receipt of items. The system also enables ILL staff to instantly exchange requests with resource sharing partners, breaking down the barriers associated with different standards in ILL protocols (e.g. Generic Script and ISO), and software systems. Appropriate adoption of link-resolver technology (e.g. SFX) enhances the integration of information resources and reduces to the minimum the re-keying of data onto ILL request forms.

Ryerson's E-Reserve has taken the document delivery process a step further, into the faculty and students domain – their virtual teaching or learning environment. Faculty can choose to create their course reading lists using RefWorks; they can also request library staff to create the links for them, making use of the OpenURL connector template. Whether the VLE is proprietary (e.g. Blackboard course management system) or simply the faculty's own course pages on the Web, the finished product is document delivery into the course content. Above all, the formats are not limited to text; videos can be streamed and music lists can be shared.

Despite the seemingly enormous achievement in less than 10 years' time, there are still lots of room for improvement to the resource sharing operations. An extra log-in step or library authentication requirement causes frustration to users. A single slip in system communication is enough to make staff cautious of doing away entirely with paper records. It is hoped that technology will further reduce any barriers that exist between different ILL systems, increase the resource sharing opportunities and enhance users' convenience. The OCUL RACER project has expanded its messaging with Quebec, another Canadian province. There is always the opportunity for partnership with other VDX user institutions outside the country. The new generation of end-users is not satisfied with desk-top delivery only; they want information, in all formats, at their finger tips, anywhere, any time, whether it is on their cell phones, their iPods, or other mobile devices. In spite of the proliferation of digitized information resources – books, journals, sounds and moving images, the demand for interlibrary loan and document delivery still exists. Our ever-increasing ILL usage statistics is a reasonable indicator. Technology is not a threat. Technology is a perfect partner with resource sharing, and their convergence is destined to bring resource sharing to a new vision of speed and convenience in a virtual learning environment.

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3. McGillivray, Sue and Joan Seeley. (2006) Linking to RACER ILL via SFX, brief #8. [Toronto]: Ontario Council of University Libraries. (http://www.scholarsportal.info/vdx/support/ongoing/primers/8-linking-sfx.pdf)

4. Cheung, Ophelia and Susan Patrick. Chalk it up to collaboration: E-Reserve in Blackboard. Journal of Interlibrary Loan, Document Delivery & Electronic Reserve, v17 no 3, 2007.[PAGINATION?]

5. Copeland, Lynn. There be dragons: learning management and library systems in Canada. IFLA Journal v 32 no 3, 2006, 200-208.

Appendix A. Glossary
RACER stands for **R**apid **A**ccess to **C**ollections by **E**lectronic **R**equesting.

System augmentations made by the vendor for the Canadian market mean that VDX can receive messages in Generic Script format (i.e. those generated by legacy AVISO ILL systems) as well as ISO.

ISO, International Organization for Standardization, is a network of the national standards institutes of 157 countries, on the basis of one member per country, with a Central Secretariat in Geneva, Switzerland, that coordinates the system. They issue technical standards for various industries, including libraries. (http://www.iso.com/)

OCLC PICA is a supplier of software, content and services for libraries. (http://www.oclcpica.org/dasat/)

IMS Global Learning Consortium is a global, nonprofit association with over 50 members from every sector of the global learning community. They include hardware and software vendors, educational institutions, publishers, government agencies, systems integrators, multimedia content providers, and other consortia. IMS provides a neutral forum in which members work together to advocate the use of technology to support and transform education and learning. (http://imsglobal.org/)