Workflow Processes in a High Density Storage Facility: Balancing Preservation and Access

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ABSTRACT:

This case study explores how a high density storage system with associated software helps track and manage collections. In the case of Zhang Legacy Collections Center at Western Michigan University, the system is used with an attached reading room. The lessons learned in three years describe how the operation works in detail. There are profound operational ramifications for placement of materials to facilitate researcher access. In theory, a high density storage system with associated software helps track and manage collections. It does not take into account how researchers use collections. Shelving schemes were developed to better accommodate researchers. Shelving also reflects potential deaccessions of non-archival materials. Workflows were modified before the move to the new facility and were refined in the first three years of operations. Collection processing and cataloging workflows employ best practices but now also incorporate the additional technology for tracking materials and the constraints imposed by the high density shelving.

Keywords: high density storage, archival storage, high density shelving

Overview of the Zhang at Western Michigan University

This is a case study focusing on the use of high density shelving and a tracking system that is generally used in remote storage facilities. In the case of Western Michigan University, the system is used with an attached reading room. Because of the smaller footprint, the facility was built on one of the University's secondary campuses and is available to students and faculty as well as public researchers. Since moving into the new facility, gate counts have ranged from 18,616 the first year to 14,986 the last fiscal year.

Western Michigan University is the fourth largest public university in the state of Michigan and classified by the Carnegie Foundation for the Advancement of Teaching as one of only 139 public institutions it considers research universities. The enrollment is about 24,000 students and it is located on the west side of the state in Kalamazoo, a community of 75,000 people and a metropolitan area of about 326,000.

The Zhang Legacy Collections Center at Western Michigan University opened in 2013 and incorporates high density shelving with an attached reading room. The building is one story, 16,373 square foot building. It cost 8.7 million dollars or approximately $532 a square foot.

The Zhang houses 32,000 cubic feet of archival and manuscript collections and another 150,000 volumes which are overflow serials and monographs from the main academic library in a state-of-the art facility with humidity and temperature controls and a fire suppression system. The Zhang also provides records management services for Western Michigan University. Six fulltime employees and another ten to twelve student assistants work in the facility

The collecting areas include special collections materials as well as overflow storage for the academic libraries. Western Michigan University participates in a collaborative Mi-SPI which involves a number of academic libraries in Michigan. MI-SPI (Michigan Shared Print Initiative) began in 2011 to identify titles that are commonly-held but little-used. These books may be sent and circulated amongst participating libraries around the state.

Ingest and Processing Work Flows

Prior to moving into the new facility, collections were spread across four buildings with substandard and poor space on campus. Workflows were modified before the move to the new facility and were refined in the first three years of operations. Collection processing and cataloging workflows employ best practices but now also incorporate the additional technology for tracking materials and the constraints imposed by the high density shelving. The Zhang is an actively used facility with a reading room attached to the storage facility.

Collection Access and Reading Room Procedures

Collection access and reading room security policies are in place but there is the added layer of operating in a facility with high-density shelving. Priority is also given to on-site researchers and this sometimes conflicts with the ongoing ingest of materials and maintenance of the collections in the storage facility.

The system at Western Michigan University is not robotic. A lift is used by a staff member. The staff member has shelf location information and retrieves the requested monograph, serial, or archival collection. We created sticky notes with retrieval information which are placed directly on the shelves. This facilitates refiles. When the item has been used and is ready for refile, it is placed in the original space by a staff member.

Researchers are encouraged to contact the library ahead of time in order to have collections ready. Retrieved materials are placed in a holding room and made available to the patron. This is the most efficient method. Not all researchers make contact before arriving at the research facility. Because of the shelving, when collections are retrieved from the storage facility, all other functions often come to a halt. One aisle may be opened at a time. Even if somebody is ingesting and using the Raymond in the aisle, we typically do not work in aisles at the same time. The person operating the lift must suspend activities for maximum safety of staff.

As a result, while every effort is made to halt operations in the storage facility to retrieve materials, it may sometimes take fifteen minutes or more. This is particularly true for collections with ledgers. The ledgers have been placed directly on shelves which will be covered later in this paper. Sometimes patrons are puzzled by the length of time until the system is described—or better yet, demonstrated, for them. Repeat patrons generally learn that their research time is more efficiently used by contacting the library ahead of time and requesting retrievals.

Intellectual Control and Preservation Workflows
The system relies on LAS, Library and Archival System, which is a product developed by the Harvard Book Repository. Western Michigan University worked with a vendor with a license to the product, Generation Fifth. The University also has a license. Barcodes are placed within the system. Every item has a barcode. Every shelf has a barcode and every tray containing a book has a barcode.

All incoming books ad monographs are now processed and workflows include barcodes. If the volume is marked, the barcode is applied on the exterior of the book. Unmarked volumes include the barcode and catalog information on an acid free slip which is placed inside the book.

Archival collections also require one barcode for each box or ledger. Boxed archival collections are barcoded on the box. Ledgers which have been shrink wrapped receive an acid free strip which is barcoded and shrink-wrapped so it is visible on the exterior of the volume.

Finding aids now include the barcode information. We are still refining our finding aids and catalog records. Until we have all barcode information attached to ledgers, we will have problems.

Shrink-wrapping has become an accepted way to transport and to house volumes. Many collections, especially those on deposit from county governmental units, include ledgers of various sizes. In an ideal world, perhaps these ledgers would be boxed. This would require finding box sizes for various sized ledgers or making them. Both are possible but boxes are more expensive and take up precious shelf space.

When shrink-wrapped items are requested and used, the shrink wrap is removed. When the item is ready for reshelving, the item is shrink wrapped again. Catalog information and barcodes are placed on an acid free slip which is placed between the ledger and the shrink wrap.

The LAS system we use requires inputting a shelf location in the electronic record. We came up with a direct to shelf scheme since we sometimes stack shrink wrapped volumes on shelves. We use a total of 459 direct to shelf in our storage scheme or roughly 9% of our shelving in this manner.

Unintended Consequences and Additional Workflows

The management and maintenance of the overflow storage materials also represents additional challenges and opportunities. Interlibrary loan and document delivery which were exclusively handled in the main academic library are now a part of the work flow in the Zhang Legacy Collections Center. The addition of the overflow storage augments some of the collections held at the Zhang and provides additional research resources.

Workflows for the overflow storage materials have also resulted in new approaches to handling library-wide acquisitions. As a result of the new storage facility, training needs have become more complex and now include learning the new technology to track and manage materials in the storage facility. All employees also receive training in the high density shelving and using a lift to retrieve materials.

These new workflows have resulted in additional training required of all staff. The LAS system is not web based. There are plans and discussions for a web based product at some point. As a result, it uses menus with pre-set selections. It also requires inputting barcodes. This requires a high degree of accuracy. The system also requires additional code or programming to work with the online catalog. Not all libraries using the system have elected to integrate the two programs.

Additional training in the use of the lift has also changed workflows. All trained and certified in the use of a lift. It is an OSHA required training and the certification is valid for three years.

Lessons Learned in the First Three Years

Western Michigan University's Zhang Legacy Collections Center is a medium sized repository staffed by personnel with backgrounds in library science and history (in contrast to warehouse staff). In fact, as we have given many tours to people in the first three years, those who have a background in

warehouse management find the system familiar. Some of the drawbacks in the use of the system result from this warehouse orientation that does not always work with archival research in practice.

In theory, a high density storage system with associated software helps track and manage collections. It does not take into account how researchers use collections. There are profound operational ramifications for placement of materials to facilitate researcher access. When we began using LAS from Generation Fifth, we were told that placement of materials in the box is inconsequential. After operating for three years, I would make the argument that collection placement does matter. In fact, depending on the format (monograph, serial, or archival collection), the appropriate placement of a collection can help or impede work flows in several areas. Based on our experiences, these are my recommendations.

Collections that may be accessed on a regular basis are probably best placed on the lowest shelving levels so using the lift is not required. Similarly, boxes that are very heavy or awkward to handle are also probably based placed on lower levels regardless of their use. Placing collections that may have security issues in areas requiring the use of a lift may be one more deterrent. A planogram was designed by staff prior to the move sand staff worked with the moving firm to implement the plan. The actual move took eight weeks and was impacted by the compact shelving to a great degree.

Collections that are used as a whole would benefit from being shelved in one place. It will reduce time in retrieving them and make the reshelving go more quickly. That said, if the collections have materials in several different box sizes, you will need to have them shelved in different areas. This is the area of most discomfort for archivists who have toured the facility. We have become used to the concept of storage by size but we still find it more convenient to keep collections together if at all possible.

There are also sets of serials that are used the same way. A publication about employment trends published by the State of Michigan is an example from our collections. Sometimes a patron only requests one particular year but my experience in working with these materials for more than twenty years is that researchers often want to compare trends over time and wish to consult several years. One year is what is required but more often than not, researchers want to compare trends over time. Again, if these volumes are the same size, there are benefits from placing them in the same trays. It reduces retrieval time and ultimately the time needed to reshelve the items.

Another factor that we discovered involves the evolving digitization and availability of serial back files. As more products become available from library vendors, patrons appreciate the instant availability of these online sources. It also reduces the need to keep hardcopies of old journal runs. As a result, Western Michigan University Libraries continues to deaccession these journals as electronic resources become available and budgets allow. Again, retrieving them from one or two trays for disposal is easier. It is also easier in the LAS system to delete an entire tray. Once you enter data into the system, any deaccession needs to be handled within the system.

Records management presents another set of challenges. Some of the materials that are ingested into the system are inactive records of Western Michigan University. These have a limited retention of 3 to 7 years in most instances. They will be retained for predetermined periods but eventually reach the destruction stage. These need to be taken out of the system. The shelf may be reprogrammed for other collections but the barcodes must be removed from the system and cannot be reused. Again, the barcodes are included on these collection inventories.

Closing Observations
The shelving system has worked well for us. It is most effective with standard sized books and standard sized archival containers. Standard document storage containers and archival document boxes are the easiest to store.

It is possible to mix full, half, legal, and letter sized archival document containers. In trying to keep some collections together, we made this decision early on and have no regrets. It is how researchers often use larger archival collections. That said, it caused great distress for the trainer from LAS who wanted to demonstrate the fact that a box or a book may be stored anywhere in the system. Our experiences working with archival researchers suggested that often a number of boxes may be used from a collection over the course of a researcher's visit to an archive. It is easier to retrieve materials from one location rather than picking boxes from numerous locations in the facility. We have also tried to keep journal runs when the volumes are the same size together in trays because of the potential for deaccessioning. This will make this work easier in the future.

Some of the efficiencies built into LAS such as sequenced pick lists work better for facilities making a pre-determined number of retrievals every day. The system assumes that a number of pulls will be made and that collections or books are not retrieved on demand. In fact, we sometimes enter the retrieval information after a box or book has been retrieved.

The number of steps in LAS required to retrieve, verify, and close a work order make single instance retrievals awkward. This is problematic but it also contributes to the integrity of the process. It is time consuming but also greatly reduces the likelihood of lost materials or shelving mistakes.

The reporting functions of LAS are helpful. The reporting allows for capacity reports. For example, it is possible to know the percentage of shelves used in the system. This is somewhat misleading because once a shelf has any box or tray ingested, it is listed as full. Among the most useful statistics are the reports of ingest (what is put into the system) and the retrievals (what has been taken off the shelf for patron use).

The retrieval slips do not contain any bibliographic information. The only information included is the barcode and the placement on the shelf. In fact, books in trays are simply described to the tray level. The staff most familiar with LAS and making the most retrievals have become accustomed to looking for barcodes. Several staff still note bibliographic information on the call slips such as title, call number, collection number of box number.

There are some items which will never be barcoded but which need tracking. In the collections are Western Michigan University, the newspaper clip files (one of the signature collections) provide one example. The clip files came from the local newspaper and are arranged by name and subject in alphabetical order. A barcode was created for the collection and every time a refile occurs, the barcode is swiped into the system. The individual packets which number in the tens of thousands have not been barcoded. A similar system has been used for realtor listing cards. This collection is organized by address. For each card or clip file we refile, we scan the barcode associated with the collection.

Shelving Facts

The shelving system at Western Michigan University was designed by SpaceSaver. The shelves are 32 feet tall. There are 9 ranges of shelving with 5136 shelves. Of those shelves, 4294 have some materials placed on them. The facility is presently at 84% capacity. Shelves assigned to the Archives and Regional History Collections are at 95% and those assigned to over flow storage from the University Libraries are at 55% capacity. The archival storage in the building represents 72% of the storage.

There are 151,856 items are actively ingested in LAS. These span several customer codes. The customer codes represent different areas of the collections, dividing storage and archival components. Some facilities using this system to manage collections from multiple libraries use the customer codes to distinguish library collections.

In fiscal year 2015-2016, a total of 2217 total retrievals were made using the system. Again, the LAS allows for tracking retrievals. The retrievals vary from a slow day of six to ten retrievals to a busy day of up to twenty retrievals. The retrieval system in the LAS software requires several steps. The initial step involves identifying the location of the item. A retrieval request is made. The retrieval is verified. The retrieval order is closed. In a busier repository or one that only pulls materials at designated times, a pick list may be generated. Since requests are fulfilled on demand, several trips may be made into the storage area to retrieve items throughout the day.

As collections and materials are added to the facility, the process of ingesting occurs. Again, the ingest process is multi-step to insure accuracy and verify placement of materials. Since the primary ingest occurred as part of the move process, new items are retrieved as they are received. In fiscal year 2015-2016, 32,313 items were ingested. At this point, the majority of the ingested items are overflow storage materials from the University libraries or 23,649. The remainder are archival collections. Again, the customer codes allow tracking of the ingests.

This project presents a case study which may be applicable to mid-sized repositories. Many of the planning, implementation and operational considerations may be applied to similar sized institutions.

References

Carlson, Sharon, "The Use of High Bay Mobile Storage in a Traditional Special Collection Library: The Zhang Legacy Collections Center at Western Michigan University," Proceedings IFLA WLIC 2014 – Lyon – Libraries, Citizens, Societies: Confluence for Knowledge, Library Buildings and Equipment with Rare Books and Manuscripts. ttp://library.ifla.org/979/1/069-carlson-en.pdf

The Harvard Depository http://hul.harvard.edu/hd/ [retrieved July 13, 2016]

Kellerman, Suzanne, "Moving Fragile Materials: Shrink-Wrapping at Penn State," Collection Management 18: 1:2, 1993.

Michigan Shared Print Initiative (MI-SPI)
https://members.mcls.org/cms/sitem.cfm/library_tools/mi-spi/ [retrieved July 13, 2016]

Nitecki, Danuta and Kendrick, Curtis, eds., Library Off-Site Shelving (Engelwood, Colorado: Libraries Unlimited, 2001).