

Migrating to ISO28560-2 : The Exeter Experience

Background and Context

The University of Exeter's Library Service across our two Exeter-based campuses are delivered through three facilities (Forum Library and Research Commons on the Streatham Campus, and the St Lukes Campus Library). The Library Service based in Cornwall is delivered through FXPlus, an exempt educational charity constituted as a shared resource between the Universities of Exeter and Falmouth, and which serves a dual role of supporting students, staff and researchers from Falmouth University and University of Exeter, Cornwall Campus. There are two libraries, the main Library based at Penryn and a smaller campus library at Falmouth

Whilst self-service predominates across all sites, with self-service traffic reaching in excess of 95%, this is currently delivered by a mix of both RFID and EM/Barcode technologies – RFID is in operation throughout the St Lukes Campus Library, whilst the Forum Library utilises RFID only in the Express Collections (1-Day Loan) area. A project is currently underway to migrate the Forum Library stock fully to RFID by 2015, but for the present the main system both here and in Research Commons is based on EM/Barcode technology. The two Libraries in Cornwall (Penryn Campus and Falmouth) are both fully RFID-enabled. To complicate the picture further, the RFID systems in use in Exeter and Cornwall are from different suppliers, each using their own proprietary data model and each using different Library Management Systems and suppliers.

The benefits of migrating to ISO28560-2 have been well rehearsed elsewhere¹, but those of particular interest to Exeter certainly included the allowance of choice expansion in terms of suppliers and equipment² and importantly, given the complex environment described above and our culture of continuous service improvement³, the beneficial impacts that streamlining and simplification of systems and standards would have in terms of developing and improving shared services between Exeter and Cornwall.

Project Design

Given that the migration of all Forum Library stock to RFID was planned to begin in the relatively near future (Autumn 2012), it was considered timely to migrate the existing, limited range of RFID-enabled stock in the Exeter libraries prior to commencement of the main project. The number of items in question was, at that time, approximately 16k in Express Collections and 80k in St Lukes Library, compared to the 500k items that would be affected if migration to the new standard was postponed pending completion of the Forum Library migration project. Given the limited numbers pre full migration, any issues or problems encountered would have a relatively limited impact, and the process could be undone quite quickly if needs be.

Of the two collections affected, Express Collections is by far the busiest – indeed, Express Collections stock has the highest turnover of all. It was important, therefore, that disruption to services in that area should be kept to a strict minimum, so it was planned to conduct migration of that collection over the relatively quieter summer months. As migration, even of a relatively small number of items, would inevitably take time to complete, to ensure continuity of service it was decided also that the self-service equipment attached to the areas affected should be converted to read and interact with tags programmed both with the new data model and the existing one

Project deliverables, agreed with our equipment supplier, included:

- Conversion of all current RFID self-service and security equipment to read both ISO and TV2 (the current model)
- Convert RFID Programming equipment to ISO
- Re-programme all RFID-tagged stock to ISO
- Test tags for compliance with ISO
- Re-programme all current RFID self-service and security equipment to read ISO only

¹ <http://www.bic.org.uk/e4librariesfiles/pdfs/110915%20migration%20final.pdf>

² <http://www.bic.org.uk/e4librariesfiles/pdfs/081202%20rfid%20case%20study%20UCLAN%20by%20stephen%20Mossop.pdf>

³ Mossop, S (2013) Achieving Transformational Change in Academic Libraries; Oxford: Chandos

Compliance Testing Regime

Although we were aware of one or two ‘early adopters’ of ISO28560-2 as the data model for their full RFID migration projects, we were unable to locate any library that had opted to migrate to it from their current data model. If we were to act as pioneers, we needed to ensure that the trail we blazed would be clear and safe for others to follow. We felt it very important, therefore, that we should be able to prove that the data model programmed to our tags was fully compliant with ISO28560-2. This would not only reassure other libraries considering a similar programme of retrospective migration that full compliance was achievable by using our methods, but would reassure ourselves that we would be able to achieve our aims in terms of stock movement and sharing between sites.

Since it would seem logical to expect that a supplier would ensure that their conversion and tag-reading equipment would work in harmony, we sought to verify compliance through a triangulation of tests using a mix of primary supplier and independently sourced equipment. At this time, as a result of our policy of selecting ‘best of breed’ equipment whenever possible, our range of RFID equipment included not only self-issue machines from our primary supplier, but stock management tools and a returns machine sourced from independent companies. These had been tuned originally to interact with our primary supplier’s preferred data model, but as part of our migration we elected to have them re-programmed by their manufacturers to read only a pure form of the ISO28560-2 data model. To complete the testing environment, and for additional reassurance, we also purchased a software system created by a verifiably independent specialist compliance testing company⁴.

Since ISO28560-2 was designed to be non-proprietary, supplier-neutral, a failed reading at any one of these points of testing should reveal an underlying problem.

Project Implementation

Our primary supplier having made the necessary changes to our self-service and security equipment, and having installed the new data model to our RFID programming tables, work to migrate the stock in Express Collections was completed very quickly. The team then moved to the St Lukes Library, where again work proceeded very swiftly.

Gathering the necessary compliance testing equipment took a little longer than expected, and by the time all was ready the team had completed almost half of the work to migrate the St Lukes Campus Library stock. Fortunately, or unfortunately (depending on your perspective), the testing regime very quickly proved its worth, and whilst all tags worked seamlessly with our proprietary equipment (so ensuring service continuity), an unexpectedly high number of tags failed to be read successfully by the testing equipment.

Widening the range and number of tests conducted, we were able to note that whilst newly programmed tags (i.e. new stock) worked fine, none of the converted tags (i.e. existing stock) passed the tests. Using the independent compliance-testing software, samples of readings taken from converted tags were analysed carefully, and compared to readings taken from newly programmed tags. It was discovered that whilst new tags contained just the standard ISO data, converted tags contained a range of unrelated data in addition to the standard ISO. For background, we prefer to use a simplified set of data for our tags, and in the original data model this took the format of Barcode number, country code, library ID, AFI (security) code and a ‘set’ value to indicate groups of items held together (book and CD set etc). Whilst numerous other fields are available in the ISO model, we restricted this to include a similar set to our original: Barcode number, ISIL code (equivalent to ‘Library ID’), AFI (security code) and set value. All other information is held in and controlled through our Library Management System. The number of potential problem fields to be investigated was usefully limited, therefore, and, following consultation with our primary suppliers, it became clear that whilst the method used to programme both new and used tags was the same, in the case of re-programmed tags the uploaded ISO data was in fact shorter in physical length than the format of the previous data model, leaving a trail of extraneous data visible to RFID readers.

⁴ We used specialist conformance testing software from Convergent Software: <https://www.convergent-software.co.uk/libraries.php>

enabled equipment. Conversion work was completed successfully, the delays caused by the issues discovered through testing having caused a delay of some three months in total.

Next Steps

Having successfully completed work to convert all of our existing RFID-enabled stock and equipment to ISO28560-2, we have since been working to migrate the balance of our Forum Library stock. This major project is due to complete in the summer of 2015, at which point all of the current EM/Barcode equipment will be exchanged for new RFID-enabled equipment which, with the benefit of ISO28560-2, we will be free to source on a non-proprietary basis.

As mentioned above, the RFID equipment used in the Penryn campus library is sourced from a different supplier from any of the equipment used in the Exeter campus libraries. Clearly their supplier will follow their own design in order to create a conversion solution for their tags and equipment. However, lessons learned from experiences in Exeter were shared with colleagues in Cornwall, and they were able to take advantage of our range of ISO-enabled equipment for their own compliance-testing. These tests having been carried out and proved successful, work to convert the Penryn Campus stock to ISO is planned to commence shortly – upon completion of which we will have achieved another of our major joint objectives: reaping the benefits that streamlining and simplification of systems and standards will bring in terms of developing and improving shared services between Exeter and Cornwall

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