

Colorado Library Checks Out RFID

The library is using RFID to streamline circulation and keep better tabs on its collection of more than 1 million items at 10 branches.

By Mary Catherine O'Connor

July 6, 2006—"We're a library system that is being loved to death," says Jackie Powers, director of public information for Colorado's [Jefferson County Public Library](#).

The library system serves more than 370,000 of the 530,000 residents of the Denver suburbs, including Arvada, Golden, Westminster, Littleton, Lakewood and Wheat Ridge, are patrons of its 10 branches, and the region's population continues to grow. In 2005, the library system circulated more than 5.5 million items, a 30 percent increase over 2004—and it expects to circulate 6 million this year.

This increase is taking a toll on the library system's 230 full time staff and 270 hourly employees. "Our circulation people can't keep up with usage," says Powers. "We needed to take pressure off our staff through the use of a self-checkout system."

Therefore, the Jefferson County Public Library is transitioning from a largely librarian-assisted checkout process to a self-checkout system, while also transforming its bar-code-oriented book identification system to one based on radio frequency identification. RFID enables faster book identification than bar codes, since multiple books or other media can be stacked atop an interrogator (reader) and read very quickly. With bar codes, patrons must locate and then hold each book's bar-code label under a scanner. Currently, four of the library's branches each have one self-checkout counter for bar-coded books. These four will be converted to RFID-based systems, and multiple self-checkout counters will be added to all 10 locations. Librarians will use the RFID tags, rather than the bar codes, to check returned books back into the library system.

Estimates vary on the time savings RFID checkout and check-in offers over bar-code-based systems, but many sources gauge it at 40 percent, according to Cindy Phillips, the library's digital resources manager.

The library system's old antitheft system will be replaced by RFID interrogators installed at library exits, which will sound an alarm when someone walks out of the library without properly checking out an RFID-enabled book or other media. "One of the criteria we had for an RFID system is one that could tell us what items the antitheft system reads," says Phillips. Thus, in cases where patrons manage to steal items despite the alarm, the library can keep track of items it needs to replace. Eventually, staff will also use the RFID tags to help shelve books and manage inventory.

[Bibliotheca RFID Library Systems](#), a Switzerland-based maker of RFID products for libraries, is providing the RFID system, including all hardware, software and integration services. The system uses ISO 15693-compliant tags and readers operating at 13.56 MHz (high frequency). Bibliotheca sources RFID-enabled book labels from [UPM Raflatac](#) and manufactures its own labels for optical media, which have metallic content that often interferes with or prevents RF communication between the tag and reader (see [Tags for CDs Get a Boost](#)). From [Feig Electronics](#), Bibliotheca sources the RFID interrogator modules it designs

into both its fixed-position and handheld interrogators. It also provides middleware needed to link the tag data with the library information system (LIS) software used to manage all of the library's circulation and patron accounts.

Thus far, staff at the 10 branches have added RFID tags to about a third of its collection of more than 1 million books, CDs, DVDs and other media, which circulate through the library system as a floating, or shared collection. That means that items are loaned from or returned to any branch rather than being assigned to specific locations. To add a tag to a book, a staff person scans the book's existing bar code, which calls up its unique call number in the LIS. He then places an RFID label in the book and uses an interrogator to encode it with the call number (linked to the book's title and author name in the LIS database), pulled from the LIS by the Bibliotheca middleware. (The same process is used for CDs and other media, utilizing the optical media tags.) All tags contain an I-Code SLI chip manufactured by Philips. To protect the tagged media from being read by an unauthorized party with a 13.56 MHz interrogator, the tag data is encrypted and can be read only by interrogators linked to the library's network.

As the library transitions into using the RFID technology for self-checkout, the existing bar-code scanners will remain functional. In August, the institution plans to begin making the RFID-based self-checkout counters available to patrons at its Wheat Ridge location, followed by its Arvada branch, now under construction and set to open in September. During the transition time, patrons will be instructed to place the books they are borrowing on top of the reader at the self-checkout counter, and to check a computer monitor on the counter to see if any or all of the books or other media have yet been checked out. Those that haven't will need to be checked out using the bar code. The library expects to have its entire collection RFID-tagged in approximately one year.

Jefferson County Public Library is the second-largest library system (following Denver's) in the entire Rocky Mountain region, but it's not the only one interested in RFID. According to Powers, the library systems of Colorado's Douglas and Arapahoe counties are also looking into RFID.

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