THEME ARTICLE
Making the new OPAC seamless: dealing with the transition from "finding" to "getting"

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Abstract
Purpose – This paper aims to describe the process of development undertaken by the State Library of Tasmania to provide a new generation OPAC – TALISPlus.

Design/methodology/approach – The methods developed and used to meet the "getting" needs of clients in the new OPAC are described, with examples based on the alternatives investigated and the results achieved.

Findings – During this development process the State Library established, through client consultation and feedback, that the process of item discovery within the new OPAC was incomplete unless accompanied by new methods that ensured that the desired item could in turn be easily found and physically accessed by clients. The need to address both the finding and getting requirements of clients is of major importance to the State Library of Tasmania which provides a state-wide public lending system with one collection spread across 49 branches.

Originality/value – The paper argues that the development of a successful next generation OPAC is not limited to the provision of new searching functionality. Rather the success of a new OPAC is linked to its ability to provide existing clients with a seamless tool that delivers the ability to both find and get the desired item. The provision of this seamless access will require additional and significant development resources. However, the high levels of client satisfaction with the new OPAC witnessed by the State Library reinforce and validate this approach.

Keywords Libraries, Information retrieval

Paper type Conceptual paper

Introduction
The attractive client-orientated functionality of web-based delivery systems and the challenge of other search services such as Google etc. have prompted (or forced) libraries to respond by developing new search interfaces to replace existing Online Public Access Catalogues (OPACS). These new or next generation catalogues are generally still based on existing data sources (bibliographic and holding records) and existing business polices and processes (e.g. MARC record structures, AACR2), but offer a wide range of exciting opportunities to modernise library discovery interfaces and delivery mechanisms.

Against a background of an outdated ILMS OPAC, and the desire to make the catalogue more client-focused and web friendly, the State Library of Tasmania undertook a process to design and implement a replacement OPAC during 2006 and 2007. It was hoped that a new discovery interface could be developed using an external search engine to re-index cataloguing data exported from the ILMS. The resultant search interface would then simply interface with existing borrowing and other ILMS functions, handing over functionality as appropriate.

The State Library was conscious, however, that any new discovery interface designed to replace an existing OPAC had to be benchmarked against that existing OPAC. It could only be turned into a production system if clients clearly and overwhelming felt that it was a better service than the old OPAC. Because of this, the development process integrated client evaluation and testing to constantly gauge client satisfaction. Usability tests and a rolling beta model with restricted staged releases became major features of the development program.

It was this feedback from clients that necessitated a review by the State Library of the role of the new discovery interface in meeting client needs, and forced the State Library to address the reasons why the clients were using the catalogue in the first place. Based on feedback from clients, the State Library found that improved discovery outcomes were not an end in themselves, and that client use of the catalogue was part of a larger process that involved finding a resource and then obtaining access to that resource. Simply improving the first part of the process, that of item discovery, was not sufficient to satisfy the clients and would not justify the new OPAC as a replacement for the old. As Karen Calhoun recently stated: "The end client's delivery experience is as important, if not more important than the discovery experience" (Calhoun, 2008).

A "Find" and "Get" model of service delivery has been usefully described by the National Library of Australia (Pearce and Gatenby, 2005) and Lorcan Dempsey (Dempsey, 2005). This model provides a simple yet solid conceptual background to understanding client needs by breaking down the service delivery process into the finding component (basic searching or discovery) and the getting (the fulfilment of the client's need to access an actual item).

The State Library found it useful to further identify three types of information that would assist clients in getting the items they required. First, the getting function could utilise information that could be searched directly by the client (e.g. show me items on X that are on the shelf). In a faceted search engine, a number of searchable facets can be provided that relate directly to getting outcomes. Such facets are not objective descriptors of the resource, but reflect how that item is shelved or made available in a particular library. Second, getting functions could utilise information that passively assists selection (e.g. where information about availability is included in result displays and used by the client to investigate or select specific results). Finally, the getting function would need to access those processes that access or request an item once chosen (e.g. view a resource online, place a hold on an item, etc.).

The State Library of Tasmania found that addressing these sub-components was a significant factor in discovery system development and a key factor in achieving client acceptance of the new system.

The State Library of Tasmania – background

The State Library of Tasmania is a multi-function library system covering the State of Tasmania in Australia. The State Library of Tasmania (SLT) organisation and corresponding library software serves 46 public libraries, the State Reference Library, and the Tasmanian heritage libraries. Service outlets range from larger urban centres down to very small rural and remote areas, and this array of service centres is supported by the concept of a single collection, whereby clients can borrow, place holds, and return items at any service point across the state.

As a public library with a shared collection across multiple public library branches around the State, the client's ability to search across the full range of service outlets, to quickly ascertain resource status and availability, and finally to place holds on stock held in other locations has been a key element of library services. This holds process has been fundamental to the state-wide service and is heavily used by the State Library's clients.

The ILMS system is critical to this process. A stock management system that could cope with lending and reference stock across 49 outlets, together with the ability to place holds and deliver those holds efficiently to clients anywhere in the state has long been a fundamental requirement of the underlying systems used by the State Library.

Although the existing ILMS used by the State Library can deliver the underlying stock management and holds processing required by the state-wide system, the actual discovery system or OPAC provided by that ILMS had become very outmoded in a web world. A replacement ILMS system with a "modern" OPAC seemed a very unlikely possibility in 2005 and the State Library began to develop an alternative model.

This model was based on the concept of exporting the data from the bibliographic database and then re-indexing that data using a powerful external indexing tool with a modern and web-friendly delivery interface.

Because the State Library had an existing OPAC in place, any move to replace that OPAC had to at least meet current levels of functionality and client acceptance. Because there were also many uncertainties in the process of developing a new OPAC (performance, client acceptance, functionality, etc.), the State Library decided to use a process based on gradual implementation and development, releasing various beta versions to an increasing range of staff and selected clients; testing, validating, and adapting the functionality through these releases.

This process was designed to let the State Library deal with the issues of facet design, data manipulation, search operations, web presentation, and results delivery in a gradual way, allowing the clients to influence the process. At an early stage in the design process, clients were enlisted to provide input via usability tests, and a staged process of public beta releases gave the opportunity for continuous public feedback.

A new OPAC for the State Library of Tasmania – beginning the process
The underlying principle for the new OPAC was to export data from the existing MARC database and re-index that data using an external software package. The existing OPAC (TALIS) contained approximately 500,000 bibliographic records and covered the holdings of all the public, reference and heritage libraries in Tasmania. The new OPAC would be branded TALISPlus (Figure 1) and be fully integrated into the State Library web site at: www.statelibrary.tas.gov.au

To enable the delivery of TALISPlus the State Library purchased the Verity K2 search engine in 2006 as a metadata and facet-enabled search platform capable of handling a large number of records from a variety of sources. Verity K2 is a commercial search engine product designed for heavy-weight applications. Additional information about Verity can be viewed at the Autonomy web site available at: www. verity.com/ (accessed 30 September 2008) It has all the normal search engine functionality, including spelling suggestions, truncation, various query syntaxes, scalability, and also facet capacity – known within Verity as parametric indexes.

Figure 1.
TALISPlus

Implementation

The attraction of most next-generation discovery software is the ability to provide facet-based searching. Facets act as dynamic access points, allowing the client to begin or refine a search by choosing among options provided by the OPAC. These facets are dynamic and pertinent to the context of the search, and can be selected, removed or combined in any order by the client. As such they represented one of the major advances in searching that the State Library expected from the new OPAC software. Identifying and deploying those data elements that could be used as facets in the search process was an early part of the implementation project. Although many of these facets reflected traditional entry points (author/title/subject), they still required significant data manipulation to produce the consistency of presentation that a faceted style of delivery requires.

Implementation of the new TALISPlus was carried out by the Systems Development Section, in parallel with an extensive project to clean up and/or correct inconsistent data within the cataloguing database that involved both Cataloguing and Systems Support Sections. During the initial phases of development, discovery functionality, data provision, and the client interface design took up the bulk of development time and resources. During this time usability testing and comments from clients were fed back into the design process, and enhancements and fixes to both the data and interface were made on a recurring basis.

Search options related to getting

Certain facets in the new OPAC were provided that went beyond traditional descriptive and subject cataloguing entry points, and focused on characteristics about how that resource was shelved or managed by the State Library. These characteristics were

required to meet client needs to get an item, and the new OPAC software allowed the opportunity to present certain of these characteristics as facets alongside traditional entry points. The getting information that served this functionality could not be simply taken from a catalogue record, but had to be based on holdings data and required distinct data extraction and manipulation rules as a result.

The most important key discovery facets that directly provided getting functionality in the new OPAC were "Availability" and "Library location".

Availability as a facet
One of the first requirements of the "getting" process was to determine the availability of an item. Is it on the shelf? Can it be borrowed? The authors developed an Availability facet to help in this process, which groups items by their availability for loan:

- Lending (can be borrowed);
- Reference (can be used in the library);
- Online.

Clients can narrow their search to any one of these availability types at any time in their search. This has proved to be a popular facet, with the Lending option being the most heavily used by clients. But the ability to restrict search results to Reference or Online items is also used extensively.

Interestingly, the concept of physical location is complicated by the concept of online availability. It was expected that clients would like to know if a resource was available online; either directly then and there to them on a PC, or via a more controlled access to subscribed data sources that were available to library members or to clients physically located in a library. Is it best to offer Online as an option in the Availability facet or the Library location facet? Neither is a perfect fit.

The "Library location" facet and the "Availability" facet can be used well together, e.g. Lending items in Hobart, Reference items in Burnie, etc. An online item may be available in some or all libraries, however, depending on subscription terms for example. Putting Online in the Library location facet means that someone choosing another location, e.g. Hobart, would not see any online items. It would also be buried in the middle of 49 other location options. Putting "Online" in the "Availability" facet has problems also. If it is freely available in all libraries and from home should all 49 holdings be added – one for each library, greatly complicating the full record screen? If this is not done and a client restricts to one Library location, these online items will not appear, even though they are actually available to clients of that library. No ideal solution to this issue has yet been found, with Online currently appearing in the Availability facet.

"Library location" as a facet
Providing information and searchable options concerning the physical location of a resource is straightforward when only one or two libraries have holdings, but the State Library has to deal with situations where up to 49 libraries can hold copies of a resource. TALISPlus offers a "Library location" facet so that clients can choose to narrow their search to just one library branch. The list of libraries in the facet can be

somewhat unwieldy, however, with up to 49 options appearing in the facet. The number of library locations also complicates the client interface display of "On shelf" availability.

Selection options that complement getting

Once the client has a set of results, they need to choose the item(s) most appropriate to their needs. The ease of getting an item may affect the client's choice – an item with multiple lending copies may be more easily and quickly accessed than an item with only one copy. An item that is on the shelf at their local library may be chosen over one that is out on loan or held elsewhere.

In the search results list the only availability information given for individual items is the number of reference and lending copies held, e.g. six lending, two reference. These figures are calculated in the ILMS and then output during the nightly data download to TALISPlus (see Figure 2).

Clients can quickly scan a results list, determining the number and type of holdings for each item, which allows them to make an initial selection of likely items before having to go into each individual record for more complete details.

It is possible that the number of lending and reference copies given on the search results screen is inaccurate at times during the day as items are added to, removed from, or moved between collections. But this possible inaccuracy was felt to be acceptable, as the number of errors per day would be small and could be assumed to have a relatively minor impact on the client. The number of lending and reference items is simply a guide to the client of the possible availability of the item, not a promise of instant availability. No negative client feedback has been received about inaccuracies in these data.
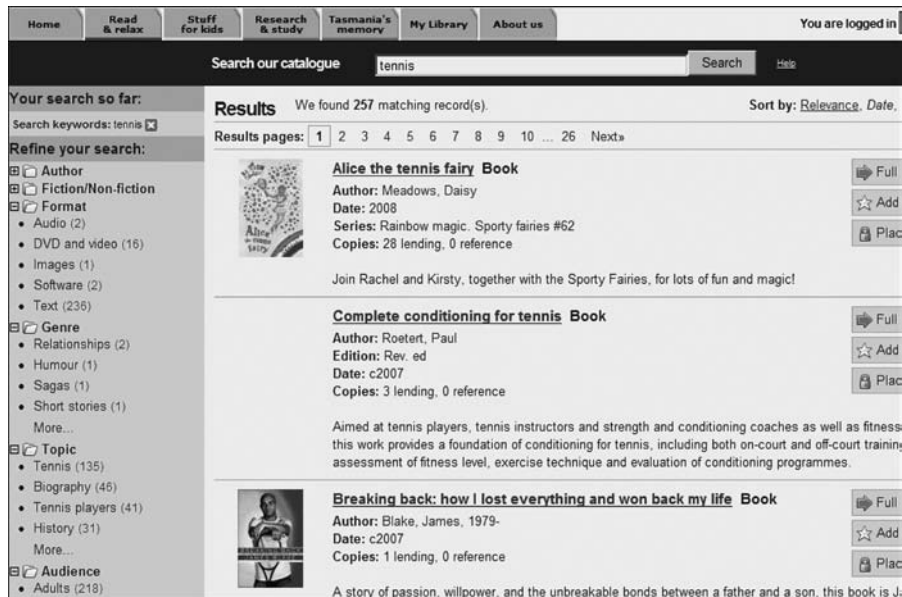

Figure 2.
TALISPlus search
results page

Statistics are showing that the overwhelming majority of holds (nearly 80 per cent) are being placed at the search results screen i.e. before the client has even checked the full record screen. Clients are finding it is easier and more efficient to place a hold on an item with lending copies directly from the search results list, even if by going further into the full record they could find that it is on the shelf in their local library. TALISPlus statistics show that over 70 per cent of the usage comes from clients outside a library i.e. at home or work. As an item that is listed as On shelf at their local library may well have gone out on loan before the client can actually get to the library to pick it up, placing a hold immediately regardless of On shelf status, and then picking the item up at their convenience is an effective strategy on the client's part.

Also, in a statewide system, the probability of any particular item being actually on the shelf in the client's local library is relatively low, so that the "Place a hold immediately" strategy is also going to be the correct behaviour in the majority of cases. This may be an example of clients using "satisficing" behaviour – the quickest, easiest, most-often-effective behaviour is followed, ahead of the more time-consuming, accurate, check-all-details-first behaviour that tends to be the one used, and expected of clients, by librarians (Satisficing – see http://en.wikipedia.org/wiki/Satisficing).

On shelf availability

Although a majority of clients are placing holds without checking for complete circulation status details, the actual circulation status of the item is still crucial to the get process – is it on the shelf in my library now, and if so, where? In a public library system a book can obviously be checked out at any time of the day, and the currency of the shelf status information for clients has to be as accurate as possible.

As TALISPlus data are only updated nightly from the ILMS, it was felt that the shelf status information from the nightly load would be too inaccurate to use during the following day. For accuracy a live query into the ILMS would be necessary, but circulation status could not be a facet in its own right, as live requests against the entire database based on circulation status would present an impossible load on the system. Nor was it felt desirable to direct the client back into the old OPAC for live circulation data, as the presentation of two such different interfaces would be confusing.

The State Library then considered presenting live circulation status information in the search results pages. This would still mean ten live queries into the ILMS per results page – a high load on the ILMS server and search interface delivery software when factored against the number of clients on the system at any time. Displaying the circulation statuses of ten items per page, with each item held by up to 49 libraries, was also an interface design challenge of some magnitude! The usefulness of doing this in a large consortium was also questionable. Knowing that there are three copies available on the shelf in Burnie is of little use to a client 200 kilometres away in Hobart.

In a large consortium, it may be more useful to display or refine by the real-time shelf status of items at the search results screen only after the client has narrowed their search to a specific library location. For example, once a client has used the "Library location" facet to limit their search to items held by the Hobart Library, it may be useful to the client to see the Hobart Library shelf status of all items in their search results page, or to narrow their search further to items currently on the shelf in the Hobart Library. At this stage such a system has not been implemented in TALISPlus.

These issues meant that displaying the real-time circulation status of items at the search results screen was both difficult and of dubious value. The decision was consequently made to display the real-time "On shelf" status of all the holdings in all libraries for an item only as part of the full record display for the item. This is done via a live query into the ILMS when the client requests to view the full record for an item. The current "On shelf" status of each copy is then returned and displayed in the TALISPlus interface, and provides accurate up-to-the-second circulation status with minimal load on the system. The use of a full record page for extended information also provided additional functionality and flexibility, such as the addition of book covers, abstracts, reviews, "LibraryThing" tags, etc. (see Figure 3).

The real business of "getting" – placing holds

As a state-wide consortium with widely-scattered collections, the ability to place holds is of enormous importance to the State Library and its clients. The new OPAC had to provide an easy and effective way for clients to place holds if it was to gain acceptance by the public and staff.

First attempt

The ability to place holds from the TALISPlus was provided in the first test release by passing the client through to the old OPAC and its holds placement interface. A login to the old OPAC was activated when the client clicked on the hold button. This login process then generated a session with the old OPAC and details about the client's chosen item were passed through ready to be used by the client in placing the hold in the old OPAC interface.

This meant that the clients moved from a new and modern interface into a traditional and somewhat clunky interface. Having clients navigate two distinct systems was initially seen as the best that could be offered. Extensive usability testing

Figure 3.
TALISPlus full record display

and iterative designs using paper prototypes, and then a working test implementation, delivered a process that was the best that could be provided given the two interfaces that had to be dealt with. It was felt that the benefits of the new TALISPlus search system would be seen as such an improvement that clients would put up with the rather complex holds process.

The first beta releases of the new OPAC soon demonstrated that this assumption was invalid.

Many clients struggled with the holds process – either failing to place a hold or becoming stuck in a loop moving between the two interfaces. Multiple steps were involved in successfully placing a hold, providing multiple points of failure and frustrating clients with the slowness and complexity of the process. A continuous stream of negative feedback was received from clients about the holds process and was indeed almost the sole cause of complaint about the new test OPAC (see Figures 4 and 5).

The initial plan to rapidly migrate from the first test version to a more widely-used public beta version was shelved, and the State Library had to go back to the basic design of client functions and the need to integrate them into the way the new OPAC delivered its services.

By raising the bar for search, the State Library had also raised the bar for holds placement, as well as other public library client functionality (reviewing items on loan/overdue, renewing items, checking address details, etc.).

Back to the drawing-board
As none of the many holds methods that were tried with two interfaces gave a satisfactory level of client success, it became obvious that expecting clients to move between two different interfaces was in itself unacceptable, and that the holds process needed to be much more seamless. The next phase of OPAC development then became an investigation of methods to make the hold functionality work seamlessly with TALISPlus.

Second attempt
Initially it was planned to use a Z39.50 connection direct to the ILMS in order to provide holds functionality, in effect replicating and replacing the holds functionality of the old OPAC, but this soon ran into complex and time-consuming technical problems. After lengthy technical investigation and consultation with the OPAC vendor, a number of problems arose with this method that could not be easily solved. At this point, the more pragmatic method of screen-scraping the old OPAC was put forward as an option.

Subsequent testing showed that a screen-scraping process that worked with the functionality of the old OPAC gave satisfactory results and was far easier to
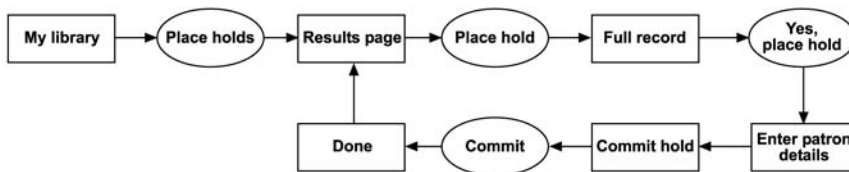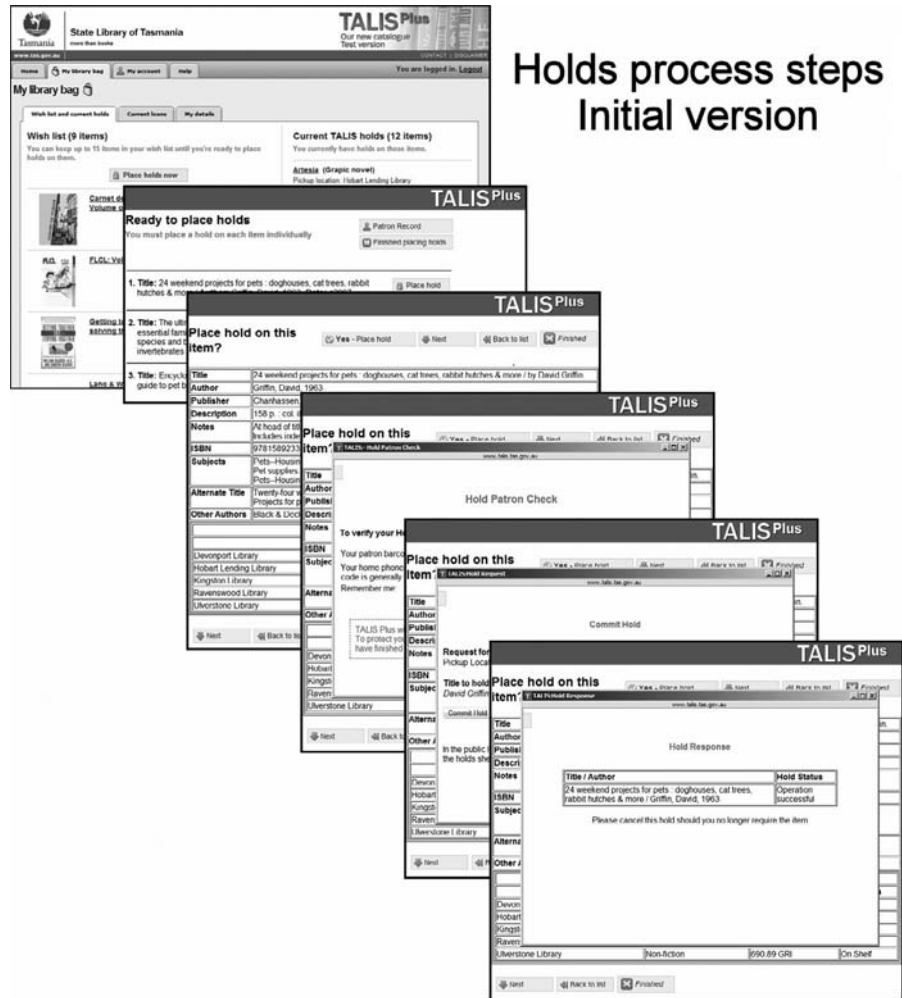

Figure 4.

Figure 5.

implement. With this method, when a client clicks on a "Place hold" option in TALISPlus, the system invisibly opens a session with the old OPAC and automatically sends through the client's and the hold request details, fills in the various hold forms in the old OPAC, and returns a result screen (Successful/Unsuccessful) to the client in the TALISPlus interface. This means that the client never leaves the TALISPlus interface – all they see when they click on the hold button is a "Confirm hold" box, a "Processing hold" message, then the "Hold response" screen (see Figure 6).

All the work is being done by the system behind the scenes while the "Processing hold" message is displayed (Figure 7).

Usability testing showed that this process was simple and error free for clients. When it was introduced to the beta TALISPlus, holds were successfully placed and negative feedback on the holds process ceased completely.

This version of the holds process was the one that went into the final production version and has been a major success. No further negative feedback on the holds process has been received in the year since its inception. As usage of the old OPAC dropped and TALISPlus took over the bulk of client demand, the screen-scraping process has held up well under the load.

Other client functions

Given the success of screen-scraping for the holds process, it was felt that other client functions, such as renewals, should also be as seamless as possible.

As much as possible, clients are kept completely within the TALISPlus interface. Data is brought over directly from the ILMS databases via stored procedure queries and displayed in TALISPlus. Client loans, overdues, charges and address details are all brought over automatically from the ILMS and displayed to the client whenever they log into their account (*MyLibrary*) in TALISPlus (see Figure 8).

Complex stored procedures allow tailored options to be presented to the client in TALISPlus, e.g. on the client's "Loans and renewals" screen, the renewal options for each item on loan are calculated behind the scenes in the ILMS, based on renewal limits, other holds etc., and suitable options are presented to the client next to each item in a "Can be renewed" field, e.g. "Yes", "No", "Check with staff" etc. Although the actual renewals process still involves a trip into the old OPAC, by presenting some information within TALISPlus before the renewals process is initiated, unnecessary trips into the old OPAC are avoided (see Figure 9).

If it is necessary to move clients back into the old OPAC, as much as possible the interface presented to the client stays in the TALISPlus look-and-feel. The old OPAC screens, buttons, labels etc. have all been tailored to use the TALISPlus look and feel, and importantly, no options at all are given to move around within the old OPAC once the client has completed their transaction there – the only options offered for movement all take the client back into TALISPlus (see Figure 10).

Wish list and bibliography

During the TALISPlus design phase, it was recognised that clients do not always want to get things now for a variety of reasons. They may want to place a hold on an item but they have reached the limit of allowable holds, they may be going away for a period of time but want the item when they return, they may have enough to read at present but would like to keep track of items they want in future. A "Wish list" facility was added to TALISPlus to assist clients to cope with these scenarios. The "Wish list" allows them to save up to 15 items in a list, which they can refer to or place holds on at their convenience.
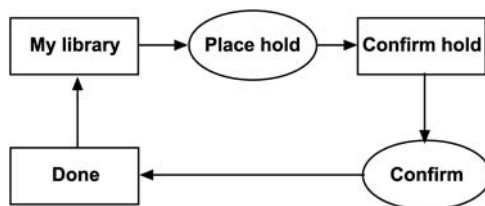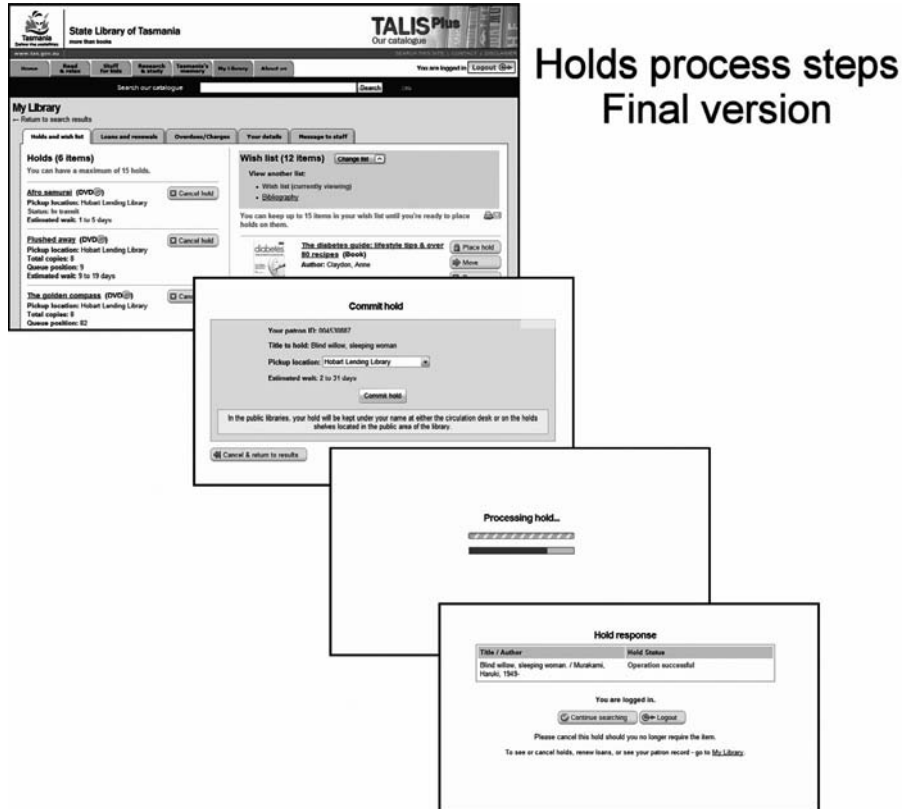

Figure 6.

Figure 7.

Clients have been very enthusiastic about this additional functionality, to the point where many very vocally demanded increases to its capacity and functionality. A "Bibliography" function has since been implemented in TALISPlus that allows clients to save up to 100 items in a bibliography list, and to print or e-mail them in several formats, including citation format. When clients add an item to a list, they are given the choice to add it to either their "Wish list" or "Bibliography", and they can easily move items between their lists. Several clients filled both their "Wish list" and "Bibliography" within days of their roll-out.

Usage statistics

Over the first full year of operation, clients have demonstrated the ability and flexibility to use a large number of facets provided, including both finding and getting facets. The "Availability" facet has proven its importance and is used at the same rate as the "Topic" facet and slightly more than the "Author" facet (see Table I).

The "Lending" and "Online" options in the "Availability" facet are by far the most popular, demonstrating the high use of the OPAC by public library clients. The usage of the "Online" option within "Availability" is expected to grow in the future, but already indicates a significant use of such resources by the general client community.
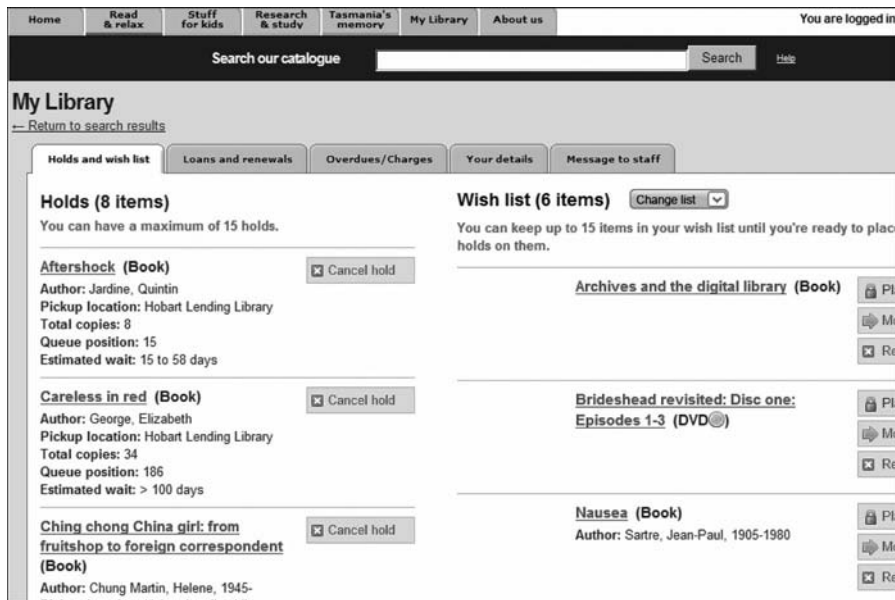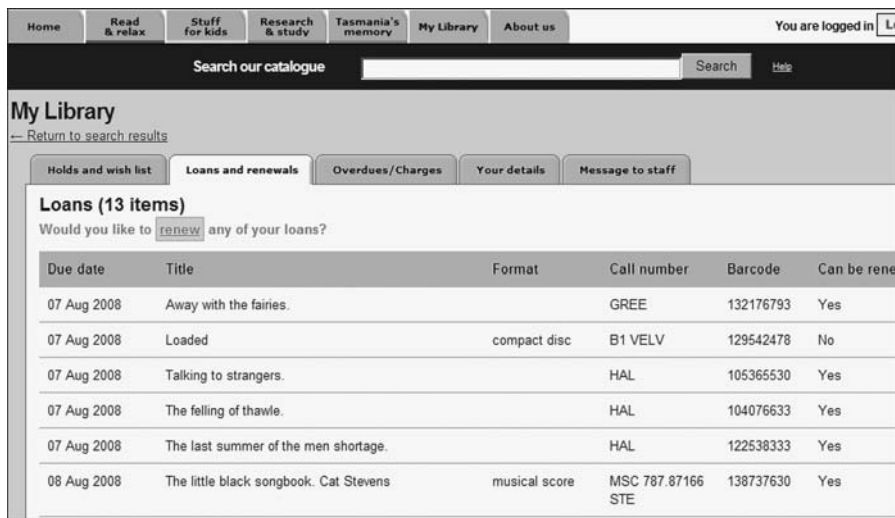
Figure 8.
My library page

Figure 9.
Loans and renewals screen

The compromise solution adopted by the State Library with regard to placement of the "Online" option within "Availability" also seems to be accepted by clients (see Table II).

The "Library location" facet has slightly lower levels of use than "Availability", but this is possibly explained by the strategy adopted by many clients of placing holds without bothering to check on specific library holdings. Within the "Library location" facet the larger libraries are most often chosen by clients, as would be expected.
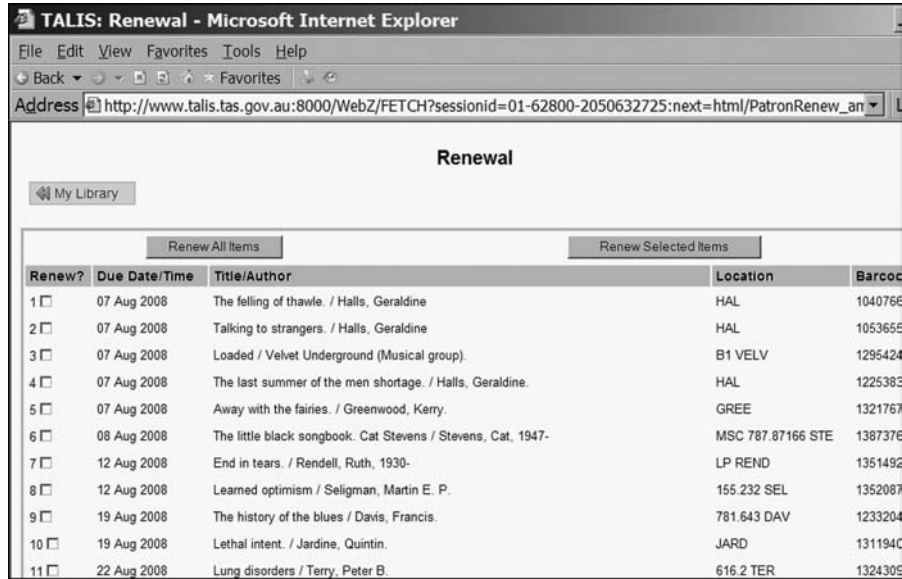
Figure 10.
Item renewal (old system)

		%
Format	40,009	31
Audience	14,986	12
Topic	14,743	11
Availability	14,424	11
Author	13,042	10
Location	8,469	7
Series	8,466	7
Fiction	7,375	6
Genre	5,227	4

Table I.

	%
Lending	77
Online	19
Reference	4

Table II.

	%
Search results page	78
Wish list	17
Full record	5

Table III.

The "Wish list" and "Bibliography" are also popular with nearly 6,000 clients making use of them. This usage is steadily increasing. On average, clients using the "Wish list" have seven items in their list and clients using the "Bibliography" have 16 items in their list.

After the initial difficulties, the holds process has become a major success of TALISPlus. In keeping with the improvements to discovery, the usability of the holds process is much better than the original OPAC version and matches that of the discovery system. The number of holds successfully placed is very high, with no usability issues being raised by clients. Holds are placed from multiple places in TALISPlus, in the proportions shown in Table III.

Conclusion

The State Library of Tasmania's experience has shown that when implementing a new discovery interface for a next-generation OAPC, both the "finding" and "getting" stages of client behaviour must be addressed. A great new discovery interface can be undermined by a poor delivery interface and process. Client satisfaction hinges on being able to easily navigate through all the stages required to satisfy their needs, meaning that "getting" must be as easy and simple as "finding".

Throughout the beta testing and client consultation process, the State Library learned that it had to keep the client within one system and one interface whenever possible. When that proved to be impossible, the State Library had to make the second system and interface as indistinguishable from the first as possible, and close off any avenues into the old system that could cause confusion to clients.

The end result has been an OPAC that works seamlessly and successfully for the State Library's clients. Indeed, since the final production version of TALISPlus was introduced, at no time have any of the clients commented on, or even appeared to realise, that they are actually using both the old and new OPACs during their transactions. This has vindicated another principle commonly taken from services such as Google, keep client interfaces as simple and consistent as possible and move complexity to the back-end.

The positive feedback from clients about the State Library's new OPAC has consistently approached 100 per cent and the final withdrawal of the old OPAC prompted no calls from clients for its return.

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