

The right time, the right place: implementing RFID at Gold Coast City Council Library Service

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Introduction

The City of Gold Coast is the 6th largest city in Australia and the 2nd largest local government authority (second only to Brisbane). Formed in 1995 by the amalgamation of Albert Shire and Gold Coast councils, it is today home to approximately 500,000 people and is currently growing at a rate of 13,000 -16,000 people per annum. (Gold Coast City Council 2006, p2).

The Gold Coast City Council (GCCC) boundary stretches approximately 70km along the coastal plain from the New South Wales border in the south to Brisbane's southern suburbs in the North. Its hinterland reaches approximately 50kms in land, encompassing a diverse range of habitats and environments. The Council itself is a comprehensive service authority with responsibilities covering roads and traffic management, water, community services, tourism facilities, engineering services, planning and building services and administration.

The GCCC network of public branch and mobile libraries provides a customer-focused lending and information service to approximately 260,000 registered borrowers and over 2.2 million library visitors per annum. Services include the provision of and access to resources (in a variety of formats) for the informational, educational, recreational and cultural needs of our community. During 2005/06 the Library Service transacted over 5.5 million loans.

In 2006 the GCCC Library Service undertook an ambitious project to implement Radio Frequency (RFID) technology throughout its network of 14 public libraries, Local Studies Library, Corporate Library and two mobile libraries.

A long time coming

The decision to introduce RFID was not "spur of the moment". GCCC has maintained a watching brief on RFID since the late nineties. In 2000 a review of the Library Service highlighted a number of issues, including the impact of below-standard staff levels on service delivery within Council libraries. Staffing levels within the Library Service had long been acknowledged as falling well below both the per capita recommendations established within the State Library of Queensland (SLQ) minimum standards. At the time, the loans:staff ratio in the major libraries in the network all exceeded 50,000:1, leading the consultant to note:

"Although achievement of such levels of output efficiency reflects extraordinarily on the level of commitment to customer service by the staff in the face of considerable demand, it is achieved at a cost, reflecting a single-dimensional library service focused on a lending/supermarket style of service with little capacity for product/service development and diversification." (Carson 2000, p.29)

The Future Directions framework, which outlined the development of a five to ten year strategy for the provision of library services throughout the City, endorsed by Council in 2001 and updated in 2005, identified RFID as an emerging technology which would diminish the impact of the low staffing levels on service areas.

Overall staffing numbers proposed in the original report have subsequently been achieved, but unfortunately have not kept pace with either the increase in population, or the increase in service demand. In such a climate, any technological solution that could liberate staff from routine transactional duties, to be redirected to higher-value customer service activities, warranted investigation.

While the benefits of RFID in a library environment have long been apparent, the cost of implementing the technology remained prohibitive – particularly in Australia where the market was comparatively small. We watched with interest, and some envy, the early implementations of RFID in Australian libraries – Baulkham Hills Shire Library, Belmont Branch Library (Lake Macquarie City Council), Wynnum Library (Brisbane City Council), Commonwealth Parliamentary Library and Adelaide City Council.

In 2003-04 there was an increase in the adoption of RFID technologies and applications in Australia – particularly in the retail sector. An increasing number of vendors supplying RFID systems for libraries in Asia, US and Europe began to turn their attention to the Australian library market. Costs (especially tag costs) decreased to the point where the Library Service felt the return justified the investment.

Those early RFID implementations had reinforced our belief that the technology would be advantageous to GCCC and an Expression of Interest (EOI) was issued in December 2004. The EOI process was a valuable exercise as it confirmed assumptions in respect to costs and benefits, and enabled Council's IT staff to gain a greater understanding of the how the system would fit within GCCC's ICT environment.

Detailed costings were prepared for various scenarios – implementing a pilot site at the busiest branch library; tagging and installing selected branch libraries as they were refurbished or relocated; and rollouts across the service over 1, 2 and 4 years. It quickly became apparent that a service-wide implementation in the shortest possible time frame would provide the greatest benefit to Council for the least cost.

In part this was due to the nature of the library collections, the majority of which float – that is to say, an item borrowed from one branch library and returned to another stays at the branch where it has been returned, unless required to satisfy a hold request elsewhere. The close proximity of some branch libraries to each other, the number of holds placed and a customer demographic where people constantly move up and down the Coast when travelling to work, school, shops or home, have all contributed to an aggressively floating collection. To implement RFID at a single library or selected group of libraries would have required one of two courses of action:

- 1 Tag the entire collection up front and continue to apply barcodes and tattle tape in addition to RFID tags to all new stock until such a time as all the branch libraries were RFID enabled; or
- 2 Tag each branch library as it is converted to RFID and make the collection for those libraries non-floating.

Any form of protracted rollout had significant cost/benefit disadvantages: the operating cost of maintaining two systems; increased processing costs and the corresponding impact on the number of items being acquired for the collection; the increased workload and associated costs of transferring stock between branch libraries; and the change management implications for staff working across RFID and non RFID branch libraries.

A business case was developed with the recommendation that RFID be implemented system-wide over a twelve month period over two financial years. A Request for Tender (RFT) was issued in November 2005 and the contract was awarded to 3M Australia Pty Ltd in April 2006.

Implementation

Project planning commenced in earnest during the contract negotiation phase. Three key areas were identified early in the planning stages:

- Tagging;
- Communication and Organisational Change Management; and
- Site preparation.

Tagging

Giving the floating nature of the collections priority was given to tagging all items service-wide in the shortest period possible. The majority of the budget for the first financial year was allocated for the tagging sub-project.

Several different approaches were considered. Many public and academic libraries have successfully used library volunteers or students to tag their collections. Redcliffe City Library is a case in point; teaming volunteers with library staff they were able to tag over 95,000 items in less than 3 weeks. This approach ensured the community felt a degree of ownership in the project. Other libraries have contracted tagging services from their RFID vendor or have included tagging in the operational duties of the branch library staff.

GCCC opted for a different approach. We had already determined that tagging the collection in the shortest possible timeframe would greatly facilitate benefit realisation. There was no capacity within the existing staffing complement to reassign library staff to the tagging project without severely impacting branch operations. Provision was therefore included in the budget to establish 12 temporary 'tagger' positions, recruited from the library casual pool. We purchased one conversion station, which was located at the Collection Services Unit to tag new acquisitions, and hired/loaned four additional conversion stations to tag the existing collections. The 12 taggers were grouped into teams of three, and each team allocated a conversion station. We were highly conscious of the OH&S risks inherent in the tagging process due to the repetitive nature of the task – particularly when using stations designed to accelerate throughput. Having three people per team enabled the individual team members to regularly rotate tasks, take breaks as required and generally watch out for each other. It also provided a degree of redundancy; if one person was absent the team could still operate effectively.

Tagging commenced in May 2006 at Southport Library, the largest branch library in the network, with all four tagging teams in operation. Having tagged Southport, two teams moved on to tag the northern libraries while the other two teams went south. In late September 2006 the four teams 'reunited' at Robina Library. Tagging was completed in early October 2006 – having taken five months in all to tag 700,000 items.

The tagging plan worked well, but there were aspects we had overlooked and some unexpected obstacles. Ironically, these were mainly due to the team 'over-achieving' – tagging the stock of a particular branch library in too short a time frame! We had opted not to install reader pads into the branch libraries prior to the main rollout, which hampered our ability to manage the return of untagged material to those libraries that had already been tagged. This problem was exacerbated when a library was tagged too quickly. Ideally the tagging team needed to stay at each mid to large branch library for at least a month to cover the standard loan/renewal period. We adopted a number of strategies to work around the 'untagged returns' problem, including:

- Using a single team to tag the smaller libraries;
- Sending taggers back to tagged libraries with a laptop and reader pad on a rotating schedule to tag untagged returns;
- Installing a reader pad at selected libraries to facilitate tagging;
- Tagging items in-transit to tagged libraries at Collection Services as they passed through; and
- Couriering boxes of untagged items to the nearest tagging team for processing.

Communication, Organisational Change Management (OCM) and site preparation

Communication and OCM were identified early on as being critical factors to the success of the project and to benefits realisation.

Even though RF and RFID technology is becoming more prevalent in many aspects of our lives it is not particularly well understood. There is considerable misinformation and misconception surrounding RFID, in part because it is not a single technology. Being used in such a diverse range of applications, it lends itself to generalisation (Butters, 2006). There were a lot of questions, from:

- Library staff who wanted to know how RFID works, whether it was safe, and what about privacy;
- IT staff who were concerned with how it impacted the ICT environment, how it would be supported and what about Gen 2;
- Councillors and the executive who wanted to know what it did, why we needed it, what customers would get out of it, and how much would it cost;
- Other council staff who wanted to know whether the library RFID system could be used in other areas of Council.

There was some initial scepticism from some of the circulation and casual staff as to the motivation for installing RFID – particularly the self-serve components. Customers were also concerned that library staff might lose their jobs. There was also understandable suspicion from some members of the community after a highly entertaining article in one of the local newspapers indicated that the Library Service would not be using spy chips in the tags to photograph users.

A variety of strategies were used to inform and educate the library staff and interested council staff:

- A project page was established on the intranet providing background information, status reports and access to key project documentation such as the business case, project management plan and OCM plan;
- Library staff were invited to attend demonstrations of various RFID library systems. Once the contract was awarded we arranged for 3M to conduct hands-on demonstrations for all library staff – library casuals provided backfill to enable branch library staff to attend;
- Representatives from the branch libraries, collection services and IT branch were included in the evaluation teams for the EOI and RFT assessments to increase awareness and foster ownership;
- Members of the OCM team visited each branch library and the demonstrations and just prior to installation to prepare staff and to answer questions; and
- Emails were sent out to all library staff at key points to report progress and to herald imminent activity.

Audits were conducted at each site to determine the locations of the self-serve units, power and data requirements, and to assess modifications to cabinetry.

Change management was carefully planned and communicated. An OCM team was formed to consider the impacts of RFID on all circulation and collection management procedures and guidelines. The OCM team comprised branch library representatives at various levels and library administration staff. GCCC's primary objective in implementing RFID was to reduce the time library staff spent on rudimentary circulation and stock management tasks in order to diversify the services provided to our customers. In order to maximise the efficiencies of the technology it was important to assess and overcome potential obstacles. The OCM team visited each branch library to map the existing checkout and checkin processes and assess the constraints of the physical environment (desk layouts, location of hold shelves, position of return chutes, etc). The likely impact of RFID on existing workflows was documented and all collection management and circulation guidelines and procedures were reviewed and revised as required. The library management system policies and parameters were also reviewed in some detail. We had not previously implemented SIP/2 and needed to test the impact of alerts and blocks on the self-serve units.

We opted to stagger the rollout of RFID hardware and software slightly to fine-tune parameterisation of the self-serve units and SIP/2 and to bed down the business process redesign. GCCC had trialled self-check at three branch libraries several years ago, but it had not been a success. Constant equipment failures and connectivity problems had eroded staff and customer confidence in the units which were eventually removed. Six years had passed since then but customers (and staff) have long memories – we wanted to ensure a different experience this time round. We opted for a gradual introduction of self-serve, installing one to two self-check units in the eight largest branch libraries. A marketing campaign “Self serve ... it’s your choice” was launched to promote the technology to customers. Count-down posters and banners were used to promote the imminent arrival of the self-checks within the branch libraries. Radio advertisements, telephone hold messages and media releases were used to spread the message further a field. Brochures in the form of bookmarks were produced highlighting the self-serve facilities within the libraries.

Beenleigh Branch Library, the Collection Services Unit and the Mobile Libraries went live with RFID mid August 2006. Beenleigh proved to be an excellent ‘pilot’ site for the project. It is a busy library averaging 43,681 loans per month during 2005/06 and a loans:staff ratio of 48,311:1 per annum. The age profile of the library membership for Beenleigh is younger than the norm for most of the Gold Coast libraries with over 48% being under 45 years of age – which we hoped would pre-dispose the Beenleigh customers to self-serve. The system was well received and the customers were enthusiastic about the self-checkout units. The launch received excellent local media attention and the Beenleigh customers were delighted to have been first off the block.

The main rollout was undertaken during the first two weeks of October 2006, with a different library being installed each day. Training in all the RFID components was conducted onsite at each branch library the day after installation. Library staff were trained in groups of six to eight. Once the first group was trained they went straight onto the loans desk – the gates were then turned on and the system, with the exception of the self-checks, went live. The self-check units were reserved for staff use during the first day and then went live to the public the next day. Those libraries with self-serve loans were required to roster staff as “customer assistants” for the first fortnight. The customer assistants would approach customers as they queued at the loans desk and offer to show them how to use the self-serve units.

The path to benefits realisation

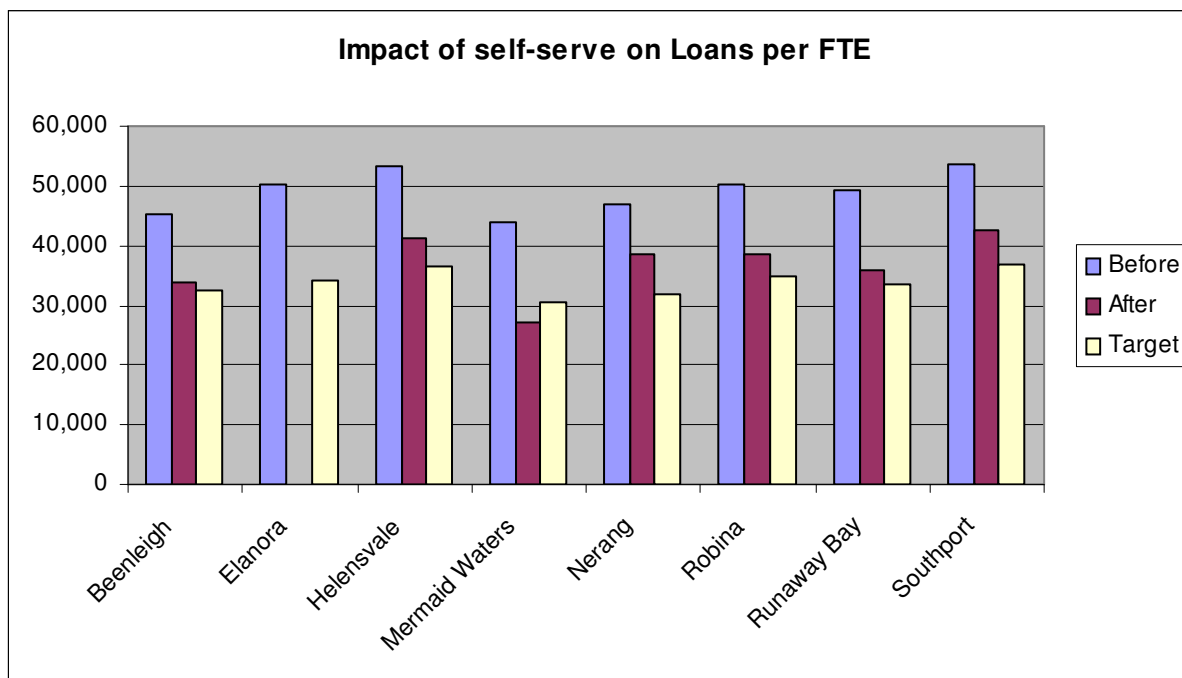
GCCC’s project methodology incorporates identification, quantification and measurement of potential benefits throughout all stages of the project lifecycle. We were well aware prior to submitting the business case for the project that we would be required to justify and to prove the return on investment.

As indicated previously, our primary motivation in implementing RFID was to diminish the impact of the below-standard staffing levels on service delivery. Three benefits were identified which would have a direct bearing on this goal:

- A reduction in the volume of checkouts processed by library staff through the introduction of self-checkout;
- Faster, more efficient check-in and checkout processes through the integration of item identification and security; elimination of line-of-sight requirements; and ability to read to tags of multiple items simultaneously; and
- Reduction in the time taken to process housekeeping reports produced from the library management system by utilising the Digital Library Assistant.

It was envisaged that the time saved from these efficiencies would free up the full time equivalent of 11 staff – almost one staff member per branch library, who could be redirected to higher value customer services such as programming, training, reference or content development.

While it is still too early for us to gauge the full impact of the project, the initial signs are encouraging. The most visible impact, as anticipated, has been the introduction of self-serve checkouts into seven of the busiest library branches, and self-serve checkout and check-in into the Corporate Library. As of 31 December 2006 the Beenleigh, Helensvale, Mermaid Waters, Nerang, Robina, Runaway Bay and Southport Branch Libraries were averaging 28% self-serve checkouts overall. Our target for 2005/06 is 35% self-checkouts in those libraries where the units are installed. The table below highlights the impact of self-check on the loans to staff ratio if the averages experienced at those branch libraries were maintained for a year.



Post implementation visits to the branch libraries identified a number of factors that have impacted customer take-up of self-serve loans:

- Location of the holds shelves – those branch libraries that had already implemented self-serve holds (where the hold shelves are located in the public areas and customers collect their holds prior to borrowing) had higher take-up of self-serve loans.
- Location of the self-serve loans units – space is at a premium in a number of the branch libraries and the self-check units were not always optimally located. While signage can assist to make the units more visible, customers will often forget that the units are available if they are not in clear sight when queuing for the loans desk.
- Multiple units too close together – most of the branch libraries have a single self-check unit, but our experience at Southport where there are two units placed side by side has indicated that clear space around each unit is preferably to having a bank of units together. Families have a tendency to congregate around the units – overflowing to the second unit making it difficult for customers to see that the second unit is available.

Following on from the post implementation site visits all of the branch libraries with self-serve have opted to place their hold shelves in the public areas. The self-checks at Helensvale, Nerang, and one of the units at Southport, are being relocated to areas more visible to customers as they approach the loans desks. Additional signage has been installed at a number of branch libraries. The statistics to date for January 2007 are promising – those libraries where these measures have taken place are showing a steady increase in the proportion of self-serve checkouts. The new Elanora Branch Library, with two self-check units, has been averaging 52% self-checkouts since it opened at the beginning of January 2007.

We will also be making some modifications to checkin areas and loans desks to optimise efficiencies to workflow. Primarily this will involve recessing reader pads into the desks where appropriate, positioning CPUs under the desks and raising monitors, receipt printers

and keyboards off the desk to make the best use of the surface area to slid items onto and off the readers pads.

Anecdotally we know the check-in/checkout processes at the staff assisted loans desk are faster. In the past it was not unusual for returns to stack up during peak periods, which would then cause difficulties when the customer went to check out the next batch of items. This is occurring much less frequently. The amount of time customers are spending in queues at the loans desk seems to be reducing. The nature of the interaction between customers and loans staff is changing – there is no longer a frenetic scramble by staff to scan barcodes, desensitise tattle tape, and open proloc cases. The pace is more measured, the information on the monitor is being checked more thoroughly and there is more eye contact with the customer.

In a number of branch libraries we are starting to see suggestions coming through from the library staff to further streamline procedures or to redesign workspaces. Prior to this staff in the busier libraries were primarily focused on the tasks at hand, they had minimal capacity to be able to stand back and contemplate further change.

During the next three months we will be implementing the recommendations from the post-implementation site visits and consolidating the work done to date. We will be introducing self-serve checkouts at our Burleigh Waters and Coolangatta Branch Libraries and installing second units into Robina and Runaway Bay. Longer term we will be increasing the number of self-checks and reducing the number of staff assisted loans stations across the Library Service. We will continue to monitor the viability of self-serve check-in.

Over the next 6-12 months we will be reviewing all of our customer programs and services and developing new ones; redesigning the website; and revising and implementing our marketing plan. It is work we have been waiting a long time to do.

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