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# Set your library staff free with RFID: a case study from Cardiff University

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Cardiff University implemented RFID (radio frequency identification) self-service circulation in three site libraries during summer 2007, and a fourth site is due to go live in January 2009. We undertook a European Union (EU) tender and selected Intellident as our supplier and implementation partner.<sup>1</sup> A major aim of the project was to increase the amount of time available for library staff to liaise with academic schools, and to further develop and deliver information literacy (IL) and research support. We planned to achieve this by freeing our library assistants from as many routine tasks as possible, to enable them to take on other, more interesting roles, including support for the subject librarians who lead the liaison activities.

## BACKGROUND

The project to implement RFID self-service circulation arose from the recommendations of the 2004/2005 library review, undertaken following the 2004 merger between Cardiff University and the University of Wales college of medicine.<sup>2</sup>

The university library service (ULS) of the merged institution has 18 site libraries, ranging in size from the arts and social studies library (ASSL), with approximately 450,000 items and 60 staff, to several smaller hospital libraries operating with a site librarian, one library assistant and less than 10,000 items each. The review identified several inefficiencies in the current structure, including

duplication of effort across the 18 sites, causing a restriction in the time of the professional staff available to support research and learning and teaching activities across the university. In parallel with this was a recognition that we needed to devote more time to supporting the effective exploitation of information resources across the university.

The two major recommendations of the review were an immediate action plan and a strategic plan to 2014/15; the latter recommends the consolidation of the 18 site libraries into 7 (4 of which would remain in hospital sites). So we anticipate economies of scale in the future, but it was also evident that more short-term changes were required, and the expansion of self-service circulation was identified as an option in the immediate action plan. Prior to this project, the only self-service facilities were two 3M 6210 units in ASSL.

The initial intention was to install self-service units in most sites, using the existing barcodes and electromagnetic (EM) tattle tapes for circulation and security respectively, and to trial RFID self-service in one pilot site. Following a successful bid for capital funding, the project team, formed in spring 2006, began drafting the operational requirements (OR) that would form the basis of the EU tender. As part of our research we arranged visits to several other university libraries to view their systems and discuss their implementation processes and any subsequent benefits and service gains. We initially concentrated on libraries using Voyager, the same library management system (LMS) as Cardiff's, and also libraries in the same region. Several libraries very generously provided copies of their OR to assist us in writing ours and, with this almost complete, a number of the team attended the 2006 CILIP 'RFID in libraries' conference.<sup>3</sup> We were already aware of the possibilities offered by RFID, and as we continued our research it became clear that it was feasible to consider implementing RFID on a larger scale than we had initially anticipated. The presentations and discussion at the conference reinforced our view that we should be considering RFID for the whole project, rather than just as a pilot in a small site. Having discussed the pros (multiple simultaneous transactions, increased speed and potential stock-management benefits) and the cons (increased cost per site, therefore implementation in fewer sites) we decided that RFID was the best way forward for our project. We contacted some of the conference speakers who had implemented RFID in their libraries and asked for copies of their ORs, to ensure that we

covered all necessary points when revising ours. This delayed the tender date by a couple of weeks, but was worthwhile.

#### IMPLEMENTATION SITES AND TARGETS

Although we had approximate costs for most equipment and tags, we weren't able to make a final decision on the libraries to be implemented until later in the process, so we identified three definite sites and one or two possibilities, for what we now regard as phase one of the project. Our priority was to install RFID in the Aberconway and Trevithick libraries, because these were both due to undergo major refurbishment, and in the Sir Herbert Duthie library (Duthie) which supports the school of medicine and the NHS staff at the university hospital of Wales. The Duthie library is situated in the main hospital building and we anticipated RFID circulation being a significant step towards extended opening hours and borrowing facilities for all medical staff and students. The final site-library selected was the law library, where we implemented RFID issuing in the short-loan collection.

The decision to limit the number of sites was a consequence of the additional cost involved in purchasing RFID tags and new security gates, in addition to the self-service units. However, the project group realised that implementing in fewer sites would mean that we could concentrate more equipment in each site, leading to shorter queues and hopefully higher usage levels, and therefore we set an initial target of 80% self-service circulation transactions in each site.

Placing more equipment in each site meant that we could remove the circulation desks from these libraries, thus encouraging our readers to try out self-service and see how easy it is. The refurbishments in Aberconway and Trevithick provided an ideal opportunity to plan a smaller, less-obtrusive information desk and give prominence to the new self-service equipment. The law library still has an issue desk for the standard loan collection, but the changes required to install the self-service equipment have enabled us to remove one desk entirely and concentrate the staff effort in one area. The Duthie entrance area was completely transformed when we removed the entire circulation desk along with the work area and partitioned staff offices behind it. The Duthie library assistants now share a larger, more private office and work area, and the whole entrance area has been given over to self-service and casual seating.

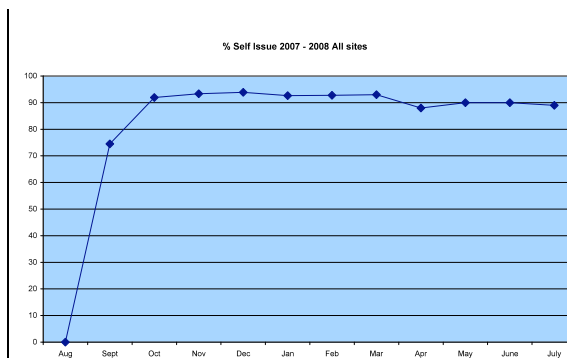


*The Duthie library pre-RFID*

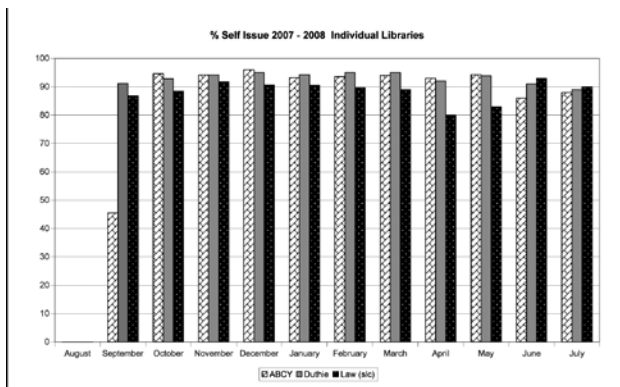


*The Duthie library post-RFID*

So did we meet our 80% target? As the charts below demonstrate, the libraries met and surpassed the targets almost immediately.



The Sir Herbert Duthie library went live with RFID at the end of August 2008, the law library short-loan collection was live midway through September and the newly refurbished Aberconway library opened at the end of September. The Duthie library's statistics showed 88% self-service in the first week of service, and they continued with over 90% throughout the academic year.



**IMPACTS: STAFF, SERVICES AND READERS**

Before the introduction of RFID, there were always two members of staff on the Duthie desk and sometimes three at peak times; the rota included the subject librarian and the site head and most staff were timetabled for at least two or three hours each day. All library assistants had specific traditional tasks, such as providing support for inter-library loans, book orders, journal processing, overdue and invoicing, and so on.

Post-RFID there is now one person staffing a much smaller information desk for a maximum two-hour shift. The circulation-desk function has been replaced by two RFID self-service units, with library staff roaming in one hour shifts at peak times. Time freed up in this way has been used to work on new projects, such as a training programme for research staff, a blog for distance learners, participation in the UK Research Reserve,<sup>4</sup> developing the library pages on Blackboard and converting the library manual into a wiki format. There is now more time available for meetings with module co-ordinators from the school of medicine and with student representatives and also for liaising with the All Wales Health Information and Library Extension Service (AWHILES), which supports medical students on placement in years three to five.<sup>5</sup>

Staff reaction in the Duthie library has been very favourable, with all library assistants welcoming their new, more interesting roles and enjoying the opportunity to provide more detailed help and responses to enquiries during their roaming sessions. The physical changes made as part of the implementation have created a lighter, more pleasant area to work in, which is also more welcoming for the readers.

The students were very impressed with the new service and were soon helping each other to use it. If for any reason a book had to be taken to the information desk (e.g. it had not been tagged) the

students were keen to take it back to the self-service units and issue it themselves rather than have it issued at the desk. The school of medicine and NHS staff were initially concerned that the service might herald job losses for staff, but were reassured by the presence of the roaming staff and now appreciate the increased liaison and support.

Service developments planned for next year include a rolling information audit with the school of medicine and further Web 2.0 activities, for example applying social bookmarking to reading lists and reference consultations for distance learners via instant messaging.

The Aberconway library underwent major changes during summer 2007; the service had operated from two adjacent buildings and the refurbishment offered the opportunity to combine both parts of the service in one building, with a more accessible entrance and an improved, logical layout. The new library has one information desk with a maximum of two staff whereas the previous service needed three or four library staff on the desks. The subject librarians' time has been freed up for more liaison work and staff have taken on more IT support with an increased number of PCs available in the foyer area. Aberconway opened in late September, and monthly statistics show that 46% of all circulation transactions were made via RFID, an amazing achievement considering they were issuing via a circulation desk in a temporary site during the first part of the month.

The law library is operating a hybrid system, with RFID in the short-loan collection but not in the main collection, so we took the decision to implement self-issue but not self-return because this would require the readers to sort their books before returning. However, we have still been able to redesign the entrance area, remove the separate information desk and operate all services from one staffed area, again resulting in a saving of staff time, especially for the subject librarians.

**CHOOSING THE RIGHT SUPPLIER**

The RFID implementation at Cardiff University has been successful for a variety of reasons, not least of which is the help and support that the project team have received from other areas in the university. The ULS is part of the information services directorate (INSRV), a merged service which provides library, IT and media services to support all aspects of research, learning and teaching in Cardiff University. The RFID project

team comprises four site librarians from ULS and three members of the library systems development unit (LSDU) who are based in the university systems group (USG); thus we have close links to the IT staff who develop and maintain the network across which the LMS and our RFID system run. The IT staff supplied questions for the OR, attended the site demonstrations from short-listed suppliers and evaluated the responses to their OR questions, so we knew we were selecting a system that they would be happy to run on the university network and one that would not cause any network problems.

The project team was also fortunate to receive advice and practical support from Cardiff University's purchasing section throughout the whole tendering process, from December 2006 up to and including the contract negotiations in May 2007. One of the senior purchasing officers took on our project, advised us to go for a restricted tender, helped us define the pre-qualification questionnaire (PQQ) points and handled all aspects of the advertising in the *Official Journal of the European Union (OJEU)*. Once we had a short-list of four suppliers she arranged all subsequent site visits, the publication of the full OR and all communications between the project team and the companies, including the contract negotiations with Intellident, our chosen supplier.

Before evaluating the OR responses, the project team arranged further visits to four UK university libraries, each one operating one of our short-listed systems. The first set of site visits at the start of the project had given us some excellent general information about operating a self-service system, and each of our short-listed suppliers had demonstrated their systems on site prior to the full OR publication in the *OJEU*, but we wanted to see each system working live in a university library and take the opportunity to discuss the pros and cons with the staff involved in implementing and operating the systems.

Clearly, a critical success factor was ensuring that the RFID system worked correctly with our LMS; we knew that at the time Intellident hadn't implemented their system with Voyager, but had worked with Aleph, the other Ex Libris LMS. So we contacted Ex Libris and they confirmed that Intellident had been very responsive to work with and that they would have no hesitation in working with them again.

Several speakers at the CILIP 'RFID in libraries' conference had emphasised the importance of

clearly stating within the OR that the RFID supplier must take responsibility for ensuring that their software will work with the library LMS software. This was a mandatory requirement in our OR and Intellident have taken full responsibility for this. Indeed they have exceeded our systems librarian's expectations in overcoming any Voyager deficiencies and they have been really excellent to work with throughout. Any remaining limitations in functionality are due to the way in which the SIP2 communication protocol was implemented in Voyager by the previous supplier, but we knew this at the start and were aware that Ex Libris were planning improvements for the next upgrade.

#### **CRITICAL PROCEDURES AND DECISIONS**

Three major practical decisions have also contributed to the success of the project: removing circulation desks, removing the loans block for readers with just one overdue item and raising the fines threshold. The latter was an evidence-based decision, taken after investigating what level of charge would allow 80% of readers to borrow books without being stopped and asked to pay fines; the level is £10.00, raised from the previous £5.00. Similarly, allowing readers to borrow when they have just one overdue item allows more use of self-service. Receipts printed at the issue stage list all items on loan, not just items borrowed in the current transaction, so readers are always aware of all items they have on loan, with their due dates.

The biggest impact was definitely the removal/reduction of the circulation desk. The project team's view was that students would be encouraged to use self-service if the units were immediately visible and more prominent than the information desk. Given that the three implementations were taking place in late August and September, the imminent lack of circulation desks, combined with the specific, unmovable deadlines of enrolment week, certainly helped to keep the project on track.

#### **CHANGE MANAGEMENT**

Before we could publicise the forthcoming developments to our readers, we needed to be sure that the library staff were well informed and prepared for the changes so that they would be happy to promote them throughout the libraries. We started by presenting short sessions at library-assistant forums; these are informal sessions run by the University Librarian and deputy University

Librarian and are specifically aimed at the library assistants. Each forum usually has one or two sessions on new developments and a general discussion/question-and-answer session. Two members of the project team presented an introduction to RFID, screen shots of the equipment involved and an outline of anticipated impacts in the libraries. However, the most important part of the session was to reassure all library staff that RFID was not being introduced in order to reduce staff numbers, and to emphasise that the intention was to release them from the repetitive manual handling tasks at the circulation desk to enable them to take on new and hopefully more interesting tasks. We identified two existing areas where more library-assistant time would be valuable: support for subject librarians in their liaison role and in IL sessions, along with increased involvement in managing reading lists. We also introduced the concept of roaming/floorwalking/roving, in the first instance as a new activity to support our readers in their use of the RFID system.

Understandably some library assistants were concerned about the loss of the circulation desk, and in particular about their new roaming role, so the ULS staff development group arranged some approachability training sessions for the staff. These sessions, facilitated by one of the staff from human resources training and development, encouraged the staff to think about their own concerns and anxieties and also to identify positive benefits that might arise from RFID. The session then concentrated on how these concerns could be alleviated, and on discussing ways to approach and interact with readers. In essence, most of these are skills that our staff already use on a daily basis when they interact with readers at the circulation and information desks, but they are usually responding to a reader's approach rather than initiating the dialogue. Some staff had concerns about what they would do whilst roaming and whether they would appear to be just hanging around, so we produced A5-sized crib cards with some key prompts. These had a dual function, to act as reminders of important points to mention to our readers and also to give the staff confidence to approach readers with a purpose. In reality, these cards were discarded after the first day once the library assistants gained a little experience of roaming.

The Duthie went live first, and by week two they were involved in training sessions for the Aberconway staff. The Duthie library assistants led these sessions, demonstrated the RFID system and answered questions. One member of staff in

particular told everyone how much she enjoyed being out in the library, answering questions about all aspects of the service, not just supporting RFID, the underlying message being that you don't realise how constrained you are by the desk until it's no longer there!

Before the summer vacation we ran a poster campaign in the libraries publicising the forthcoming developments so that returning students would be aware of the changes. In the Aberconway and Trevithick libraries this was part of a much wider publicity campaign to ensure that all readers knew their libraries were operating from temporary sites during the major refurbishments.

At the start of the project we had wondered about using flyers to publicise the new service, but the site visits to other libraries convinced us that it wouldn't be necessary, and once the units were installed we could see that they needed no further promotion.

#### **RFID AND LEAN PROCESSES**

As part of the preparation for going live, the project team – along with the site heads and operations managers of the RFID sites – participated in two LEAN workshops facilitated by members of Cardiff University's lean enterprise research centre (LERC) to develop more cost-effective working. We plotted the cycle of service for borrowing a book from a reader's point of view, looking at every potential barrier or hindrance, and reviewed every opportunity to improve the experience for our readers. When we compared the anticipated cycle for readers in sites introducing RFID with that for sites with staffed circulation desks, it was clear that if RFID worked as intended it would remove many of the barriers and aspects of what the LERC staff called 'created demand', such as cluttered entrance areas, reshelving delays, queues at desks when readers require help. Our challenge now is to address this in sites that are not implementing RFID in the near future! Fiona Emberton<sup>6</sup> refers to this streamlining of processes as 'white water rafting', where barriers or created demand are boulders in the reader's journey,<sup>6</sup> and although it sometimes felt as though we were the ones in the raft, this has been a successful exercise.

#### **CONCLUSION**

To conclude, we feel that the success of phase one of this project can be attributed to several key

factors, in addition to the practical procedures and decisions noted above:

- a very good relationship with Intellident, brought about with a detailed OR, which in turn arose from the generosity of those institutions that shared their documents with us and from the co-operation and collaboration of other groups in Cardiff University, both internal and external to INSRV
- a good mix of staff on the project group, with a range of different technical and management skills; an unexpected consequence of the various site visits was the team-building during the long journeys, and the opportunity to discuss everything that we'd seen immediately afterwards and explore how it might affect our implementation
- the efforts we made to take the library staff along with us by publicising the project at various events, offering reassurance about their job security and changing roles, implementing training for new procedures and promoting the new tasks available to them.

#### REFERENCES

- 1 <http://www.intellident.co.uk/>
- 2 Cardiff University, *Review of the university library service 2004/05 – 2014/15*, 2005; available at <http://www.cardiff.ac.uk/insrv/futures/libraryreview/report/index.html>
- 3 See <http://www.cilip.org.uk/interests/rfid/rfid2006/index.html>
- 4 See <http://www.sconul.ac.uk/publications/newsletter/40/14.pdf>
- 5 See <http://awhiles.cf.ac.uk/>
- 6 <http://fionaambertonblog.blogspot.com/2006/09/rfid-seven-steps-to-success.html>