



***Summary of Findings
and
Recommendations
for the
NSLS Delivery Service***

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Introduction

This report is a summary of my findings after spending two days onsite (March 24 and March 25), reviewing material provided by NSLS staff, and conducting research on issues that were raised in my visit or in interviews. The two days onsite included interviews with Jan Hayes, Debbie Baaske, Larry Krenos, and Don Johnson at NSLS headquarters plus a meeting with Richard Shurman (and his assistant, Bob) and Kathy Pricone at CCS offices. In addition, the trip included time for observing operations at the sorting center and a ride-along with Alec on route 4.

The purpose of my visit was to help North Suburban Library System (NSLS) get a better handle on the dramatic increase in delivery volume (146%) that has occurred since patron-initiated borrowing was introduced six years ago and to get ideas for how to make the service more efficient in general. Patron-initiated borrowing was introduced when several public libraries moved to a shared Unicorn catalog (supported by CCS). Over 80% of delivery volume is generated by CCS member libraries.

Delivery is only one of several core services provided to the 650 member libraries, yet it accounts for 20% of the budget. Other important services include professional development, leadership, group purchasing, a local history digitization project, and consulting. According to a membership survey completed in 2003, the delivery service is one of the most important services provided by NSLS (to those that use it.)

At this time, only 46 libraries receive daily NSLS delivery service (8% of members) and most (if not all) of these libraries are public libraries. Approximately 40-50 school and special libraries receive delivery service on an on-call basis (another 8%). Many of the on-call libraries are designated On Request (or Next Day by some delivery staff) and receive fairly regular two times per week service; however, no more than two deliveries per week are permitted.

Over 130 academic libraries receive daily delivery service through ILDS (Illinois Library Delivery Services), 12 of which are NSLS members. ILDS daily delivery is provided to all CARLI (Consortium of Academic and Research Libraries in Illinois) members. ILDS also stops at each of the nine regional library systems and Chicago Public Library.

Because 20% of the budget is committed to delivery, but only 16% of members use it, NSLS would like to contain costs while continuing to provide acceptable delivery service to members that rely upon it.

Findings

Finding # 1: NSLS libraries have opportunities for expanding resource sharing activities within the regional system.

Eighty percent of NSLS delivery volume is a result of the resource sharing activities of CCS libraries. CCS supports a shared SirsiDynix Unicorn catalog which makes it possible for patrons to request items from any CCS library without having to leave their local catalog. Whenever requests can be made by patrons directly (patron initiated borrowing) and the interface is intuitive and does not require additional steps, the volume of requests made increases dramatically. In fact, patron-initiated borrowing is one of the most popular services libraries provide today. As reference requests plummet, patrons are putting more and more local items on hold and requesting items from beyond their library walls.

Regional systems like NSLS have traditionally provided delivery service to their members. Often the resource sharing tool or shared system is provided by the regional system and this generally results in equitable sharing among all members. In this scenario, the regional system controls both the request distribution and the delivery system and can more easily anticipate the workload, optimize delivery, and distribute requests according to the regional systems' needs. However, when the regional system doesn't coordinate the resource sharing system, smaller resource sharing communities evolve outside of the regional system.

As the smaller resource sharing communities develop, delivery volumes skyrocket, and the regional system providing delivery does its best to keep up. Ironically, when libraries participate in a shared catalog system, each participating member must pay a fee to the management team (i.e. CCS). However, neither the participating library nor the management team is expected to pay a fee to the regional system providing the delivery even though the effect of the shared catalog is to increase delivery volume between member libraries by enormous margins (146% in the case of CCS).

In the case of NSLS, two shared systems are affecting their delivery service: CCS and LINKin. CCS member libraries are among the top 21 borrowers and lenders in the NSLS system. Arlington Heights is number 22 in volume but is not part of CCS. It is part of a network of Innovative libraries using INN-Reach ("LINKin"). In general, the LINKin libraries are not as active as the CCS libraries but are more active than non-CCS libraries.

Another shared system (iShare) is serviced by ILDS (the delivery service provided by the State). It is likely that other NSLS members will begin to form alliances that result in resource sharing communities like CCS. Some of them may join CCS (since several NSLS members currently run Unicorn but are not yet part of CCS) or they may take advantage of new resource sharing tools that are likely to have the same affect as a shared

catalog (an interface that makes it easy for patrons to discover and request items they are looking for regardless of the physical location of the item).

Most NSLS members rely on Worldcat Resource Sharing to provide ILL service to their patrons. With effort, one can find a link to Worldcat (or FirstSearch) from some NSLS library websites or catalogs, but not many. In even fewer cases, NSLS libraries feature a link to SILC (Statewide Illinois Library Catalog).

SILC is an Illinois branded version of OCLC's FirstSearch. It provides the ability to search within Illinois library regions. Unfortunately, the state library interface is very difficult to navigate and the process of making a request for an item is even more challenging.¹

For libraries that are not part of CCS, the resource sharing options are not particularly appealing for patrons or staff. Because the interfaces are so difficult to use, patrons need help with both discovery and request of items. In essence, non-CCS libraries provide a more traditional, mediated ILL service and do not support patron-initiated borrowing. Until this changes, the increase in delivery volume is likely to remain contained within the CCS cluster (and to a lesser extent the LINKin cluster).

¹ A survey of NSLS library websites showed that few promote resource sharing. Few links to WorldCat and when they are there they are difficult to find. Even fewer links to SILC (Statewide Illinois Library Catalog):

1. Schaumburg: from home page, click on "catalog" where there is a menu called "other libraries" that takes you to another page with two more choices "collection of libraries" or "WorldCat." Neither is described and the type is about 8 pts (or smaller). From home page, there is also a link to "Illinois Catalog" which explains why they do so much ILDS business there.
2. Skokie Public Library: no link to WC nor Illinois Cat
3. Vernon Area Public Library District: found no link to WC, just a link to "Other Area Libraries" where customer would have to search each individual library catalog
4. North Chicago: main link from home page to "Catalogs" where there is the choice of "NCP Library Catalog" or "WorldCat"
5. Highland Park: no link to WC nor SILC
6. Indian Trails: Catalog. Once in catalog, there's a "Can't Find it?" menu that takes you to three options: Interlibrary Loan (which has long page of instructions and finally a link to First Search (which isn't really a link to First Search but to several databases and then another link that actually goes to First Search), Other Libraries (link to several other library catalogs), and Purchase Requests.
7. Elk Grove – once in the Catalog, if you click on the "Electronic Research" menu you can find a section of links called Library Catalogs which includes a link to Illinois Library Service. Also on this page, under a section of links called Electronic Databases is a link FirstSearch OCLC.
8. Algonquin: on the home page, the "Library Catalog" menu items drops down into "Search Our Catalog," "Catalog Tips" and "WorldCat"

Also, many (if not all) libraries require authentication BEFORE you can even search in WorldCat. Recommend putting a link of each library website that pre-authenticates users (see <http://www.finditillinois.org/OCLC/silcadminguide.htm>) and sets the default search to the appropriate region (e.g. Chicago & North Suburbs). This would make discovery of items easier but placing the requests is still problematic. Quick guides could help users navigate the process of requesting items through SILC.

Finding #2: Delivery volume is going to increase

Unless a library is part of CCS or LINKin, it is not likely to be doing a lot of resource sharing. However, as soon as that begins to change, delivery volumes will jump again. In my conversations with Richard Shurman, I asked about possible additions to the CCS network and he indicated interest had been expressed at Deerfield, McHenry Nunda and Highland Park. Adding these libraries to CCS will increase delivery volume

There is a lot of pressure on libraries to make the discovery and request of materials easy for the users because of the expectations set by online services such as Google and Amazon. With Google, users can easily find what they want and with Amazon, they can get it the next day from anywhere in the world.

Products are coming onto the market that are providing a more appealing and intuitive interface for library users and metasearch tools are making it easier to search multiple repositories at once (multiple catalogs, multiple collections types, multiple databases, open access collections, etc).

As NSLS member libraries roll out better catalog interfaces and metasearch capabilities, it will likely create more delivery demand. For example, even though Cook Memorial Public Library does not provide patron-initiated borrowing, they generate as much delivery volume as some of the CCS libraries and most of the LINKin libraries.

Cook Memorial has implemented a new catalog interface using Innovative Interfaces' Encore product. Encore provides many of the features today's users expect in an online experience and the delivery volume proves that it is drawing users. Encore has a metasearch capability although it doesn't appear that they have incorporated other libraries' holdings to appear in their search results. When they do, delivery volume between "Encore libraries" will skyrocket.

There are many software options available to libraries for providing this kind of user centered catalog environment that makes discovery and requesting items from a wide range of catalogs and other kinds of data repositories much easier. The trend is strongly in this direction. As a result, NSLS libraries are likely to gradually jump on board and with each such jump, delivery volume will lurch forward once again.

Finally, every time a library does a remodel (Glenview) or adds a new building or changes certain policies, delivery can be positively affected. For example, Evanston currently has the highest circulation of all CCS libraries but fills the fewest holds due to fees charged for each request². However, this policy may be changing which will make Evanston a much busier delivery stop than it is now.

² Per their website (http://www.epl.org/index.php?option=com_content&view=article&id=120&Itemid=55), a charge of \$.50 is charged to the customer when a requested item is picked up.

Multiple factors work to create increases in library delivery volumes but very few have the opposite affect.

Finding #3: The use of bags for delivery is inefficient and costly and should be replaced with a tote system

While it may have made sense before 2001, using canvas bags for moving over two million books a year does not benefit anyone. The arguments in their favor are that bags are easier for library staff to manage than bins or totes, and a bag with just a few books or DVDs in it takes up less room than a tote. The arguments against using bags for delivery clearly outweigh the benefits.

Disadvantages of Bags for Library Delivery

1. Require inordinate amount of driver time to repack bags so they can be safely stacked
2. Require effort on the part of library staff time to pack bags according to NSLS delivery service instructions (and even then, the result is often not adequate for drivers' purposes)
3. Do not protect materials from rain or wet ground
4. Can only hold 17-28 items each (and that is only when optimally packed)
5. Can only be carried in two bags at a time (unless a book cart is provided by the library)
6. Can sometimes only be carried in one bag at a time if weather makes it impossible to set the bag down and the driver needs the other hand to get the door open
7. Cannot be sorted without handling bag each time an item is placed in it
8. Cannot be easily labeled (paper clipped labels fall off or are not necessarily displayed because bag is crumpled over.
9. Cannot be stacked more than three bags high and then only under the best of circumstances (after much repacking of individual bags and reorganizing bags to a flat enough surface that bags won't tip over in transit)

Totes, or bins, are the most commonly used container for library delivery for several reasons.

1. They are nestable so need not take up a lot of space when not in use.
2. They can be stacked several totes high so can utilize all of the vertical space available in the vehicle being used to transport.
3. They are flat bottomed with non-skid surfaces so will not slip around inside the vehicle and can be used with conveyor systems.
4. They come in a variety of colors so can be used to easily distinguish between types of material (e.g. Holds in red, Returns in Blue, ILDS delivery in Green).
5. They come in a variety of sizes from 6"-24" deep so the size that works best for the application can be selected. For example, a delivery service serving lots of locations with few items per location would do best to pick a smaller tote. A branch delivery service with high volumes of material being moved from location to location would do better with a larger tote (especially where automation is being used and individuals do not need to move around individual totes).

6. They are ideal for sorting. They are spacious and rigid so staff do not need to organize contents of totes; just drop items in.
7. They come with lids which protect contents from rain, snow, spills, etc.
8. They are sturdy and inexpensive. A batch of 500 21"x15"x9" totes cost under \$5000 and will last years.
9. They are sturdy and protect the contents from getting crushed.

Finding #4: Vans are not efficient vehicles for library materials transportation and should be replaced with box trucks

Many libraries began their delivery service with vans because they are more affordable to purchase, easy to maneuver and cost less than larger trucks to run. However, as delivery volumes have increased, the vans become less and less practical.

One of the biggest problems with vans is that it is both difficult to take material out of the vans as well as place material in the vans. Drivers must either crawl in and work from a crouched position inside of the van, or reach in from the back or side doors to maneuver material around. Either way, the ergonomics are very bad.

Box trucks, on the other hand, allow for standup access to the material in the back. These trucks can be configured with a lift gate that allow drivers to move a stacks of 4-5 totes into the trucks without having to lift anything.

With a properly sized box truck, the driver can designate certain areas for specific libraries making the process of picking up and delivering totes to each library a 5-7 minute process. Delays in delivery are generally a result of access issues rather than delivery volume. When using totes, hand trucks, and trucks equipped with lift gates, drivers can move 80 items almost as easily as 280 items because at least 175 items can be taken into the library in one motion (and one trip).³

Although the cost of diesel is currently higher than gasoline, diesel trucks are generally a better investment than gas-based vehicles. Not only do they have a much longer lifetime but they run more efficiently as well. In addition, diesel engines can run on biodiesel which can cost significantly less than 100% diesel fuel (depending on how you get it) and is certainly an ecological choice that library users are likely to appreciate.

Finding #5: Replacing vans with 17' box trucks will provide immediate savings and better position NSLS for future delivery volumes

The capacity of the large box truck will enable NSLS to reduce the number of routes from four to as many as two. A 17' box truck can hold 160 totes which would make it

³ In this scenario, I am assuming a driver is using smaller totes (12 x 15 x 9) which contain approximately 35 items each. A driver can move five such totes easily with a hand truck and never has to pick up a single tote as long as the truck has a lift gate.

possible to pick all items up from half of the libraries currently getting delivery service and still have room to spare. Another similarly sized truck could do the second route. This would allow the library to reduce the size of the delivery staff by two and could save over \$100,000 (including salaries and overhead associated with two FTE). In my calculations, the cost of the delivery service would be reduced to \$555,000 and the per stop cost reduced from \$40.40 to \$34.35.

The savings in personnel cost could be used to purchase the vehicles. If we assume each truck costs \$35,000 each, there would still be considerable savings on the year. In fact, used box trucks of a suitable size are available for under \$20,000; plus, the library would be able to sell the vans to recover some funds there.

A third truck would not need to be purchased until the volume exceeded the fleet's capacity. With a capacity of 160 totes per truck, the current volume could increase by 25% and there would still be room for all the totes. If some presorts were dropped off along the route, delivery volume could increase even more and still not exceed the capacity of a two truck fleet.

While it would be possible to convert to a tote system and continue to use vans, I do not recommend this approach. In addition to the ergonomic considerations mentioned earlier, it is also more costly to continue use the smaller capacity vans. I evaluated the effect of moving to a tote system (with no sorting on the routes) using vans instead of 17 box trucks and found that with the same 25% increase in volume, the system would require five routes and five vans. Even after converting to a tote system (which would save money), a five route system would cost \$628,000 per year which is slightly more than the current 4 route system using bags.

See Appendix A: Analysis of Cost Factors for NSLS Delivery for more information on how these numbers were calculated.

Finding #6: No sorting should be done on the route. Item level sorting should be organized by route and performed at headquarters.

Even with large box trucks that allow the drivers to easily move around, there is little benefit to sorting on the route. Because totes are closed and stacked, every item that is sorted on the route creates an undesirable delay. The system works better by shortening the route times so that drivers can get back to headquarters to participate in the sorting operation.

In addition, reducing route times is likely to reduce the amount of overtime paid to drivers. According to Alec, the driver of Route 1 typically works one hour overtime and Route 2 and Route 3 drivers work 30 minutes overtime. This is because of the time taken to sort material along the way. Although Route 4 is the shortest route (in terms of fewest stops) it is interesting to note that the transit time of the route is only 2.5 hours. Another 2.5 hours of the route time was spent parked at the libraries sorting and/or organizing

material. When sorting is eliminated, each stop can be reduced to a few minutes which will save as much as 1-2 hours per route.

The sorting operation should be optimized at headquarters to keep the sorters close to the sort totes and to ensure that sorters are not bumping into each other. One way to do this is to have libraries sort their outgoing items into route specific totes. For example, each library would have at least three totes to sort into (Route 1, Route 2, and ILDS). Ideally, each set of totes would be color-coded. On the truck, the driver would keep the different Routes separate for easy unloading to the appropriate sort location at headquarters. With color-coded totes, this process would be very easy.

Just as NSLS has set up two sort systems (one for NSLS and one for ILDS), they would need to set up a sort system for each route (in addition to the ILDS system). This makes sorting easier because each sorter sorts to 20-25 locations instead of 49.

Manual sorting can be done as fast as 400 pieces per person per hour (pph). The current speed of sorting at NSLS headquarters is approximately 336pph (based on my observation of one of the best sorters (according to Don Johnson). Pieces in the case of NSLS are actually bundles. Each “bundle” could be a single DVD or 5 CDs or 3 paperbacks. On average, there are half as many bundles as items.

It would take NSLS approximately 14 person hours to do the day’s sorting. If drivers never dropped off material along the route (and assuming a 25% increase in volume), they would bring approximately 11,095 items back to headquarters each day (aka 5,548 bundles). If we assume the sorting environment is optimized and each sorter could sort 400 pieces per hour, we can assume that a delivery staff of four could handle the system’s sorting load in approximately three hours.⁴

Finding #7: Many routing labels are hand written and difficult to read. Sorting would be optimized with a standardized, printed label.

The labels used on the bags come in every shape and size. Different abbreviations are used for locations and handwriting is sometimes difficult to read. Pens (instead of markers) are sometimes used to write information on make shift labels that are clipped with an assortment of clips to each bag. Routing slips are not placed in any standard location on the bag.

Ideally, a routing slip is something that can be read at a glance and never requires the driver or sorter to move something in order to see what it says. Preprinted labels ensure that standard abbreviations are used which reduces the number of items that are delivered to the wrong destination.

⁴ I investigated the possibility of automating the sort but because the staff cannot be reduced by more than one FTE (since you need at least two drivers and a manager), there is little room for additional savings by way of reducing staff.

For libraries using a shared system, it is often possible to automatically print both holds slips and routing slips at the time the item is checked out of the lending library. Until this is possible, the next best thing is for each route to have its own color-coded routing slip designed to ensure the destination location is clear and unambiguous.

Finding #8: CCS staff is willing to work with NSLS to optimize delivery operation

At the CCS meeting, we spent a lot of time talking about the different tools available within Unicorn for optimizing requests for delivery. He explained that the routing table (aka “hold map” which controls which library gets a particular request) is based on “local first” which means that if an item is placed on hold and pickup location is Niles, the system will first choose Niles to fill the hold request. If Niles doesn’t fill hold, the system randomly chooses the next locations to fill the request. The randomization ensures that no one library gets too many requests.

To reduce the number of items that go into transit, “local first” is very useful. However, if the pickup location cannot fill the hold, next best choice is the library that precedes the library on the delivery route. However, this additional configuration option is not supported in Unicorn.

We discussed another Unicorn feature called “grouping” as a possible way to get at the same delivery issue. However, grouping is only suitable for limiting branch requests to a single library system. We discussed using the grouping feature to optimize requests within a specific route. However, according to Richard, once a group is defined, the requests cannot go beyond the group. Therefore, if a request cannot be filled within the group, it is not filled.

Richard has been active in SirsiDynix user groups and has requested that an additional level of control be provided so that requests could be prioritized at another level beyond just “local” and “group,” yet still stay within the system. This additional level of control would make it possible to optimize requests to work better with the delivery system.

Richard reported that there was an increase of 11.23% in holds placed by the public (up to 800,000) last year. 400,000 additional holds were placed by staff for an overall increase in holds placed of 10.4%.

According to CCS statistics, 92% of all delivery requests from one CCS library are sent to another CCS library. Only 4% of CCS requests are sent to non-CCS NSLS members. 3% were sent to non NSLS members and 1% were sent out of state.⁵

⁵ Other interesting but less pertinent pieces of information gleaned from my meeting at CCS include: the hold map is based on the type of material being requested (some material types are not requestable), type of patron and location. When CCS members and non-CCS members request the same item, CCS member gets their hold filled first.

NSLS delivery service currently delivers overdue notices for CCS libraries but Richard hopes to make these printable by member libraries by Sept. 2008 (so they will no longer need to be transported). This is

Finding #9: Statewide delivery (ILDS) is labor intensive for NSLS delivery staff. NSLS staff and all NSLS members would benefit from a more optimized resource sharing system within the region

If NSLS converts to a tote system, it will be even easier for library staff than it is now. Ideally, library staff will be asked to separate items by route and attach a routing slip to each item (or bundle) clearly indicating the destination location on that route. Very few, if any items, would need to be sorted to the library level.

With ILDS delivery, library staff follow a similar protocol although the routing slip may be more complicated. However, once the item reached NSLS delivery headquarters, multiple steps are required of NSLS delivery staff to get the item on its way to its destination. It is not nearly as simple as the one touch sort system being recommended for items that stay within the NSLS region.

Each ILDS item is sorted by destination location (and this alone is challenging because the large number of possible destinations). Each stack of items for the same destination are taken to a web-attached workstation so delivery staff can update a web form with the number of items and number of bags being sent to that destination from NSLS. The website is used to print the routing slip, and the routing slip is placed on the approved bag and secured.

This process is repeated for every destination that gets a delivery from NSLS members which can be as many as 140 locations (although it is usually only 60-70 locations.)

Currently, NSLS does the second highest volume of ILDS delivery (according to 2006 ILSDO Statistics), second only to the MLS network. Some of the items that are moved through ILDS could probably be filled by NSLS member libraries but the process of finding the item in a member library's catalog is prohibitive.

Because of the labor involved in ILDS transfers, but primarily because the promotion of resource sharing would benefit NSLS library patrons, it may be worth reconsidering NSLS' resource sharing role.

Consortia are uniquely positioned to support resource sharing by helping their members evaluate and select a resource sharing model that works for the majority of members (e.g. an NSLS union catalog, or a metasearch tool that aggregates member holdings and makes

being forced largely due to recent legislation that forbids them from putting anything on the delivery van that would violate the post office franchise.

Niles and Zion-Benton (both CCS libraries) piloting Worldcat Local (as is the Lincoln Trail regional system). Any CCS libraries using WorldCat Local would still focus on resource sharing within CCS per Richard.

them easily discoverable and requestable). Such tools require extensive testing and evaluation. This can be done more efficiently by the regional system acting on behalf of the members.

In addition, as open source solutions become increasingly viable options, the regional system is better positioned than any individual library to provide leadership and technical expertise. The Georgia PINES catalog built on Evergreen (an open source ILS) has demonstrated one very effective way to promote research sharing among member libraries while controlling costs. The PINES shared catalog saves participating libraries approximately \$5 million dollars per year (over the cost of maintaining individual shared systems) and promotes shared collections and shared resources. In 2007, lending went up 40% between the 275 public library members of the PINES network and this trend is likely to continue.

Conclusion

North Suburban Library System is facing a difficult decision. In order to continue operating an effective delivery system, it needs to make changes. Trends are conspiring to demand more and more of library delivery systems while funding for the regional systems that run those delivery systems remains flat. Library membership organizations around the country are struggling with the same questions: Do we put an even higher percentage of our budget into delivery and if we do, what programs get cut? The fact is, delivery of library materials is critical to today's library systems and no delivery service can realistically consider the alternative of reducing delivery service.

In the case of NSLS, there are steps that can be taken to reduce the costs of the delivery service while preparing for the inevitable increases of delivery volume that are coming. This report has provided recommendations for how this can be accomplished:

1. Discontinue use of bags and move to totes for transporting material
2. Move from vans to large box trucks
3. Reduce number of routes and number of drivers
4. Discontinue sorting on the route
5. Provide optimized sorting operation at headquarters
6. Provide standardized, preprinted labels

Unrelated to the efficiency of the delivery operation, this report has also provided ideas for NSLS to consider related to their resource sharing activities. While NSLS has relied on the State to provide resource sharing tools to their members (OCLC Worldcat), it is clear that these tools do not provide state-of-the-art solutions to NSLS member libraries. It may be time for NSLS administrators to revisit the regional systems role in promoting, if not leading the way, to a more robust resource sharing environment for NSLS members.