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A Librarian's Guide to RFID Procurement

by Mick Fortune (2016 ed.)



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By Mick Fortune

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Introduction

RFID – Radio Frequency IDentification has now been used by libraries for almost twenty years. For most of that time librarians have tended to use the term “RFID” as being synonymous with one particular aspect of the technology – self-service circulation.

More recently both RFID and Library Management System (LMS) suppliers have begun to recognise the broader potential of RFID to deliver new functionality and new services on new devices. At the time of writing this new guide (winter 2015/2016) new applications are already being written for smartphone based applications including self-service issue, collection management, discovery etc. This list is likely to grow rapidly so this new guide, published jointly by the National Acquisitions Group and Book Industry Communication, tries to anticipate how these changes will affect choices and is a very different document to the one it replaces.

The Structure of the Document

RFID solutions now come in a variety of guises – from membership cards to smartphone apps – so it is becoming more and more important to ensure that solutions are truly interoperable. A smartphone app should read both the data and the frequency used on the tags found in your stock collection; an access control card might usefully double as a library membership card. With different RFID suppliers working in different areas of expertise it increasingly falls to the librarian to avoid the pressure points and ensure that solutions work together. This document has been designed to help you understand where the pressure points might be and how to write a specification that will ensure that the solutions you buy meet your present and future requirements.

The document is in four parts.

Part One offers a sample template for the buyer to set out the scope of the project, explain how it fits within the existing ICT infrastructure, detail any future requirements that may need to be considered, give a detailed description of the existing library service and provide any additional information that will assist the supplier in making their best offer. Specific details relating to aspects of the procurement may either be included in this section or at the head of the relevant section in the main text of the specification.

Part Two sets out the key areas of concern that should be addressed by a potential supplier. It covers both the broader aspects of credibility, experience and durability one should expect from any supplier as well as specific points relating to RFID deliverables. Each section is introduced by a brief explanation of its importance and relevance followed by guidance for the librarian in providing relevant information to the supplier that should ensure mutual understanding. Finally a list of sample questions – that may need to be amended to reflect your particular circumstances – is offered for you to begin drafting your requirement.

Part Three offers an sample template for suppliers to submit costs.

Part Four offers a simple model for evaluating supplier responses.



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Part One – Project Scope and Library Service Information

1. Introduction/preamble

A short description of what is required, e.g. a new or replacement self-service solution, an access control/library membership system, smart 'app' for resource discovery etc. State whether this is a comprehensive (i.e. system-wide) or limited deployment. Any known constraints – environmental (e.g. extensive use of metal shelving); system (e.g. is 'non-standard' existing RFID installation); financial, etc.

2. List of sites covered by this procurement

Do not list statistical data here, just names and locations.

3. Statement of specific requirements

e.g. Services that we wish to deliver are:

- Smartphone application for at-shelf interrogation of stock to:
 - discover other related library resources
 - self-issue items
- Self-return of book & non-book material
- Patron account management via self-service terminals and/or smart devices

4. Project deadline

Date by which project must be completed.

5. Supplier responses

A short statement explaining how suppliers should respond to this document. In its simplest form this might just be a statement like: *Tenderers must, through their responses to the specification and any necessary explanatory documentation, state fully how their proposal meets the project aims.*

6. Procurement milestones

There are many ways to buy RFID solutions and many will have set procedures and timetables that must be followed in order to comply with EU or other official regulations. Most processes will include as a minimum an initial meeting with potential suppliers to allow them to familiarise themselves with the characteristics of your installation; demonstrations/presentations of any equipment, software etc. and a final interview with shortlisted suppliers before making the final selection. You should therefore set out your timetable for managing each of these steps taking care to include the closing date (and time) for submission of tenders.

7. Project Timetable

Give details of all known project deadlines taking account of any factors that may have an impact on the implementation process such as new building(s), removal of stock or equipment to another site, site and staff availability during the installation phase, network availability etc. – provide project objectives in terms of start and end dates, any pilot sites etc.

8. Summary of Objectives

Provide more detailed objectives for the project – i.e. how you would answer the question “What will success look like?”

By all means establish measurable targets for success but make sure you agree exactly how these measurements will be made and agree them with your supplier before signing the contract!

Sample text could include:



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Target levels for self-service usage. (Make these realistic – 99% is often claimed but rarely met – the percentage you might reasonably expect will depend heavily on your local circumstances and the nature of your collection). You may also want to differentiate between anticipated levels for material types – e.g. CD and DVD loans may require staff intervention that would make the attainment of high levels for self-service unlikely.

Specifics on integration with existing systems, especially the LMS(ILS) in use in your library but don't forget access control, membership card or smartphone ID, asset management etc.

Requirements for training, implementation and support. Training by the supplier may be expensive so you may opt to use a "train the trainers" approach. Specify how many staff will require training and to what level. Not everyone will need to be given full system training but unless you are a very small installation it would be wise to train at least two staff as administrators.

9. Institutional Information/Requirements

Locations:

Give an overview of your installation with details of all operational locations – addresses, hours of service (Mon-Fri, Sat, Sun), and any additional information that might be useful (e.g. special collections, limited access). Specific requirements for individual sites should be noted in the main body of the specification.

Statistics:

Depending on the nature of the procurement you may need to supply all or any of the following:

By site:

Borrower(Reader) Numbers

Annual Issues/Renewals

Annual additions to stock

Current stock levels:

Books

Journals

DVDs

CDs

Other media or assets

Standards/Policies

Give details of any local standards or policies that might affect the installation of your chosen solution e.g. local network protocols, firewalls, disability, equality and privacy requirements, internet safety standards (safe browsing), wireless networking, other radio devices operating locally (on-site or off) etc.

Existing systems in use

If there is an institution-wide requirement for specific hardware and/or software to be supplied (e.g. for ease of maintenance or to meet with institutional requirements for networking) state them here.

e.g. All software must be able to run on the (operating system in use) platform.

Give details of any anti-virus or other software required by your institution.

Hardware Procurement



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State your position with regard to hardware procurement (i.e. will suppliers require you to buy their hardware or will you be free to seek alternative equipment.)

Capacity

If you have specific requirements for future capacity, you should state them here.

e.g. The capacity of the systems proposed must be adequate for the operations as described, and capable of dealing with an increase of up to n% in stated transaction levels...

Alternatively, you may wish to ask the supplier for a statement of the potential maximum capacity of the proposed configuration.



Part Two – The Specification

<p>1. Establishing supplier reputation and approach to delivering RFID solutions</p> <p>Why this matters: The global RFID market is huge and complex. Over the past 20 or more years many suppliers of RFID materials and solutions have flirted with the library market – often with disastrous consequences for both themselves and their clients. Establishing which ones understand library requirements has become more and more important.</p> <p>Libraries use RFID in very different ways to other industries so it makes sense to buy a solution from a company that is either already well established in the library RFID market or has at least demonstrated its understanding of how libraries operate. Managing a dynamic stock collection is arguably a more complex operation than managing goods in a warehouse, and circulating stock over a number of years is more demanding than tracking items in the supply chain for a few days - so try to ensure that you buy from a supplier that understands this.</p> <p>Many suppliers are committed to support international and national standards for both tag and application data. The most important of these relate to the storage of data on the tags (the ‘data model’) and the data elements and values exchanged between the LMS(ILS) and the third party application. A recent initiative led by Book Industry Communication (BIC) in the UK called the ‘Library Communication Framework’ (LCF) seeks to introduce some uniformity to the latter with many major LMS, RFID and other application providers having signed the ‘LCF Charter’ – a pledge to work to improve interoperability through the use of common elements and values.</p> <p>You can find more information about both data models and LCF in the Appendices.</p> <p>Things to tell them: If you have already invested in RFID include a brief description of your current installation – particularly with regard to the type of tags used, whether they comply with any recognised data standard for RFID tags (ISO 28560, national data models etc.) and the extent of your existing implementation – details of stock holdings and equipment in use across your organisation. If you want stock to be freely circulated across all branches or sites, then give details of all existing installations.</p> <p>If you have other systems running on site – e.g. access control, smartphone and tablet applications, other RFID solutions, PC booking systems – with which you wish this solution to interact you should list them, together with any known limits to interoperability, to alert potential suppliers.</p> <p>Whether or not you have already invested in RFID make sure you provide details of any specific networking requirements including local firewalls and any other possible limitations to network access both within your organisation and via the internet.</p> <p>Sample Questions:</p> <p>1.1 The supplier must have proven experience of providing solutions for libraries of comparable size and type – preferably RFID-based. A full list of (UK) customers is required – any sites that may not be approached for reference purposes must be identified, together with reasons for their exclusion.</p> <p>1.2 The supplier must indicate whether they are a certified partner (or similar) of <i>(insert current LMS provider)</i>.</p> <p>1.3 Suppliers must indicate whether they support the following standards/recommendations:</p> <p>1.3.1 ISO 28560-2?</p> <p>1.3.2 UK data model for RFID data?</p> <p>1.3.3 Book Industry Communication’s Library Communication Framework?</p> <p>1.4 Is the solution proposed fully interoperable with our other library systems (provide a list here or at the head of this section). Please give details of any known limitations.</p> <p>1.5 Will your solution operate with other Library Management Systems without loss of functionality or deterioration of performance? If not please give details of any known limitations.</p>

<p>2. Overall Design</p> <p>Why this matters: The overall design of any solution is important both in terms of its aesthetic appeal, its practicality and increasingly the overall “brand” of the library (including the “look and feel” of the product). The “user experience” should also be consistent across all modules and sites to make interaction as simple as possible.</p> <p>Things to tell them: If the library has particular requirements in terms of design, meeting local needs etc. these should be specified here. This might typically include collections that require special handling (e.g. sheet music, large items, metallic covers). Other areas that might limit service delivery might include specific and/or general language requirements, access for partially sighted or blind users, disabled access etc.</p> <p>Sample Questions:</p> <p>2.1 Presentation layer software supplied should be consistent with the aesthetics of the site.</p> <p>2.2 The user’s experience should be consistent across all functions and sites.</p>
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<p>3. System Hardware Requirements: Networks and Servers</p> <p>Why this matters: Many, if not most, RFID applications will make extensive use of networks. As the range of applications being delivered both through dedicated kiosks and workstations or via mobile devices increases (many of them in the public sector no longer library related) access to and through the library network will be essential. Answers to some of the following questions may have to be sought from both your prospective supplier and your systems’ administrator.</p> <p>Applications that are not cloud or internet based may require their own server to be added to the network. Depending on the application there may be a need for rapid and reliable communication between the application server and the LMS(ILS). Again the answers to some of these questions may require dialogue between your potential supplier and your systems’ administrator.</p> <p>Things to tell them: Any information about network access – firewalls, policies for port access (especially TCP/IP), other known restrictions – should be listed here. Any requirements relating to servers (e.g. operating systems used, preferred manufacturer, communication protocols etc.) should also be listed.</p> <p>Sample Questions:</p> <p>3.1 Network and server security must not be compromised by the addition of any RFID enabled equipment. Supplier to specify what measures are in place to ensure this.</p> <p>3.2 Please confirm that there will be no interference between the RFID system and any wireless access points or other radio devices on the site.</p> <p>3.3 Please identify any additional server requirements for your solution. State the specifications, recommended operating system, your access requirements and management responsibilities.</p> <p>3.4 Please state the anticipated lifespan of all hardware proposed.</p> <p>3.5 Please state the network and bandwidth requirements of the proposed system together with any prioritisation recommended to maximise transaction speed and reliability.</p> <p>3.6 All hardware must run on standard power (220/240v in the UK).</p> <p>3.7 Please specify electrical supply and network connection requirements for each item of hardware.</p>
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<p>4. Requirements: System</p> <p>Why this matters: The introduction of a new application may have unforeseen consequences for the operation of existing systems – especially the LMS (ILS). Whilst it is probably unrealistic to expect 100% fault-free seamless integration this should always be the goal.</p> <p>Things to tell them: If replacing an existing installation it would be worthwhile mentioning any known issues with the incumbent solution rather than hoping for the best. For example, you may have had to buy additional hardware or software in order to circumvent some failing of the existing system which may not be needed – or might even conflict – with the successful operation of a new application.</p>

Sample Questions:

- 4.1 Please provide details of any additional hardware and software requirements for the use of the system with existing staff workstations (if necessary).
- 4.2 Please explain how software integration with the LMS(ILS) is achieved. Please give version numbers of any APIs or other communication protocols (such as SIP) required together with details of any non-standard additions to the standard release versions of same.
- 4.3 Please provide details of costs for all or any software licensing required for 4.1 and 4.2 above.
- 4.4 The application should be fully integrated with the LMS (ILS). Please give details of any functionality that operates entirely independently of the LMS.
- 4.5 LMS(ILS) rules and policies must not be compromised by the application.

5. Requirements: Operations

Why this matters: Whether you are buying an application for staff or library users to operate you will need to be very specific about your expectations for its successful operation.

In the following section you will need to modify or remove any questions that are not relevant to your particular requirement. For example, if you are specifying requirements for a smartphone application to carry out at-shelf discovery or issue you may find that only some of these questions are relevant to the operation of such devices (the most relevant are indicated in **bold**).

However **ALL** the questions are likely to be relevant when buying in hardware and software to run library provided self-service circulation, security and collection management solutions. You should therefore review all the following questions very carefully when preparing your specification.

Things to tell them: Any known constraints on size or design peculiar to your site or sites. If you are making a significant investment in hardware it would be well worth inviting prospective suppliers to make site visits to ensure that they propose hardware that is suited to the location(s).

If you are specifying a requirement for the system to interoperate with existing systems, smartcards, smartphones, barcodes etc. you should provide full details of the technology you are using. (frequencies used, data encoding, etc.)

Sample Questions:

5.1 Hardware – All Units:

- 5.1.1 **Where necessary devices should be capable of reading any existing borrower identification technology.**
- 5.1.2 **Devices should be able to read tags on all stock items. Please give details of any limitations to this provision (e.g. books with metallic covers).**
- 5.1.3 **Please give details of any size, range or weight restrictions on stock items that may be processed by your devices.**
- 5.1.4 Units should be capable of being upgraded to use additional/alternative borrower identification technologies. Please provide details of any options currently available together with an estimate of costs – both system wide and per device.
- 5.1.5 Self-service units should be capable of operating with low or preferably zero staffing levels for extended periods. Please give details of any limitations that might prevent continuous successful operation.
- 5.1.6 Equipment must be capable of processing non-print assets (e.g. CD's, DVD's) without damage.
- 5.1.7 All self-service units must be capable of providing a printed receipt for transactions.
- 5.1.8 **Smartphone or tablet applications should store receipts electronically.**
- 5.1.9 Please give details of minimum separation distances for each piece of equipment offered. (e.g. minimum distance between issue station and security gate, and between issue stations.)

5.1.10	All units should support touch screen operation.
5.1.11	Provision must be made for access to the system by people with disabilities and be compliant with DDA regulations.
5.1.12	All units must be capable of simultaneously reading multiple items. Please give details of read ranges.
5.1.13	Receipt printers should be integral to units.
5.1.14	Receipt printers should be easily maintainable by staff. Please give details of the process required to change a roll.
5.2	Hardware – Automated Sorters:
5.2.1	Please give details of how your solution deals with non-RFID tagged items.
5.2.2	Please provide details of the automated sorting capabilities of your solution. State number of sorting levels, bins, trolleys supported with particular reference to the use of your systems with (name of your LMS(ILS)).
5.2.3	The automated sorter must have the capability to work with books of varying sizes, weights and thicknesses. Please specify any limits to any of these metrics.
5.2.4	Automated sorter must be capable of returning audio-visual materials (e.g. music CD's, DVD's, videos, audio cassettes). Magnetic media must be handled without risk of damage or erasure.
5.3	Hardware – Security Gates:
5.3.1	The security gates shall trigger an alarm signal and/or send a message to staff upon attempted removal of unauthorised items.
5.3.2	Please specify read ranges, read speeds and successful detection rates of security equipment provided for all material types.
5.3.3	Gates shall not interfere with any other ICT or electrical equipment in close location e.g. people counters, PCs etc.
5.4	Software – Library User Functions:
5.4.1	All functions:
5.4.1.1	Please provide details of languages supported. Include in your reply details of how the choice of a different language is presented to the user.
5.4.1.2	Equal prominence should be given to different language options.
5.4.1.3	Please specify how many alternative languages can be made available for use simultaneously.
5.4.1.4	The system should be user friendly, intuitive and adhere to the general design principles set out in section 2 above. Context-sensitive help screens, prompts and meaningful error messages must be provided.
5.4.1.5	The user interface should be customisable to the greatest extent possible. Please supply screen snapshots showing the screen layout for major operations.
5.4.1.6	The system should be capable of processing mixed media, multi-part items, e.g. book plus CD.
5.4.1.7	The system must be able to operate with both RFID and barcode readers.
5.4.1.8	The system should be capable of secure user authentication (at a minimum by prompting for a PIN). Please give details and costs of options available.
5.4.1.9	The system must manage the issue, renew and return of both tagged and untagged items.
5.4.1.10	Self-service units shall be capable of operating in accordance with a user defined schedule of opening hours and be capable of self-start and self-closedown accordingly.
5.4.1.11	Access to account details should be restricted to the holder/authorised users only. Please state what measures are in place to prevent unauthorised account access.
5.4.1.12	It should be possible for staff to configure units to limit functionality to issue or return, to cope with changes in demand. Please give details of the process required to make such a change.
5.4.1.13	The system should be capable of displaying customer account details, showing a borrower's outstanding fines, charges etc.

5.4.2 Issue/Borrower Information:

- 5.4.2.1 Receipts should show time, date, device ID, title, due date (for issues) and type of transaction.
- 5.4.2.2 Receipts should be capable of being configured by the library to add local text.
- 5.4.2.3 All stations must be capable of providing a receipt in either English or other selected language.
- 5.4.2.4 The system should provide a running total of items issued or discharged during a transaction.
- 5.4.2.5 The system should provide bibliographic details of items issued or discharged (title/author as minimum) during a transaction.
- 5.4.2.6 The system should be capable of showing the status of all current loans on a customer record.
- 5.4.2.7 The system should allow customers to view the status of any current reservations.
- 5.4.2.8 The system should allow customers to cancel any current reservations.

5.4.3 Returns:

- 5.4.3.1 The system should direct borrowers to place items being returned that have been reserved in a nominated location (e.g. shelf or bin) as determined by the LMS(ILS).
- 5.4.3.2 The returns process must update the LMS(ILS) in real time.
- 5.4.3.3 Returning an item should automatically re-activate the security status on items.
- 5.4.3.4 The system must ensure that current user sessions are closed before new ones begin. Please provide details of how this is done.
- 5.4.3.5 Returns should not be updated by the LMS until the item being returned has been processed by a sorter, and can no longer be retained by the customer. Please give details of how your system meets this requirement.

5.4.4 Payments:

- 5.4.4.1 The system should provide facilities for the payment of fines and fees on some/all self-service units. Please detail options and costs for providing this functionality.
- 5.4.4.2 Payment stations should offer self-payment of charges via Chip and Pin, Smartcard, Smartphone or cash (notes and coins). Please provide full details of functionality available e.g. change given.
- 5.4.4.3 Self-service units should be capable of printing a receipt giving full details of any payment transaction, e.g. time, amount paid, reason for charge.
- 5.4.4.4 Units capable of taking payment transactions should provide an end of day printable report of card transactions at each unit for reconciliation and audit purposes.

5.5 Software – Staff Functions

5.5.1 All functions:

- 5.5.1.1 The system should be fully integrated with full staff functionality provided by the LMS (ILS).
- 5.5.1.2 Staff should be alerted to any operational problems (e.g. receipt printers low on paper, sorter bin full). Please give details of the methods by which this may be achieved.

5.5.2 Collection Management

- 5.5.2.1 Please provide a full description of collection management functionality offered by your system.
- 5.5.2.2 Please describe in detail how your system facilitates the selective identification of stock e.g. missing or lost, misplaced, special collection management etc.
- 5.5.2.3 Collection management device(s) should be capable of carrying out multiple routines simultaneously e.g. looking for lost, reserved or missing items at the same time.
- 5.5.2.4 Data collected by the device shall be in a format suitable for use and manipulation in standard desktop software packages. Please specify options available.
- 5.5.2.5 Please give details of options available for exporting data from the collection management device(s) to the LMS (ILS).

<p>5.6 Security Gates</p> <p>5.6.1 Security gates shall provide a real-time report back to a nominated staff workstation showing details of any item which has triggered the security alarm.</p> <p>5.6.2 The security system shall generate and store a report detailing the ID of any items illegally removed from the library.</p> <p>5.6.3 Please give full details of your procedures for ensuring the security of CD and DVD collections.</p> <p>5.6.4 Please state whether your system uses AFI or EAS encoding for security.*</p> <p>*Note for librarians: AFI is the more widely recommended means of handling security under ISO 28560-2 but you may decide that EAS is sufficient for your needs. There are many articles discussing the advantages and disadvantages of both available on the internet.</p>

<p>6. Standards and Best Practice</p> <p>Why this matters: The library industry is both blessed and cursed by standards. There are standards governing so many aspects of library activities that it is often tempting to overlook some of them. There are also many different kinds of standards – some, like the now ageing Standard Interchange Protocol (SIP) originally developed by 3M to simplify communications between their self-service devices and third party suppliers are widely accepted as “de facto” standards. Others – like the International Standard for RFID data (ISO 28560) – are the foundation for building new “standards” – like the UK Data Model – which are widely, but not universally supported by suppliers. More information is at Appendix A.</p> <p>“Best Practice” is sometimes a difficult concept to define. Usually these are ways of working that have been generally accepted by users to be most efficient and productive. Within the narrow confines of RFID procurement very little in the way of best practice has been defined/agreed. Most recently Book Industry Communication has launched an initiative called the “Library Communication Framework” (LCF) which seeks to improve interoperability between an RFID (or other) system and an existing LMS(ILS). This is an evolving “standard” so your specification may need to be amended over time. More information is available in Appendix B. Updated information will be posted at http://www.bic.org.uk/145/Information-about-LCF/</p> <p>Things to tell them: Your organisation may require certain standards to be supported by ICT suppliers – particularly with regard to internet safety and privacy – be sure to check and advise potential suppliers accordingly.</p> <p>If you already use RFID in your library make sure you know the format of the tags you are using and provide that information here. Tags may be of different frequency (unlikely in the UK), use different data models (especially if pre-2011), and/or store a limited amount of data. To avoid subsequent misunderstanding or disappointment make sure you tell prospective suppliers everything you can about your existing RFID tags.</p> <p>Sample Questions</p> <p>6.1 RFID tags must be read/write, operate at 13.56MHz and be compliant with ISO standards 15693 and, 18000-3. Please provide full details of the tags you propose to supply including IC, form factor and antenna composition.</p> <p>6.2 Tag data must comply with ISO 28560-2 and the UK National Profile for this standard. (The “UK data model”).</p> <p>6.3 Suppliers should state whether they are members of the LCF consortium.</p> <p>6.4 Suppliers should give details of all or any applications they supply that have been developed using the LCF.</p>
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<p>7. Tag Locking and Encryption</p> <p>Why this matters: Data on RFID tags may optionally be locked and/or encrypted. Locked data cannot be read by anyone else, encrypted data can only be read by someone with the encryption key. Some early RFID implementations used locking and/or encryption to secure the collections but unfortunately for some libraries this often prevented them from changing suppliers at a later date without re-tagging their collections.</p>

Concerns over possible new privacy legislation (see note at the end of Part Two) has led some suppliers to consider using one or both of these options to limit access to tag data. You should be aware of the possible consequences of adopting this approach – especially if you are a member of a consortium where sharing of stock may be a requirement for membership.

A number of RFID users – mostly in the universities – have written local smartphone applications to provide new functionality for their library users. It is of course essential that such applications have full access to tag data in order to operate. If your library is using, or considering using your own applications you will want to ensure that tags remain open to alteration.

Things to tell them: If you already have RFID in your library you will want to verify the status of your existing tags. Locked or encrypted tags may need to be replaced by a new supplier incurring additional unforeseen costs after the procurement has been completed. Providing a sample tag from your existing system to potential suppliers will avoid any nasty surprises.

Sample Questions

7.1 Please advise us of any additional security you may have implemented for tag data. In particular whether any data elements are locked and/or encrypted.

8. Item Tagging

N.B. Only relevant if you require suppliers to take responsibility for tagging existing stock.

Sample Questions

- 8.1 The tagging process shall be as simple and speedy as possible. Please give examples of anticipated tagging rates.
- 8.2 **(If required)** Tags suitable for use in rare and antiquarian material should be available for use. Please provide details of options available.
- 8.3 Suppliers should state whether the tagging process requires a connection to the LMS (ILS).
- 8.4 Please supply detailed estimates of time needed to tag all necessary stock at each site.
- 8.5 The system shall provide a means of tagging stock both at the shelf (for initial conversion) and at a staff workstation (e.g. for re-tagging). Please provide details of the solution offered.

9. Operational matters - Installation, Training, Maintenance and Technical Support

Why this matters: The installation of kiosks, gates, sorters etc. can be a very disruptive experience so it is important to understand exactly what work will need to be carried out. How much disruption can be expected, how long will the work take and what staff involvement will be required?

Things to tell them: If there are any local factors that might affect access to the site, networks, power supplies etc. you should include the details here.

If you plan to use existing staff to train other members give details of those you wish to be trained – numbers, abilities etc. Similarly if you intend to provide any level of local technical support give an indication of the skill levels of your staff.

Sample Questions

- 9.1 **(If required)** The system should be capable of being managed and maintained remotely, preferably via a secure web interface.
- 9.2 **(If required)** All devices should be remotely configurable from a single point of control.
- 9.3 **(If required)** A designated local system administrator should be notified automatically when any system component requires attention. Suppliers should give details of the options available to meet this requirement.
- 9.4 The system shall be capable of 24/7 operation.
- 9.5 System failure should not compromise data integrity.

- 9.6 The system shall be capable of operating in offline mode if connection to the LMS is lost. Please specify what system capabilities would still be available in this eventuality.
- 9.7 Any data captured whilst in offline mode shall be uploaded to the LMS when the connection is restored. Please specify system capabilities in this area.
- 9.8 Please give details of procedures in place to preserve loan policy rules if the connection to the LMS (ILS) fails.
- 9.9 System performance should be consistent at all times and should not be compromised at peak usage periods. Please specify performance level capabilities of the system.
- 9.10 The system shall supply management information on the usage of the self-service units both individually, and by group and site.
- 9.11 Please detail the range of management information reports available and any applications/software required to undertake reporting functionality.
- 9.12 Please provide detailed proposals for staff training to include direct training by supplier or a “cascading” model for designated staff trainers.
- 9.13 Full documentation for all functionality and any user maintenance of the system shall be provided.
- 9.14 Upgrades to the system shall be accompanied by full explanatory documentation.
- 9.15 Upgrades to the LMS(ILS) shall not affect functionality of the RFID System.
- 9.16 Upgrades to the RFID System shall not affect functionality of any existing local systems – including the LMS (ILS).
- 9.17 Please provide a copy of your standard Service Level Agreement including details of standard service hours, response times and escalation procedures.
- 9.18 Please give details of your preventative maintenance plan.
- 9.19 Suppliers are invited to provide a system development roadmap covering planned future upgrades / hardware releases over the period of the contract. Where possible this should include an indication of any associated additional costs.

10. Devices and Consumables

Why this matters: The design of both hardware and software may have a significant impact on the level of work that each system component can handle. It is often a better strategy to give details of existing usage levels and ask the supplier to make recommendations for the numbers of units that they will guarantee to manage those levels rather than specify the number of units yourself. Competition for bids should ensure that the numbers of units a supplier is prepared to **guarantee** in this regard are realistic.

You might also have a fixed requirement for the number of units you require (e.g. for staff use). Alternatively you may prefer to establish unit prices (and discount levels for bulk purchasing) for yourself and make your own assessment of needs. In the following section we provide sample wording for all these eventualities.

Do not include equipment levels for devices you do not require.

Things to tell them: If you are already using RFID in your library you should provide details of existing equipment together with your experience of their capabilities in managing current volumes of traffic.

If you have provided statistics for use, numbers of units etc., in Part One there is no need to repeat that here, otherwise add it at the beginning of this section.

Sample Questions

10.1 **EITHER:** Suppliers to state the number of RFID enabled staff workstation(s) required to manage usage levels as specified above.
OR: The system shall provide *n* RFID enabled staff workstation(s).
OR: Please give unit costs and discounts available for bulk purchasing of RFID enabled staff workstation(s).

- 10.2 EITHER:** Suppliers to state the number of RFID self-service station(s) for client use required to manage usage levels as specified above.
OR: The system shall provide *n* RFID self-service station(s) for client use.
OR: Please give unit costs and discounts available for bulk purchasing of RFID self-service station(s) for client use.
- 10.3** The system shall provide payment facilities at self-service stations as follows: (*enter list here*).
- 10.4 EITHER:** Suppliers to state the number of sets of security gates required to manage usage levels as specified above.
OR: The system shall provide *n* sets of security gates.
OR: Please give unit costs and discounts available for bulk purchasing of sets of security gates.
- 10.5 EITHER:** Suppliers to state the number of mobile stock management device(s) required to manage usage levels as specified above.
OR: The system shall provide *n* mobile stock management device(s).
OR: Please give unit costs and discounts available for bulk purchasing of mobile stock management device(s).
- 10.6 EITHER:** Suppliers to state the number of automated sorters required to manage usage levels as specified above.
OR: The system shall provide *n* automated sorters.
OR: Please give unit costs and discounts available for bulk purchasing of automated sorters.
- 10.7 EITHER:** Suppliers to state the number of automated accession units required to manage usage levels as specified above.
OR: The system shall provide *n* automated accession units.
OR: Please give unit costs and discounts available for bulk purchasing of automated accession units.
- 10.8** The system shall provide interactive shelving or display units for special exhibits, recent acquisitions etc.
- 10.9** The Supplier shall supply sufficient tags for the current level of library stock as follows:
n books
n CD / DVDs
Other (specify)
- 10.10** Please indicate size, type and cost of replacement printer paper rolls.

NB: A note on privacy.

At the time of writing there is considerable interest in the issue of RFID privacy driven mostly by the European Union's mandate M436. So far there has been no response from the UK agency (the Information Commissioner) to the mandate and accordingly there are no mandatory requirements for dealing with the issue. RFID suppliers are mostly aware of the situation which is also being closely monitored by BIC. It may be worth asking potential suppliers what steps they have taken to anticipate any changes that might be required in the future to comply with possible privacy legislation and how the solution they propose would be affected.



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Part Three – The Cost Summary

One of the most difficult aspects of buying systems is comparing like with like. Different organisations may require costs to be submitted in different ways, different tender processes may require you to request information in ways that make it difficult to assess the real cost of any given proposal.

You might therefore want to consider adding your own costs schedule for suppliers to complete – regardless of any that are mandated by either your organisation or tender process being used – to help you assess the relative costs of each submission. A suggested format is offered below, but the actual content will obviously vary from implementation to implementation so feel free to adapt it to your own requirements.

Make sure you include all the relevant sections from Part Two in your schedule! A sample template for cost comparison is given on the next page, but the list of items will of course vary from procurement to procurement so you will need to generate your own list.



Sample Cost Comparison

Hardware									
Schedule #	Product Description	Product ID*	Technical Specification (may be appended)	Image (may be appended)	Unit Cost (include minimum 1 year warranty)				
					1	2-4	5-9	10-20	20+
1.1	Self-service kiosk for issue/return/renewal	example 1							
1.2	As above with chip & PIN capabilities	example 2							
1.3									
Annual Maintenance/Service Charge									
Schedule #	Product ID*	Unit Cost							
		1	2-4	5-9	10-20	20+			
2.1	example 1								
2.2	example 2								
2.3									
Please supply details of extended warranty terms									
RFID Tags									
Schedule #	Product Description	Product ID*	Technical Specification (may be appended)	Image (may be appended)	Unit Cost				
					1	1-10,000	10-50,000	50-250,000	250,000+
3.1	Non-proprietary tags for books								
3.2	Non-proprietary tags for CDs/DVDs								
3.3									
Delivery, Implementation and Training									
Daily rate for implementation of system (to include number of day and resources required)					Charge				
Schedule #	Activity	# of days	Resources required	Cost					
4.1	e.g. Site preparation								
4.2									
4.3									
Training									
Schedule #	Activity	# of days	Resources required	Cost					
5.1	e.g. "Cascade" training of key personnel								
5.2									
5.3									

* If product numbers are supplied by the potential vendor use these in Section 1 (copying them to Section 2 as indicated by the highlighting). If no product numbers are available, use your own notation.

Part Four – Evaluation

There is no hard and fast methodology for evaluating bids. In preparing a tender request you should carefully work through each of the previous sections identifying which questions are relevant to your requirements. You will almost certainly use some, discard others and possibly add some of your own.

We would urge you to decide which questions are mission critical – i.e. without a positive response the project cannot proceed – and which are not. Try to avoid being too prescriptive – different systems have different designs and workflows and may not work in the way you envisage they should. If you mandate too many operational features you may eliminate everybody!

So for each question in your specification you will want to think hard about which are indeed mandatory, which you consider important, but that the absence of which would not prevent you from using the solution, and the rest. These final questions will normally include such questions as those you may have asked for information gathering, for the supplier to express a view/opinion or for establishing costs of optional equipment.

To create your specification, copy each question you want to use to the first column of a table (labelled “Importance”) and then add a column to indicate the relative importance of each using the following values:

- 3 Mandatory, a positive response is essential.
- 2 Highly desirable, a positive response to these requirements will score more points.
- 1 Desirable, not essential to operation but helpful to decision-making.

Prospective suppliers should be asked to respond with both a code and an explanation. Add another two columns to your specification for these responses.

You may decide that the supplier’s written response doesn’t correspond to their estimation of the code value they have selected. If this happens change the code, make a note of your reasons and take it up with the supplier later.

Many of the questions will not elicit a simple yes/no response and you should review each of the questions you use carefully. Those that request specific assurances can be completed by prospective suppliers in accordance with the following values:

- A The proposed solution meets this requirement in full.
- B The proposed solution partially meets the requirement.
- C The proposed solution will meet the requirement fully or partially in the future.
- D Not available or planned.

You will want suppliers to offer an explanation for their response – especially for responses “B” and “C”. We suggest adding the following note:

Suppliers are requested to give a full explanation of the extent to which they meet requirements where they have given either a “B” or “C” response. Where a “C” has been recorded they should give an indication of timescales for full or partial delivery of the requirement.

Finally, you might usefully offer suppliers the opportunity to tell you more about anything they feel is relevant to your requirement that has not been addressed by your specification. This will not be scored as such but may help you to determine whether you have fully understood their offer and have marked their response fairly.



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Additional Information:

Please ensure that your replies supply sufficient additional information to enable us to fully understand your offer.

Your final document should look something like this:

Requirement	I	R	Notes
6.2 Tag data must comply with ISO 28560-2 and the UK National Profile for this standard. (The "UK data model").	3	A	

Note: You may prefer to use a numerical value (i.e. 1-4 instead of A-D) for supplier responses to make calculation of evaluation scores simpler.



Appendices

Appendix A – ISO 28560 and the data model

Background

In 2011 the International Standards Organisation (ISO) published the long awaited ISO 28560 – a data standard for the structure and content of RFID tags in the library sector.

Published in three parts – to accommodate irreconcilable national differences over the means by which data is actually encoded – part one of the standard defines the data elements to be used by parts 2 and 3.

It also explains very succinctly why the data standard was needed – and the purposes for which it is to be used:

“ISO 28560-1 specifies a model for the use of radio frequency identification (RFID) tags for items appropriate for the needs of all types of libraries, including academic, public, corporate, special and school.

(It) provides the framework to ensure interoperability between libraries in exchange of library items with RFID tags, the freedom of the library to acquire or renew equipment or library items from different vendors and interoperability of a single RFID application from the vendor's perspective.

(It) specifies a set of data elements and general guidelines for implementation, to meet the needs for the:

- *circulation of library items;*
- *acquisition of library items;*
- *inter-library loan processes;*
- *data requirements of publishers, printers and other suppliers of library items;*
- *inventory and stock checking of items.*

ISO 28560-1 gives guidelines for item security, profiles, privacy, implementation, migration, label design and location of the RFID label.

It specifies the data model, system data elements and user data elements to be used in conjunction with ISO 28560-2, ISO 28560-3 and any future parts of ISO 28560.”

Up until then libraries used whatever data standard their RFID supplier proposed. In most cases this was something unique to them - usually designed to work most efficiently with whatever hardware and software they supplied.

With the arrival of the data standard, that situation changed. The UK RFID industry, through the BIC/CILIP RFID in Libraries Group, gave its full support to the adoption of ISO 28560-2 and to a data subset (now known as the UK Data Model) which includes all those elements for which there is a foreseeable requirement in the library RFID marketplace.

Since then, almost all new procurements in the UK have used the standard to ensure they use tags which can be read by equipment supplied by ANY company that supports it, enabling implementers to pick and choose the hardware and software they prefer – rather than be limited to buying everything from the same supplier - as well as having the comfort of knowing that they can switch suppliers in the future without having to re-tag all the stock.



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The UK Data Model

There are three mandatory elements:

1. Primary item identifier

Mandatory in library usage (optional if the profile is being implemented earlier in the supply chain). In the library context the primary item identifier will normally be an existing barcode number.

This field contains a unique identifier used to identify the individual copy of the book on which the RFID tag is placed (item level identification). This will usually contain the barcode number of the library book. (Note that this is not the ISBN or EAN13 - number beginning with 978.)

2. Content parameter

Mandatory in 28560-2: the OID index, (OID is the abbreviation for Object Identifier) – in effect a list of data elements present on the tag.

This field is used to tell the system which of the available elements is actually present on the tag. An entry in this element indicates that data is present and where it is stored. Its primary function is to speed the data acquisition “cycle” when reading tags. It is more efficient for an RFID system to read this OID field first rather than scanning the entire tag in the same way as looking at the table of contents of a book reveals summary information about its content.

3. Owning library (ISIL)

Mandatory as defined by ISO 15511.

This field identifies the owning library. The group felt that the long term advantages of having tags that uniquely identify institutions would facilitate the future creation of consortia, national inter-lending or simply resource sharing between different institutions.

The ISIL is an international standard for uniquely identifying libraries. ISO standard (ISO 15511) specifies the rules for creating the ISIL code. The British Library holds the UK agency for ISIL and issues ISILs for UK libraries. As this is a mandatory field, libraries which implement ISO 28560/2 will need to obtain an ISIL.

Alternatively ISO 28560-2 allows all countries to use the OCLC designation as an alternative identifier to that issued by their national agency. This was permitted primarily to deal with countries that have no ISIL agency of their own. The UK recommendation is to use the BL ISIL agency.

All other elements are either conditional (used where circumstances dictate its inclusion = functionality dependent) or optional.





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Appendix B – The Library Communication Framework

The Library Communications Framework (LCF) is a set of library interoperability standards defining a framework for the communication of data between self-service and other library terminal applications to and from library management systems.

This LCF standard is recommended by BIC as the best way to implement communications between systems within a library, for example between a Library Management System (LMS/ILS) and an RFID Self-Service Solution.

There are various communication standards already in use in the library market in the UK and elsewhere – including versions of the original SIP (Standard Interface Protocol) developed by 3M. LCF supports the functionality in these standards but goes further by providing a framework enabling systems developers to use and develop a common set of principles, variables and values to enable new, interoperable functionality to be developed.

The flexibility of LCF allows providers to determine for themselves the means by which data is exchanged as it confines itself to identifying the functionality required to deliver a service, the elements that need to be exchanged to deliver it, and the values that these elements might contain. Whilst it anticipates that the preferred means of delivering the service would be via web services (and offers examples of how these may be created) the framework is by no means prescriptive.

LCF is intended to support a much needed rationalisation of the interoperation between disparate IT solutions. In a time of scarce resources libraries are actively seeking to improve both their existing solutions and to offer new services without the risk of buying into solutions that cannot be developed or transported to a new platform. LCF provides that possibility.

The LCF framework has been developed with the active participation of leading LMS and RFID developers.

Libraries are advised to specify the use of the LCF framework in tenders for LMS/RFID procurements to help protect them against the perils of technology ‘lock-in’ that the use of proprietary solutions so often causes. By ensuring that your solution uses a standard which is up to date, comprehensive and widely approved you can be sure not to lose functionality when changing systems in the future.

Many LMS, RFID and other suppliers have already joined the LCF Consortium – an organisation pledged to developing applications based on LCF principles and values – the founding members of the charter were listed in the 2015 Press Release that accompanied the official launch:

http://www.bic.org.uk/files/LCFPR_final_release_20151002.pdf

Further information about the LCF Consortium can be found here: <http://www.bic.org.uk/146/LCF-Consortium/>

Further information about LCF is available on the BIC website: <http://www.bic.org.uk/145/Information-about-LCF/>

