

Taking off the edges – implementing a streamlined client identity management experience at State Library of Queensland

Introduction

In April 2014, American blogger Toby Greenwalt attracted library industry attention by proposing *The Librarian's Design Challenge* to create a simple online library card registration (Greenwalt, 2014). At this time, State Library of Queensland (SLQ) was already well on its way to delivering a user-focused registration experience. This paper details how SLQ has endeavoured to make registration and account management easier for clients and staff. Our new membership model, launched late January 2015, has challenged us to remove barriers by implementing a user-centric approach. This involved simplifying services offers across the whole library, iteratively designing a seamless and unmediated membership package. The final product makes registration, access and engagement with our systems and services easier, more convenient and personalised for our members.

Identifying the rough edges

State Library of Queensland is committed to enriching the lives of all Queenslanders, creatively engaging people with information, knowledge and community (State Library of Queensland, 2014a). To facilitate access to our physical and digital collections, SLQ chose to implement Ex Libris' next generation library management system, Alma. Early planning for the implementation of Alma identified the need to review and change the process for managing registration of patrons. For 12 years, all patron data was entered into the library management system Voyager, exported to, and duplicated in, Active Directory Services to enable authentication for onsite computing and printing, and for offsite access to eresources. Alma was designed for the university environment and ingests patron data from external student administration systems, such as PeopleSoft. As it did not make sense for SLQ to invest in a student administration system, this workflow would not easily transfer easily to our environment. An alternative solution was required. A second problem was that while Voyager had offered an online registration form, Alma did not. This was a mandatory requirement for continued access to collections and services for all Queenslanders. While these shortcomings required a review of our existing registration processes, it also gave us the opportunity to investigate possible integrations with a range of systems used across SLQ to manage personal information. It became a catalyst to develop a fresh and cutting edge approach to the way SLQ managed the creation, storage and lifecycle of personal information.

An internal information audit was conducted between February and May 2013. This audit included interviews with managers and staff working with individual systems and a review of website forms, policies and procedures. An environmental scan of online forms and policies used at National and State Libraries Australasia (NSLA) libraries was also conducted. The results revealed that SLQ maintained 19 different systems used to store and manage personal information. For a person to fully engage with SLQ services, they had to sign up to multiple systems, using some of the 16 registration forms on the SLQ website, with their personal data stored multiple times in numerous locations. These systems ranged from the library management system used for circulation, information and reference services software, customer relationship management and communication systems, fundraising, event management, authentication and access systems, and facilities management tools. At the end of the 2013-14 financial year, accounts held in these systems included:

- 65,733 library card members (circulation and eresource access)
- 8730 Queensland Public Libraries members (eresource access)
- 47102 active constituents in Raisers Edge (customer relationship management)
- plus accounts in systems used for venue hire, information services and online shop transactions.

The number of duplicate accounts across these systems could not be verified. The audit revealed that while all business systems owners were well engaged in the creation and verification of membership accounts for their particular purposes, the management and disposal of personal information was sporadic and not consistent. Each of these systems had a specific purpose within the organisation and there was no suggestion that any were less important than the others. Senior management acknowledged that each system predominately operated as silos with little integration or shared data management. None offered an easy way for a person to view their personal information or to change their details. The audit also confirmed that our current systems and workflows were manual and labour intensive for staff and frustrating for clients, as evidenced by feedback received from members, for example:

“This is a lot of palaver just to change an email address – why can’t I just log in and change it myself, as one can do with many other organisations.”
(Personal communication, July 23, 2014)

The review of procedures used at NSLA libraries indicated that our existing processes were similar to that used by the National Library of Australia (NLA), State Library of New South Wales and State Library of Victoria. Data collated by NLA showed that SLQ had more library

members than the other state libraries and the NLA, excluding those which facilitate public libraries services in the ACT and Northern Territory. SLQ's membership base was approximately 20,000 more than NLA and State Library of Victoria, and more than 30,000 members than the State Library of New South Wales. (L. Cass, personal communication, October 9, 2014) Similar reviews were concurrently being undertaken by both of these state libraries. However these reviews seemed to be focused only on access to library collections, rather than the whole of organisation approach adopted by SLQ.

Moving from patron management to identity management

The existing patron management model at SLQ focussed on library service offerings – circulation of physical collections and onsite access to public computers, copiers and printers plus offsite or remote access to eresource collections. To expand the scope of this project, it was deliberately renamed the “Identity Management Project” to force a cultural shift in thinking about how the whole organisation stores and manages personal information, regardless of whether the information facilitates access to collections or manages newsletter mail-outs. As succinctly defined by JISC (2012, p.10),

“Identity management, in a general sense, includes all the processes and systems that allow the creation, retrieval, update, verification and destruction of identities and information relation to identities including any rights/authority granted to the identities.”

The processes of identity management include registration ('who are you?'), authentication ('how do I know it's you?') and authorization ('what are you allowed to do or see?') (Smith & McKeen, 2011, p.170). An identity management system encompasses the full lifecycle of an account from creation to archiving and disposal and relies on mutual levels of trust between the user and the organisation providing services and access. Smith & McKeen (2011, pp.174 &177) stress that identity management is not just about technology and must be viewed from both a business and technical perspective. There were numerous challenges in applying an identity management framework to the SLQ. However the benefits of this approach were many, especially moving to a one person = one identity model. Table 1 documents the workflows and problems within the existing patron management system against possible solutions.

Table 1: Identity Management components and solutions

Selection of Identity Management components (JISC, 2012)	Existing patron management practices	Potential solutions using an Identity management framework
Central repository of identities and related information	Multiple data stores (Voyager, Active Directory Services, Raisers Edge, etc)	Use a directory as the “central point of truth” to store and manage accounts
Synchronization mechanisms to various applications in a timely manner including disabling of accounts as appropriate	Limited connectivity between Voyager, Active Directory Services and EZproxy	Improve connectivity between multiple systems, aim for real-time updates
Auditing and reporting	Monthly reports for number of new accounts added to Voyager only. Ad hoc reporting of deleted accounts. Biannually reporting for Open Data sets on membership require substantial staff effort to clean up data.	Automated reports based on SLQ’s specified requirements (monthly added, monthly deletions, cumulative growth, biannual Open Data sets)
Self-service – ability for users to self-register and/or maintain some identity attributes	Members could register via an online form but not gain access for up to 5 working days while a library card was posted to them. No ability to maintain/update their address details	Implement online self service – register with self-selected username and password for immediate access and login to update address/contact details, renew account, etc
Common sign on – ability to use the same user id and credentials for all systems	Common sign on used for One Search/Voyager, Pharos computing login and EZproxy for eresource access	Maintain existing levels of common sign on and as additional business systems are integrated, expand common sign on to room bookings, etc

The project plan, endorsed by the Executive Team in February 2014, proposed re-engineering long-established business processes and procedures. These included:

- Development of a set of identity management principles that would guide and underpin procedures and workflows
- Review of privacy legislation to ensure SLQ was compliant with Queensland law

- Review of risks associated with enabling access to eresources
- Review of the approval processes and duty of care associated with providing access and services to children
- Apply best practice design and user experience principles to ensure member-focussed registration and account management processes

This translated into a constantly growing list of questions: Why do we need a library card? Why print the member's name on the card? How do we empower members to manage their own account? How do we reduce the amount of staff intervention required? Constantly challenging the current processes and procedures became the modus operandi of the project. In essence, the goal of the project could be distilled into one key research question that became the driving focus:

How can we improve the SLQ membership registration experience so that online engagement is easier and more secure for members, less time-consuming for staff and compliant with legislative requirements?

The term "member" was adopted in accordance with SLQ's Style Guide to describe a person who registers for an account, which would be known as SLQ membership. This change has helped with the cultural shift away from "patron management", which was associated with circulation, to reflect the whole of organisation approach of the project.

The project was governed by a Steering Group consisting of ten managers and staff from teams responsible for delivering the outcomes of the project. A wide reference group of business systems owners across SLQ were also included within the project framework. The project was planned in three stages:

- Stage 1 - investigate technical options after confirmation of business requirements. An agreed set of business rules for identity management would be developed
- Stage 2 - map data to identify permission levels and authentication options, pilot integration for new registrations in priority systems, design online interfaces for both "front of house" membership access and "back of house" account management
- Stage 3 - migrate legacy data where required, communicate and promote new experiences to SLQ members, develop reporting requirements and schedules

The Steering Group acknowledged that components of the project were aspirational and that the implementation of a federated or single sign-on model was beyond the project's scope. This project would only deliver a common (same) sign-on. An SLQ member will no longer

need to manage multiple identities to access various SLQ services. They will use the same username and password for all integrated services (one person = one identity). But members will continue to login multiple times for each of the services that they use, for example to request an item from storage, then again to ask an online reference question or to book a meeting room.

Identity Management Principles

As recommended by the JISC Toolkit (2012, p.101), the project was policy-led in preference to using a practice based approach. The first major milestone for the project was the development and endorsement of a set of Identity Management Principles for SLQ. These principles acknowledged, for the first time, that the personal information held by SLQ was a significant asset that needed to be managed as a priority. Four principles were adopted:

- 1) **Asset:** Identity data is a core business asset to State Library of Queensland and is managed accordingly
- 2) **Trustworthy:** Identity data is accurate, relevant, timely, accessible and secure
- 3) **Shared:** Identity data is securely shared across State Library of Queensland and derived from a single authoritative source
- 4) **Private:** Personal information is protected in accordance with the law (State Library of Queensland, 2014b)

These principles have been published on SLQ's website and intranet. The intention is that the principles will have long-term application as a reference to guide how staff manage the personal information of members. As systems are reviewed or new systems are considered for the organisation, staff will weigh technology and processes against the principles to assess their compatibility and compliance. These principles will also be used to address emerging issues and guide planning, management and implementation processes. (Queensland Government Chief Information Office, 2009, p.9) For our members, the Identity Management Principles demonstrate our commitment to ensuring that SLQ is accountable and transparent about how we will handle their personal information (Crompton, 2010, p. 294).

Make it easy and make it better for everyone

To achieve the main goal of making registration easier, the Steering Group reviewed the barriers to access. The aim was to consider and streamline the "onboarding experience", the process by which the user becomes part of the site (Greenwalt, 2014). The most obvious

barrier was the delay in providing access to eresources via the existing online registration process. While members who registered onsite at SLQ were given a library card listing their assigned username for immediate access to services, the online registration process did not provide an equitable service. The existing practice required an individual to register via a web form and then wait up to five working days to receive a library card in the mail. The library card was printed with their username which was an assigned library barcode (e.g. B92345697). No access was available until the member received their card. Despite this prohibitive process, members' postcode data showed that 30 per cent of SLQ members lived outside the Greater Brisbane area. SLQ had previously tried to address this inequity by introducing the Queensland Public Library (QPL) membership account in 2008 which gave registered members of Queensland public libraries immediate access to eresources. The QPL account process was based on the fact that the public library had already verified a person's address. A new member would enter their existing public library barcode which would validate against known ranges held by SLQ and then allow them to create a SLQ membership account. But with the confusion created by offering multiple accounts and entry points to SLQ membership and the increase in staff time to manage these additional account types, the QPL account model did not fully realise the aspirations.

The chosen solution was to allow new members to choose their own username at the point of registration just as they may have experienced using other online services and environments, including social media sites. The first implication of this decision was that members would no longer be automatically issued a library card. Cards would still be necessary for members who wished to borrow collection items or print onsite but these could be issued as required for access these onsite services when members visited SLQ in person. The sacrifice of this sacred cow presented a potential cost savings of approximately \$6000 per year budgeted for the purchase of cards. Additional savings were forecast in staff time and processing costs.

By allowing members to register and access services immediately we removed a barrier to membership and reduced staff time that had been needed to process library cards for new members. We still need to verify that a member is eligible for services that are offered to Queensland residents only, such as access to eresource subscriptions. To confirm eligibility for authorization purposes ('what are you allowed to do or see?'), staff will continue to post a welcome letter to Queensland residents to verify their address. While this remains a manual process, it is expected to take much less staff time than before. In the future, SLQ may invest in real time address matching software to eliminate this step. There are marketing benefits to sending out a physical welcome package to new members and this may continue

as a promotional activity regardless. As with the existing process, when undelivered mail is returned to SLQ, staff will delete accounts. The Steering Group determined that the risk of fraudulent accounts being active for the two weeks it might take for the mail to be returned was low and outweighed by the benefits to users. This decision was based on ten years' experience of the existing systems and this low risk will be monitored over the coming months.

Access for everyone

As SLQ membership provides access to onsite computing and Internet facilities, the provision of membership to children had to be considered. The registration process had to ensure that SLQ's duty of care to children using our facilities was met. The existing processes required signed parent/guardian approval for children up to the age of 14 years who registered onsite but this approval was not required via the existing online form. With all registrations shifting to the online form, we needed an approach that allowed membership for children but still adhered to parent/guardian approval requirements, for SLQ's onsite computing with unfiltered Internet access and borrowing from the Information Collection. In keeping with privacy legislation guidelines and our commitment to collecting the minimum level of data required to enable access to services and collections (State Library of Queensland, 2014b), we did not want to ask members for their date of birth. Following discussions with ICTS managers, for design options, and Visitor Experience managers, responsible for public space policies and procedures, the solution proposed was a multi-stage form that would ask individuals to identify their age group before they began registering:

- I am 15 years or older
- I am 14 years or younger

If a new member identified as younger than 15 years of age, their account would be created in a group without access to public access computers login. Information Desk staff can enable this access if the member presents approval from their parent/guardian. The approval form was included in the welcome pack mailed to new members. The risks associated with this process were again identified as low level. The impact of this process and the take-up rate will be monitored closely over the coming months and may provide data on how frequently children and young adults use our onsite computing and lending services.

Technical infrastructure and challenges

The key technical decision during the project was which tool to use as the central "source of truth", as the repository of identities and related information. A set of criteria was developed against which suitable options were assessed. The criteria included:

- Scalability
- Inter-operability/compatibility with existing SLQ systems
- Security
- Ease of use
- Efficiency
- Group management potential and applicability
- User interface issues/front end design
- Reporting capabilities
- Standards based
- Cost

The software selected was Microsoft Active Directory Services (ADS). This directory tool was already well entrenched at SLQ, being used to manage network access and authentication for both staff and public access. It had the potential to cope with millions of user accounts and to use group management to enable or limit access. No additional technical infrastructure was required beyond the staff expertise and time required to develop the required directory structure. ADS included all the components required by the functional specifications including account provisioning/de-provisioning abilities, auditing and reporting capabilities, group management and directory and synchronization mechanisms to various applications (Garibyan, McLeish & Paschoud, 2014, p.101). By using the functionality of ADS, we have been able to script rules by which members will be automatically assigned to the appropriate group for access based on the postcode data they enter in their registration form. For example, an individual from Melbourne will be able to join SLQ, but will be prevented from accessing subscription resources that are restricted to Queensland residents only. This is a new service offer which will be monitored to determine what engagement there is from non-Queenslanders.

To reduce the duplication of data throughout the organisation, ADS will operate as the central data store which can be authenticated against or “looked up” by connected systems. Where duplication must occur, for example membership records ingested into Alma to enable circulation, workflows ensure that the data in both locations is accurate. Changes made in ADS are pushed to Alma as soon as possible, using APIs developed by the Ex Libris User community and adapted for SLQ’s needs by ICTS staff. ADS was already linked to the onsite public printing system but some configuration work was required to ensure a member’s username was linked to the card used to pay for printing and copying. There was a precedent for this in the printing configuration used in SLQ’s Infozone space. This

configuration was implemented across all public copying and printing spaces, again streamlining members' experience of printing throughout the building.

The design of the registration form and membership management tool was a key deliverable for the project. It was vital that the form have a look and feel consistent with the SLQ website to provide an inclusive onboarding experience for potential members, regardless of the device which an individual used to access the form. Another important, but obvious and necessary, change to the technical infrastructure was to shift the registration form to a https secure environment. This was critical to demonstrate our commitment to the Identity Management Principle of Trustworthiness.

Privacy in the era of the cloud

During the information audit, it was identified that SLQ's registration processes should be improved in line with changes to Queensland's *Information Privacy Act 2009 (Qld)*. While we were collecting information relevant for a specific purpose that did not unfairly intrude on an individual's privacy, the existing lifecycle management processes did not guarantee that personal information was complete and up to date. It was also difficult for members to find out what information we held about them once they had registered.

The implementation of Alma introduced additional privacy challenges. Alma is a software-as-a-service product, cloud based and accessed by SLQ staff via the web. The Asia-Pacific servers for Ex Libris are hosted in Singapore, which meant that membership data exported from ADS to Alma, would be heading out of Australia. A review of the *Information Privacy Act 2009 (Qld)* determined that the onus was on SLQ to advise both existing and new members that their personal information would be stored offshore (Office of the Information Commissioner Queensland, 2013). The existing SLQ privacy notice needed to be reviewed in light of this scenario and amended to meet the requirements of the Act. To draft the amendment, a range of privacy notices including examples from commercial businesses (e.g. QANTAS, Myer, flybuys, Linked In) were reviewed to find best practice examples of plain English language privacy statements to communicate this change to members.

The approved notice was distributed to members in two email campaigns. The first campaign beginning in December 2014 targeted 30,000+ existing members with expired accounts notifying them of the change and inviting them to renew their account if they wished to continue their membership. The second campaign was sent to current members in January 2015 advising them of the changes to membership and offering them the opportunity to discontinue their membership if they wished. These campaigns served two

purposes – ensuring we held accurate and up-to-date personal information about members and complying with the legislative requirements for offshore data storage. The updated notice has been published on the SLQ website (State Library of Queensland, 2014c) and forms part of the new terms and conditions for membership. Copies are also available at the Information Desks within the library.

To ensure members could update and access their own personal information, an online membership tool was created. Members can now login with their username and password to view their personal information, update their contact details and renew their membership as required. In the future, we hope to further personalise this tool so that members can see the content and services they have access to and choose to opt in or out of services that interest them.

A smoother future

SLQ has taken some significant steps towards a more streamlined, user-centric membership experience. The outcomes achieved include a simplified membership offer that is easier to use, gives immediate access to content and services and empowers individuals with control over their own personal information. The new registration and access model gives equal access to members whether they can register onsite at SLQ in Brisbane or via our website from Charleville. Regardless of their location, eligible members no longer have to wait for access to SLQ's collections and services.

The adoption of the Identity Management Principles created a standards based approach to identity management across the organisation which will enable implementation of new and existing technologies and methodologies, such as Open ID and Security Assertion Markup Language (SAML). This will also stand us in good stead for future implications from whole of government approaches, such as the Queensland Government's Client Identity Management Policy (Queensland Government Chief Information Office, 2014).

Implementing an identity management framework has reduced staff effort, reduced costs and ensured compliance with Queensland privacy legislation. It will enable accurate reporting of membership data. Critical success factors for this project will be monitored closely over the coming months and include:

- an increase in the number of new members joining SLQ,
- an increase in the number of members renewing their membership,
- the number of members updating their contact information

- a decrease in staff time managing registration, membership renewals and membership enquiries

The next steps include integrating additional business systems into the framework, including the customer relationship management system (Raisers Edge) and reference enquiries/feedback system (RefTracker). This will ensure that members are able to use their SLQ identity consistently across a broader range of library services. As SLQ moves to implement a new venue hire system and e-commerce solution in the near future, these systems will also be incorporated into the Identity Management framework. We also hope to investigate options for personalising the online environment for members, to highlight their access to services, to better promote tailored services based on their personal interests and to further add to the SLQ membership experience.

Acknowledgements

This paper has benefited from preliminary research conducted by Sharon Young and from the input and expertise of Beth Paul. The vision for the Identity Management project came from Anna Raunik who has provided ongoing guidance and advice.

References

Crompton, M. (2010). User-centric identity management: An oxymoron or the key to getting identity management right? *Information Polity*, 15, 291-297. doi: 10.3233/IP-2010-0193.

Garbayan, M., McLeish, S., & Paschoud, J. (2014). *Access and identity management for libraries: Controlling access to online information*. London: Facet Publishing.

Greenwalt, T. (2014). *The Librarian Design Challenge*. Retrieved April 7, 2014 from <http://www.theanalogdivide.com/2014/04/the-librarian-design-challenge/>

Information Privacy Act 2009 (Qld) (Austl.).

JISC. (2012). *Identity Management Toolkit*. Retrieved August 31, 2014 from <https://identitymanagementinfokit.pbworks.com/w/page/50989755/Home>

Office of the Information Commissioner Queensland. (2013). *Sending personal information out of Australia*. Retrieved August 27, 2014 from <https://www.oic.qld.gov.au/guidelines/for-government/guidelines-privacy-principles/transferring-personal-information-out-of-australia/sending-personal-information-out-of-australia>

Queensland Government Chief Information Office (Enterprise Architecture & Strategy). (2009). *Information Principles*. Retrieved August 19, 2014, from <http://www.ggcio.qld.gov.au/products/qgea-documents/548-information/2615-information-principles>

Queensland Government Chief Information Office. (2014). *Client Identity Management Policy*. Retrieved November 14, 2014, from <http://www.ggcio.qld.gov.au/products/qgea-documents/3250-client-identity-management-policy>

Smith, H.A. & McKeen, J.M. (2011). The Identity Management Challenge. *Communications for the Association for Information Systems*, 28(11), 169-180.

State Library of Queensland. (2014a). *Corporate information*. Retrieved September 28, 2014 from <http://www.slq.qld.gov.au/about-us/corporate>

State Library of Queensland. (2014b). *Identity Management Principles*. Retrieved November 19, 2014 from <http://www.slq.qld.gov.au/about-us/corporate/policies/identity-management-principles>

State Library of Queensland. (2014c). *State Library of Queensland: information privacy and website security*. Retrieved November 19, 2014 from <http://www.slq.qld.gov.au/home/privacy>