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The evolution of an e-book demand-driven acquisition programme at Swinburne University of Technology

In 2006 Swinburne University of Technology became the first library in the world to launch a large-scale implementation of a demand-driven acquisition (DDA) programme for e-books. At that time, the 34,000 e-books made available through the EBL DDA programme accounted for almost all the e-books available from the Library. In the intervening years the demand-driven collection has grown to almost 300,000 e-books but these now form only a component of a much larger collection of 765,000 e-books in total, acquired through a range of acquisition models. When changes in publisher charging models caused a large increase in short-term loan-based DDA expenditure from late 2014, the library took action during 2015 to put the DDA programme on a sustainable footing. Further changes were introduced in 2016 when Swinburne became one of the launch customers for a new DDA model developed for ProQuest's Ebook Central platform called Access-to-Own (ATO). This paper describes the evolution of DDA at Swinburne and the early experiences of using the new ATO model.

About Swinburne University of Technology Library

Swinburne University of Technology was established as a technical college in Melbourne, Australia in 1908 and became a university in 1992. With an enrolment of over 23,000 university students and a significant vocational education programme, it operates across three campuses in Melbourne with another campus located in Sarawak, Malaysia. For over a century Swinburne has committed to innovative education, strong industry engagement and social inclusion.

In 2016 the Library collections budget was equivalent to US$5 million, with around 95% of expenditure going on online resources. In a ranking of Australia's universities, Swinburne is placed at the median point both in terms of student numbers and in terms of the library collections budget.

In early 2017 the Library's book collections across the three Australian campus libraries comprised 91,000 print book titles and 765,000 e-book titles, with 837,000 unique book titles across all formats. Included within the e-book figures are 296,000 e-books available through the Library's DDA platform ProQuest Ebook Central, of which 26,000 are owned. There is an existing overlap of e-books which are also held as print books, and these print books were moved to off-site storage in early 2017.

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The beginning of e-books and demand-driven acquisition

At Swinburne we count 2006 as the beginning of our e-book collection. At that time the Library provided access to over 50,000 e-journal titles but only around 2,000 e-books, from three vendors under three different acquisition models. While e-journal acquisition models in libraries had developed and matured over the previous decade, the acquisition of e-books was a different story entirely.

We wanted to expand the range of e-books to our Library users but we lacked a mechanism to make the change until, at the beginning of 2006, we became aware of developments taking place with a new user-centred model for e-book acquisition. Australian libraries often look overseas for solutions, but in this case the solution was being developed right here in Australia through a collaboration between the e-book vendor EBL (now part of ProQuest) and the library at Curtin University in Perth. A planned pilot implementation of the new DDA model was only partly realized at Curtin,[1] but the concept was presented at the VALA library conference in Melbourne in early 2006 and Swinburne began working closely with EBL shortly afterwards on what would become the world's first large-scale DDA programme, launched in July 2006.

'We wanted to expand the range of e-books to our Library users but we lacked a mechanism'

We approached the launch of our DDA programme in 2006 with the principle that this was a way to allow our Library users to choose the e-books they wanted to use. It was based on our experience with the publisher 'big deal' journal collections over the previous decade. We had found that usage of journal titles available in the big deals often had little relationship to those journals to which the Library had previously subscribed. Some previously subscribed journals recorded modest usage, while titles which had not previously been subscribed to but which became available to users through the big deals sometimes had surprisingly high usage. This was also the experience of librarians at Curtin University, and was one of the factors which led to the development of the DDA model for e-books. Rather than attempting to select single e-books title by title in the hope that these would be used, taking the big deal approach meant libraries would make available a large pool of e-books and allow the users to choose the books they wanted to use.

'the solution was being developed right here in Australia'

In 2006 the DDA model was built around short-term loan (STL) fees which were payable for loan of an unowned e-book. STLs could be mediated or unmediated. E-books could be purchased manually or auto-purchased based on usage and configuration rules. The pool of visible e-books could be configured based on criteria such as price, publisher, or subject.

We chose to make as many e-books as possible available to our users in the initial implementation through limited profiling, and this changed very little over the following decade. Swinburne's DDA profile at launch excluded duplicates of titles already held as e-books and set a price limit (initially US$175) with unmediated loans and auto-purchasing set to occur on the third loan, although this was changed to auto-purchase on the fourth loan a few weeks later and remained so until 2016.

These profile parameters were decided upon through some basic analysis undertaken in conjunction with EBL. As we were the first library to go live with DDA in the world, we had no other libraries we could compare notes with. Regardless, these initial profile settings served us remarkably well and we reviewed them only in terms of the price limit, which we gradually increased to US$250 by 2014.

'we were the first library to go live with DDA in the world'

Publisher changes to short-term loans

Expenditure on Swinburne's DDA programme was reasonably steady for the first few years and 2012/2013 saw the first significant increase in expenditure when we lifted the price limit to make more e-books available through the DDA programme. We were able to open up more e-books to DDA availability because, through the uptake of DDA and the acquisition of large publisher collections of e-books over the previous couple of years, our acquisition of single title monographs had declined substantially. Swinburne's monograph acquisitions for print books and single title e-books declined from a peak of 13,369 in 2011 to 3,171 in 2014 (and has declined further since) and we channelled these savings into increasing the availability of e-books. We believed that our DDA expenditure increases in 2012 and 2013 were sustainable in the context of our overall budget. However, things were to change in 2014 (see Figure 1).
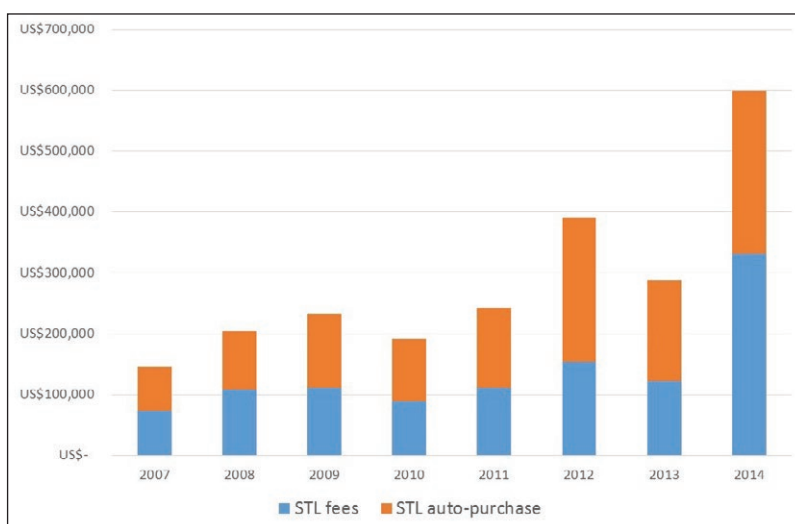
Figure 1. DDA expenditure 2007 to 2014

In the latter half of 2014 libraries around the world became aware of publisher changes to STL-based DDA. Some publishers made large increases to their STL fees, while other publishers removed their titles from STL availability entirely. As Swinburne was still auto-purchasing on the fourth loan, and therefore paying up to three short-term loan fees before purchase, this exposed us to the effects of the large STL fee increases. By early 2015 it was clear that we would need to take some action.

Modelling of DDA expenditure during the period January to May 2015 showed that expenditure had increased substantially over the same period in the previous year. While expenditure had increased across the board, the highest increase was in payment of STL fees, which showed an increase of 117%. While in some part the increase in expenditure was driven by an increase in usage of around 10%, the major driver of the increased expenditure was that the average STL fee more than doubled. A projection to the end of 2015 showed a 70% increase in DDA expenditure over 2014, which would have caused serious issues for the Library budget.

Reviewing our DDA profile to achieve sustainability

A 70% annual increase in the costs for our DDA programme was unsustainable and we decided we had to undertake a review of our DDA profile, but we also approached this with the knowledge that DDA remained an important part of our overall e-book collection. Turning off or 'throttling' our DDA programme was not an option. Our aim going into this review was to keep as many e-books available as possible, at least maintain usage of the collection, and reduce expenditure to a sustainable level. We set the benchmark for sustainable expenditure as our overall spend on the DDA programme in 2014.

'Turning off or 'throttling' our DDA programme was not an option'

We modelled a number of scenarios with our e-book platform vendor ProQuest, including reducing the percentage limit for STL fees and reducing the upper limit for e-book purchase price. This approach also yielded the helpful suggestion that setting a dollar-based STL limit would allow us to reduce costs while retaining more available e-books. In early June 2015 we made the first major change to Swinburne's DDA profile in almost a decade by reducing the upper limit to the purchase price of e-books in our DDA pool from US$250 to US$225, and imposing an STL price limit of US$40.

'setting a dollar-based STL limit would allow us to reduce costs while retaining more available e-books'

These changes resulted in a modest 15% reduction of our available books to 181,000 titles but showed a much greater reduction in spending on our DDA programme – expenditure in the months following these changes was about half of the same period in 2014. We would

have been happy to leave these changes in place and run the programme without further changes until the end of the year. However, in late 2015 we became aware of an upcoming expansion of titles driven by the incorporation of former ebrary titles into the EBL DDA pool. With no amendment to our DDA profile this would increase our DDA pool of visible titles by 85,000 e-books and almost certainly lead to a substantial increase in expenditure. We therefore took the decision to impose a publication date threshold for the first time, excluding e-books published before 2004.

Making these changes had a significant effect on Swinburne's DDA programme expenditure. While the period January to May 2015 showed a 70% increase in expenditure over the same period in the previous year, after making the profile changes in early June, Swinburne's expenditure in the period June to December 2015 showed a 50% reduction over the same period in 2014. A review at the end of 2015 showed that annual expenditure, originally projected to increase by 70%, showed a reduction of 12% in the full year 2015 compared with 2014, while usage had gratifyingly increased by 20%.

'annual expenditure, originally projected to increase by 70%, showed a reduction of 12%'

A new model: Access-To-Own

At the beginning of 2016 Swinburne was in a good place to review the ongoing DDA programme and we would probably have considered opening up our DDA profile somewhat had we not also been approached by ProQuest late in the previous year to become a development partner for a proposed new DDA model. At the time the new model had no name but would become Access-To-Own (ATO). The new ATO model would not replace the existing STL-based DDA programme but could run in parallel, offering the prospect of expanding the numbers of e-books and publishers available for DDA.

In the STL-based DDA model, a book which has not yet been purchased is loaned to a user and the library pays a loan fee. Libraries can set the system to auto-purchase an e-book following a certain number of loans. The loans and auto-purchase process can be mediated or unmediated, but for Swinburne we had always set the system for unmediated loans and auto-purchases. Publisher increases to the STL fees had largely driven the big expenditure increases that we saw from late 2014 onwards, and which forced us to review our DDA profile during 2015 to reduce costs.

In the STL-based DDA model the STL fees are used solely for the loans and when an e-book is eventually auto-purchased after the set number of loans, the library must pay the full purchase price of the e-book plus an upcharge to increase concurrent user numbers if required. Essentially the STL charge is written off at the time of the loan and cannot be credited to a later purchase.

The new ATO model works differently in that the ATO loan fees act as instalments towards an eventual purchase. Once the ATO loan fees reach 100% of the purchase price of the e-book, a single-user copy of that e-book is automatically acquired at no additional cost. Additional purchase charges are only required if the library seeks to increase the concurrent user model, for example to a three-user or unlimited use title, and this can be automated through configuration.

'the ATO loan fees act as instalments towards an eventual purchase'

Swinburne was a beta test site for the new ATO model during July 2016 and implemented ATO alongside the existing STL-based DDA programme from 5 September 2016. Some publishers only provide content through STL-based DDA, others only through ATO-based DDA, while some publishers provide content through both models. Swinburne's profile changes applied at the time of going live with ATO were: where an e-book is available under both ATO and STL models, prefer the ATO model; for the STL model, to move the auto-purchase point from fourth loan to third loan; and to increase the purchase price limit to US$275 for STL-based DDA and US$350 for ATO-based DDA. Swinburne also used the savings generated by the STL-DDA profile changes implemented in late 2015 to manually

acquire all e-books which had generated three short-term loans but had not yet been purchased, since these would have been purchased under these most recent changes.

At the time of implementing ATO in September 2016 there were approximately 267,000 DDA e-books visible, of which 105,000 e-books were available through the new ATO model. There were 162,000 e-books not available through ATO which continued to be available through the STL model, and these numbers have not changed markedly in the six months following implementation.

Swinburne went live with ATO on 5 September 2016 and the first ATO e-book auto-purchase was made on the first day at 11.58pm.

Early analysis of ATO expenditure showed that in the first few months of implementing the new model, ATO had become the largest component of Swinburne's DDA expenditure. At first glance, the ATO expenditure therefore looked a little worrying, but we could see that other DDA expenditure was reducing and overall expenditure appeared to be sustainable.

'ATO has become the largest component of Swinburne's DDA expenditure'

ATO – the first six months

The basic premise of DDA is that it is cost-effective to pay a loan fee for an e-book that might only be used once or twice, but that further use is predictive of continuing usage and it is therefore then cost-effective to purchase the e-book. With STL-based DDA the Library can choose the auto-purchase trigger point but the ATO-based purchase model is set to automatically acquire a single copy of the e-book when at least 100% of the price of the book has been reached in ATO loan fees. Typically this will occur on the second loan for a front-list title, and on the third loan for a back-list title.

In order to evaluate our changes to our STL-based auto-purchase trigger point, and the introduction of ATO, we looked at reuse following purchase in the six-month period following implementation of the changes applied on 5 September 2016, and compared this with the STL auto-purchased e-books in the corresponding period of the previous year. We also compared the STL auto-purchased e-books with the equivalent period in the previous year to see whether changing the STL auto-purchase trigger point had an effect on reuse after purchase (see Table 1).

We also investigated the number of reuse events following purchase in these periods (see Table 2).

While this is very early data, the results are encouraging. Reducing the STL auto-purchase trigger point from fourth to third loan did not have an adverse effect on usage, and reuse increased slightly from the previous year. As many of the ATO auto-purchase e-books were being purchased on the second loan we were concerned that they might see less reuse following purchase compared with the STL-based e-books being purchased on the

'ATO purchased e-book reuse is roughly in line with reuse for STL-based auto-purchases'

Table 1. Reuse following purchase

Period	Type of auto-purchase	Total purchased	Total reused within period	Total % reused within period
5 Sep 16 to 5 Mar 17	STL auto-purchase	559	378	68%
5 Sep 15 to 5 Mar 16	STL auto-purchase	330	203	62%
5 Sep 16 to 5 Mar 17	ATO purchase	654	401	61%

Table 2. Number of reuse events following purchase

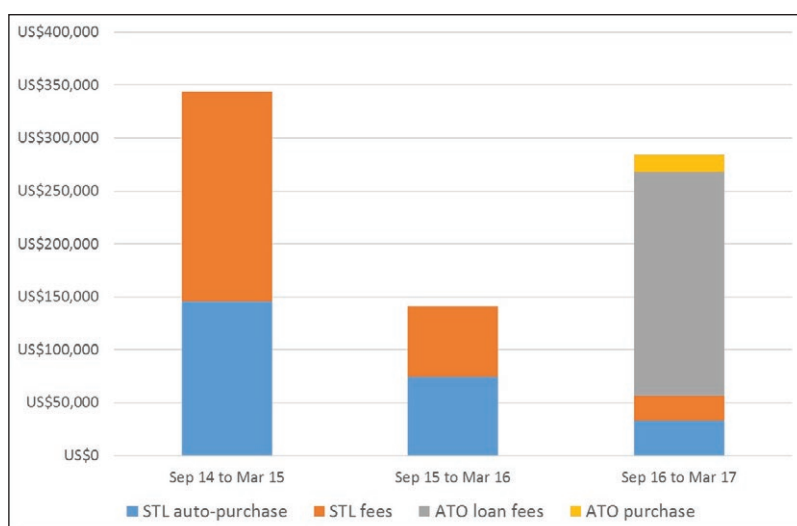| Period	Type of auto-purchase	Reused 1 time	Reused 2–5 times	Reused 6+ times
5 Sep 16 to 5 Mar 17	STL auto-purchase	15%	42%	43%
5 Sep 15 to 5 Mar 16	STL auto-purchase	22%	32%	46%
5 Sep 16 to 5 Mar 17	ATO purchase	21%	43%	36%

Figure 2. US$ expenditure by DDA category in six-month period

third loan, but ATO purchased e-book reuse is roughly in line with reuse for STL-based auto-purchases.

In the first weeks following ATO implementation, the new ATO model was accounting for well over 70% of our total DDA expenditure, which was initially concerning until we realized that other DDA expenditure had substantially declined. Total expenditure now sits midway between what it was before we made the changes to rein in STL expenditure in mid-2015 and the launch of ATO in late 2016 (see Figure 2).

We will continue to monitor ATO expenditure and overall DDA expenditure during 2017, but the initial analysis appears to indicate a sustainable expenditure model.

'initial analysis appears to indicate a sustainable expenditure model'

Concentration of usage in owned e-books

Over the past ten years we have tracked usage of e-books in our owned versus visible but not owned e-books, which has shown a consistent trend towards increasing usage of the e-books which have been auto-purchased through DDA. We believe this is a validation of the STL-based DDA model. For e-books that might be used only once or twice it makes sense to pay a loan fee. When the usage reaches a certain point it becomes an indicator of continuing future usage and so it makes sense to purchase the e-book, since the Library pays no further charges once an e-book is owned.

We have found that the concentration of usage within owned e-books has been growing year by year and, while we typically have owned around 8% to 10% of the visible e-books, these have accounted for a much greater percentage of usage. For example, in 2013 we owned approximately 8% of visible e-books but these accounted for 69% of usage, and this grew to 74% in 2014 and 82% in 2015. While ATO-based DDA was only implemented in the final four months of 2016, we were curious to see whether this would have any effect. In October 2016 usage in owned e-books for the year to date was 86% and this increased to 87% by the end of the year (see Figure 3).

We will continue to monitor this through 2017, but early indications are that implementing ATO has not had an adverse effect and it will be interesting to see whether usage continues to be concentrated in owned e-books.
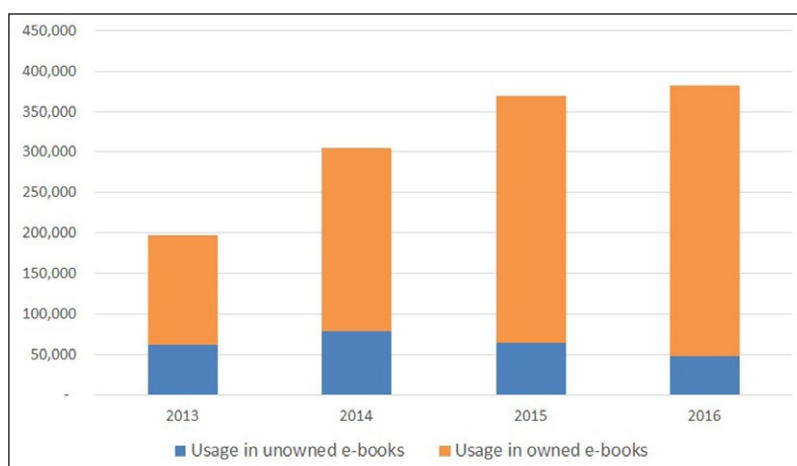
Figure 3. Usage in owned compared with unowned DDA e-books

Conclusion

We now have over ten years' experience with DDA acquisitions at Swinburne and DDA continues to form an important component of our overall e-book collection, which has now expanded through the adoption of the new ATO programme alongside the more traditional STL-based DDA programme. Implementing ATO has allowed us to expand the range of e-books available to our Library users and early analysis indicates that this will continue to be a sustainable and cost-effective method of acquiring e-books to supplement our publisher e-book collections.

'early analysis indicates that this will continue to be a sustainable and cost-effective method of acquiring e-books'

Abbreviations and Acronyms
A list of the abbreviations and acronyms used in this and other *Insight*s articles can be accessed here – click on the URL below and then select the 'Abbreviations and Acronyms' link at the top of the page it directs you to: **http://www.uksg.org/publications#aa**

Competing interests
The author has declared no competing interests.

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