

Many are eliminating manned checkout counters, and are seeing savings in reduced labor costs for checkouts and returns, while freeing up staff members to spend more time assisting patrons.

By Claire Swedberg

Feb.11, 2010—As more libraries adopt radio frequency identification, a growing number have begun eliminating their old check-in and checkout systems, which require employees to manually scan a patron's library card or the books that person is borrowing or returning. Instead, visitors use RFID kiosks to check out, return or renew books, as well as pay fines or fees. In such applications, the technology does much of the work—checking materials in and out, updating those items' status in the library-management system (LMS), and instructing patrons how to sort the returned items to ensure they are put back on the shelves faster.

Hertfordshire's countywide library system is one of many in the United Kingdom that have phased out the human-based system entirely, switching to [Intelligent's](#) SmartServe RFID kiosks. Library employees no longer work behind a counter, but simply walk through the building providing assistance when needed. With self-serve kiosks, patrons move through the process more efficiently and faster, says Sue Valentine, [Hertfordshire Libraries'](#) head of stock, reader development and customer services.



Intellident's SmartServe Lite kiosk let's library patrons check out and return materials.

In much of the world, although RFID systems have been installed for checking out materials such as books and DVDs, self-service technology is provided as an alternative to interacting directly with a staff member, and is thus not used exclusively. In fact, many U.S. libraries find that their patrons prefer to stand in line for the human interaction—for the most part, because that's what is familiar to them.

RFID deployments by libraries are increasing in number more quickly in the United Kingdom than in other parts of Europe, as well as in North America and Asia, where adoption has been slower. Worldwide, however, approximately 5 percent of all libraries (there are estimated to be about 1 million around the globe) are using RFID technology, says Maria Kaganov, the marketing director of [Tagsys](#), which has supplied RFID solutions to a number of libraries (see [Amsterdam Libraries Deploying RFID](#), [New Orleans Library Reopens With RFID](#) and [RFID Helps CSU Library Automate Sortation, Storage](#)). "We are seeing more and more interest in the use of RFID in both new library buildings and the retrofit of existing libraries," she states. "The growth rate we expect in libraries is about 25 to 30 percent per year."

The technology has developed to the point at which all patron transactions—checkouts, returns, renewals and the paying of fees—can be managed at a kiosk, according to Andy Chadbourne, Intellident's marketing and communications manager. Once a kiosk

is provided as the only solution, he says, visitors quickly get comfortable with the technology.

"This is now the trend in the U.K.," Chadbourne says, "and we are really seeing a high adoption rate

based on this." In France and the Netherlands, where Intellident also maintains offices, libraries are installing self-service RFID kiosks. However, he notes, most are looking to complement manned counters rather than replace them. "In France, self-service is just becoming popular [in the past six to 12 months], and we are seeing a real interest from our Paris office."

In the United States and Canada, self-service RFID kiosks are being installed as a complement to manned counters as well, and Chadbourne predicts that academic libraries in both countries may begin to adopt the same exclusive RFID solutions (without manned counters) currently being used in the United Kingdom.

At Hertfordshire's 47 libraries, the previous library-management system was becoming out of date, and the county determined that RFID would be the best technology to replace it. Until it began installing the SmartServe kiosks in September 2009, at a rate of one site per week, the libraries employed a proprietary system known as "bookreader," provided by LMS supplier [BiblioMondo](#). Bookreader labels have magnetic spots that provide a unique ID number attached to books and patron ID cards. A visitor would present his or her card at the desk, and an employee would place that person's card in a reader, which would scan the ID card, and then slide the unopened books, one at a time, over a device that would read the magnetic spots on the label attached to each item.



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That system, installed in 1980, was working, Valentine says, but BiblioMondo was no longer producing the hardware, so as equipment needed to be replaced, there simply was no hardware available. "The equipment was at least 10 years old," she explains, "and becoming increasingly unreliable, so an alternative solution was needed."

In addition, security systems in the Hertfordshire libraries were failing. The security system was not integrated with the LMS, and required a separate security tag on each item, designed to sound an alarm if it passed through the one-way exit gate. Therefore, when an item was checked out, the staff would then have to hand the books to the patron after he or she had passed through the gate.

Installing a bar-code system seemed to be a step backward in technology, Valentine says, because it would have required each item's bar-coded label to be scanned—a slower process than the previous system in which books did not need to be scanned with a bar-code reader, but were simply placed on or swiped near the bookreader device. What's more, she adds, such a system would have required increasing the number of workers at check-out and return desks in order to accomplish those scans.

One of the county's priorities was to reduce or eliminate checkout counters, thereby allowing more public space for the movement of visitors and the display of books. "Research shows that the first 20

feet of a library are most important," Valentine states, "as that is where the customer makes their first impression and [is] made to feel welcome." Big counters, she adds, act as barriers, as do gated security systems. What's more, she says, opening up entrances by eliminating the one-way exit security portal also improves access for users with disabilities.

With the new kiosks—which number as many as four at Hertfordshire's largest library, and only one at its smallest—patrons enter an open area in which the library has set up book displays, as well as the kiosks. Each library schedules one staff member to monitor the front area of the library, including the kiosk, to ensure that visitors are able to use it properly, and to assist those who need help, or answer questions. The kiosk comes with a cart on one side for returned books (which can be shelved immediately), and a bin on the other for returned specialty items, such as audio-visual materials, or items that have been reserved by other patrons.

When returning borrowed materials, a visitor simply places them in a recessed tray on the kiosk, then presses a prompt indicating a return, and the screen directs that individual to move the items to the appropriate cart or bin. For checkout, the patron first holds his or her library card near the kiosk's bar-code scanner, and then puts the materials to be borrowed in the tray, all at once. The 13.56 MHz interrogator captures the unique ID number of each item, and transfers that data, via a cabled connection, to the library's BiblioMondo library-management system, using Intellident software to translate that information. Simultaneously, the reader disables RFID tags so that the visitor can then walk through the doors without setting off a security alarm. RFID reader antennas are installed in a gateway at the door, to capture the RFID tag ID numbers of any materials that have not been checked out, and to trigger an alert.



*Andy Chadbourne,
Intellident's marketing and
communications manager*

Hertfordshire's kiosks also enable patrons to pay fines for late books, or fees related to rental equipment, by inserting paper money or coins into the machine. Again, the data related to that transaction, along with the bar-coded number of the paying visitor's library card, is sent to the LMS. Patrons can also use the kiosks to view whether they have others items on loan, as well as renew materials they left at home. Another positive feature, Valentine says, is that the kiosks can display on-screen instructions, not just in English, but also in up to five other languages.

Because RFID-enabled Hertfordshire libraries have removed their checkout desks, Valentine says, patrons all use the kiosks, and the results have been positive. "They think it's quite clever," she says. "They show their membership card to the machine, and by the time they put their card away, the kiosk has checked out all their items."

Nearly all libraries around the world that have adopted RFID use high-frequency (HF) 13.56 MHz technology complying with the ISO 15693 standard. [Business Resource Solutions \(BRS\)](#), a systems integrator based in Brentwood, Tenn., recently installed an HF RFID system at

[Linebaugh Library System](#) in Murfreesboro, Tenn. The library is tagging all items at the library and reading them with ISO 15693-compliant desktop interrogators provided by Singapore company [ST LogiTrack](#).

When the system goes live this month, the staff will utilize RFID interrogators behind the counter to read tags on every item as it is returned, says Lynn Monger, BRS' marketing associate. The materials are then updated in the back-end library-management system using software provided by BRS. A patron has the alternative of self-checkout using another ST LogiTrack reader, or going to the counter to interact with library employees. In that case, librarians use an RFID interrogator to scan the books for the visitor. Either way, the RFID tag, with a unique ID number that links to the item in the LMS, is disarmed at the time it is checked out. An RFID reader at the library doorway captures the tags' unique ID numbers if they have not been disarmed, and an alert is triggered, thus notifying workers that a book or other item is being removed without having been checked out.

Intelligent, [3M Library Systems](#) and [Bibliotheca](#) are market leaders in RFID-based technology that interfaces with existing library systems, while Tagsys is a leader in supplying hardware to library application providers (though not a big supplier to U.K. libraries).

In the United Kingdom, data-encoding standardization has helped to fuel RFID adoption in libraries. Vendors of library system hardware and software sold in that country—including [2CQR](#), [3M Library Systems UK](#), [Axiell](#), [Bibliotheca](#), [D-Tech](#), [Intelligent](#) and [Plescon Security Products](#)—have formed a group called the RFID Alliance, which recommends one standard, ISO/DIS 28560, that dictates how information is stored on an RFID tag. In that way, all tags can be read in the same manner, making U.K. library RFID systems uniform. This would allow libraries to read the tags on items that may belong to another facility.

According to Kaganov, the next step for libraries will be full data integration of inventory and checkout status of items into one central information-management system (ILS) server, accessible to all libraries.

"With the use of RFID, data is available at the security point to track theft, and also directly on the shelves through faster inventory," Kaganov explains. "All of this data provides considerably more visibility into material availability. The library market is rapidly moving to implementing systems [middleware applications] that are able to interface with the ILS, as well as offer analytics to the librarians." This means, for example, that a library could access data such as whether an item at another location has been checked out, and when. It would also allow for the analysis of trends, such as peak periods, thereby enabling libraries to staff their facilities accordingly.

As RFID tags become more commonly embedded in books and DVDs by the publisher or manufacturer, Kaganov says, the systems will be adopted at a higher rate in libraries. "RFID tagging is starting to be an added service to book providers," she states. Since tagging collections on library shelves is often a long and manual process, she notes, librarians are looking to their suppliers to deliver product with RFID tags already attached.

Meanwhile, the complete self-serve system will be gaining momentum, says Matthias Joos, the CEO of Bibliotheca, which is headquartered in Switzerland. More RFID kiosks that offer full service, he indicates—check out, returns and payments—will drive the elimination of manned library counters. "The financial crisis had no impact" on the rate of RFID deployments in the past two years, Joos says. In fact, he speculates, it may have had a positive effect, due to economic pressure on communities to adopt technologies such as RFID that offer libraries the potential to lower costs and reduce labor.

"More and more, libraries don't give the patrons an alternative [in the form of a manned check-out desk] when implementing RFID," Joos says. "This is due to the high acceptance of the kiosks by all ages of the patrons. In fact, the circulation increases since there is more privacy when borrowing with RFID."