WHITE PAPER

# Automating Library Processes

## Achieving success with Self-Service Loans & Returns

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# Executive Summary

The strategy of separating people from repetitive manual tasks is common in almost all industries. In the last few decades we have seen a shift away from bank-tellers toward ATM machines, from staff facilitated petrol stations to self-service vehicle refueling and from telephone operators to automated voice recognition systems. Manufacturing and warehousing / distribution operations have been revolutionised by materials handling technologies. The mountain of labour-saving gadgets available for the home continues to grow and increasingly services previously requiring face-to-face contact with a real person are being conducted via the Internet.

This same trend has been seen within libraries as managers seek to find ways to shift the focus of their staff away from manual labour and toward value-adding borrower services that make use of professional training and experience. Since the early 1990's, process automation technology has been on the market to assist in the achievement of this goal. At first, new equipment targeted staff-facilitated borrowing. More recently, increasingly complex equipment is being manufactured to replace or augment staff at the point of returns. The range, physical size, complexity and cost of this equipment can be daunting.

This white paper has been prepared with several goals in mind:

- To assist library professionals to understand the range of process automation technology available to them

- To provide assistance in evaluation and selection of equipment

- To articulate the importance of the social and organisational context of process automation

- To provide guidance directed toward successful implementation of process automation

Increasingly, libraries together with many other professions are being asked to achieve more within a context of decreasing resources. Libraries in some areas are experiencing rapid growth in circulation without the commensurate increase in staff. As the workload increases, so does the incidence of work-related injury associated with repetitive tasks. Service-oriented programs become harder to sustain as circulation related activities consume larger amounts of staff time. Against this background, process automation technology can deliver a significant contribution to the successful operation of libraries. For it to do so, careful planning is required. Where process automation is concerned, as with most technology projects, there are many more ways to get it wrong than there are to get it right. This white paper is aimed at making a contribution toward success.


Alan Butters

# What is Process Automation?

**Introduction**

In the context of this white paper, process automation refers to the application of technology to previously manual activities performed by library staff. In the past, mention of the term "library automation" almost universally triggered a discussion of library computer systems and software management packages. More recently, library managers have turned their attention to the issues involved with manual activities in the library and how these might be better performed by the deployment of specialised technology. Thus "*process* automation" in the library context usually refers to a strategy designed to remove the repetitive materials-handling burden from human beings and to pass this burden to automated systems of various sorts.

**Library processes suitable for automation**

The obvious candidates for automation within the library are the processes associated with issuing books to borrowers and then retrieving them and returning them to the shelves at the end of the loan period. Whereas automating the loans process is a trail well-blazed (although not always successfully), automating the returns process is both a more recent and a relatively more complex activity. Of course there are many other processes in the library that could usefully benefit from the application of technology but the task of circulating library materials represents such a significant proportion of staff time and energy that it is worthy of a discussion in isolation.

In this document the movement of library material out of, and then back into, the library is considered separately. It should be kept in mind however that there is much overlap in what may be said about the processes involved and so some repetition is inevitable.

# Automating the Loans process

**The history of automated loans**

While various self-service schemes have been experimented with in libraries for decades, it's really only since 1991 that commercial equipment designed to automate the loans process has appeared on the market. The first commercial products in the world were developed by Raeco Pty Ltd and 3M Australia Pty Ltd with 3M managing to bring their solution to market first. For many years, systems from these two vendors were the only ones available with the 3M equipment quickly dominating the international market.

Since that time, many solutions have appeared, some have disappeared while others have developed in maturity. Self-service systems now exist for barcoded library items, Radio Frequency Identification (RFID) tagged items, and item security systems of many types. Because new vendors continue to enter the market, the range of product features and capabilities (as well as prices) is considerable. With the growing interest in RFID for library items, some self-service loans systems entering the market are designed exclusively for this new technology.

> There is no substitute for careful planning and allowance for the social, organisational and technical factors involved…

**Why Automate?**

While libraries may have individual motivations for adopting an automated loans process, the majority would appear to be driven by the promise of productivity gains. The productivity motivation may relate to the desire to freeze staff levels in the context of increasing circulation or a strategy aimed at allowing existing staff to be redeployed in borrower-focussed activities. Regardless of the exact driver, the factors that determine the success or failure of automated loans projects need to be considered if the desired outcome is to be realised.

**Key factors to consider**

There are a number of key questions that must be addressed during the planning phase of a migration to self-service loans.

*What is the desired outcome?* - Is the library to be 100% self service or a mixture of staff-facilitated and self-service loans? While there are obviously many common factors between these two scenarios, the two scenarios are often approached quite differently by libraries. Sometimes when 100% self-service isn't the target (as is often the case), an actual target figure is not specified. Thus the ultimate effectiveness of the loans automation process is left to find its own level. This passive strategy is not usually the best approach. Even if staff will continue to be assigned to work on the circulation desk, a firm goal for the utilisation of the equipment should be set and then monitored over time. Only in this way can business plan predictions be confirmed and staff redeployment sustained. A useful way to approach this often contentious question is to start by assuming a scenario of 100% self-service and then analysing and challenging any objections to the realisation of this scenario. The introduction of automation into this core library process is often a good platform from which to drive real change.

*Are the library's work and traffic flows optimised for self service?* - The introduction of self-service loans may require changes to existing library furniture or the creation of new furniture. Experience suggests that one of the most significant factors contributing to the success of self-service loans (highest utilisation of equipment by borrowers) is the location in which it is placed. Ideally, borrowers should have to walk right past the equipment to leave the library. When planning, consideration should be given to:

- Signage - will the the equipment and its purpose be obvious to library users? Is the area well lit to attract the eye?

- Position - If part of a circulation desk, will the borrowers encounter the equipment before they reach the staff on the desk? If the equipment has a computer screen, will it be in full sun and therefore difficult to see at any part of the day?

- Space - is the self-service equipment convenient to use? Are multiple machines well spaced with room for borrowers to put down bags and library items while using the equipment? Depending on the style of the equipment, bench space either side may be required to enable a stack of items to be processed from one side to another.

- Supervision - Can the location be adequately supervised by staff? This is important both to facilitate prompt customer assistance as well as for monitoring security.

- Traffic flow - is there an identifiable approach pattern taken by borrowers as they move toward the current circulation desk? Are there opportunities to create a unified traffic pattern within the library? Such patterns should lead borrowers directly to the self-service loans equipment. If the creation of new traffic patterns is not possible or desirable, existing patterns should influence the location of the new equipment. Conversely, if 100% self-service is not implemented, taking the circulation desk out of the traffic flow may naturally reduce its use by borrowers.

*Are the library's circulation policies optimised for self-service?* - If borrowers attempting to use the self-service facility have multiple items and one item has an exception condition attached, experience suggests that the borrower will bring all of the items to a staff member and may be reluctant to use the self-service facility on the next visit. The introduction of automated loans technology represents a good opportunity to review circulation policies. Within reason, the goal should be to maximise the number of transactions that can be processed through the self-service facility. This may involve reviewing fines and reservations policies or other prohibitions that may compel the borrower to seek out a staff member. Because many of these policies may have been in place for years and have much inertia, a useful way to start is to imagine a scenario where *all* blocks to borrowing are removed and then to vigorously challenge reasons why any should be reintroduced.

*Are the library's materials ready for self-service?* - Barcodes are often a source of frustration for library users as well as staff. If the barcodes are of poor quality they may not be read by the scanner in the self-service equipment. If barcodes are to be found in multiple locations throughout the collections, all of the barcode positions may not be accessible to the scanner in the self-service equipment and may also be challenging for the borrower to locate. Consider whether a barcode relocation to a fixed position somewhere on the cover of the book is necessary. Experience suggests that the more that is required of the borrower - such as hunting inside the book for the barcode, the less enthusiastic will the self-service equipment be received. A project to relocate all barcodes to a common position may deliver rewards in terms of equipment utilisation. Many vendors have products specifically designed for the duplication and relocation of barcodes.

Consideration should also be given to non-book material. A strategy will be needed for audio tapes, CDs, DVDs, video cassettes and other commonly borrowed non-book items. The accepted wisdom is that if a borrower has multiple items including one item that cannot be processed via self-service, the borrower will bring *all* of their items to a staff member - even if the majority could have been processed via self-service. In this way, a relatively small collection of frequently borrowed items that cannot be processed through the self-service facility may generate a much larger negative impact on the utilisation of the facility.

*Are the staff & the borrowers of the library prepared for self-service?* - It is an unfortunate reality that many self-service projects have been unsuccessful due to staff negativity. Sometimes this negativity results from poorly located or performing equipment or lack of communication regarding the project's intended purpose. Borrowers too can be apprehensive if they suspect that their favorite staff member may lose their job as a result of the technology implementation.

A plan is needed to address both staff and borrower concerns. Communication, consultation and adequate training are essential. The need for change management should not be underestimated.

*Does the library have an implementation plan for the users?* - Simply placing the technology before the library's borrowers is not usually sufficient to ensure that they will be motivated to use the service or that their first experience will be positive. A plan to introduce the technology is essential and more details are given in the section *Achieving a successful introduction* later in this document.

## What to look for when purchasing self-service loans equipment

While lack of attention paid to some of the points in the preceding section can overwhelm even the best technology on the market, care is still required in the selection of equipment. The following list represents a starting point for evaluation of loans automation technology - if in doubt seek expert advice:

- Does the system have a mature user interface that makes good use of pictures or graphics, colour and sound?

- Can the user interface be customised to reflect the library's site-specific requirements such as receipts, borrower cards, barcode placement, corporate sponsors, library logos etc.?

- Does the equipment provide a security solution for magnetically sensitive materials and CDs / DVDs?

- Can the equipment be upgraded to operate with RFID? If so, at what cost? What about barcode and RFID together during a staged implementation?

- Can the equipment be adequately managed and administered remotely?

- Does the equipment provide the option of material returns processing?

- Does the user interface support the languages necessary for ease of use by the library's borrower demographic?

> The best way to manage the borrower's first experience is for a staff member (or a trained volunteer) to introduce the borrower to the system and for them to perform the first transactions together...

- Can the equipment work in an offline mode while the circulation system is unavailable? If so, with what restrictions?

- If required, does the equipment support additional functions such as fines and fees? To what extent?

- If required, can the equipment be integrated with existing library furniture?

- How realistic are the vendor's claims of technical support capabilities and response times? If the equipment fails, staff may be required to fill the gap - this can be inconvenient and expensive.

## Achieving a successful introduction

We've stated previously that simply placing the equipment correctly is not sufficient to ensure maximum utilisation. In fact, allowing the library users to figure out the equipment on their own may be counterproductive. Experience has demonstrated that the first time the self-service equipment is used by a borrower is a critical stage. Managing this first experience must be paramount in any self-service technology introduction plan.

The best way to manage the borrower's first experience is for a staff member (or a trained volunteer) to introduce the borrower to the system and for them to perform the first transactions together. The importance of this cannot be overstated. No amount of explanatory signage or promotional pieces can replace the assistance of a real person. The trained person is able to invite the borrower to use the self-service equipment and to remove any apprehension they might have in trying it out for themselves. The trained person can also use this occasion to emphasise the positives of the new system and to communicate information prepared by the library to allay any fears that the borrower might have about the reasons the technology has been introduced.

Of course this strategy doesn't guarantee that the borrower will choose to use the self-service solution next time (assuming the library provides a choice) but the reverse is almost always true: If the borrower has an unpleasant first experience, perhaps being embarrassed in front of others and struggling to complete the transaction, the borrower is *very* unlikely to choose to use the service again. The effort required to convince such a borrower to "have another go at it" is considerably greater than that required the first time around. On the other hand, experience shows that once a critical mass of experienced and positive users has been developed, the users will begin to assist each other when individual difficulties arise.

Libraries need to factor the cost of managing this first experience into their plans. Some libraries have engaged temporary staff for the first month or two to ensure that most regular users can be helped. Libraries have also run competitions centred around the launch of the new self-service equipment and offered prizes associated with its use such as lucky dips etc. and in this way provided an incentive for the borrowers. It can also be very effective for staff members to explain to borrowers how much better it will be when everyone uses the new service and how excited they are about the new programs that they will have time to run etc.

Not to be overlooked too, are rewards for library staff who work hard to make the project a success and who persevere in good spirits with difficult borrowers. Ensure that mechanisms are put in place to recognise this sterling effort.

# Automating the Returns process

**Introduction**

Automating the returns process can be complex and expensive. Unlike the loans process which can be automated almost as a single process, returns must be tackled as a number of discrete steps. Each step should be evaluated carefully and the relative benefits of automation weighed. When automating the returns process, often the difficulty is in knowing how far to go. For most libraries, it will almost certainly be impractical to automate every step and so a neat borrower-to-shelf solution will usually not be available. The next sections deal with a suggested way to approach this situation, looking at the various levels to which technology can be incorporated into the returns process.

**Manual returns vs automated returns**

One of the reasons that automating returns is more difficult than automating loans is illustrated by the following two tables which map the main activities involved by staff in the manual processes of both cases:

**For manual staff facilitated loans:**

| LOANS ACTIVITY | PERFORMED BY |
| --- | --- |
| Items selected from library shelves | Borrower |
| Items conveyed to processing point | Borrower |
| Items issued on borrower's record | Staff |
| Item security deactivated | Staff |
| Item removed from the library | Borrower |

**For manual staff facilitated returns**:

| RETURNS ACTIVITY | PERFORMED BY |
| --- | --- |
| Items returned to library building | Borrower |
| Items conveyed to processing point | Staff |
| Items removed from borrower's record | Staff |
| Item security reactivated | Staff |
| Item sorted ready for shelving / reservations / transport etc | Staff |
| Item replaced on library shelf | Staff |

Although the manual returns process has only one extra step, a complete automation project has to automate five steps for returns and only two steps for loans. In addition, the two steps requiring automation for loans are easily combined and require no extra item handling or transport.

## How deeply to push technology into the returns process?

What the two tables illustrate is that, from a technology perspective at least, it is a relatively simple exercise to automate loans when compared with returns. Therefore, for any library contemplating returns automation, the question is how many steps should be automated? The answer will obviously vary from organisation to organisation, but the following chart illustrates an important principle:
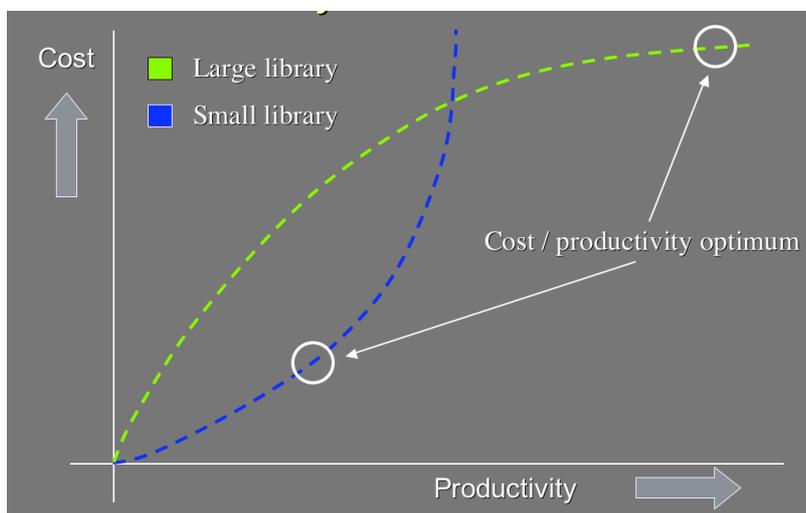


*Maximum benefit in a small library might be achieved with a relatively small spend on returns automation. Beyond a certain point, a large increase in investment provides only a modest increase in benefits. A larger library might experience increased benefit by automating more steps in the process but at a greatly increased initial cost and significantly higher ongoing costs.*

The chart is not designed to represent absolute values but rather to be indicative of the trends. It highlights two factors; firstly that there is a need for careful cost/benefit analysis when automating the returns process and secondly, that it is relatively easy to overspend on returns automation technology in the smaller library environment.

The guiding principle must therefore be:      *Don't automate more deeply than you can realistically justify.*

The next sections examine the categories of returns automation technology that are commonly seen in the market and provides subjective observations on their strengths and weaknesses. Note that, unless stated to the contrary, any observations and comments made apply equally to barcode based identification as well as RFID. It must be said, however, that just about *all* process automation is faster, cleaner and less complex when dealing with RFID tagged items.

## Technology for accepting library material returned by borrowers

### Smart Chutes

Smart chutes don't all conform to a common set of features and are offered in different configurations by library vendors. These configurations range from a simple kit of parts to be included in an existing library chute through to a completely self contained unit made from sophisticated materials and featuring access control etc. The core functionality is similar however with two of the manual steps in our activities table being automated - returning the item on the library database and resetting the item security. If the smart chute can be located to deliver items to the staff work area, a third step is also addressed. The large majority of Smart chutes on the market operate only with RFID tagged library items and are designed to be located inside the library. The comments in this section apply to these chutes.

| SMART CHUTE | PERFORMED BY |
|---|---|
| Items returned to library building | Borrower |
| Items conveyed to processing point | Borrower (potentially) |
| Items removed from borrower's record | Automated |
| Item security reactivated | Automated |
| Item sorted ready for shelving / reservations / shipping etc | Staff |
| Item replaced on library shelf | Staff |

The principle on which the smart chute is based is that some but not all of the work is done as the borrower drops the items individually down the chute where they fall into a common bin, preferably inside the library's workroom. Some smart chutes are able to generate a printed slip to aid staff in identifying reservations or other exception conditions on returned items. Note that the chute does not separate exception condition items and staff are required to manually locate any items requiring further processing.

At the time of writing, the state of the art in gravity fed smart chutes is for one-item-at-a-time operation. This point is worth some careful thought. For years many libraries have used simple chutes for their borrower's returns and so people have become accustomed to pushing as many books down the chute as will fit through the slot. It can be a significant training exercise to break this habit and force borrowers to patiently feed library items one at a time. If they fail to do so and feed multiple items, there is a strong likelihood that some items will not be detected by the smart chute. Some borrowers may also feel that the extra time required to feed items singly into the smart chute represents a reduction in the quality of service to them.

The benefit to libraries of smart chutes rests in the fact that the items are removed instantly from the borrower's record. If a library has strict borrowing limits and the staff have difficulty keeping up with returns in real time, borrowers may attempt to borrow new books but be prevented from doing so because their recently returned items are still attached to their borrower record. In this case, a smart chute may be a welcome solution. If the problems associated with items remaining on borrowers' records do not exist within a library organisation, the benefit provided by the smart chute is reduced but not eliminated.

The major disappointment with current smart chutes is the fact that the returns bin contains items that still have to be separated. Some vendors offer solutions whereby a hand held RFID device is utilised in locating reservations and other exception condition items. While workable, the real-world practicality of these solutions should be carefully examined.

*Dedicated Returns Machines*

| DEDICATED RETURNS MACHINE | PERFORMED BY |
|---|---|
| Items returned to library building | Borrower |
| Items conveyed to processing point | Borrower (potentially) |
| Items removed from borrower's record | Automated |
| Item security reactivated | Automated |
| Item sorted ready for shelving / reservations / shipping etc | Staff |
| Item replaced on library shelf | Staff |

As can be seen from the above table, to a large extent, dedicated returns machines automate the same steps as does the smart chute - albeit with considerably increased functionality (and cost). These machines are usually supplied in the form of a kiosk or ATM-style wall mounted machine and often have LCD displays, receipt printers, access control mechanisms and an ability to reject or return items that is not possessed by their gravity-fed smart chute cousins. dedicated returns machines are also larger and more expensive and have greater maintenance requirements.

One of the more useful features of the dedicated returns machine is that they can usually feed a sorting system. Most (but not all) sorting machine vendors cannot reliably accept for sorting library items returned via a smart chute. Generally this is due to the fact that sorting machines process items singly and it's difficult to manage this reliably with a chute. Some vendors (Tech Logic for example) are able to separate stacks of books before handing them to the sorter. This ability tends to be the exception rather than the rule at the time of writing.

One of the potential benefits found on most dedicated returns machines is the provision of a returns receipt. This is an added value for the borrower in providing absolute proof of return. Some dedicated returns machines can also be configured for after-hours access and feature a sliding panel which may be opened upon presentation of a library membership card. The cost of a dedicated returns machine can be somewhere in the range of three to ten times the cost of a smart chute - obviously determined by vendor and features.

### Technology for transporting library material for processing

This area is mostly dominated by custom materials handling technology. Essentially, library items are transported from the location where they are dropped by the borrowers to a location (returns room or library workroom) where they will be processed. Sometimes smart return chutes and staff workrooms simply cannot be co-located. Often this equipment is installed between a dedicated returns machine and a sorting machine and consists of sections of conveyor belts and sometimes machines designed to move items vertically between floors. In the table below, the assumption is that the transporter will be part of a smart chute returns automation project. Note that some libraries have used this technology simply as a means of transporting library materials from point A to point B - with a manual process at either end.

| RETURNS MACHINE & TRANSPORTER | PERFORMED BY |
| --- | --- |
| Items returned to library building | Borrower |
| Items conveyed to processing point | Automated |
| Items removed from borrower's record | Automated |
| Item security reactivated | Automated |
| Item sorted ready for shelving / reservations / shipping etc | Staff |
| Item replaced on library shelf | Staff |

While existing library buildings can be retrofitted with transport technology, the process is considerably easier when planned as part of a new building or renovation. Most vendors of returns automation technology for libraries generally focus on developing the borrower returns interface and the sorting components and then partner with an external third party if transport technology is required. The Tech Logic company is one exception to this norm but perhaps not the only one.

### Technology for sorting & shelving

While there are systems in existence for automated remote storage and retrieval of library materials, for our purpose we can assume that the re-shelving of items in a traditional library with browsing facility will be accomplished for the

foreseeable future by library staff. While domestic-aid style bipedal robots might conceivably be able to perform this task in the future, that possibility is sufficiently remote that we can set it aside for the moment.

However, for the *sorting* of library materials, there are many options available. These options range from simple two-way sorts to complex sorters placing material directly onto shelving trolleys. In an attempt to put each category of equipment into perspective, we will consider them separately. The table below represents, more or less, the steps automated by adding sorting equipment to our returns automation project.

| RETURNS MACHINE & TRANSPORTER & SORTER | PERFORMED BY |
|---|---|
| Items returned to library building | Borrower |
| Items conveyed to processing point | Automated |
| Items removed from borrower's record | Automated |
| Item security reactivated | Automated |
| Item sorted ready for shelving / reservations / shipping etc | Automated |
| Item replaced on library shelf | Staff |

It is worth making the observation that, even with the addition of sorting, we still have the final manual step for the staff to complete before the items arrive back on the shelves. Also worth noting is that to automate the returns process to the point shown in the table above while using equipment available today would require a capital expenditure somewhere in the order of two to five times that required to automate the loans process for a given library size.

**Simple Sorters**

In this category there are a range of solutions - some home-grown, some commercial. These sorters are aimed at providing the most basic level of sorting - that of splitting reservations and exception items from the bulk of the returns. Sometimes these simple sorters consist of nothing more than a small transverse conveyor which simply drives items left or right as they slide down a chute sequentially. These systems provide some desirable functionality when combined with a smart chute but the previous caveats apply regarding the difficulty of modifying entrenched borrower behavior. Much useful work is still to be accomplished in this area by commercial product developers.

**Bin Sorters**

These machines are more sophisticated turn-key devices and are available in various guises and from several vendors. They are expandable and configurable, often taking the form of a central conveyor with bins located on either side to receive library items. More sorting locations can be added by lengthening the central belt or adding another segment. Generally they are designed to operate with a direct feed from a dedicated returns machine although some can be linked by transport technology. Library items are generally driven, pushed or tilted into bins as they pass by on the central conveyor. If barcodes are used to identify library items, they are usually required to be located on an external surface such as the outside of the front or rear cover of a book.

It is at this level of automation where careful cost/benefit analysis is especially needed. It can be a non-trivial exercise to know what configuration will add the most value for the least cost and expert assistance should be sought before purchase if there is any doubt. Some of the considerations that should be explored include:

• Optimum number of bins and sort locations vs cost

• Space requirements for the equipment, for maintenance, and for daily operation

- Maintenance costs and vendor capability

- Expandability and upgradability

- Speed and throughput

- OH&S issues relating to sprung-bins vs powered bins, bin design, noise levels & safety protection

- Bin to shelving-trolley workflow and space requirements

- Unattended operation capabilities

- Ability to handle a range of library items eg large, small, fragile etc

- Potential damage to the collection due to the method of material handling - book spines, plastic CD cases etc

- Interface to the library's circulation system and the source of the sorting data

- Provision of staff manual feed for items returned from other libraries etc

*Cart or Shelving Trolley Sorters*

Several sorting systems feature direct sorting onto proprietary shelving trolleys (known as carts in the United States) and these have the additional benefit of automating the sub-step of removing the items from the sorting bins and placing them on to the shelving trolleys. This facility is often provided at the expense of significantly increased technical complexity and therefore cost, but it does have potential health and safety benefits as it reduces the incidence of bending to remove library items from bins. Some manufacturers of bin sorters have provided power-lift bin platforms in an attempt to address this same issue. It should be noted that the items placed automatically on the shelving trolleys are, of course, not placed in  strict shelving order.

The considerations listed above for bin sorters apply with equal merit to cart or shelving trolley sorters.

*Custom built sorting robots*

Particularly in Europe have we seen locally developed sorting systems based on industrial robotics technology. While fantastic to watch in operation it is unlikely in most cases that custom developments of this kind could maintain their cost competitiveness against the increasing number of off-the-shelf or modular solutions on the market.

## Other process automation technologies

*RFID implementation*

It should be noted that library RFID vendors typically claim that the manual returns process can be improved somewhere between 20% and 40% by the correct application of RFID technology. These sorts of savings, assuming they can be demonstrated, may represent enough of an initial benefit to cause many libraries to rethink whether any extra money needs to be spent on returns automation technology. This is particularly the case for smaller libraries.

*Remote returns bins*

Some libraries are using remote book drops at railway stations or at various points around a university campus or shopping centre. Some of these remote bins are online and so the items deposited in them are visible to the library's circulation management system in real time. Significant technical challenges exist when placing technology into some of these locations, particularly if the bin is to be located outside and in all weathers. Libraries should ensure that the technology is sufficiently robust to meet the needs of external use if online visibility is required.

*Reservations automation*

There are vendors who are developing or who have developed systems to allow the self-collection of reserved items within the library. Typically these are kiosk style machines that use a library card to identify the borrower and then dispense the reserved items in the fashion of a vending machine. There have been limited deployments of this equipment to date.

## Conclusion

The foregoing represents an overview of library process automation with a focus on loans and returns. It's fair to say that automation for the loans process is better established within libraries than is automation for returns. Many of the lessons learned over the years regarding successful self-service loans apply equally well to self-service returns. There is no substitute for careful planning and allowance for the social, organisational and technical factors involved.

Particularly with reference to automating the returns process, ongoing product and solution development continues apace. Libraries wishing to push automation into their returns processes are well advised to think carefully about the extent to which the technology delivers the results they desire and to seek expert advice if there is any uncertainty. This is not to say that there aren't benefits to be realised, just that it's easy to over-automate in this area. Libraries wanting more information should feel free to contact the author using the contact details at the bottom of the cover page.

# Ten Quick Tips for Successful Process Automation

**Position, position, position**

Evaluate library work and traffic flows and ensure that devices aimed at self-service operations are in the right place, have the highest visibility signage, and have enough bench space to be used comfortably. Consider influencing traffic patterns within the library if necessary to achieve the best outcome.

**Library loans policies**

Streamline library policies to get the maximum traffic through the self-service facility. Don't block unless you must and be willing to experiment radically but with vigilance.

**Don't underestimate the social & organisational issues**

The project can be brought undone if the majority of the borrowers and the staff are not positive toward it. Plan carefully and work toward an outcome that everyone understands is to their own benefit. Change management is essential.

**The borrower's first experience**

Don't let this be left to chance. Expend time and energy managing the borrower's first experience and the rewards measured by equipment utilisation will be significant.

**Keep it fast and simple**

Many self-service products provide a whole range of extra services. Be careful when implementing these. If there is a need for an automated fine-paying system for example, locate it on a dedicated machine placed away from the main self-service systems - keep borrowers moving through the self-service systems by optimising the core process.

**Don't buy more technology than you need**

When considering a returns automation project, do the sums and evaluate the benefits gained at each step. If in doubt, proceed conservatively and call on expert help if needed.

**Know what your goal is before you start**

If you don't expect 100% self-service as part of your project, decide what figure you expect to achieve and then plan accordingly. Once reached, monitor the target figure to ensure it doesn't slip backwards.

**If you plan to run a sorting system, do a test-run on your database first**

The implementation of a sorting system often reveals major inconsistencies in the way material has been catalogued in the library's database over the years. Sometimes fixing these problems can be a major exercise. Make sure you have had a test-run of your data through the vendor's sorting software before you proceed.

**When automating returns, don't underestimate maintenance**

Some of the complex machines employed in returns automation are time consuming and costly to maintain. Ensure that you understand what's required from a time and expense perspective.

**Seize the opportunity of a new building or renovation project to automate processes**

Ironically, the change management challenges can sometimes be easier when everything is new. Also a good opportunity to design space for process automation and to put the equipment costs into the context of a much larger project.

# About the author

Alan Butters is Principal Consultant at [Sybis](), a Melbourne based technology consultancy focussed on the needs of Australian libraries. Alan specialises in Library RFID systems and process-automation technologies such as self-service loans & returns and materials sorting. Alan has almost twenty five years experience within the library sector including roles as Technical Manager for 3M Australia and Raeco International where he managed product development laboratories tasked with generating innovative solutions for the global library market.

Alan chairs a working group within Standards Australia committed to developing a standards proposal for an RFID-tag data model for Australian libraries. He is a member of the ACS, IEEE, and ALIA, and has served on the committee of VALA.

Alan has a Masters Degree in Digital Communications from Monash University where he also teaches in the School of Information Management & Systems.

# Links to Process Automation Manufacturers & Suppliers

**3M - RFID Solutions for Libraries**  http://solutions.3m.com/wps/portal3M/en_US/LibrarySystems/Home

**Bibliotheca RFID Systems AG**  http://www.bibliotheca-rfid.com/

**Checkpoint Systems**  http://www.checkpointsystems.com/default.aspx?page=epcrfid

**Sirsi/Dynix**  http://www.sirsidynix.com/

**ST LogiTrack**  http://www.stlogitrack.com/

**Tagsys**  http://www.tagsysrfid.com/htmleng/page-8.html

**TechLogic**  http://www.tech-logic.com/default.asp

**Codeco**  http://www.codeco-library.com/uk/default.htm

**Civica**  http://www.civica.com.au/

**Wavex**  http://www.wavex-tech.com/

**Sentry Technology Corporation**  http://www.sentrytechnology.com/librrfid.htm

**Libramation**  http://www.libramation.com/home.html

**Tag-alert**  http://www.tagalert.com.au/

**DistriSort**  http://www.distrisort.com/go.cfm

**AXIELL**  http://www.axiell.se/website/english/

**FKI Logistex**  http://www.fkilogistex.com/

**Crisplant**  http://ralphscherer.com/crisplant/welcome.html

**Queensland Library Supplies**  http://www.qls.net.au/

**Integrated Technology Group**  http://www.integratedtek.com/flash/index.asp

**Wharington International**  http://www.wharington.com.au/index.htm

**Tecevo**  http://tecevo.com/main/index_c.php?fh=lms

**LibBest**  http://www.rfid-library.com/

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