

## **From 0 to 100 in 16 weeks: how to revolutionise a library with secure hosted authentication and discovery**

*The case of DSTO Research Library (DSTORL)*

### **Abstract**

Defence Science and Technology Organisation Research Library (DSTORL) was facing a challenging future not uncommon to many government libraries that operate services within a shared and highly secured IP environment. A major change to existing connectivity arrangements to online resources and services in June 2012 resulted in the suspension of seamless access and the reintroduction of individual usernames and passwords for DSTO's extensive range of online resources. The impact on DSTO researchers and Library operations was swift and immediate. A project was initiated to identify, evaluate, test and implement a viable, secure and dynamic solution that would not only restore seamless access to our resources but also extend and exceed current online service delivery using a unique approach to hosted single sign on (SSO) authentication. A further objective was to combine this technology with a customised web scale discovery service. This paper explores the challenges confronting many government libraries in delivering electronic resources and services via restricted and highly secure environments and how one library was able to exploit an opportunity to pioneer an innovative approach and reposition itself as an important enabler to research.

The methods by which DSTORL was able to overcome critical obstacles via a unique implementation of OpenAthens (MD) to achieve its vision of ubiquitous access to a nationwide collection 24/7 from any PC or portable device are described. The paper also examines how EBSCO Discovery Service was customised and transformed from a proprietary search tool into the DSTO tailored "SearchLight" by building 'brand' recognition in anticipation of the new services.

OpenAthens (MD) and SearchLight were launched after a targeted marketing campaign culminating in a 5 day promotional tour across library sites. Five months on, client uptake and reaction is examined, and the change in usage patterns revealed. The conclusion summarises how DSTORL was able to meet DSTO IM&T Operational Plan Initiative 2.2: *Define and execute the actions necessary to cater for the needs of the Library to access subscription services* and allows an insight into the lessons learned during a project that brought strategic integration of accessibility and discoverability to a uniquely restrictive environment.

### **Introduction**

DSTO is the Australian Government's lead agency dedicated to providing science and technology in support of the country's defence and security needs. The role of DSTORL lies in supporting approximately 2500 researchers, scientists and support staff in eight locations across Australia by delivering a range of essential information services which contribute to the development and maintenance of Defence capability. Prior to June 2012, DSTORL was equipped to deliver seamless access to electronic resources via IP authentication, however a network reconfiguration resulted in the disabling of the separate DSTO IP range meaning that DSTO and Defence shared one IP range.

The loss of DSTO's discrete IP range immediately created significant challenges for online information services. Firstly, DSTO staff were no longer recognised by the global publishers and providers that had delivered library subscriptions to DSTO desktops and secondly, there was suddenly the potential for unauthorised access to a proportion of exclusive subscriptions purchased by the Defence Library Service (DLS). The DLS is responsible for managing the development and delivery of library services to support the Defence business needs of Australian Defence Organisation personnel and as such is discrete from DSTORL. Other

significant challenges included the disabling of the library's federated search tool and link resolver which jettisoned the single search interface to online resources. Searching via the native, individual interfaces became the sole access point to investigating DSTORL's considerable scope of e-content. The impetus to move towards replacing the federated search tool with a discovery layer was stymied with no suitable solution and network on which it could be hosted. The loss of DSTO's discrete IP range also meant that many publishers were unable to supply usage statistics which in turn diminished the ability to effectively evaluate the use and worth of resources with deleterious implications for collection management.

Whilst staff worked quickly to remedy trespassing upon DLS subscribed resources, the disruption of seamless authentication to DSTO's own e-resources immediately impacted DSTORL and threatened to erode client confidence. Library clients were no longer able to scan resources to readily locate and identify information they needed for their research. Library staff commenced the enormous administrative task of negotiating, obtaining and ensuring continuity of access via user name and password to copious databases, e-journals and collections of e-books. The tasks of managing workarounds and facilitating searches for clients consumed a significant amount of staff time; clients were either required to seek multiple log in and passwords to individual e-resources or request mediation by a staff member. Some publishers were not willing to distribute institutional log in and password access credentials which rendered these e-resources unattainable; interlibrary loan arrangements were made for content which had already been paid in full. These onerous tasks continued until early 2014, by which time a strategic vision had been established, industry standard proprietary solutions identified and deemed customisable for DSTO requirements and finally, the complex matters of risk, governance, IT and security had been addressed and satisfied.

### **The Project Begins**

On 20 February 2014, a project team of four was convened to scope the task of resolving authentication to library resources by implementing a Single Sign On (SSO) technology to restore access. One user name and password would be required for seamless access across the DSTO's protected network and for the first time via the WiFi network and from remote locations and mobile devices via the internet. A discovery layer would also be launched to ameliorate and extend the pre-June 2012 service and provide a single search box and unified index of the quality content subscribed to by DSTORL. This complementary and integrated approach was intended to reposition DSTORL at the centre of the research process, to elevate the service on par with premier research and academic institutions globally, to restore client confidence, and to increase the return on investment in accessing e-resources that had suffered considerably in the preceding eighteen months.

Key staff assigned to the project represented the four operational areas of DSTORL and were selected for the experience and expertise considered critical to the successful outcome of this venture. The team and duties assigned comprised:

- Electronic Resources Manager (Project Lead) whose role was to coordinate the project from initiation, planning, execution, and control through to launch and close. The Project Lead formulated the timeline of deliverables, oversaw vendor liaison with the key supplier and attendant publishers, managed procurement of key services and products; established a training program for library staff; coordinated staff and resources; communicated progress to key stakeholders and had technical responsibility for implementing the discovery layer
- Library Systems Manager who managed all Information Management and Technology (IM&T) technical functions related to the project including liaison with the IM&T division, suppliers and DSTORL staff to deliver both the authentication system, and functions related to the interoperability of the two systems through

implementation, trial, testing and launch. The Library Systems Manager also developed online resources to chart and socialise the progress of the project

- Technical Services Librarian who assisted with the management of the interdependence and functionality of electronic resource management infrastructure; customised OpenAthens (MD) forms for DSTORL's requirements and was trained to provide ongoing administrative assistance to the identity management system once operational
- Information Services Team Leader who assisted in developing the communications and promotional strategy, and had oversight for the creation of training tools and documentation to clients

The project team met each week during the sixteen week period and reported the progress formally to the Director, DSTORL (Project Sponsor) each Friday. With a brief to have the services launched across DSTO by the end of financial year, there was little room for failure or delay. The scope of the project needed to be realistic and manageable and would preclude innovations that were too ambitious for the time scale. This meant both the library catalogue and institutional repository were omitted from the initial implementation because of issues with ownership and classified content. Once access could be restored, there would be scope for developing the services as staff expertise deepened.

### **The complementary solution**

OpenAthens (MD), operated by the not-for-profit organisation Eduserv, was selected as the most suitable solution for DSTO's requirements. Many avenues had been considered but were rejected because they were not suitably flexible or compliant with mandatory Defence security and DSTO specific requirements. OpenAthens (MD) has been sold and supported in Australia by EBSCO since 2006 and offered the following:

- The removal of individual log in and passwords consolidating access into one user name and password for all resources
- A complete access solution with resources available onsite, remotely or by mobile device
- A highly customisable service tailored to comply with DSTO's requirement for security and privacy
- Significant assistance with set up and maintenance with Australian based support

Most libraries subscribing to identity management systems such as OpenAthens (MD) do so as a way of enabling clients to achieve remote authentication to resources. This is a universal expectation in the contemporary library setting. It is less common, however, that the host institution provides access to e-resources only via a hosted IP proxy. DSTORL needed a robust product supported by a company with a proven track record and excellent customer service; if the system was insufficiently mature in its development and application, access for DSTORL clients could be jeopardised once again. OpenAthens (MD) offered a straightforward self-registration process with authentication available from numerous starting points: from individual databases, eBooks or eJournals, publisher platforms, links in Google Scholar (providing DSTORL subscribed to the full text) and the web scale discovery layer DSTO had purchased and intended to implement alongside OpenAthens (MD). OpenAthens (MD) also had the capacity to ensure improved compliance with e-resources license management and the library could at last dispense with user name and passwords.

EBSCO Discovery Service (EDS) had also been evaluated prior to the commencement of the project. Key factors which influenced the decision to procure EDS included its compatibility with existing e-resource infrastructure, its sophisticated functionality and scholarly focus and the rigorous security controls and policies employed by EBSCO. With

the acquisition of OpenAthens (MD), and therefore a plausible solution to hosting EDS, the effort to develop and add content to this resource began in earnest.

## Methods

The work to implement two major services concurrently and give consideration to all aspects of the project was both complex and broad, requiring a high level of organisation, and multifarious skills exercised across a broad spectrum of capabilities. The first phase of the project required an intense commitment from the project team to establish the parameters of the implementation and progress the essential work of procuring and designing self-registration forms for OpenAthens (MD). Linking resources in OpenAthens (MD) and establishing training and administrative responsibilities for key personnel was also prioritised. OpenAthens (MD) registration forms, designed and tailored to DSTO requirements, required submission to the UK for online creation and automation. This process took four weeks. Whilst the project team worked closely with Eduserv and EBSCO, the completed product could not be showcased to library staff until a month out from launch. The forms were returned to DSTO in the middle of May allowing a brief window for changes to be made before testing could begin with library staff and the client pilot group.

The time frame of the project also meant that library staff were not exposed to the final version of EDS until close to launch, although early buy-in was sought. A decision to abandon the proprietary name 'EDS' was taken early in the project in order to establish and build 'brand' recognition and loyalty for a DSTO tailored search tool. Library staff were asked to submit suggestions for a name for the discovery layer; they later cast votes from a creative range of proposals. The name reflects EDS's capability to retrieve quality content that illuminates research hence "SearchLight" was chosen. A positioning statement was also devised to reinforce the purpose of the service: *Powering the Discovery of Knowledge*. Once the name was established, staff referred to SearchLight only by this name in order that it would become "second nature" and entrenched as a DSTO branded service. The name SearchLight quickly became common DSTO parlance. It was also adopted by EBSCO staff who provided training in discovery across all sites in March. Although the commitment of labour would come later, many library staff volunteered at an early stage to participate in testing, marketing, developing training tools such as online help and videos, and training of clients as the launch grew near.

Much of the technical implementation of SearchLight was outsourced to EBSCO personnel both in Australia and via their Implementation Specialists in the USA. The requirement to launch the services at DSTO before the end of the financial year meant that this was the most expedient and practical approach. Graphic design and web experts at DSTO assisted with logos and the positioning of the search box on the intranet. In a global first for Eduserv, DSTO staff embedded the OpenAthens (MD) registration forms in the DSTO intranet for a consistent corporate look.

As the coordination of OpenAthens (MD) and SearchLight began to take shape, the project team had to relinquish one aspiration for the complementary solution. It was intended to extend the brand of SearchLight to the OpenAthens (MD) User Account however due to customisation limitations with the OpenAthens (MD) product this was not possible. In addition, other authentication points to subscribed e-resources outside the SearchLight discovery service, such as from native databases and Google Scholar would risk confusion for our clients because of the misleading nomenclature.

As the 12<sup>th</sup> week arrived, and the OpenAthens(MD) forms had been tested successfully by library staff, the team was able to implement the pilot test phase and put in train a coordinated marketing strategy that had long been scoped and was ready for unveiling. A comprehensive test plan was compiled by the Information Services Team in conjunction with

the Library Systems Manager and conducted over five working days. The Information Services Team provided critical support in recruiting forty clients across divisions and sites who systematically tested OpenAthens (MD) and SearchLight across multiple networks and browsers. As clients still relied on the use of log in and passwords to access e-resources, outages were scheduled for two evenings during the week to enable the testing of PDF downloads. Many remarks and some requests for enhancements were received during the test phase; some positive comments were used in marketing releases to generate support for the services and convey client confidence.

After the successful test was completed, the cautious approach to marketing was replaced by a coordinated campaign which included posters, articles in the internal DSTO magazine, *Connections*, and promotion on the DSTO intranet in the two weeks prior to launch. Managing expectations was critical and until this point, with the exception of the test group, DSTORL staff had only indicated a solution to accessing e-resources would be in place by the end of the current financial cycle. Embedding a link to SearchLight on the DSTO external site was authorised and staff began to socialise the forthcoming remote and mobile access to e-content. At last, the roadshow, planned and booked in March, well before the services were customised or tested, was announced as a five day five city tour of DSTO sites to showcase and demonstrate both services. A catering budget for the roadshow was approved and organised as both an incentive for attendance and a celebration of library innovation. Clients across DSTO received customised invitations to the launch and signature block banners unveiling the SearchLight logo and release date were added to all staff emails. As staff sought to finalise the appearance and placement of the services on the library web pages, training videos, online guidance and FAQs were developed for client assistance. The Information Services Team, who were trained and had become expert in SearchLight during its implementation, fine-tuned the hands-on demonstration and a one page user guide to be presented at the roadshows. An outage of all electronic resources on the Friday before launch was planned and executed to allow OpenAthens (MD) links to be switched on ready for the live environment. A final dress rehearsal took place and a contingency plan was mounted in the event key presenters would be unavailable for the roadshow. The cumbersome and onerous period of managing user names and passwords from scores of publishers served to motivate staff to succeed in the confines of this ambitious time frame.

## **Launch**

OpenAthens (MD) and SearchLight were launched on 16 June 2014 on a new library intranet site, with the top news item on the DSTO intranet Daily News page advertising that both services were live. Between 16-20 June the Director, Research Library and the Project Lead travelled to five DSTO sites to launch services and convey the strategic alignment of OpenAthens (MD) and SearchLight with the Research Library's vision to adopt and exploit progressive technologies to underpin and propel the research endeavour at DSTO. A local Liaison Librarian demonstrated the OpenAthens registration process and benefits and functionality of SearchLight at Edinburgh (SA), Stirling (WA), Sydney, Canberra and Fishermans Bend (VIC) with smaller sites receiving presentations via a videoconferencing facility in Canberra. The final presentation at Fishermans Bend was professionally recorded so as to serve as a record of the event and a training tool on both the DSTO webcasting service and the library web pages. By the end of the week 245 clients had attended the roadshows and 490 clients had activated OpenAthens (MD) accounts, representing 25% of the scientific community. No requests for assistance in registering for accounts had been received; and over 50 000 searches had been performed in SearchLight. The profile of the Library and its potential for delivering cutting edge solutions had been raised, with the roadshow providing a critical opportunity for networking with clients and library staff across DSTO sites.

## **Moving towards Closing the Project**

Inevitably, unexpected problems with the new services arose shortly after launch. The existence of many broken links between citations in SearchLight and the full text on the publisher website or in databases was the single biggest issue affecting access and client satisfaction. Also, two incidents occurred when SearchLight was unexpectedly blocked by Defence Networks in the early weeks, compelling the Project Team to develop an administration protocol to troubleshoot and manage this risk. The ongoing commitment by project team members to maintain and enhance the services required considerable time; thought needed to be given to how enhancements would be managed, who would perform the work and how it was best distributed amongst staff. The project had stimulated a significant increase in skills development for many staff across all business units of the library. Upskilling occurred in electronic resources infrastructure management, marketing and publicity, authoring and creation of online tools such as videos and web pages, presentation skills, and project management experience. There were additional benefits in client relationship management in DSTO, with external suppliers and indeed other EBSCO customers who were in the process or had completed their implementation of OpenAthens (MD). The take on work associated with a major new offering needed to be dispersed across staff and consciously managed to ensure a premier service continued to be delivered and developed. Work to bring the project to its conclusion included:

- Ensuring the functionality of all subscribed e-resources via OpenAthens (MD) and SearchLight with the aid of a testing tool devised by Information Services, with problems recorded and forwarded for action to EBSCO or individual publishers
- Guaranteeing LinkSource was correctly enabled for full text article delivery by systematically reviewing the functionality of LinkSource in A-to-Z and SearchLight to ensure active links were in place for all e-resource subscriptions
- Decommissioning all the redundant user names and passwords for individual e-resources by notifying publishers
- Developing a risk management and disaster management plan for OpenAthens (MD) and SearchLight with a flow chart for gauging the cause of the incident, troubleshooting and reporting issues
- Formally concluding the project by communicating to stakeholders that the objective of the project had been achieved and advising library staff of ongoing responsibilities for the management of services to include: administration of OpenAthens (MD) and SearchLight, communications, training, amendments to web pages, statistics, enhancements and reporting
- Meeting DSTO governance reporting requirements to track progress on DSTO strategic objectives.

The project was officially closed on 27 September 2014 with a Searchlight Innovation Team established in response to key recommendations of the Open Athens (MD)/SearchLight project report to provide support to the ongoing innovation and development of discovery services. The group consists of two members of staff from the Technical Services Team, one from Information Services and the Electronic Resources Manager; two of the team already hold responsibilities as OpenAthens (MD) Administrators. The purpose of the team includes undertaking analysis and decision making in response to suggestions for improvements, assuming responsibility for supplier relationship management with regard to the inclusion of publisher content, maintaining current awareness of discovery services and liaising with key library personnel to effect changes to the presence and appearance of SearchLight on the intranet. The Innovation Team also aims to be competent in all aspects of the technical administration of OpenAthens (MD), SearchLight and the attendant infrastructure to guarantee the requisite skills and experience to deliver key services and mitigate potential system failures and risks.

## Analysis and Results

In the five months following the introduction of ubiquitous access to e-resources, library staff closely monitored stakeholder reaction in conjunction with statistics from OpenAthens (MD) and SearchLight in order to assess the interest, acceptance and utility of the services. A survey was conducted over 8 days in November which sought to measure usability satisfaction and to provide insights into the varying successes of selected marketing and training tools apposite to the launch and in relation to subsequent development of access and discovery. Staff were also interested in quantifying the percolating trends such as the changing nature of document delivery and inter-library loan requests resulting from the vastly improved discoverability of applicable research.

OpenAthens (MD) registrations continued to increase in the five month period, although 50% of current account holders had registered in the first month of operation. The 1200 subscribers registered at the time of writing represents 60% of the researcher FTE component at DSTO, this result provides the impetus to regularly promote the services in numerous and creative ways. The survey indicated that the most successful ways of marketing were via the intranet and direct emails to clients as shown by 79% and 77% respectively of respondents cognisant of both approaches in the lead up to launch. Much less successful were efforts to reach out via physical hand outs, posters and in articles in the DSTO magazine *Connections*. Of the 97% of respondents who had registered for OpenAthens accounts, 95% said it had been 'easy' or 'very easy' with 57% advising they had required no assistance from staff or online tools to complete the process. Indeed, when respondents were asked whether they had attended in-person training or viewed online learning aids, the largest percentage (38%) had declined both. This result indicates the intuitiveness of both services. Perhaps it also depicts the shifting interaction of libraries with their clients; invest, develop and provide sophisticated electronic resource management infrastructure and discovery tools with quality content and clients will self-direct their research. Whilst this finding does indicate that the traditional model of clients coming to the library has considerably shifted, it is gratifying to note that the most popular of all the training concepts devised for the launch was the national roadshow.

At the end of five months, 88% of clients were satisfied with the OpenAthens (MD) authentication model. A further 10% who remained unconvinced may have misunderstood the requirement and purpose of OpenAthens (MD) as indicated by comments such as:

*"it would be good if we could automatically log into any journal DSTO subscribes to"*

and

*"Log in should only be required once outside the work place...ie. using non-working IP address computers"*

Client education needs to be continually reinforced. Slowness with the IP proxy was also mentioned as a disincentive for using the service, however this could be addressed should EBSCO upgrade its servers in international regions.

As the majority of clients (67%) authenticate from OpenAthens (MD) directly to SearchLight, it is critical that SearchLight be as optimal a service as possible. Satisfaction rates for SearchLight were lower than for OpenAthens (MD), with 77% of respondents 'very satisfied' or 'adequately satisfied' with the services. This may be attributable to the greater complexity of a discovery search engine and the ambitious attempt to offer such a vast array of e-resources through a single portal. At DSTO, this is 96% of subscribed e-content. For SearchLight to work effectively, its related infrastructure must work proficiently as it relies on the A-to-Z and LinkSource services as well as the quality and currency of metadata from a myriad of publishers. By excluding the library catalogue in SearchLight, valuable MARC

records are omitted reducing the discoverability of eBooks. Feedback from clients included the following: difficulty in understanding whether an article is available in full text (or frustration when it is not), the multiple browsers and windows that open as a search progresses, perceived limitations with the advanced search options, difficulty in locating the export citation link and the inability to search directly by citation. 49% of respondents stated they used SearchLight to perform a specific search across subscribed e-resources rather than undertaking general searches when unsure of a starting point. Overwhelmingly, clients reported on the positive impact SearchLight had brought to their research. For example:

*“This service is fantastic. I did a literature search this week using SearchLight and OpenAthens. Over three days I was able to pretty much complete my literature search. I very easily pinpointed key researchers and papers. To get to this point would have taken me weeks or months in the past”*

and

*“SearchLight/OpenAthens is the best IT tool in DSTO – it’s brilliant. It saves looking up individual passwords for each database, it enables all databases to be searched at once, and the documents are accessible 90% of the time without needing assistance from library staff...The remote access is very valuable to me.”*

In the five months of operation, nearly 600 000 searches have been performed in 11 000 sessions. The initial surge of interlibrary loans has eased since the June launch and stabilised to resemble the statistics of the previous pre-SearchLight year. The number of requests for foreign language articles and recondite material has increased reflecting the changing nature of the inter library loan proposal.

## **Conclusion**

Results indicate the acceptance and uptake of the services have surpassed initial expectations. The objectives of the project were met with a single sign on technology ensuring accessibility of resources via a single gateway. Quality staff selected resources and sophisticated technology have combined to empower library clients, permitting, for the first time, autonomous research capability 24/7 from any location, computer or device. The implications of this are considerable to DSTO’s research capability and to DSTORL as an enabler to improved information support that is in keeping with modern library trends and online user behaviour.

In conclusion, the project provided an opportunity for library staff to combine technical skills with creativity to provide clients with a far superior and intuitive research experience that positions DSTORL favourably for the future.

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