Texas Resource Sharing: Examining the Present, Envisioning a Vibrant Future

Part 1: Introduction and Background

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Introduction

The interlibrary loan environment in Texas is a complex tapestry of many interwoven programs. All of the Texas State Library and Archives Commission (TSLAC) resource sharing programs – TexNet Centers, the Texas Group, the Project Loan program, the TexShare ILL Protocol, the Library of Texas, and any relevant state legislation and rules – are deeply intertwoven, and it is difficult to examine any single piece of the system in isolation. In addition, the overall texture of Texas resource sharing is influenced by many factors outside of the control of any one agency or organization. At any single institution, the level of Internet connectivity, the variety of ILS in use, the access of librarians and patrons to discovery tools for identifying materials, the databases licensed, the options available, the local financial incentives or disincentives, and the marketing efforts all factor into the overall strength of the resource sharing fabric.

In an effort to better understand these factors in relation to the broader environment of innovation in library services, the Texas State Library and Archives Commission (TSLAC) contracted with the Bibliographical Center for Research (BCR) to conduct a thorough analysis of interlibrary loan and resource sharing services in Texas. The purpose of the research as stated by TSLAC in the RFP was:

"… to review the structure and design of Texas statewide Interlibrary Loan services through an unbiased study of the program. A plan is needed for the interlibrary services to meet the challenges of a changing environment. An interlibrary loan study will:

1. Examine options for meeting interlibrary loan needs in terms of costs and benefits.
2. Provide a blueprint, based on best practices, for building interlibrary loan services at the state level into the future.
3. Determine the needs of the Texas interlibrary loan community as they strive to meet patron demands for library materials.
4. Collect accurate information on the attitudes and perceptions of Texas librarians and library patrons toward various methods of interlibrary loan delivery."

The contract called for creating an Interim Report in September 2007, followed by a Final Report in December 2007. The Final Report encompasses all work to date, including research submitted as part of the required Interim Report, additional background research, a feasibility analysis of potential solutions, and recommendations for action. <u>The Final Report replaces the Interim Report in its entirety.</u>

The research study was limited by two primary factors: time and available funding. Because of required deadlines for expenditure of monies used to fund the research, an Interim Report was due following approximately two months of background research. The Final Report, which contains the bulk of the analysis, was due two and a half months later. Extended timelines would have allowed for more patron interviews and surveys throughout the year. In addition, the research team would have been able to organize and schedule focus group discussions on resource sharing as well as one-on-one conversations with key stakeholders. Consequently, the team was limited to responses by telephone and email. Available funding also limited the scope of the patron and staff surveys. Targeting additional libraries with portable electronic survey devices would have provided responses from a more geographically dispersed range of library users who do not currently use interlibrary loan services. Such distribution of portable electronic surveys carries a cost, but would result in more feedback from a group of constituents which are often difficult to reach.

An Executive Summary has been provided to highlight the primary recommendations for improvements to Texas resource sharing. These recommendations have been summarized from other sections within the overall Final Report.

Part 1 includes the background information gathered through various methods during all phases of the research.

Part 2 includes descriptions of potential resource sharing models, including an overview of estimated costs, benefits, and a feasibility rating.

The primary set of recommendations is located in Part 3. The recommendations focus on overall goals to be established for statewide resource sharing service as well as to a specific plan of action for implementing new resource sharing models.

It is clear that if the current funding restrictions in Texas persist (i.e. no significant increase in LSTA funding and no increased funding support from the state legislature) while at the same time the volume of interlibrary loan requests continues to increase each year, TSLAC will be unable to continue to support the current model which funds interlibrary loan service for a significant number of public libraries in the state. The BCR research team hopes that the recommendations contained in this Final Report will assist TSLAC in turning this conundrum into an opportunity for improving resource sharing to all Texans.

Executive Summary

Goals for a Statewide Resource Sharing Service

The BCR research team conducted a review of the resource sharing literature and best practices and protocols. Both patrons and library staff were surveyed regarding their needs and desires related to interlibrary loan service. The results of these reviews and surveys were used to create goals for a Texas statewide resource sharing service which are as follows:

- Patron-centered
- Unmediated requesting
- Maximized use of technology
- Enhanced reciprocity and increased visibility of library holdings
- Flexibility for ongoing change in technology and patron expectations
- Shared funding responsibility at local, state, and federal levels
- Resource sharing viewed as a core service
- Increased training and continuing education for library staff
- Efficient and cost effective delivery of materials

Workflow Improvements to TexNet Centers

A detailed workflow analysis of the TexNet Centers was conducted through site interviews, phone interviews and a time-cost study. The results were used to create recommendations for short term process improvements to enhance efficiency and consistency at TexNet Centers.

- Customize ILLiad and Clio implementations at TexNet Centers to the same levels of automation
- Troubleshoot and improve ILLiad response time between TSLAC and TexNet Centers
- Require use of branch collections to fill Area Library requests
- Develop and implement method of managing all correctional facility requests electronically
- Increase courier participation statewide and reduce packaging requirements
- Develop on-going training program at TSLAC for TexNet Center staff

Transition to New Resource Sharing Model

While short term improvements to the current practices are achievable, long term viability of the overall TexNet Center model is questionable. Traffic through the system has been increasing steadily and improvements in service to patrons will naturally result in even higher demand. State subsidized funding of staff to

provide interlibrary loan support for host libraries is not financially viable over the long term.

The most cost effective method of delivering resource sharing services to patrons within a state is to develop the skills of staff at local libraries, to distribute the workload among all libraries, to provide an easy-to-use centralized software solution, and to support resource sharing with a robust delivery service.

Moving from the current TexNet Center interlibrary loan model to a new resource sharing solution will be painful for libraries heavily invested in TexNet Centers. However, in the long term overall service to Texans will be improved and the skills of library staff developed to a higher level. The transition should be phased in with the major steps outlined below.

- Reduce the number of TexNet Centers from nine to one to achieve economy of scale in current model
- Simultaneously implement one or more pilots to test new resource sharing models
- Issue RFP for a new resource sharing model with specifications based on results of pilots
- Use cost savings gained from reduction of TexNet Centers to transition to a new resource sharing model identified from results of pilot projects

Part 1: Background

The background information in this portion of the Final Report and its accompanying appendices includes all of the data provided in the Interim Report, with some minor corrections and additions. In addition, a significant amount of analysis as it relates to the TexNet Center workflow has been included in new sections. This Part 1 of the Final Report replaces the Interim Report in its entirety.

The information contained in Part 1 was collected in a number of different ways:

1. Site visits to TexNet Centers, including staff interviews
2. A time-cost study using data provided by TexNet Center staff
3. Phone and email interviews with TexNet host library directors
4. A review of data provided by TSLAC
5. GIS analysis of demographic trends, library characteristics and resource sharing program participation
6. A review of interlibrary loan literature
7. A review of available interlibrary loan best practices and protocols
8. Interviews with staff at companies that develop and sell resource sharing solutions
9. Interviews with staff at state library agencies and consortia that have implemented resource sharing solutions
10. A survey of Texas library users
11. A survey of Texas library staff

TexNet Site Workflow Analysis

In August 2007, BCR staff visited all ten TexNet sites in order to better understand the workflow of the entire TexNet system. These site visits included interviews with staff members (as available) to examine how each Center organizes its work and how it is implementing the available automation options. The questionnaire used in onsite visits is included in Appendix 4 and the resulting workflow diagrams are attached in Appendix 3.TexNet Center staff was also asked to complete a time-cost study in order to evaluate the amount of time required for different ILL tasks. Finally, host library directors were queried in order to provide background on the host libraries' view of resource sharing and the library environment in Texas.

TexNet Site Visit Discussion

The following is a discussion of the issues raised in visiting the Centers with reference to related data supplied by the Texas State Library and Archives Commission. The purpose of this section is to be as factual as possible and avoid

extensive analysis or evaluation. It seeks to define the issues to be factored into the feasibility and cost/benefit analysis which are submitted in the following section.

Branches

One of the major factors that affects a Center's turnaround time is retrieving requested items from branches within the system. Most central/main branches are served by the branch courier only once a day. Consequently, at least one extra day is required to bring lending items to the central location or to send borrowed items to patrons for pick up. Some systems allow the branch to refuse a loan which slows the overall lending process.

Communication to branches for item retrieval also varies from Center to Center. Some are using the local catalog's hold system to generate pick lists for library branches to retrieve each day. If the branch item is not available, the routing of the request may be sent automatically to the next available copy in the library system or to may be routed back to the ILL staff in order to pass on the request to another lending library. Others are faxing copies of requests to branches and waiting for reply via fax.

Initiating and waiting for retrieval from the branch location impacts turnaround time and fill rate statistics. It is also a tedious process that creates complex workflows and tracking procedures. One library has chosen not to respond to ILL lending requests which are only available in the branches because it affects their turnaround time statistics too greatly. While this decision benefits their turnaround time statistics, it reduces their fill rate.

Circulation

Each TexNet Center also handles circulation duties (checking items in and out of their local catalog) differently. Most are employing pages or assistants to pull ILL lending items from the central/main branch. At least three Centers are required to check in all returned items as well.

Several models are employed to process and to track materials borrowed for local patrons. Some create simple records on their local catalog in order for the item to be checked out and tracked on the patron record. Libraries with ILLiad have the option to check out items exclusively in the ILLiad system. Two Centers have the circulation staff checking out items in ILLiad rather than the local circulation system. Other libraries are checking items out on ILLiad at the central processing Center which, according the patron survey, can cause confusion as items may appear to be available prior to reaching the pick-up location.

Sites using ILLiad are only checking local patron standing at the time of validation i.e. a patron's first ILL request. Consequently, patrons in bad standing with the host library's general circulation policy may still borrow via ILL.

ILL Management Software

While all TexNet Centers employ the use of ILL management software, the use of these systems is not consistent across the network. No best practices or expectations of a common level of high standards (e.g. paperless workflow) are present in the system. Nearly all TexNet Center staff expressed the need for more training, the desire to better utilize the software available to them, and the recognition that the software was not being used to its fullest. While some issues are local (e.g. firewall, IT support), most issues are related to implementation of the software itself. Those Centers with technology-savvy, proactive staff have worked with vendors and implemented customizations to create highly streamlined procedures. Expertise for better utilization of both Clio and ILLiad is available within the TexNet network staff. All ILLiad installations complained of problems with slow connectivity to the hosted server in the afternoons. While some also identified local bandwidth problems, complaints from the entire system seem to indicate a common problem with the ILLiad server traffic.

Unfilled Lending

Each Center's staff was asked what they thought were the most common reasons for having to say no to lending requests. The top three reasons mentioned: the item is (1) in use, (2) non-circulating—reference, or (3) non-circulating—genealogy. TexNet Centers do not limit the types of items that they lend by format. Exceptions are for bound periodicals and other non-circulating items. Overall, unfilled rates appear to reflect the demand for popular items.

Unfilled Borrowing

All Centers were asked what they thought were the most common reasons for borrowing requests coming back unfilled. Answers were as follows: (1) A/V materials with limited number of lenders, (2) items too new or popular, and (3) non-circulating items. A consistent level of service for unfilled borrowing requests is not present in the TexNet system. Some libraries retry unfilled requests multiple times. Other Centers do not and require the patron to re-request at a later date, causing some negative comment as recorded in the patron survey. Five Centers have limits for the number of requests that can be placed by local patrons.

Patron-initiated Requesting

Seven of nine TexNet Centers have established an electronic submission method for patrons to make ILL requests. A few problems were noted for this service: (1) choice of the "wrong" record (e.g. requesting the large print format rather than standard version), (2) local ownership not verified, (3) assumption that

anything can be acquired through ILL, and (4) using ILL to request items from the branches rather than using the catalog's hold system. While problems were noted, most staff said that they were not significant enough to stop using the service.

Direct Request

Most (7 of 9) have unmediated requesting (Direct Request) set up within their OCLC WorldCat Resource Sharing service. Problems noted were patrons choosing the "wrong" record (e.g. requesting the large print format rather than standard version) and issues with the ILLiad address book for area library referral items. While problems were noted, most staff said that these were not significant and that they and their patrons were happy with the service. Unfortunately, OCLC does not provide statistics on the number of requests that are forwarded through the service.

Comprehensive Holdings Record for Texas Libraries

Overall, current holdings of Texas libraries are not adequately represented on WorldCat. Data provided by Amigos Library Services show that only 24% of all Texas libraries are routinely maintaining their holdings on OCLC WorldCat as governing members. Consequently, it is difficult to fully utilize the resources of Texas libraries in an OCLC-based system. In discussing this issue with TexNet Center staff, only one site was aware of the lack of consistent WorldCat holdings for Texas public libraries.

Also related to WorldCat holdings, lending fill rates are lower because items which have been lost or weeded have not been removed from TexNet Centers' holdings on WorldCat. One library has TexNet Center staff updating WorldCat for such items. Union listing for serial holdings is inconsistent and not current across the TexNet Centers.

The Library of Texas (LOT) is a source for the holdings information of Texas libraries. At this point, 145 libraries have their catalogs set up to be searched by LOT. TexNet Center staff does not use the LOT as an alternate source of discovering holdings. Currently, the technology within the LOT does not allow seamless connection between the local catalog and the typical ILL request workflow nor does it create an alternate fulfillment workflow.

Out-of-State Request Fulfillment

According to TSLAC collected data from TexNet Centers in 2006, 36% of requests are filled by libraries outside of Texas. Most Centers noted that many out-of-state borrowing requests were for audio-visual materials (A/V) because the number of Texas which loan A/V is much lower than those which lend print materials. While the percentage of A/V requests made at TexNet Centers is not available from OCLC statistics, anecdotally, the team observed that A/V

borrowing requests are probably between 30-50% of ILL traffic and growing. In addition, requests for genealogy and local history are often filled out of state.

Correctional Facilities

Seven of nine TexNet Centers provide service to correctional facilities. This activity provides a significant volume for most of those seven Centers. Three of these Centers are receiving requests via paper forms; others have been able to negotiate with facilities to have requests submitted electronically. Many of these requests are vague, unverified, and/or subject-level requests which result in lower fill rates and increased use of staff time. In addition to the extra time required to re-key and verify these citations, some facilities do not allow the TexNet Center to refer the request to other libraries or to mail items directly, causing additional complexities to the workflow. Currently, the total number of requests from correctional facilities is not available.

Postage v. Courier

Anecdotally, TexNet Centers are delivering close to 50% of their deliveries via the Trans-Amigos (formerly Texpress) courier service. While this saves delivery costs, the courier still requires individual packaging. Multiple items to one library and A/V items are boxed. TexNet Center staff expressed concern about the consistent scheduling, the reliability, and high turn-over rate of the drivers. Overall, TexNet Center staff were approving of the courier service. Some wondered if delivery was really faster than the US Mail because mail service to the region was generally delivered the next day. Most expressed desire for more libraries to participate in the service. Some small libraries have innovated and joined a shared stop with a local academic library. Delays in delivery at some Centers are also caused by city requirements to use offsite contract mail services. One library creates labels with USPS barcodes for faster service.

Area Libraries

TexNet Center staff overall expressed a high desire to visit Area Libraries for training and to encourage use of the service. Those Centers that have a close working relationship with Regional System staff are able to travel with Regional Coordinators for this purpose. However, most training and site visits are done in an ad hoc manner within each Center. Support from system offices is also inconsistent from Center to Center. TexNet Center staff at more than one location suggested a subsidy for postage for Area Libraries. Moving to the automated submission of requests was off-putting for some Area Librarians who are not comfortable with computer technology. Workflow issues for ILLiad libraries arise when processing Area Library requests. These requests are transferred to the ILLiad DocDel service which is not designed for returnable items.

Statistics

TexNet Centers are not consistent in retaining statistics from previous years. Most are keeping the actual request forms for five years worth of activity which causes storage issues. Questions were raised about what is necessary for state records and if that information can be retrieved from ILL management systems. Some TexNet Center staff expressed a lack of confidence in statistical validity of the data and its ability to truly reflect service level. Turnaround time statistics could be improved by delineating the delivery time from onsite processing time. Additional statistics would be useful to better understand workflow strengths and weaknesses such as the number of items processed by Direct Request, percentage of requests by format type, and an accurate number of requests from correctional facilities with a separate fill rate. Because of the “blind receipt updating” for area library referral items, turnaround time statistics are not wholly accurate.

Relationship of TexNet Center with Host Library

The relationship of the TexNet Center and the host library impacts its ability to function effectively. When the Center is more incorporated into the local library, assistance from circulation and IT departments enables a more integrated, efficient workflow and allows economies of scale with bulk processing activities such as circulation duties. This relationship varies widely from one Center to another.

Relationship of TexNet Center with Regional System Staff

Those TexNet Centers that are highly integrated with the regional system staff are often separated from the host library and its resources, but they have more opportunities to serve Area Libraries with shared training and education visits. Those closely connected to regional systems also had more responsive IT personnel. This relationship also varies widely from one Center to another.

Relationship with TSLAC

A need for more day-to-day leadership from TSLAC was noted. Two new managers had not had onsite contact from TSLAC. Some TexNet Center staff are looking to TSLAC for training and support with local issues (e.g. communication with correctional facilities, training).

Staffing

Some TexNet Centers cited the need for more staffing in order to deal with the consistently growing volume of requests that the Centers are processing. At three Centers, the designated managers were not previously trained in ILL and are supervising highly experienced paraprofessional staff. Some paraprofessional staff are innovating and using the supplied technology to its fullest.

Collection Development Interaction

Most TexNet Centers interact with collection development departments in an ad hoc manner, informing collection development staff of titles that may be heavily requested for borrowing on a case-by-case basis. One Center has a program in conjunction with the regional system office to purchase items that have been requested by Area Libraries.

Unique local issues

Libraries that do not filter Internet access are restricted by the Child Internet Protection Act (CIPA); therefore, they are dependent on the host library for hardware purchases. Several TexNet Centers are a part of a library which participates in a group catalog. These libraries have workflow modifications that are required to accommodate the needs of the consortia. Electronic document delivery is limited at some Centers by firewall issues and problems with Ariel software. One library noted that the local patron base of each TexNet Center varies greatly; some have higher non-English language requests, while others have more research level requests rather than entertainment/enrichment level. This factor can affect staff time to verify borrowing requests. Instances of inefficiencies within workflows exist, such as recreating pull lists in word processing documents to faxing to branch libraries and updating items in WorldCat Resource Sharing prior to updating them in ILLiad.

TexNet Center Time-Cost Study Evaluation

As part of the evaluation of the TexNet Center service model, researchers developed a survey form and asked the staff members at the Centers to complete a time study over a week of work. The desire of the time-cost study was to develop a more quantitative comparison of the time required to accomplish the interlibrary loan tasks, with distinction between manual and automated activities. Salary information was also included to examine the average staff cost for each activity. Data was also used to compare efficiencies of the ILL management systems used in the Centers. It is hoped that this analysis will also help TSLAC to evaluate the staffing necessary to implement any change to the current system.

Each staff member was asked to complete the survey form for five days, detailing the time spent on various activities. The following activities were monitored and classified as manual or automated. General administrative duties were also tracked but were not included in the comparison of manual and automated activities.

Manual Activities

- Retrieving lending items from stacks (including requests from branches)
- Processing lending items for delivery (wrapping, shipping, sorting for delivery)
- Return processing (unwrapping, online updating, re-shelving)
- Receiving items/processing borrowed material (electronic updating, sorting, matching paperwork) N.B. This category of activity includes some manual and some automated tasks, the proportion of which varies from one Center to another.
- Delivery of materials to patrons (preparation of item, patron notification)
- Returning materials (preparing for shipping, electronic request updating, clearing patron record)

Automated Activities

- Receiving requests from other libraries (downloading requests, printing, sorting, processing paper requests)
- Verify for local call number/local availability (finding bib record, request on OPAC)
- Update request (filled, unfilled, shipped)
- Overdues/Recalls/Lost Item processing
- Receiving requests for borrowing patrons (downloading, handling paper, printing, sorting, re-keying)
- Verifying/searching local collection (finding bibliographic record, placing holds for referral requests)

- Requesting outside of collection (Searching, initiating request in OCLC or other system)
- Maintaining pending requests (electronic or paper; updating patron and circulation records; sorting filing paper requests) N.B. This category of activity includes some manual and some automated tasks, the proportion of which varied from one Center to another.

The time-cost study worksheet is attached in Appendix 5.

Qualification of Data Collection

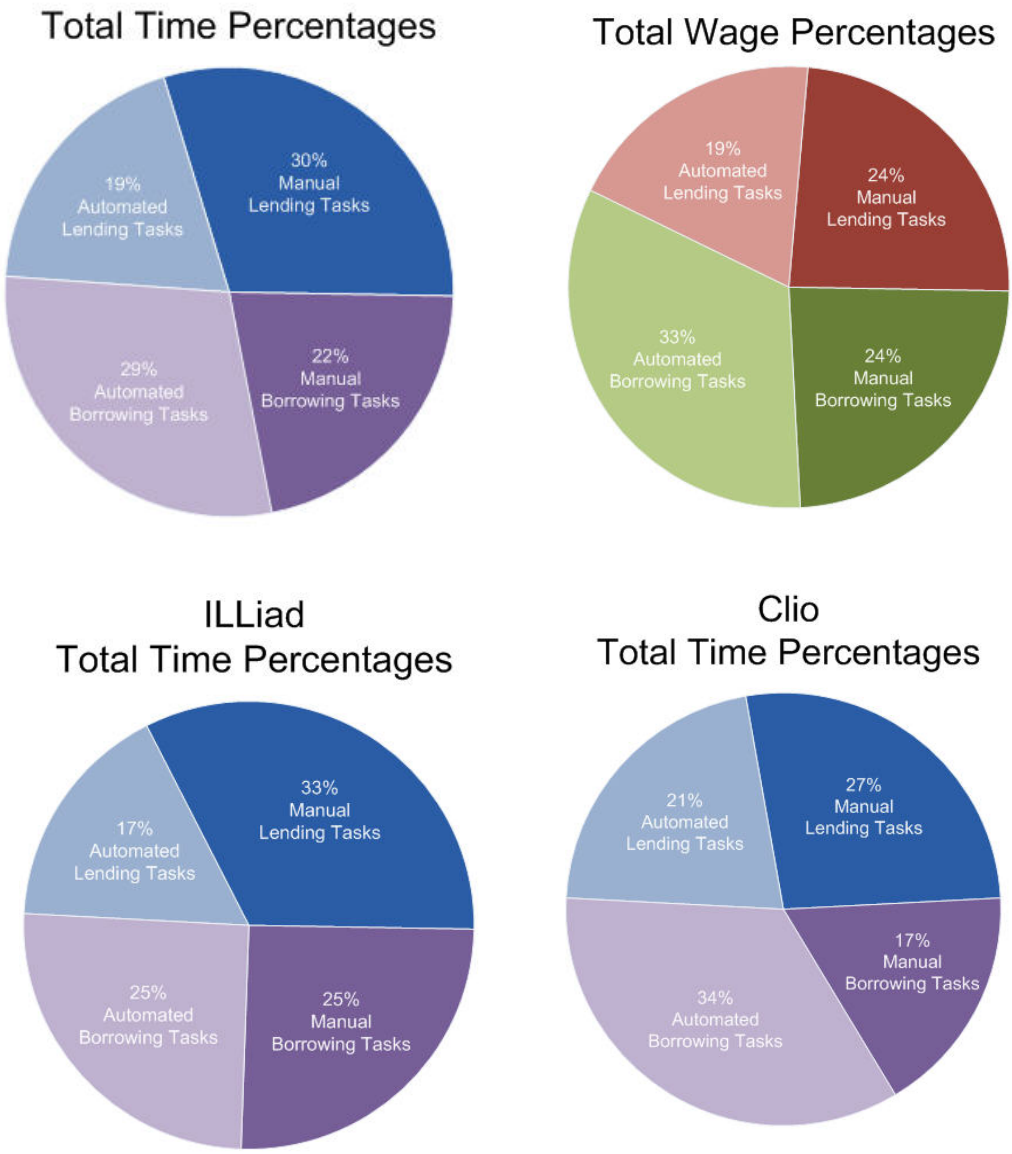
1. Surveys were collected and evaluated from eight Centers. One Center reported independently and could not be incorporated into the research.
2. Some activities, such as opening mail, could not be easily designated between lending and borrowing activities.
3. Two Centers noted that the time study was conducted during the budget planning cycle and administrative activities were more than normal.
4. ILL managers noted that the time-cost form did not contain a specific category for phone calls and email transactions with patrons. When staff noted this time separately in the survey, it was included in the "Maintaining Pending Requests" sections.
5. Data is presented in percentages because the number of FTE for each Center varies greatly and was not reported with a high degree of accuracy.

The raw data are available in Appendix 6. An analysis shows that about half of the work required (62% for lending, 43% for borrowing) to complete an interlibrary loan transaction is a manual process. These are the kinds of activities which are not easily automated (i.e. retrieving items from the stacks, preparation for mailing). Therefore, the possible impact of further automated processes is limited. If article delivery was a larger part of the volume, automation might have a greater impact. However, as demonstrated in the patron survey (see Appendix 11) demand for returnable materials that must be physically handled remains high in the public library environment.

Two ILL management systems are used within the TexNet Centers—ILLiad and Clio. ILLiad offers the most customization options and is used by the higher volume Centers. These Centers had the least amount of "paper shuffling" as most tasks were managed within the ILLiad database. The evaluation of the time-costs between the two types of Centers did not find great differences in the overall time spent on automated tasks. The activities affected most by the increased automation options in ILLiad were on the borrowing side (requested outside of the library 4%; maintaining borrowing requests 3%; receiving borrowing requests 2%) and statistics (2.5%). These findings point to a couple of conclusions. More than 50% of the time and staff costs are not likely to be impacted by automation. The overall processing time differences between the ILLiad and Clio libraries are not significant, but may represent

a significant difference in time per unit handled (i.e. higher volume in ILLiad Centers). It appears that each set of Centers is reaching an economy of scale with the product used. Clio works well for lower volume libraries; whereas, ILLiad customization options are important to expedite the traffic in the higher volume centers.

Figures 1-4: Time-Cost Study Analysis



One can conclude that the TexNet Center service as currently designed is operating with reasonable level of automation and workflow efficiencies and that little opportunity for significant cost savings exists within the current structure. [1]

Analysis of Area Library Service Demands

[1] Additional time-cost study analysis is available in Appendix 7.

The evaluation of the data provided by TSLAC and collected by the researchers finds that the TexNet Center Host Library (TXCHL) benefits greatly by housing the TexNet Center. Since the indirect costs of the Centers are covered by the grant, the most significant cost to the TXCHL is the additional use of their collection as a library of first resort for the Area Libraries' requests.[2] However, this demand is quite low when compared to the overall circulation of the host libraries. An evaluation of the fill rate of Area Library requests to overall circulation of the nine host libraries shows that this additional demand accounts for only 0.15% of total circulation.

Figure 5: Area Library Borrowing Demand on Circulation

$$\frac{\text{Total Fills for Area Libraries}}{\text{Total Circulation for TXCHL}} \times 100$$

$$\frac{36{,}645}{31{,}874{,}000} \times 100 = 0.12\%$$

The major benefit for the host library is the provision of borrowing services for their local patrons. The increasing volume of borrowing traffic for host library patrons is well-documented in the Annual Report for the TexNet Center System. Statistics from 2006 indicate that approximately 53% of the borrowing requests handled within the TexNet system are for the patrons of the host library.[3] The time required to process these requests, however, accounts for 58% of staff time.[4] Consequently, the time expended within the Centers for local patrons exceeds the percentage of request volume. This reality is the result of two factors: (1) Area Library requests are filled as part of the lending workflow which accounts for less time overall; and (2) the physical processing for Area Library borrowing requests is handled by Area Libraries, not TexNet Center staff.

Figure 6: System Time Required for Area Library Lending (based on requests filled)

[2] Host libraries which do not employ Internet filtering do have additional hardware costs as federal grant monies are subject to CIPA restrictions.
[3] The range of these varies greatly between Centers from 20% to 85%.
[4] Based on staff time for borrowing and lending only; does not include time for administrative tasks.

$$\frac{\text{Area Library Lending Requests}}{\text{Total Number of Lending Requests}} \times 100 = \text{Percent of Lending Volume for Area Libraries}$$

$$\frac{36{,}645}{154{,}142} \times 100 = 24\%$$

$$\text{Percent of Lending Volume for Area Libraries} \times \text{Percent of Time for Lending Processing}$$

$$24\% \times 49\% = 12\%$$

Figure 7: System Time Required for Area Library Borrowing (based on requests filled)

$$\frac{\text{Area Library Borrowing Requests}}{\text{Total Number of Borrowing Requests}} \times 100 = \text{Percent of Borrowing Volume for Area Libraries}$$

$$\frac{56{,}390}{215{,}420} \times 100 = 26\%$$

$$\text{Percent of Borrowing Volume for Area Libraries} \times \text{Percent of Time for Borrowing Processing}$$

$$26\% \times 29\% = 7.5\%$$

Figure 8: Time for ILL Tasks—Comparison

Lending—Area Libraries	12%
Lending—Other	37%
Borrowing—Area Libraries	7.5%
Borrowing—Local Patrons	43.5%

These figures demonstrate that a significant portion of statewide resource sharing funding is encumbered to support service to local patrons at the host libraries and lending to non-Area Libraries. The subsidy received by these libraries is high when compared to the types of resource sharing subsidies provided to other public libraries in the state.

Directors Background Discussion

The Library Directors of each of the TexNet Centers were surveyed for background information on the Texas library community, the TexNet structure, interlibrary loan, and statewide resource sharing services. Over half of the Directors responded to our survey and were asked the following questions:

1. What are the top two or three issues facing libraries in Texas?
2. How do you view your library's role as a TexNet Center? What are the advantages and disadvantages?
3. What is your view of TexShare and its impact on libraries in Texas?
4. If a new funding structure for TexNet was created, would you bid in a competitive granting environment? If not, why? How would that change your library's interlibrary loan service?
5. Any ideas for funding or managing the TexNet Centers?
6. Other comments?

Funding was universally mentioned as an important issue facing the Texas library community, as well as the diversity of the patrons across Texas, both in their needs and expectations of library service. Providing a well-trained professional library staff was also deemed a critical issue facing many libraries. Apprehension exists regarding patron-initiated technology and the resulting increased demand on staff and resources.

All responders felt the current TexNet service provides an efficient and useful service to the Area Libraries. The existing structure offers the smaller libraries essential technological support in borrowing and much needed access to materials they could not expect to purchase. The subsidy of the local interlibrary loan service was also discussed by Directors, a benefit that many would have a difficult time replacing within local budgets. Many volunteered that they would continue to provide interlibrary loan service outside of the TexNet funding subsidy; however, a diminished lending service was seen as a possible outcome. In general, more information was needed before Directors would comment on whether their library would bid on a TexNet Center contract in a competitive granting environment.

Directors offered no suggestions for significant modifications to the service, though it was recognized by a few that consolidations into larger service areas might offer some efficiencies and cost savings. Some concerns about turnaround time, patron satisfaction, and delivery issues were expressed if fewer Centers were created.

TexShare was unanimously commended for its impact on the Texas library community, both in its increased access to resources and cost sharing benefits. It was seen as an example of a cost effective and efficient statewide service.

Workflow Improvement Recommendations

As discussed in the previous section, the TexNet Centers are operating with a relatively high degree of efficiency, based on their use of ILL management software, patron-initiated requesting, and unmediated request processing. The following recommendations would make minor adjustments to the TexNet Centers' processing functions, bring all Centers to the same level of automation, and maximize the investment in the ILL management software programs.

ILLiad and Clio Customization

One area that varied the most between the Centers was their use of the customization features available within the ILL management software programs. These features do not require routine maintenance, rather they are options to be set once and then utilized though daily processes. Optimizing the use of the customized processing options will make the best use of the investment in these management systems and improve workflow. Expertise to implement these changes is present within the TexNet Centers' staff and would not require a visit from Atlas or CLIO trainers.

<u>ILLiad</u>

The most important customization for ILLiad libraries is the use of the labeling systems. Many Centers have created additional workflow accommodations and printed paperwork that can be eliminated with the use of customized labeling. The TexNet Center at Fort Worth Public library has developed label customizations which would not require services of local IT staff in order to implement in other Centers. This knowledge can easily be shared throughout the system, and would address a specific need expressed by many staff during the site visits. Fort Worth has also developed an effective way to update the Area Library requests to "Received" status.

<u>Clio</u>

Staff at Abilene Public Library has worked with Clio staff and Sirsi/Dynix to streamline workflow for borrowing processing and collection of statistics. Sharing these improvements across Clio libraries should be aided by the fact that all TexNet Center libraries that use Clio also use an ILS product from Sirsi/Dynix.

ILLiad Connectivity

ILLiad libraries complained of particularly slow updating processes in the afternoon. These slow downs can force staff to wait up to 5 minutes for request status to update. This delay disrupts the workflow, frustrates the staff, and causes dissatisfaction with the software. TSLAC should consider investing the resources necessary to resolve these connectivity issues and assist the Centers with prioritizing their traffic out of local firewalls.

Branches

In order to improve fill rates and to utilize the TexNet Centers' collections as "libraries of first resort," the grant contract should require consistent policies regarding use of branch collections to fill Area Library requests. The Centers' collections should be fully available to their Area Library patrons just as they are to local patrons. Library staff reservations regarding sharing materials, or issues regarding turnaround time, should not be the reason for unnecessary OCLC referral of requests to other libraries.

Correctional Facilities

TexNet Centers which still receive requests in non-electronic format from correctional facilities should develop a program to manage this request traffic electronically. Consultation with the Centers that have successfully made this a requirement for service is recommended.

Courier participation and packaging

Broad promotion of the courier service should be conducted through TSLAC affiliates. This promotion could include statistical information about the improvement in service to patrons and comparison of courier cost to postage costs.

Many other courier programs provide nylon zippered bags for packaging materials. This one-time investment could offer an opportunity to streamline the courier processing routine. One courier system does not even require individual packaging. A reasonable number of items for the same library are bound together with rubber bans and then labeled. The bundles are put into tubs for transport. Fragile or materials in need of special protection are packaged as necessary. Such modifications to the processing could greatly reduce handling for both shipping and receiving as well as save costs and storage space for shipping materials.

Training

TSLAC is encouraged to consider the place of training within the system. With the acknowledged growth of request volume, it will be important for TexNet staff to keep up with developments in the field in order to manage the level of growth. There is a good deal of expertise within TexNet Center staff that is underutilized. Sharing innovations in request processing would reduce paperwork and filing across the system and would make it easier for all Centers to accommodate the growing volume of work.

Texas Resource Sharing Culture

The TexNet Center Interlibrary Loan Program has as its central focus the borrowing and lending of physical items between libraries—commonly referred to as interlibrary loan. It is one of several statewide information access programs available to qualifying Texas libraries, such as TexShare Databases, Project Loan, Library of Texas, and the Texas Group. Together these programs constitute the resource sharing efforts of the Texas State Library and Archives Commission. Existing funding, technology and service goals within libraries all provide the context for a statewide approach to rethinking resource sharing in Texas. In developing models for change for the interlibrary loan program, the research team has chosen to take a broader view of the status of resource sharing in Texas. The current structure provided by TSLAC supports a unique resource sharing culture which will impact any proposed changes to the TexNet Center service. The following elements work together to shape institutional attitudes, service models, and policies in Texas libraries. These cultural aspects are outlined below in order to better understand the feasibility issues that will arise in seeking to create a new environment and/or system for resource sharing in the state.

Funding

Resource sharing in Texas public libraries is primarily a state supported service. The patrons of the TexNet Centers (five large urban and 4 mid-sized rural libraries) receive a complete subsidy for their interlibrary loan service. This service accounts for more than 50% of the total borrowing transactions within the TexNet Center system.[5] Additionally, the borrowing activity of public libraries in the Texas Group is funded through TSLAC. With these subsidies, local library administrators have been shielded from the necessity to prioritize resource sharing within their own library's mission and budget. Interlibrary loan as a core service may struggle to find a place in local budget priorities without such subsidies.

Other resource sharing programs—Project Loan, TexShare, and courier service—are either entirely supported or heavily subsidized by state and federal monies as demonstrated in the chart below. Local contributions to statewide resource sharing initiatives are limited.

Figure 9: Resource Sharing Funding Distribution

	Local	Federal	State
TexShare DB	x	x	x
Project Loan		x	

[5] See discussion of TexNet Center Time-cost Study in the preceding section.

TexNet Centers		x	
TX@G		x	
LOT and TRAIL		x	x
Courier	x		x

Encumbering state and federal funds for basic services such as ILL limits the state's ability to develop cutting edge or even second generation programs and results in a reactive, rather than proactive, approach to resource sharing demands.

Reciprocity

Best practices suggest a 1:1 borrowing to lending ratio as the ideal. The TexNet Centers and the Texas Group provide significant subsidies for libraries to borrow for their patrons. Whereas, lending subsidies are generally targeted toward academic institutions. Consequently, these funding priorities have not fostered an environment of reciprocity among public libraries.

Exposure of Holdings/Union Catalog

An impediment to reciprocity is the lack of widespread exposure of holdings among Texas public libraries. An equitable resource sharing system within the state requires a readily available union catalog. Data supplied by Amigos Library Services and TSLAC show the overall percentage of **holdings** at Texas libraries available in WorldCat (the most commonly used union catalog for resource sharing) is actually quite high, more than 75%. These numbers indicate that the largest collections are available for use in the WorldCat Resource Sharing Service, and present a sense that Texas libraries are well represented within the service. However, approximately 76% of libraries in Texas have not been routinely maintaining their holdings as governing members of OCLC. This represents more than 24 million items which could be circulating in the resource sharing system. While system membership requires libraries to offer lending services, funding that would support the broad scale exposure of holdings within the most commonly used ILL resource (OCLC WorldCat) is not provided.

The Library of Texas (LOT) is another possible source for the holdings information of Texas libraries. At this point, 145 libraries have their catalogs set up to be searched by LOT, representing only a small percentage of libraries in Texas.

Adoption of New Technology

While embracing much new resource sharing technology, apprehension remains regarding the impact it has on request volume and sufficient staffing. Opportunities for unmediated patron requesting are not optimized. Smaller Area Libraries often resist adoption of digitally-based technologies. Even staff at large libraries hesitate to welcome updates to existing software because of the ensuing

disruption it often causes. These hesitancies to fully automate request service restrict the ability to adopt automated time and cost saving measures.

Training

Funding for staff training within TSLAC's subsidized resource sharing programs is minimal. Staff training is essential to leverage technological investments and to create workflow efficiencies. As an example, interlibrary loan management technology is not used to its fullest even though expertise is currently available within the TexNet system. Budget priorities at all levels have not recognized staff training as a critical element in providing resource sharing service.

Texas Resource Sharing Data and GIS Analysis

Because of the complexity of the resource sharing environment in Texas, BCR sought to bring together the data pertinent to a full understanding of where resources are deployed throughout the state. This process required the collection of data from various sources such as TSLAC, Amigos Library Services, and NCES. Details of the data sources can be found in Appendix 2. These data were collected and sorted in an Access database in order to allow further analysis for the cost/benefit and feasibility sections below. BCR is delivering this complied data in an Excel spreadsheet to allow further and future use by TSLAC and is present in Appendix 1.

This database was also the basis for the GIS mapping analysis which will provide a comprehensive visual depiction of services deployed throughout the state of Texas. The analytical and interpretive maps, which are designed to be interactive, are delivered separately in electronic form. CIVICTechnologies will provide support and training to TSLAC in the application and use of the interactive maps. Additionally, CIVICTechnologies has provided demographic analysis in Appendix 2.

The projection of data through GIS analysis presented key information for planning recommendations in the final section of the report. One important finding was the ratio comparison of net lending to net borrowing libraries (see map in Appendix 2.) This analysis prominently displays how exposure of local holdings enables reciprocity. The Texas Panhandle Library System (TPLS) with the Harrington Library Consortia has the holdings of all Area Libraries available in WorldCat. Consequently in 2006, 13 of 31 libraries in that region are net lenders to the resource sharing system. The status of libraries in TPLS stands in contrast to the rest of the state where the majority of libraries, many with sizeable collections, act as net borrowers in the system.

GIS data applications can continue to provide planning information for TSLAC as it moves into a time of change, allowing it to deploy resources to the most appropriate areas.

Literature Review and Bibliography

In order to understand the context of interlibrary loan and resource sharing, it is important to survey the broad landscape of both library innovation as well as the studies of patron interaction with library services. Two thorough literature reviews relating to interlibrary loan and resource sharing are extant. Thomas Walhart (1985) covers the initial stages of study through 1985. Joan Stein (2001) continues the review through the work in 1998. Both reviews cover the primary research areas in resource sharing: (1) fill rate, (2) turnaround time, (3) cost, and (4) user satisfaction. This review does not attempt to be a comprehensive review of the literature relating to resource sharing, rather it is an overview covering themes related to this project and the issues as identified in the request for proposal from the Texas State Library and Archives Commission and as revealed in the site visits to the 10 dispersed TexNet Centers. It should be noted that current studies are predominately of the academic library environment.

The Climate—Libraries

The Texas State Library and Archives Commission well recognizes the change that has deeply affected library services over the last 10 years with the advent of technologies that empower user interaction with information in a virtual environment. These trends are well documented throughout library literature.

In recent years OCLC Online Computer Library Center has completed two comprehensive studies to assist librarians in understanding their environment and the relationship of libraries within that environment. *The 2003 Environmental Scan: Pattern Recognition* report detailed trends in the social, economic, technological, education and library landscapes. Major findings include trends toward self-service, satisfaction with Internet resources, the need for seamless delivery, global economic factors that favor infrastructures that encourage sharing, shifts to structured data, distributed and open source software, the growth of e-learning environments, reduced funding in education, and increased life-long learning endeavors in the community. OCLC's *Perceptions of Libraries and Information Resources* explored the average person's understanding of the library. Results demonstrated that while libraries are considered a trusted source for information, most people are not aware of the electronic offerings presented at the library. The results also showed that patrons are looking for more self-service models.

Mary Jackson (2004b & 2005) summarizes how these trends are affecting the world of resource sharing. She highlights the shift to user-centric service which places more responsibility and workflow onto the user, removing the high costs of staffing for meditated interaction between libraries. These shifts also blur the distinctions between the traditional silos of library work—when consortial buying of electronic full-text databases increases collections and access at the same

time or when direct consortial borrowing moves the traditional interlibrary loan request to a circulation transaction. She identified 10 key trends that will shape the resource sharing environment for the years 2003-2008 (Jackson, 2004b): (1) rising user expectations, (2) mediated service shifts from centralized to standards based systems, (3) user initiated services grow, (4) increased access to electronic resources, (5) copyright and licensing issues, (6) federated searching, (7) enhanced online catalogs, (8) the blurring of collection and access activities, (9) technical standards, and (10) increased globalization.

In preparation for an analysis to determine outcomes-based evaluative measures for its resource sharing services, MINITEX noted the following environmental trends:
(1) impact of web-based services, (2) electronic service integration between libraries, (3) patrons' desire for self-help, (3) a population growing in diversity, and (4) increasing need for cost-effectiveness and accountability (Management Analysis Division, 2003).

Current catalog systems function best to identify "known" items (University of California, 2005), but lack of sufficient standards limits the ability of seamless discovery and delivery (Pearce, 2005). Schuyler (1998) comments that it is broadly recognized that interlibrary loan is a high cost service for a small percentage of the patron base, but that this service is highly valued and will continue to be a part of the library landscape.

The Climate—Patrons

Patron studies have demonstrated the need to re-assess what librarians assume about their patrons and such information should help to shape the approach to library problem solving. In reference to resource sharing services, Oberlander argues that libraries need to design services around the user community rather than around the library functions and to increase the presence of direct to customer delivery options (Oberlander, 2007).

Morris (1998) found that most libraries are satisfied with current feedback mechanisms, often don't implement feedback into decision making processes, and look for the results "they" want to see. Library staff view patrons as "happy amateurs" (Akselbo, 2006). Director of the Pew Internet and American Life Project, Lee Rainie (2006) suggests that librarians need to take the role of information support technician like "tech support staff."

Kani-Zabihi (2006) argues that patron competency with IT does not affect expectations of functionality, but it does affect what features are valued. Users are satisfied with search strategies regardless of poor result (Bilal, 2002). Mills (2006) found that attention to customer service is important because personal

interaction and past interaction affects user perception and understanding of the value of libraries and this issue was confirmed by Radford (2007).

Young adult patrons have specific distinctions in regard to their interactions with libraries. Agosto (2005) found that young people do not view libraries as relevant and seek information from other people. They have high attachment to digital tools but don't necessarily understand them, and their needs for information are contextually based and contingent on current surroundings (Rainie, 2006). Rainie (2006) also found that time-saving has a higher value than accuracy, and that most young people have low concern for or awareness of copyright and privacy issues. Young adults perceive library virtual and chat services as different from similar services in their social networks (Radford, 2007).

Demand for Resource Sharing

Overall, studies in the last 10 years demonstrate an increasing demand for resource sharing (Preece, 1998; Bogar, 1998). In a large urban public library district study, volume increased more than 25%, but staff costs only increased 4% (Emm, 2004). The Association of Research Libraries (ARL) also recently noted an increased demand for returnables (Beaubien, 2007).

However, some libraries have noted a decrease in demand. A study of higher education institutions in the United Kingdom cited a decrease in demand for articles and attributed the decrease to an increase in the number of electronic journal subscriptions (Goodier, 2004) (Lobban, 2006). A study at Edinburgh University, however, was not able to identify the reason for the decrease in monograph borrowing traffic (Lobban, 2006). Egan (2005) similarly found decreased demand directly correlated to the availability of full-text online, even if the items available in full-text were not current, and hypothesizes that decline in demand may be evidence that convenience is trumping content for patrons.

MINITEX's study (Management Analysis Division, 2003) identified that the following factors increase use of ILL and document delivery:

1. Need for access to strong collections
2. Decreasing budgets for collections/materials
3. Increasing quantity of information available to people
4. Online databases which are generally not full-text
5. Coordination of collections within a region
6. Increase in familiarity with these services in high schools
7. Online databases which come and go depending on budget
8. Distance education
9. Online catalog with direct borrowing functionality
10. Implementation of gateway enhancements
11. More access to technology finding tools
12. Patron-initiated, unmediated requests using MnLINK

Automation and Patron Initiation

In the Jefferson County (Colorado) Public Library District, the costs of delivery via patron placed holds in a direct consortial borrowing system were significantly less (90%) than mediated ILL and allowed for an increase in volume of 20% (Emm, 2004). A patron-initiated service, Borrow Direct, among seven private academic institutions produced a nearly 85% fill rate and a turnaround time of four business days, a dramatic increase in the volume of service at a significantly lower cost. This increase in volume has created a need to reallocate staff resources at some libraries (Nitecki, 2004a). The Borrow Direct model calculates its cost at less than $10 per transaction. Designers of the service will seek to maintain an emphasis on service quality and user satisfaction by continued evaluation in order to continually improve the service (Nitecki, 2004b).

Patron-initiated requesting has been a viable option for interlibrary loan services for at least the last 10 years (Preece, 1998). Southern Illinois University began unmediated interlibrary loan services for their patrons in 1994 with an emphasis on customer service. The cost savings in this service model allowed increased funds for borrowing fees and photocopies. While volume increased, it did not require a higher number of staff. Additionally, patrons enjoy a faster turnaround time and higher satisfaction with the service.

Cascade Union catalog's patron-initiated, direct consortial borrowing model had an increase in volume of more than 250% over a three-year period. Practitioners still argue the need for traditional ILL as important and necessary for copies and books outside the consortium. Authors reported anecdotally that patron satisfaction is high and turnaround time fast, with no over lending by large libraries or over borrowing by small institutions (Chmelir, 2005). In another study of the same system, Munson (2006) found a decrease in demand for mediated interlibrary loan which allowed the ILL department to improve its borrowing service.

Academic libraries in Utah developed the Utah Article Delivery (UAD) service after a mandate from the state legislature to increase resource sharing. After looking at adding additional staff and resources to the traditional model, they chose to subsidize a document delivery service for articles not available in-state. This project sought to significantly decrease turnaround time for article requests (from six days to 24-48 hours). (Kochan, 1998)

Successful improvements to ILL services at Ryerson University also resulted from consortial purchases of ebooks, subsidized document delivery service (from CISTI) and use of VDX with a user-centric focus (Cheung, 2004).

After the results of an ARL 2002 study of ILL costs (Jackson, 2004a) became available, Iowa State University compared its costs to the averages documented in the study and found deficiencies in their lending services. In order to remedy the situation, they added local holdings information to OCLC WorldCat to improve fill rates for article requests, employed the RAPID ILL union list-based article request service and hired professional level staff to supervise the lending department (Iowa State University, 2006).

The state of Colorado employed the use of a distributed model of item requesting where local librarians place their requests within a shared statewide installation of VDX, an ILL management system. Known as SWIFT, the system is completely subsidized by the state and has reduced costs for lending and borrowing (Bailey-Hainer, 2004). The implementation of the SWIFT interlibrary loan network improved resource sharing across Colorado but also served as a development activity as librarians acquired new skills and improved services to their patrons.

The Committee on Institutional Cooperation (CIC) created a virtual catalog with an integrated request form. A patron study showed that this catalog was most used for known items (i.e. not discovery), but that patrons felt delivery was faster in this service than in traditional ILL (Prabha, 1998).

Technology

Steely (2004) describes the many open source options that are currently available to improve resource sharing activity and proposes a “Gourmet Resource Sharing System” that would create seamless connectivity between a patron search, request for item (no matter where or how the item would be retrieved) and the types of code that would be needed to connect the system.

Awareness of standards is important for librarians to communicate their needs to the vendor community to move toward more interoperability. Nye (2004) reviews the developing changes in standards work with emphasis on NCIP (NISO Circulation Interchange Protocol) and its application to direct consortial borrowing, circulation/interlibrary loan interaction, and self-service circulation. Broad implementation of this standard is necessary for the wide-scale movement of interlibrary loan traffic to a more circulation-based model (which has been previously documented as being more cost-effective.)

Studies performed by ARL (Jackson, 1998 & 2004a) discovered certain practices which were common among ILL departments with high-performance rankings. Use of technology and automation are widespread in these characteristics.
High performing borrowing operations

1. Maximize use of technology
2. Use a single messaging system
3. Maintain a paperless office
4. Send articles directly to patrons
5. Are willing to pay lenders/suppliers
6. Use staff with interest in technology
7. Have directors that support the activity

High-performing lending operations

1. Encourage borrowers to use their library first
2. View lending as a business
3. Maximize use of technology
4. Ship materials via Ariel, fax, or expedited methods
5. Oversee the entire process (mailroom to billing)
6. Check the stacks for materials only one time
7. Charge for sending books or articles
8. Accept credit cards, IFLA vouchers
9. Have directors that support the activity

Automation also increased patron satisfaction and staff effectiveness at Washington College when the Clio ILL management system was implemented (Shoge, 2001). Increased patron satisfaction may also result from the addition of a tiered service level as described by Peterson (1999), who examines a German fee-based system for faster, direct delivery of monographs. Furthermore, automated unmediated electronic article delivery via Odyssey (rather than Ariel) proved to decrease turnaround time (Connell, 2006).

Huwe (2004) argues that using one integrated online request form for ILL and document delivery provides an opportunity for branding the library service, a single point of request and retrieval, a better understanding of usage patterns, an opportunity for online bibliographic instruction, and increased cooperation with vendors and consortia members.

Policies

Another area that can be addressed to assist in increasing fill rates and decreasing turnaround time is the role of policies. Many libraries have restrictions on the types of items that are lent from their collections and what institutions to which they will lend. Jackson (2005) reports that more libraries are easing these restrictions. This kind of broader sharing has been encouraged by the Rethinking Resource Sharing Initiative ("It's Time . . .", 2005).

User-focused policies are also reflected in the study conducted by Yang (2006). This study of local document delivery sought to determine the best turnaround

time for articles which were not available on the shelf on first check. Previous practice was to return for a second time to check for the item, but Yang found that ordering the item from another library decreases turnaround time. The author chose to change to the practice that favored the faster turnaround time even though the items were found on the shelf 44% of time on second check (Yang, 2006)

Costs

The standard in determining the cost of interlibrary lending and borrowing has been the studies of Mary Jackson for the Association of Research Libraries in 1992, 1998 and 2004. The most recent study confirmed that user-initiated transactions "have lower unit costs, higher fill rates, and faster turnaround times than mediated services" (Jackson, 2004, xi) and verified that the biggest portion of the cost for ILL lies with staffing. The author hypothesized that service improvements between reports were the result of the tools and data provided in the previous studies to enable library directors and ILL managers to make improvements, increased use of technology tools, and widespread enthusiasm for change within the ILL community.

Impact on Collections

Resource sharing has an impact on collections. Campbell (2006) piloted a purchase-on-demand program to buy and add to the collection items that met established criteria rather than borrow them from another library. She found that the cost of purchase was equal to or less than the cost to borrow. Additionally, the items recirculated an average of seven times.

The question of access versus ownership has been widely discussed in library circles since the advent of online full-text database products. Kingma (1996) presents a detailed study of the universities of the State University of New York at Albany, Binghamton, Buffalo and Stony Brook. The detailed economic study and comparison included a patron survey to assess the "costs" involved in waiting for the delivery of a traditional ILL item. The economic model is followed by a set of decision rules that allow a library to compare the costs of ILL to those of access.

Policies for choosing lender can also affect the use of library collections. Sloan (1998) sought to challenge some assumptions on how collections of different sizes and types of libraries are used in resource sharing. He cites studies which demonstrate a general overlap of smaller and larger collections. Consequently when the holdings of all libraries, large and small, are widely exposed large libraries are not overburdened with requests because more libraries are available to respond to requests. His study showed the converse to be true, that smaller libraries loaned more than larger ones. While results were inconclusive regarding the assumption that libraries borrow from other libraries of the same type, he did

find that proximity did not play a large role in choice of lender. Also contrary to a common assumption, large libraries did not have the highest net-lending ratios nor did small libraries have the highest borrowing ratios. Rather mid-sized libraries carried the highest net-lending ratio.

Standards of Measure

The maintenance of quality service requires routine evaluation of processes. The library at New Mexico State University took on the job of creating benchmarks for their service during the late 90's (Stabler, 2002). This project involved comparing the results of the ARL study (Jackson, 1998) to their local statistics and creating goals to improve service to met and exceed medians established in the study. The staff also obtained grant funding to conduct site visits of other high performing ILL offices. Goals included better use of staff, integration of ILL and document delivery, union listing of serials, and further feedback from patron groups.

In creating its best practices document, the International Federation of Library Associations and Institutions (IFLA) has set out rationale for creating service benchmarks and cites the following benefits for the benchmarking process (Stein, 2006):

1. It supports a culture of change and of continuous improvement.
2. It supports a learning organization.
3. It helps to break established patterns of behavior and thought that may no longer be productive.
4. It provides models for excellence.

In accordance with IMLS requirements, MINITEX, a library network in Minnesota, North Dakota and South Dakota, worked with the Minnesota State Office of Administration to create outcome-based measures for their resource sharing services (Management Analysis Division, 2003). Historically, MINITEX had used cost and efficiency measures to determine success. The evaluation of services concluded that it was necessary to increase visibility with the patron community in order to judge outcomes effectively. The outcomes are as follows:

1. Innovating to make all services continually more cost effective
2. Providing more services that leverage the skills and time of library staff resources
3. Ensuring that library patrons' needs as well as library needs figure prominently in the design and redesign of services
4. Making best use of online resources for service delivery
5. Promoting integration, partnering, and collaboration among libraries and systems.

This overview of interlibrary loan literature demonstrates that library patron service expectations have changed dramatically over the last 10 years.

Consequently, the focus of most interlibrary loan departments has been to improve service through automation and patron-initiated requesting. The most significant costs of interlibrary loan lie in staffing and its overhead. Consequently, cost reduction is also a result of increased automation. The new service environment is additionally calling on libraries to be more liberal in their lending polices. Finally, libraries are employing benchmark structures in order to improve their service.

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Interlibrary Loan Best Practices and Protocols

Interlibrary loan best practices promote a productive and streamlined service which, hopefully, results in high end user satisfaction. Best practice statements establish a common understanding of expectations and policies among resource sharing partners. Many examples of best practice documents for individual libraries, library consortia and resource sharing cooperatives are readily available, (see following list), including TexShare's ILL Protocol. The changing cultural expectations for resource sharing have encouraged some to embrace radical change in policy. This kind of change is modeled in the "Rethinking Resource Sharing Manifesto."

As mentioned in the preceding literature review, IFLA's rationale for creating benchmark standards includes the following:

1. They support a culture of change and of continuous improvement.
2. They support a learning organization.
3. They help to break established patterns of behavior and thought that may no longer be productive.
4. They provide models for excellence.

Best practices often define institutional objectives related to interlibrary loan service and complement the specific requirements of an interlibrary loan code. Typically, best practices include activities associated with the library's IT capability, cataloging functions, collection development policies, staffing and training. The following are found in most of the best practice protocols:

- Electronic requesting for lending and borrowing
- Negotiate licenses for e-content which allow ILL use
- Collection development response to ILL demand
- Union listing of serial holdings
- Electronic delivery options
- Load leveling to suppliers
- Lending of all formats
- Limiting barriers to lending (e.g. charging borrowing fees)
- Staff expertise and training expectations
- Definitions of materials that should not be requested through ILL

The TexNet Centers generally provide service that reflects best practice guidelines. The borrowing and lending services are offered at no charge to their patrons and resource sharing partners. The Centers have liberal lending and borrowing policies for all formats. This fact is of particular note since A-V

demand is increasing in the majority of the Centers, and many libraries have not adopted this best practice.

Electronic requesting for lending and borrowing is the norm, though there are variations in using it to its full capacity. Centers range from an unmediated, nearly paperless interlibrary loan process, to ones that continue printing and filing activities. E-Licensing allows use of TexShare databases for ILL. Electronic delivery options through Ariel are available at all TexNet Centers. However, this delivery method is underutilized due to issues with internal IT firewalls and incompatible software. All the Centers use custom holdings paths to load level their borrowing requests.

The opportunity to use ILL requests as a means of identifying collection development needs was not common at the TexNet Centers. An example of a best practice is the Wisconsin model which collects and communicates the 100 most requested ILL items within the statewide system for local purchase consideration. Only two Centers had ILL requests vetted for possible addition to the collection, and only one had a program in place to offer purchase rather than loan. Union listing of serial holdings is not routine practice across the TexNet Center system.

Best practice is established through individual institutional culture and the wider structure of libraries within the state. The TexShare ILL Protocol offers an excellent example of best practice standards. Adherence to these guidelines is impacted by funding and budget priorities within each TexNet Center.

Resources for Best Practices and Protocols—State, Regional and Consortial Policies

ALA
http://www.ala.org/ala/rusa/rusaprotools/referenceguide/interlibrary.htm

ALA draft revised ILL Code
http://www.ala.org/STARSmainTemplate.cfm?Section=STARS&CFID=88210662&CFTOKEN=29658859

Amigos Resource Sharing Agreement
http://www.amigos.org/?q=node/565

Amigos/BCR Reciprocal Interlibrary Loan Agreement
http://www.amigos.org/?q=node/511

Bibliographical Center for Research
http://www.bcr.org/resourcesharing/illcd.html

Boston Library Consortium
http://www.blc.org/member_library_info/resource_sharing/rs_best_practices.html

Colorado Interlibrary Loan Best Practices
http://www.cde.state.co.us/cdelib/CoLAB/download/MayPDF/ILLBestPractices.pdf

Connecticut
http://www.iconn.org/staff/RequestGuideLines.aspx

Greater Western Library Alliance
http://www.gwla.org/committees/rsdd/index.html

IFLA
http://www.ifla.org/IV/ifla72/papers/073-Stein-en.pdf

ILLINET ILL Code
http://www.cyberdriveillinois.com/departments/library/who_we_are/ill_code.html

Kansas
http://skyways.lib.ks.us/KSL/kild/KSillbestpractices.html

Libraries Very Interested In Sharing (LVIS)
http://www.cyberdriveillinois.com/departments/library/who_we_are/OCLC/pdfs/lvis_agr.pdf

Massachusetts
http://mblc.state.ma.us/mblc/regional/services/delivery/best_practices/index.php

Michigan
http://www.mlcnet.org/cms/sitem.cfm/library_tools/melcat/melcat_resource_sharing_policies/

North of Boston Library Exchange
http://www.noblenet.org/ill/bestpract.htm

North Bay Cooperative
http://www.nbcls.org/members/Illcode.pdf

Northeast Massachusetts Regional Library System NMRLS
http://www.nmrls.org/ill/ILL%20Manual.htm

Nylink ILL Reciprocal Agreement (Zero)
http://nylink.org/sharing/illcode.cfm

Rethinking Resource Sharing Manifesto
http://www.rethinkingresourcesharing.org/manifesto.html

TexShare Interlibrary Loan Protocol
http://www.texshare.edu/programs/ill/illprotocol.html

Virginia
http://www.vivalib.org/rsc/illguide.html

Wisconsin Department of Public Instruction
http://dpi.state.wi.us/rll/ill_gd_best.html

Wyoming (WYLD)
http://www-wsl.state.wy.us/wyld/docs/illpractices.html

Overview of Major Resource Sharing Options with Selected Case Studies

A true robust resource sharing system requires a number of different components:

- Search/discovery interface
- Holding institution identification
- Requesting function
- Request tracking
- Delivery options

While not required, the use of ILL management software is helpful in making workflow as streamlined and efficient as possible. In addition, libraries are increasingly aware of the growing expectations of users and their demands for additional services. Many of these services are based on the idea of making resource sharing more user-centric rather than focusing on library backroom operations, and they may be referred to as 2.0 service enhancements.

A broad array of resource sharing installations at both the state and consortial level are in use in the United States and Canada. While these implementations represent those ranging from simple to sophisticated, for an installation the size of Texas currently there are only a handful of resource sharing systems that would be scaleable and handle the volume. One caveat: Technology in the library automation field is changing rapidly. This information may be out of date within 12 months and should be revisited for currency at a future date.

Scaleable resource sharing systems available at this time are:

- Auto-Graphics AGent
- Innovative Interfaces INN-Reach
- Innovative Interfaces Direct Consortial Borrowing
- OCLC Resource Sharing, Group Services and VDX
- SirsiDynix URSA
- Relais International Enterprise

A brief description of various potential solutions is included below, with case studies of selected statewide resource sharing systems. The case studies include information on funding sources and costs when available.

Auto-Graphics AGent

Auto-Graphics has been a long-term player in consortial resource sharing. They offer all of the basic components, including a searching interface, options for a physical union catalog or a virtual union catalog or a combination of both, and ILL requesting and tracking software. (For a diagram of a union catalog based

resource sharing system, please see Appendix 8.) In December 2007, Auto-Graphics released new functionality in their AGent Resource Sharing software that supports NCIP functionality. It streamlines the borrowing and lending functions by automatically creating (then later deleting) temporary patron and holdings records, and tracking transactions through the regular circulation system. The Auto-Graphics AGent software is in use in a number of large statewide resource sharing installations, including Kansas, Mississippi, New Jersey, and Wisconsin. Auto-Graphics AGent was recently selected by the Loan SHARK group of public libraries in Louisiana to replace a resource sharing system developed by TLC that is no longer supported by TLC. All of these installations use a union catalog, and in some cases, also connect out to larger individual library catalogs using Z39.50. The latter allows simultaneous searching of both the union catalogs and the remote catalogs. In addition, Auto-Graphics supports the seamless transfer of requests between their system and others, such as OCLC Resource Sharing, using the ISO ILL 10160/10161 protocol.

Case Study of Auto-Graphics in New Jersey

The current version of JerseyCat, New Jersey's statewide resource sharing system, was implemented in 2002 and uses Auto-Graphics AGent software. This is a second generation system, converted from epixtech's Resource Sharing System (RSS) software, no longer on the market. The software is hosted at Auto-Graphics in California. A union catalog has been created for libraries with holdings of 100,000 or less. Libraries are asked to update their MARC records annually, which is done through a strip and reload. Z39.50 is used to make connections to larger library catalogs or to group catalogs. Currently, there are 63 Z39.50 targets. A number of integrated library systems are in use in the state, including Sirsi Unicorn, Dynix Horizon, Endeavor Voyager, and TLC. ISO ILL 10160/10161 protocol was just implemented in August 2007. It is used to transfer requests that cannot be filled through JerseyCat to OCLC. At this time, they are not using NCIP. Currently, around 125,000 requests annually are filled through the system. They anticipate that this number will increase significantly once additional New Jersey libraries' collections are accessed through the ISO ILL protocol link to OCLC.

Funding for JerseyCat comes from a combination of LSTA funds and the state's New Jersey library network funds. Libraries are not charged any participation fees to use JerseyCat. The annual fees to Auto-Graphics are approximately $300,000 annually. The state library's OCLC symbol is used to transfer requests between JerseyCat and OCLC via ISO ILL, so the state library also will be covering the cost of the OCLC requests created in this manner.

Almost all small and medium public libraries in the state participate, a total of over 700 including schools. Many academic libraries are lending through JerseyCat; Rutgers University is doing both borrowing and lending. The state

library anticipates that the implementation of ISO ILL will encourage the academics to use JerseyCat more. The state library is also working with Auto-Graphics for their JerseyCat Plus service, which will allow brokering of requests directly with OCLC.

Although patron-initiated requesting functionality is available in the software, most of the requests placed on JerseyCat are staff initiated. However, the number of patron- placed requests increases gradually each year. Many of the barriers to allowing it stem from local policies. Patrons are apt to request materials in formats that libraries do not lend, such as DVDs, CDs, and recorded books. The state library hopes to influence the change of these policies by encouraging both ILL staff and their supervisors to attend the annual user group meeting and discussing lending policies.

Resource sharing in the state is further supported through a library courier service funded through the state's New Jersey Library Network funds. There is no charge to libraries for courier service. Each area of the state has a regional library office, and these four regional offices handle the administration of the courier contracts for their region. A commercial courier service is used.

Case Study of Auto-Graphics in Wisconsin

Wisconsin has a statewide resource sharing system called WISCAT, currently in its third generation. They recently converted off of the OCLC VDX software in November 2007. WISCAT uses a physical union catalog, which is created for them by Auto-Graphics. Auto-Graphics hosts the installation for them, but state library staff has administrative access.

The Wisconsin installation shares many of the same characteristics of JerseyCat. The system supports simultaneous searching of both the union catalog and various individual catalogs using Z39.50 against 42 separate Z-servers. Libraries have the ability to update and add bibliographic records online. The system supports both staff and patron-initiated requesting as well as both mediated and unmediated processing. Around 50-60 libraries allow patron-initiated requesting. However, most of the libraries mediate at some level. The Auto-Graphics software supports NCIP, but there is no Wisconsin library that has the capability. Some are using SIP2 instead.

Any library in the state of any type may participate, but must pay an annual fee of $200 per building to do so. WISCAT includes 400-500 public and school libraries. Fifty-three schools have holdings in the union catalog. Around 250 libraries use WISCAT for interlibrary loan. The annual volume of requests is between 240,000 to 250,000.

The cost for WISCAT includes an annual fee for hosting and software maintenance of approximately $400,000 per year. Library fees are used to cover around $118,000 of the cost; LSTA funds are used to cover the rest. The initial installation and conversion costs to move off of VDX were approximately $70,000. This covered configuration, profiling, set-up, etc. Very little customization was done to the searching interface, in part to keep the costs low.

The state library chose to conduct the training for staff itself when the switch to the new system was made, and handled the set-up of the library profiling. The system supports load leveling in terms of which library receives the requests. Libraries are set up to borrow from within their region first, then from other preferred partners based on geographic proximity before requests are potentially sent on to any other library in the state. The state library has contracts with the University of Wisconsin at Madison and Milwaukee Public Library to serve as the libraries of last resort, and pays them to be a net lender at about $6.00 per request. Requests that cannot be filled in-state are transferred to OCLC.

The migration from VDX to Auto-Graphics was fairly simple. They chose not to convert any ILL transaction data, but instead ran both the old and new systems concurrently for awhile so that old requests could be closed out on VDX and any new requests initiated through the new system.

This particular software package is a good fit for small Wisconsin libraries. They find it easy to use. State library staff was able to train most of the libraries in a two month period. Some of the training is conducted online.

In addition to WISCAT, there are a number of shared automated systems in the state. The University of Wisconsin system has Voyager clusters and supports universal borrowing. The 17 regional public library systems all have some kind of shared system. Among the systems in use are SirsiDynix, Innovative Interfaces, and Geac.

The philosophy in Wisconsin is to let every library do its own ILL processing. Even the smallest libraries do ILL directly and pay their own fees to participate. The state library is responsible for training them and providing on-going support, but the staff in small libraries learns the software and actively participates in statewide resource sharing.

Innovative Interfaces Inc.

Innovative Interfaces, Inc. (III) was the first software vendor to design and implement circulation-based resource sharing. In this model, the system validates the user against the borrower files then allows patrons in good standing to place holds on materials. The system requires no intervention from library staff. (For an example of how a circulation-based resource sharing system

works, please see the flowchart in Appendix 9.) Because III was first to market, their solution is a proprietary one. They are active on NISO standards committees. Other vendors sometimes find that their interpretations of standards differ when working with III on projects that require interoperability with III software.

III has two kinds of resource sharing implementations. The first is their traditional INN-Reach system in which a physical union catalog is created based on participating libraries' holdings. This model requires that all participating libraries use III for their ILS platform. Some of the significant customers which use this solution are the Colorado Alliance of Research Libraries, the OhioLINK consortium of primarily academic libraries and the Orbis Cascade Alliance of academic libraries in Oregon and Washington.

Most recently, III developed an INN-Reach Direct Consortial Borrowing solution for the state of Michigan. A "black box" allows non-III libraries to participate by converting their non-III records into a format that works with INN-Reach. In addition to the Michigan Electronic Library, the PASCAL academic consortium recently licensed the system.

Case Study of Innovative Interfaces in Michigan

MELCAT uses Innovative Interface's INN-Reach Direct Consortial Borrowing System. This particular implementation was designed in response to the Michigan State Library's RFP. The resulting solution allows libraries that use integrated systems other than III to participate. The records of those libraries using III locally are fed into INN-Reach in the usual way. For those using other types of integrated library systems, III developed a direct consortial borrowing (DCB) box so that non-III libraries can participate in the system. In these situations, the records go first to the DCB box, then INN-Reach reaches out and pulls them into the union catalog. The patron data lives on the DCB box. III has indicated that they are developing NCIP capability and have been testing with a SirsiDynix Horizon library. Once NCIP is operational with SirsiDynix Horizon and III knows what needs to be done, then other vendors will be approached to interoperate using NCIP.

The system went live in January 2005. During the first year, there were 90,000 requests. Last year, that grew to 205,000. So far this year there have been 370,000. Because the system is circulation based, patrons place their own requests (which are akin to circulation holds). The request is then forwarded only to libraries that own the material and where it is also shown as available on the shelf. Consequently, they have roughly a 90% fill rate. According to studies, median length of the ILL request-to-receipt time is shown to be about 3 days.

Participation in MELCAT is multi-type and is open to any library in the state. All libraries that join have to contribute to the union catalog and agree to a common loan period.

The initial contract for services was signed in May 2004. Currently, around 200 libraries are up and running and using the system for resource sharing. Although the contract allows for 550 participants, it appears that the addition of most of the libraries that will use it long term will be done by the end of next year, reaching between 400 and 500 participants. A five-year contract was negotiated.

Some libraries are becoming concerned about the large volume of requests they are seeing. For example, two large public libraries have had to redo workflow and put additional staff into MELCAT support. A few public libraries are sending out over 20,000 MELCAT requests per year. Small libraries are also noticing that demand is greater. There is no state reimbursement for lending in Michigan, so the libraries don't have to pay anything for the software. The library participants do incur the costs for the delivery and must receive courier shipments at least two days a week.

The initial costs for hardware and software came to $2.5 million. The contract for service is actually with the Michigan Library Consortium, rather than the state library. The payment schedule for the initial cost was spread out over 18 months. The annual maintenance fee is about $310,000. LSTA funding was used for both the initial $2.5 million and also for on-going costs.

OCLC Group Services

Since many libraries catalog using WorldCat, copies of their records and information about their holdings are already included in WorldCat. OCLC has taken the next step of introducing the ability to provide scoping services that allow users to restrict their view to just state or consortial holdings. Various options in the Group Services product allow consortia to pick among several different OCLC modules: FirstSearch, Resource Sharing, and Cataloging. Some of the significant customers of this service include the states of Illinois, Montana, and New Mexico. One of the major drawbacks of Group Services has been the lack of circulation status and patron validation in OCLC Resource Sharing software. However, OCLC has been aggressive about implementing NCIP. Currently, they are testing NCIP in Montana for patron validation as part of a home delivery pilot.

Case Study of OCLC Group Services in Illinois

The Statewide Illinois Library Catalog, known as SILC, is an all inclusive statewide union catalog that integrates WorldCat and the Illinois Library Systems' local consortial OPACs, to provide both shelf status and interlibrary loan capabilities through one searching interface. SILC resides on a FirstSearch

platform as an additional WorldCat database that allows users to scope to regional groups within Illinois, as well as by type of library. From a single WorldCat record, users can link to a local shared catalog record to see if and where an item is available for loan.

SILC is possible because of a long-term commitment from the Illinois State Library to make all libraries in the state OCLC members. The retrospective holdings of libraries were added through batch loads over a multi-year time span.

OCLC VDX

Originally developed by Fretwell-Downing, Inc. in the UK, then acquired by OCLC, VDX has been one of the most advanced stand alone resource sharing systems for many years. It is based solely on a virtual union catalog model which uses Z39.50. (For a diagram of a distributed virtual union catalog model, please see Appendix 10.) It supports the ISO ILL protocol, and will support NCIP with the upcoming version 3.0 release. Patrons are added either manually or through batchload to the VDX database, a practice which causes some libraries concern over confidentiality and privacy. The potential lender strings, called "rota", are built based on customized preference profiles for each library.

When OCLC first acquired the software, some current VDX customers expressed concerns about the future of VDX. However, OCLC staff recently provided this update to OCLC's plan for VDX.

> OCLC's "new consortia borrowing solution, provides a single end user interface and enables seamless resource sharing, both within and outside your consortium. By integrating our .... discovery tool, VDX Resource Sharing, and WorldCat Resource Sharing systems, OCLC will provide a configurable, comprehensive, unlimited-use, affordable solution that will enable consortia to uniquely serve both their staff and users. This service is able to offer consortia access not only to their partners' collections, but also to the collections of all of the members of the OCLC network of libraries. [This] provides a service that offers this unique combination of group and network level discovery to delivery. We are looking to begin rolling this out early in 2008 (Jan-May)"

Significant customers of the existing VDX product include Access Pennsylvania, the states of Colorado and Minnesota, and public libraries statewide in Ohio. The soon-to-be-released merged solution that includes functionality from both OCLC Resource Sharing and OCLC VDX definitely bears watching as it develops over the coming year.

Case Study of OCLC VDX in Minnesota

Minnesota's statewide resource sharing system, MnLINK, uses the OCLC VDX software. The software and server are hosted by OCLC. The system uses a

virtual union catalog model with Z39.50 calls to 20 server sites representing multiple integrated library system brands. Although MnLINK currently uses only Z39.50 connections, the creation of a union catalog has been discussed as a potential solution for schools. Patron requesting is turned on, and has been almost from the beginning. Most of these requests go through unmediated; only one library mediates requests. Approximately 265,000 requests are filled through the system annually.

SIP2 is used for patron authentication. They have been testing NCIP with one of the library systems, which is an ExLibris site. Testing has been successful and is near completion. Testing with Unicorn has been more challenging. With Unicorn, both VDX and Unicorn developed NCIP for a decentralized resource sharing model so that when a request is filled, the system immediately sends out a message to the patron indicating that the material is ready for pick-up. However, because of the centralized MnLINK model, a delay is needed before the message is generated to allow time for the material to move between sites. In general, MnLINK staff have been very pleased with the functionality of NCIP. To date, MnLINK has not used ISO ILL to forward requests up to the OCLC online resource sharing system.

Participation in MnLINK is multi-type. The 80+ libraries in the PALS academic library consortium are participating, but in a different way. The request is placed on MnLINK's Zportal, transferred through to their ExLibris ILL system and handled there. All activity with the request on the PALS side is managed through ExLibris.

The state pays for the hosting and annual software maintenance fee. Funding for this comes from the Minnesota state legislature out of $400,000 per year designated for the MnLINK office, including software maintenance and staff costs. The exact annual costs for just software are not available from MnLINK at this time. The libraries receive an allotment based on a set of criteria, including how many records they have, how many loans are fulfilled, and they get funds for being an active participant – part of the $400,000.

A library courier is very pervasive in Minnesota libraries. For the public libraries, there are LSTA funds which cover the delivery portion. For the academic libraries, it is covered through legislative funding and provides delivery from the MINITEX office to the library and/or directly between libraries. Libraries are only responsible for direct costs for delivery between the systems. They have to go to the pick-up location, so there are internal delivery systems that libraries fund locally.

The biggest impact from implementation of the statewide resource sharing gateway has been that the patrons love it. As a result, the request volume has sky rocketed. Once patrons gained access to the gateway, they began to request everything. The concern for many of the public libraries is that they can't sustain the volume. Some libraries have had to shift staff from other positions in the library to help process ILL requests. Currently, MnLINK is not marketing the resource sharing service because it would stimulate more requests. The staff focuses on ensuring that the system functions in a very streamlined fashion since workflow any extra steps accumulate into a tremendous impact on libraries.

Case Study of OCLC VDX and Innovative Interfaces in Colorado

Colorado is a perfect example of the complexity involved in statewide resource sharing. There are 4 primary resource sharing systems in use in the state: 1) a VDX stand-alone system, 2) an Innovative Interfaces shared database with place holds functionality between libraries; 3) an INN-Reach system used by large academic and public libraries; and 4) OCLC Resource Sharing. The INN-Reach system has the most in-state traffic.

SWIFT

The Colorado State Library runs a statewide resource sharing system called SWIFT. It runs on OCLC VDX software on servers housed locally in Denver and is managed by State Library staff. The system uses a virtual union catalog model, which is created through Z39.50 connections out to 100 individual servers. A variety of different integrated library systems are represented through the Z39.50 connections, including Innovative Interfaces, Follett, Horizon, SirsiDynix Unicorn, Winnebago, CARL, TLC, and Book System's Concourse. The version of VDX they are running at present does not support NCIP. However, VDX version 3.0 is close to release by OCLC and will include NCIP capability. The current software version does have the ability to filter requests by circulation status where the Z39.50 server can support it. However, since this software version is not NCIP enabled, the word string used by a particular ILS brand must be typed into a table (e.g. checked in, on shelf, available, etc.). VDX 3.0 also will include the functionality for filtering by media type.

Originally implemented in 2001, SWIFT is used by 325 public, academic, school, and special libraries for borrowing or lending, or for both. Large academics have elected not to participate, but some in-state requests are referred to them via the SWIFT-to-OCLC link that uses ISO ILL 10160/10161. The volume that flows through the system annually is around 158,000 filled requests. Resource sharing is almost exclusively for returnables since most of the participating libraries are public libraries which have less need for nonreturnables.

For the public searching interface, SWIFT does not use the Zportal interface that comes with VDX, but instead uses SiteSearch WebZ, an open source product that was originally developed by OCLC.

The software supports staff initiated requesting and patron-initiated requesting, but only 12 libraries have turned on patron-initiated ILL. It supports both mediated and unmediated requests, and all the patron-initiated requests are unmediated. For the patron authentication function, libraries add the patrons manually into a VDX file or use loaders developed by the State Library.

The total cost to run the system involves software annual maintenance, hardware annual maintenance, and staffing. The State Library currently pays an annual software fee of around $60,000. However, Colorado was an early adopter of VDX and this figure probably is much lower than later installations pay. Local hosting requires system administration staff. SWIFT staff includes a .5 FTE system administrator, and 1 FTE training and support liaison. In the past, when previous software upgrades were installed, it required a hardware upgrade at the same time. An Oracle database is used behind the scenes for the transaction file, and a portion of the annual cost is the Oracle license, which is discounted since it is used only for SWIFT. The system administrator and customer support staff salaries are both state funded. Hardware upgrades, and hardware and software maintenance are LSTA funded.

There is no charge to libraries to participate in SWIFT. However, they are strongly encouraged to be on the statewide courier. Since courier service is partially subsidized through state funds, it is relatively inexpensive, e.g. the annual fee for delivery 3 days a week is $325.

Marmot

A multi-type consortium on the Western Slope, Marmot, has a III installation. All of the libraries share a single database. Because of the shared database they are able to use the place holds function as a circulation-based ILL system to share materials between libraries. The place holds function was turned on only in the last 1-2 years. This has increased the resource sharing volume significantly at participating libraries. For example, one library that serves a population of around 10,000 has seen a three-fold increase in requests for their materials. When college students are part of the mix, they use the system to borrow DVDs. As a result of the increased traffic, some libraries have merged circulation and ILL into a single unit called access services.

Prospector

Prospector is an III INN-Reach installation that serves large academic research libraries, some small public libraries, and two four-year colleges. Like other INN-Reach installations, this has supported sharing returnable items only. Recently,

they have begun integrating Prospector with RAPID, a system developed at Colorado State University to support article requesting. Much of the delivery of articles in the large academic library environment has moved to electronic. Most Prospector libraries use INN-Reach as their first choice for resource sharing. The public libraries on Prospector also are on SWIFT, but use SWIFT primarily for lending. In recent years, OCLC Resource Sharing was used as a last resort, but now that OCLC has changed their pricing model to subscription based, libraries are more willing to route ILL traffic through OCLC than they were before.

SirsiDynix URSA

SirsiDynix is another long time player in the resource sharing market and had other products prior to developing their current URSA product. URSA is based on the virtual union catalog model using Z39.50 and supports traditional ILL as well as a circulation model. The software includes a searching/discovery module, and also validates patrons, checks ownership and availability, creates requests and tracks them. URSA is unique in that it supports circulation functions using a combination of NCIP and SIP2, and also creates custom circulation mappings to accomplish the same work with different ILS implementations. URSA communicates with the library's local circulation system in order to place holds on requested items at the lending library and to create temporary item records on the borrowing library's circulation system. Sirsi/Dynix has been very active in testing NCIP with other ILS vendors and resource sharing service providers. While there are some large consortia using the software, there have not been any statewide implementations to date. However, this solution is still worth consideration for a potential statewide implementation. Significant customers include the PALCI Pennsylvania academic consortia, the North Bay multi-type consortium in California, and the Tampa Bay consortium in Florida.

Relais International Enterprise

Relais International has been developing and improving their product line of resource sharing software and are slowly gaining market share. In addition to individual library installations, there are two academic consortia in Canada using Relais. The software works off a Z39.50 search of selected library catalogs and has web forms for libraries to submit requests directly to other libraries as well as patron web forms. An enhancement scheduled for release in late 2007/early 2008 will support "tiered" requesting, which they view as a form of load leveling. Requests for items not available in the province can be directed to the provincial library, which may choose to bump out the request to a higher level of referral. The item fulfilling the request can be sent directly to the library, but the associated bill can be directed to the province. While Relais does not currently have any statewide implementations to date, they are worth consideration. The company has been a strong supporter of interoperability standards and has planned for scalability.

Other Miscellaneous Solutions

In addition to the major resource sharing solutions outlined above, there are others that exist on the market but which may not be suitable or scaleable to a degree that is suitable in the Texas environment. These other solutions are outlined briefly for completeness sake.

ExLibris

ExLibris has the ability to support a consortial circulation model across multiple installations of their Aleph ILS system. The South Dakota Library Network (SDLN) uses the Aleph multi-administrative center capability which allows data to be exchanged between individual Aleph installations. Each institution may set its own policies. Aleph is also in use with the PALS system in Minnesota, and these libraries have been testing NCIP interoperability with OCLC VDX, which is used by the statewide MnLINK system there.

ExLibris is actively testing NCIP interoperability with other ILS vendors. One of their major installations testing NCIP is the NovaNet group in Canada which is sharing data between ExLibris, Innovative Interfaces and URSA libraries. In addition, there is a combined effort in the Tampa Bay Library System. Tampa Bay Public Library, which uses Polaris, shares a physical facility with a community college, which uses ExLibris.

While ExLibris is a strong supporter of standards and interoperability, they find that the implementation of NCIP is going slowly. Considering that they have over 400 installations of Aleph in the U.S. and over 1,000 Endeavor systems, the number of libraries actually making active use of NCIP functionality – only a dozen or so – is a very small portion of their customer base.

SILO

SILO was developed locally in Iowa as part of a federal grant. The state library has a partnership with Iowa State University where the ILL software is run locally on behalf of the state. The union catalog of Iowa holdings is currently an installation of SirsiDynix Horizon in which only the cataloging module is used to make the catalog available to the ILL Application and to the public for searching. Records may be batch loaded into the SirsiDynix union catalog or added by libraries using an online add function. For a searching interface, the system uses an old Z39.50 to web gateway program originally developed by Stanford University. The union catalog contains around 4 million bibliographic records and 16 million items. The system supports approximately 106,000 loans per year. Approximately 700 libraries contribute records to the union catalog. Of those, around 575 participate in interlibrary loan. Use of the application is free to libraries. Most public libraries are using it for borrowing. In all cases, library staff places the requests on behalf of patrons.

They hope to migrate to a more standardized open source model for the architecture, such as using Index Data's Zebra database and Yaz Z39.50 server. They may also redesign the ILL application from scratch, including rewriting it in Perl or another language. Currently the state library has not tried to implement either NCIP or SIP2 yet, in part because they have not seen a demand for it to date. While the Iowa State Library is not actively seeking partners to assist with the redevelopment of the software to a newer platform, they would consider any offers that were made to them.

OpenILL

The University of Winnipeg developed an open source ILL software package called OpenILL. The university librarian at the time gave several presentations about the software in 2003. Although the software is registered on SourceForge, there does not appear to be much activity in continuing development. A recent message indicated that they were in the process of porting it to PHP. The architecture supports patron requesting functions which are also tied into abstract and indexing databases. Z39.50 broadcast searching is in use now and there are future plans for NCIP support and full ISO ILL protocol compliance. The University of Winnipeg expected to offer libraries the option of either running the software locally or to pay for hosting at University of Winnipeg.

Index Data

Index Data has a reputation for being a solid supporter of standards and interoperability. Their Keystone open source software is currently used for the Library of Texas' robust federated Z39.50 compliant search interface. While they do not have an ILL module at this time, limited ILL capabilities were built into the core Keystone software. In addition, the software is NCIP compliant and could be extended to support circulation-based interlibrary loan.

RAPID

The RAPID software was created at Colorado State University in response to a flood which decimated their journal collection and forced them to find innovative ways to support a high volume of requesting. It was designed to streamline the process of fulfilling journal article requests and support web delivery of articles. Participating libraries, which are almost exclusively academic, provide copies of their serials holdings which are loaded into a central union catalog. Each participating library must commit to a 24-hour turnaround in responding to requests.

ILL Management Software

In addition to full-blown resource sharing systems, a number of tools exist that help libraries automate their ILL management functions. These include: Clio and

ILLiad. TSLAC and TexNet Centers are already familiar with and are using both of these products (see Part 1 - TexNet Center Workflow Analysis).

2.0 Service Enhancements

The service enhancements listed below represent a combination of ideas being put into practice right now, ideas for services in the planning stage, and pure speculation. This list is not intended to be comprehensive, but rather stimulate additional creative thinking outside of traditional ILL.

Print on Demand

Instead of moving the book around from library to library, new technology exists that allows printing material on demand. The Espresso Book Machine prints out up to 550 page books in a few minutes at a low cost. BookSurge is a commercial model that allows libraries to digitize unique content and sell it via services like Amazon.com.

NetFlix Model

There is evidence that some people are willing to pay for the convenience of having materials delivered directly to their homes for a monthly fee. PaperbackSwap.com facilitates person-to-person book swapping. BookSwim.com provides book rental services for a fee.

Downloadable E-materials

Another alternative to moving physical materials from place to place is to license the online content so users may download the electronic files themselves. The number of materials available electronically is increasing daily, and includes e-books and audiobooks, music, and videos.

Digitized Materials

A recently announced partnership between the Open Content Alliance and Boston Library Consortium will support the scanning of materials from all of their member libraries. These materials will then be available electronically.

Home Delivery

Some libraries such as Topeka Shawnee County Public Library in Kansas have been supporting home delivery of materials to patrons for many years. In Montana, a home delivery pilot in place right now has shown that patrons are willing to pay an extra fee for home delivery.

Purchase Model

Already a policy in some libraries, materials requested through ILL might be considered for purchase if below a certain cost and within the collection scope of the library. This could be facilitated through the use of suppliers with fast delivery, such as Amazon.com. The supplier can process the material, deliver it

to the patron already processed, and when the patron is finished with the materials and returns it to the library, it is officially added to the collection at that point.

Summary

All of the software packages mentioned above–either singly or in concert with others–are illustrative of different models that the Texas State Library and Archives Commission may consider for making changes in resource sharing throughout the state. This overview is intended to provide descriptive information with a few case studies to illustrate how these options have been implemented in other settings. Parts 2 and 3 use this overview information—in conjunction with pricing obtained from vendors, information gathered from site visits and data analysis—to provide descriptions of potential new resource sharing models and to provide feasibility rankings on various solutions in the context of statewide resource sharing in Texas. Should the Texas State Library and Archives Commission decide to pursue a new model of resource sharing, this overview of software options should be revisited and updated to include new functionality added to these solutions and to add any new products on the market at that time.

Patron Survey See Appendix 11

The study of interlibrary loan should include those most affected by the service, the ILL patrons and Texans themselves. TSLAC staff created and conducted a patron survey in the fall of 2006. This sample shed light into the patron world, but it also raised new questions. Additionally, some Area Librarians filled in this survey which mixed the results. Consequently, BCR decided to create another survey exclusively for patrons and a separate survey for library staff (see next section). The patron survey seeks to better understand patron needs and expectations particularly in relation to technology.

Patron Survey Distribution Methodology

The patron survey was administered between September 6 and November 1, 2007. Three different methodologies were used: an online survey, a point-of-service evaluation using stand-alone, onsite, portable, electronic-data-gathering devices, and a paper version of the survey provided upon request and returned via mail. As an incentive to complete the survey, all patron respondents were offered the opportunity to win one of ten $50 Amazon gift certificates. Administration of the surveys and basic analysis of results was outsourced to Your Perceptions, a commercial firm specializing in customer feedback, who also assisted with survey design.

Information about the online and print versions of the survey was made available several ways in order to reach a wide range of Texas library patrons. In particular, an effort was made to reach users of TexNet Center Area Libraries, Texas Group libraries, and rural libraries as well as a cross-section of all users throughout the state. Distribution method and targeted audience included:

- TexNet Centers
  - Request to fill out survey added to e-mail notification sent to patrons
    - Reached: patrons who use TexNet Centers as their home library where the library uses ILLiad
  - Sent supply of paper inserts to put in materials sent out to Area Libraries
    - Reached: patrons of TexNet Centers and patrons of Area Libraries
- Texas Group libraries
  - Sent portable electronic survey machines to one Texas Group public library and one Texas Group academic library in each of the 10 regions where possible
    - Reached: cross-section of patrons in public and academic libraries whose libraries use OCLC for ILL. May or may not be ILLiad users

- Rural libraries
    - Sent electronic survey machines to one rural referring library that is a heavy user in each of the 10 regions where possible
        - Reached: rural public library patrons that depend on TexCenter Centers
- All Texas libraries
    - Used TSLAC listservs and mailing list of ILL practitioners to invite them to send patrons an invitation to fill out the survey
        - Reached: a wide cross-section of patrons throughout Texas

The research team selected 30 libraries to receive the portable electronic data gathering devices. To ensure geographic distribution, a minimum of two public libraries were selected in each of the 10 regional library systems. In addition, since a mixture of academic and public libraries was sought, 10 academic libraries in 8 different geographic areas were selected. Not all of the 30 libraries contacted by BCR agreed to participate; only 20 locations agreed. Usable data was returned from 17 of the locations, which were:

- Baylor University Library
- Burleson Public Library
- Chambers County Library System
- Eden Public Library
- El Paso Public Library
- Hidalgo Public Library
- Hockley County Memorial Library
- Howard County Library
- Jeff Davis County Library
- Killgore Memorial Library
- Lovett Memorial Library (Pampa)
- Montgomery County Central Library
- New Braunfels Public Library
- Round Rock Public Library
- Tom Green County Library
- University of Texas Austin Library
- West Texas A&M University Library

All respondents were self-selecting, meaning that any respondent could choose to complete the evaluation without being randomly chosen. This can reduce the scientific reliability of results and does not assure that a specific type of respondent is included. However, the respondents who did choose to participate did represent a typical sample based on ILL usage and demographics of users in markets penetrated.

The targeted respondent pool was current library users. The size of the total library card holder population in Texas was estimated at 10,066,498. Reliability of resulting data is difficult to predict since no statistics regarding the actual number of ILL users was available. Based on the consistency of responses across all libraries participating, the findings are usually variable to within ± 4-5%.

Results

Significant highlights and conclusions from the patron survey are summarized below. The complete results of the patron survey are included in Appendix 11.

Of the 1,595 qualified responses to the patron survey (i.e. completed the opening screen and at least 2 questions), 54.48% (869) were completed online and 45.52% (726) were completed onsite at 20 participating library locations using the portable electronic data gathering devices. Respondents ranged in age from under 15 to over 84, but most were evenly distributed between age 20 and 64. Over 70% of respondents have a college degree. 69.9% indicate they often act in the role of leisure/personal/hobbyist when using interlibrary loan, but at other times they may be acting as a student (37.3%), researcher (34.2%), professional (22.9%) or teacher (22.5%). Responses were received from each of the 10 geographic areas served by regional library systems, with a fairly even distribution throughout the state. A slightly higher percentage of respondents came from the Waco area, but the results were consistent with the responses from other parts of the state and did not skew the data.

Interlibrary loan use would likely increase as the result of distributing information about it to library users. 26% of the patrons surveyed had not used ILL. Of that 26%, 59% did not know about it. 77.7% indicated they would be interested in using it, provided that they received additional information on the service and of those, 41.5% would most likely use it. 31.4% of those responding indicated that they have no need for the service, but only 6.4% indicated that they buy material instead.

Library pick-up of materials is the preferred method, but there is significant interest among patrons for home delivery. 99% pick up materials at the library. Although library pick-up would remain the preferred method for non-electronic materials, by almost 2 to 1, delivery to the home, with a small or no fee, is of primary interest to approximately 46% of those responding.

Most library users in Texas have access to high speed Internet and have experience with online ordering, making online access to materials or to check the status of requests a viable option for them. Approximately half of respondents would order electronic materials online or use e-mail. 42% of the total sample audience would use a webpage with secure access and 54% would use e-mail. 83.3% have high speed internet access. 73.5% order something

online (e.g. online shopping) requiring online profiles. 71.5% use WorldCat or other online databases. 46% would prefer to check the status of requests online and 40.6% would prefer to receive notices via e-mail.

Current interlibrary loan users have a significant interest in requesting audiovisual materials in addition to books and articles. 95% of the respondents who use interlibrary loan indicated that they request books and 26.5% request articles. However, 46.8% of this same group already request DVDs/videos, 30.8% request music CDs, and 22.7% request audio books. When asked what kinds of materials they *might* request in the future, 52% indicated they would request articles, 74.3% DVDs/videos, 53.9% music CDs, and 50.9% audio books.

Average acceptable turnaround time for interlibrary loans is 3-5 days. 3-5 days is the average acceptable threshold to receive materials for all respondents. However, 21% of those responding would like 1-2 day delivery and 23% indicated that 1 week was acceptable.

Students prefer faster turnaround time. Cross-tabulations were conducted based on capacity in which people were responding (i.e. teacher, researcher, students, etc.). Students represented the single largest percentage of respondents, with a few differences in preferences from other population groups. They preferred receiving materials in less time than the overall population and 48% of students would prefer to check their ILL status from a password protected access point online.

Limitations

Because of the timeframe dictated by the TSLAC contract and cost constraints, the patron study was not as extensive as the research team would have preferred. Traditional interlibrary loan patterns indicate that peak usage falls between mid-September to late November, with another peak period in the spring. The patron survey was conducted beginning and ending earlier than the fall peak. The total number of responses likely would have been higher if the survey had been conducted later in the fall, with a more complete picture of overall activity if it had been repeated in the spring.

The onsite electronic data collection gathering devices were shipped to the libraries via commercial carrier to expedite delivery and to allow for tracking the packages. The cost of shipping and the staff time involved in tracking them necessitated limiting the number of libraries to which devices were distributed. Ideally, devices should have been distributed to a larger number of libraries to gain a true picture of the preferences of Texas library patrons.

At a future time, TSLAC also may wish to survey Texans who are not currently library users. However, this was beyond the scope of the current research project.

Library Staff Survey See Appendix 12

A study of resource sharing should also involve those who work on the front line of interlibrary loan service. In site visits to the TexNet Centers, BCR gained insight into the work of the large, urban and mid-sized, rural ILL departments in Texas. In order to expand the scope of data available, BCR designed a survey for library staff. This survey sought to better understand the services being offered statewide and opinions about possible improvements.

Methodology

The online survey link was distributed through the email list service hosted by TSLAC to librarians throughout the state. The survey was designed by the BCR research team in consultation with Your Perceptions, a commercial firm specializing in customer feedback, which also deployed and analyzed the survey results. The survey was available online September 11, 2007 – October 5, 2007.

Results

Of the 462 qualified responses (those completing at least the opening screen and the first 2 questions), 462 were completed online.

Most respondents use OCLC WorldCat for requesting.

The largest majority of respondents (75.5%) use OCLC WorldCat as the primary requesting system for their ILL service. See “Limitations” section below for further discussion of TexNet Center use.

Overall, the majority of libraries still do not allow patrons to place their own requests and continue to mediate requests. 67.2% do not allow patrons to place their own requests online through FirstSearch, ILLiad or another electronic method. However, this trend is different when isolating public and academic libraries (see #5 below)

79.6% do not send requests automatically to borrowing libraries without staff intervention. However, this varies greatly by type of library (see #6 below).

Staff expectations for turnaround time are 1-2 weeks.

70% say 1-2 weeks is adequate for delivery turnaround which does not agree with the 3-5 day turnaround patrons’ requested (on average). However, most deliveries are indicated as being made in 3-5 days.

Cross tabulating public versus academic respondents, the findings are reversed for allowing patrons to place their own requests online through First Search, etc.

Cross Tab: 16. Type of Library / 8. Do you allow patrons to place their own requests online through FirstSearch, ILLiad or another electronic method?

	Public		Academic	
	Number	%	Number	%
Yes	36	31.6%	76	66.7%
No	153	65.4%	75	32.%
Total	189	54.3%	151	43.3%

All respondents

	Number	Percentage of Sample Answering
Yes	114	32.8%
No	234	67.2%
TOTAL	348	100%

However, cross tabulating public versus academic respondents, for "Do you allow the system to route and send requests automatically to borrowing libraries without staff intervention," the findings are reversed for public libraries **only** in that they were more likely to allow the system to route and send requests automatically:

Cross Tab: 16. What Type of Library / 9. Do you allow the system to route and send requests automatically to borrowing libraries without staff intervention (i.e. Direct Request)?

	Public		Academic	
	Number	%	Number	%
Yes	51	71.8%	19	26.8%
No	138	49.8%	132	47.65%
Total	189	54.3%	151	43.39%

All respondents

	Number	Percentage of Sample Answering
Yes	71	20.4%
No	277	79.6%
TOTAL	348	100%

Improvements to existing courier service and increasing the number of libraries with courier stops is important to libraries.

Many respondents offered suggestions for improved service. The most often mentioned improvement was the courier service. Recommendations included better quality of service by meeting advertised service standards and turn around times as well as encouraging more libraries to participate.

Limitations

The library staff survey was created to evaluate opinions from a variety of ILL environments, including specific data from those Area Libraries served by the TexNet Centers. Unfortunately, the survey question which would direct these respondents to the appropriate questions was misinterpreted by many of those to whom it was targeted.

Question 2

"We use the following to initiate ILL borrowing requests:

a. TexNet Center
b. WorldCat Resource Sharing
c. Consortial/Group Catalog (e.g. place holds function thru online catalog)
d. Stand Alone ILL System (e.g. VDX, INNReach, Relais, URSA, etc.)
e. ALA Forms
f. Other (please specify)"

Only 11 participants selected option (a.), yet the responses to (f.) as seen in Appendix 12 demonstrate that many Area Librarians selected this response instead. Consequently, the evaluation of TexNet Center service by the Area Librarians is limited. However, the limited sample expressed overall satisfaction with the TexNet Center Service.

In conclusion, automation through patron-initiation and unmediated processing is not widely embraced by libraries surveyed. Still, interlibrary loan staff at Texas libraries communicates their commitment to patron service by expressing a desire for improved courier service, wider program participation, and unrestricted sharing of materials.

Comment on the Texas Interlibrary Loan and Resource Sharing Study - Final Report
Go to http://www.texshare.edu/apps/illstudy2008/index.php and write your comments in the comments section.