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Using automatic storage for ILL – experiences from the National Repository Library in Norway

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Abstract

Purpose – The purpose of this paper is to share the Norwegian Repository Library (RL)'s experiences with an automatic storage for interlibrary lending (ILL).

Design/methodology/approach – This paper describes how the RL uses the automatic storage to deliver ILL services to Norwegian libraries. Chaos storage is the main principle for storage.

Findings – Using automatic storage for ILL is efficient, cost-effective and safe.

Originality/value – The RL has used automatic storage since 2003, and it is one of a few libraries using this technology.

Keywords Document delivery, Norway, Interlibrary lending, Library automation, Automatic storage, Repository library

Paper type Case study

Background

The Norwegian Repository Library (RL) was established in 1989 as a department of the National Library of Norway (NLN) (Henden, 2005). It is located in the town of Mo i Rana just south of the Arctic Circle (Figure 1). Today the RL is a major supplier of interlibrary loans in Norway.

The collection

The RL's collection consists of 1,100,000 monographs and 550,000 periodical parts representing 20,000 titles. In addition there are 50,000 microfilms of Norwegian and foreign newspapers and periodicals and audio books that have been published in Norway since 2004, as well as a selection of Norwegian music CDs. The RL ingests printed publications from both public and academic libraries in Norway. In addition, the RL receives one copy of every printed publication published in Norway. These new publications are, naturally, most frequently requested, and Norwegian non-fiction is most in demand. The RL only receives loan orders from other libraries, and no end users are served.

Automatic storage

In the beginning, the publications transferred to the RL were stored on traditional bookshelves. As the amount ingested increased more than had been estimated, these bookshelves were replaced by mobile shelves. It eventually became clear that a traditional storage for the RL would demand thousands of meters of mobile shelves and other necessary equipment, and therefore several different unorthodox alternatives were considered. Finally, in 2000, the Automatic Storage and Retrieval System (ASRS) was chosen.

In 2003, the Automatic Storage and Retrieval System was ready for use. The storage building is 15 m tall, 14 m wide and 52 m long. It is reinforced with steel pillars and has a concrete floor. Inside there are 43,500 steel boxes in racks, and between the three rack sections there are three automatic cranes on rails. The Retrieval Center is in a separate building and an enclosed bridge connects the storage with the Retrieval Center. The boxes are brought between the storage and the retrieval center on powered rollers. The boxes contain folders in which the publications are stored. The boxes come in three sizes. The number of publications per box varies between 20 and 60. Humidity and temperature in the storage varies with the seasons, but are always within threshold level of 15–22°C and 20–55 per cent relative humidity.

The storage capacity in Norwegian libraries is limited, and this has created an increasing need for transferring their collections to the RL. As the collection grows, so does the need for storage space.

In consequence, a new automatic storage was built next to the existing one and was ready for use in October 2015. The building is an exact copy of Automatic Storage 1, and two-thirds of the building is used to store the RL's collection. The storage contains two rack sections, two cranes and space for 30,000 steel boxes. The remaining third of the storage will be used for film. With Automatic Storage 1 and 2, the RL has a total storage capacity of 2,500,000 publications. The two stores are connected, and the boxes are transported between the stores by the system or by the operators to optimize the storage space (Figures 2 and 3).

Chaos storage is the main principle for storage in the ASRS, and is used for the books. Chaos storage means that the books have no permanent box in the stores, and the boxes have no permanent place in the stores. A book is stored in any vacant folder in any steel box in any of the stores. All publications, folders and boxes are identified by barcodes, and this enables the ASRS to keep track of in which folder and in which box any given publication is stored. The periodicals are basically not for lending, so they have permanent boxes and folders in the stores.

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Figure 1 The town of Mo i Rana**Figure 2** Automated storage facility NLN

Handling of loan orders

The loan order is initially registered in the library system of the National Library. Every morning, all loan orders are automatically transferred from the library system to the

Figure 3 Automated storage facility NLN

Warehouse Management System (WMS), which runs the Automatic Storage and Retrieval System. The data that are transferred from the library system include the number and address of the ordering library and the identifier of the book. The WMS locates the box which contains ordered material, and the automatic crane fetches the box and brings it to the powered rollers. When the box arrives at the pick-up stations, the operator receives on-screen information on which book to pick from which folder. The operator scans the barcode of the book, and both the library system and the WMS are updated with information that the book is on loan and out of storage. There are five pick-up stations, so up to five staff members can operate the store at the same time.

Before the box is returned to storage, the operator inserts a book that has been returned from loan into the empty folder. In that way, both the returns and the loan orders are handled in the same operation, and the number of boxes that is moved in and out of storage is thereby reduced by 50 per cent.

The orders are sorted by the system so that all orders to the same library are consecutively sent to the same pick-up station. When these orders are all processed, the system automatically prints out an overview of the orders with a barcode identifying the library with its delivery address. The shipment from the RL is made the day after the loan order has been made. Urgent orders are processed and shipped the same day.

Increased use

The number of loan orders to the RL increases every year, and, in 2014, the RL delivered 175,000 documents: 131,000 to Norwegian public libraries, 43,000 to Norwegian academic libraries and 1,000 to foreign libraries.

The number of loan orders from public libraries increased by 70 per cent from 2010 to 2015. In the same time, the number of orders from academic libraries decreased by 3 per cent. All in all, the total number of loan orders increased by 42 per cent. According to the users, this increase is mainly due to fast delivery, and the fact that the RL has an almost complete collection of Norwegian monographs. The aim is to have a complete collection of both Norwegian monographs and periodicals. The decrease in loan orders from academic libraries is connected to the decrease in interlibrary loans between these libraries in general because of the increasing access to electronic resources for their users.

Most Norwegian libraries order interlibrary lendings (ILLs) from the RL, and approximately 700 public libraries and 500 academic libraries are served.

Digitization

In 2006, the NLN decided to digitize its entire collection. Because of the efficient retrieval in the ASRS, it was decided that all Norwegian monographs and periodicals in the automatic storage should be digitized. Publications from other collections in the NLN are only digitized when there is no copy of the title in the RL. So far, 426,000 monographs and 14,300 issues of periodicals have been digitized. Because of an agreement between the NLN and the Norwegian organization for copyright holders (Kopinor), all digitized books published during the twentieth century are being made available in full text to everyone with a Norwegian IP address (Solbakk, 2014).

Digitization requests are sent to the automatic storage daily. These requests are picked from storage in the afternoon, when all loan orders are handled. It is possible to order a number of unspecified publications for digitization, as well as a specific title, or titles by specific authors. The National Library receives many digitization requests from publishers, authors and other users, and these requests are prioritized in the digitization process.

A combination of a budgetary increase and a new prioritizing of operational and investment funds is financing the digitization activities at the NLN.

Advantages with ASRS for ILL

The advantages of using ASRS for ILL are many. Orders are handled very efficiently, as the books are automatically brought to the staff. Furthermore, ASRS provides safe and compact storage in one physical location. The number of items misplaced is reduced to a minimum compared to storage with traditional book shelves. The chaos storage makes it possible to handle loan orders and returned books in the same process, which gives a significant reduction in the workload. The building costs are not

high compared to building a traditional storage with shelves, and an expansion of the storage is easy and inexpensive, compared to other storage solutions. The efficient retrieval in the ASRS is a significant part of the ongoing digitization project at the NLN.

Digital ILL

According to the regulations of the Norwegian Copyright Act, digitized publications can be sent to libraries on ILL for a specific order. This service covers books published after the year 2000 (as previously mentioned books published before 2000 are available in full text for everyone with Norwegian IP-addresses), and periodicals that are not available in full text on the National Library's Web site. A digital ILL is delivered within one day.

There are, however, several restrictions to this type of ILL:

- The publication can only be used on the library's premises.
- The file must be deleted after use.
- It is not possible to loan digitized copies of legally deposited publications.

Conclusion

The RL at the NLN has used an ASRS for ILL since 2003. The solution has proved to be efficient, cost-effective and safe. The ASRS enables the RL to deliver both loan orders and digitization requests fast, and despite the chaos storage, the RL has a good overview of the collection. The newly built storage facility ensures that Norway has sufficient capacity to store publications for many years to come to the benefit of both end-users and libraries.

This is a substantially revised and updated paper originally presented at the IFLA satellite conference in Nancy 13-14 August 2014.

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Further reading

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