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## LCF – Collaborating Internationally to Leap Forward

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### Keywords

RFID; Library Communication Framework; Standards; SIP2; NCIP2; ISO 28560-2

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In a few weeks, I'll be attending my first National Information Standards Organization (NISO) meeting as a member of the National Circulation Interchange Protocol (NCIP) Standing Committee. My objective is to see if I can garner support for the Library Communication Framework (LCF) which is a set of protocols that replicate and extend Standard Interchange Protocol (SIP2) and NCIP2 while adding web services functionality for the exchange of information.<sup>1</sup> The LCF was developed by BIC (Book Industry Communication<sup>2</sup>), an independent organization based in the U.K.

The current library communication protocols (SIP2 and NCIP2) are very limited in what they do and how they do it. SIP2 and NCIP2 were developed to support barcode technology and, as such, they were designed for serial communications. Only one little piece of information can be sent at a time. These pieces of information are specified in the “message pairs” that make up the SIP2 and NCIP2 protocols. SIP2 messages were created to support self-service circulation functions. NCIP2 addresses a bit more functionality including circulation and also some resource-sharing (ILL) messages. None of the current messages go beyond self-service circulation or ILL-related functions and there is no mechanism in place for expanding the message sets.

Since neither SIP2 nor NCIP2 protocols support multiprocessing, RFID-based (Radio Frequency Identification) circulation transactions over a SIP2 connection are as slow as they are with barcodes even though RFID technology supports parallel processing. With RFID, you don't have to find the barcode on the item and align the scanner to read the barcode, so RFID readers are a big improvement over barcode scanners, but it could work a whole lot better if the communication protocol supported the native ability of RFID technology to process multiple items and handle multiple communications at once. Sure, you can place a stack of four books on the RFID reader but then what happens? Bing, bing, bing, bing. Each item still gets checked in one at a time. That's SIP2 in action.

However, there is no reason that the same messages couldn't be exchanged using newer technologies that support multiprocessing. For example, if you exchanged the same messages using Web Services instead of SIP2, you could actually check-in multiple items at a time. The Library Communication Framework (LCF) does just that. The LCF was developed in the U.K. shortly after they established 28560-2 as their RFID Data Model shortly before the U.S. did.<sup>3</sup>

The developers of the LCF recognized that something had to be done or libraries in the U.K. would end up with proprietary interfaces for every combination of ILS and RFID device because once you get past basic check-in and check-out, there is no protocol that allows you to have meaningful communications with the ILS. And even those check-ins and check-outs would be hobbled by the serial nature of SIP2. So, for RFID vendors to distinguish themselves, they would have to create their own proprietary interface with each ILS.

The need to do more than what basic SIP2 allows, and the desire to position your self-check machine or ILS as competitively superior, have already done a lot of damage to the benefit of having a standard protocol. Many ILS vendors sell an “Enhanced SIP” interface which is essentially some SIP messages plus the additional messages that only they offer. The result is that each self- third party device (e.g. self-check machine, security gate, PC management system) that communicates with that ILS must learn that particular ILS vendor's version of SIP and the standard stops being much of a standard anymore.

Inventory devices were the products that put this issue on the front burner for RFID vendors. Whereas basic check-in and check-out were improved by virtue of being radio signals instead of optical signals—despite the fact that the information exchanges were based on serial communications, inventory products suffered more from this limitation. Every vendor's device involved uploading and downloading batches of data, and

the inventory process was cumbersome and slow. Again, that was SIP in action.

The point is, new product development based on RFID has been stunted because anything interesting one might be able to do with RFID technology or RFID tag data (as defined by the new data model) isn't supported by SIP2 or NCIP2. It is slow and cumbersome when it need not be. And none of the 26 data elements that can be stored on the tag is put to use. After all, what's the point of putting useful information on the RFID tag if the ILS can't do anything with the information anyway? RFID technology theoretically opens the door to all sorts of new products that could improve library processes, but the key to developing them is a state-of-the-art standard that can grow and evolve.

The Library Communication Framework tackles this problem by defining all the communications that need to be supported between the ILS and our RFID devices and facilitates the development of protocols that support these communications while providing flexibility in how they are implemented. LCF-compliant protocols can be implemented over a serial connection with SIP2 or Web Services or with APIs. The LCF specifies the messages that need to be exchanged between the ILS and the third-party device and provides "Use Cases" to help clarify what the objectives of the exchange are. And then leaves it to the vendors to use state-of-the-art platforms to get the job done. In addition, there will be a mechanism in place for regulating the expansion of the messages that make up the core LCF so we don't end up with any "LCF Extensions."

In my view, the Library Communication Framework is the way forward for libraries. I'd like to see to SIP2 phased out completely (and maybe even NCIP2 eventually). The pre-release version of LCF (0.9) has already incorporated all SIP2 communications as well as most (if not all) of those proprietary SIP2 extensions. Version 1.0 of the LCF will be released this year. Some vendors have already started using LCF. Bibliotheca, for one, has committed to using it for all of their RFID development that includes ILS vendors here in the U.S. as well as several in the U.K. Two of the U.K. ILS vendors have also already committed to using LCF (Axxiell and Capita). Even 3M, originator of SIP, has thrown in their support for LCF.

We should be building on the work of BIC and the LCF rather than recreating the wheel here in the U.S., or worse, continuing to limp along with SIP2 (or any variation thereof). We share RFID vendors and we share ILS vendors and we share an RFID data profile. This trifecta puts us in the perfect position to take advantage of the work librarians and library vendors on the other side of the pond have already done. What that means is we should be telling our ILS and our RFID vendors that LCF compliance is important (if not critical) and we should be helping define our communication requirements (providing those Use Cases).

At the NCIP Standing Committee meeting, I'll be sharing some of the Use Cases I've gathered and seeing whether NISO is the right agency for supporting and extending the great work that is underway. U.S. libraries are not so different from U.K. libraries, and this is an opportunity for collaboration that will make all of us more efficient, more effective, and create opportunities to be much more creative about how we get things done. A consistent communication protocol that leverages RFID also opens up the market for new hardware and software products for the vendors to sell us. It's a win-win situation. And that's the best kind of collaboration there is.

#### Endnotes

<sup>1</sup> <http://www.bic.org.uk/e4libraries/16/INTEROPERABILITY-STANDARDS/>

<sup>2</sup> BIC is an independent U.K. organization established to promote supply chain efficiency in all sectors of the book world (and they include libraries in that world). The Book Industry Study Group (BISG) here in the U.S. is similar to BIC, but BISG is a "trade organization for the book industry," which includes publishers but not libraries. As such, BIC has paid more attention to the issue of RFID technology, which (so far) is a concern of libraries but not of book publishers.

<sup>3</sup> [http://www.niso.org/apps/group\\_public/download.php/8269/RP-6-2012\\_RFID-in\\_US\\_Libraries.pdf](http://www.niso.org/apps/group_public/download.php/8269/RP-6-2012_RFID-in_US_Libraries.pdf)