

Work Package 6 – Systems Integration Guidelines

This work package forms part of the E-book Acquisition as a Shared Service in M25 investigation which seeks to examine possibilities for the consortial purchasing of e-books, in particular through patron driven acquisition methods (PDA). Four potential acquisitions models have been under consideration, these are outlined in Appendix 1. This work package aims to illustrate some of the systems and procedural considerations which might arise through the implementation of such a programme of patron driven e-book acquisition, and has taken as its basis conversations with technical services librarians about current practice¹. It also relies on responses from e-book providers who engaged with JISC Collections in their work on this E-BASS 25 project². The piece focuses, in the main, on the issues of user discovery of content and financial management. It does not claim to completeness with elements such as virtual learning environment integration falling outside its scope. It is also worth stipulating that the library management system (LMS) market is undergoing significant change and new approaches for the management of patron driven programmes are likely to emerge.

‘Consortium’ and ‘patron driven acquisition’, the two elements which define this project, both cause issues from a systems perspective. Efficiency in shared services is difficult to ensure, where one might have a variety of systems underpinning those services across the consortium. Where cross-consortium user activity is the determinant of purchases, it is also important to ensure parity across systems provision. For example a delay in the publication of records for candidate material at an institution could result in the users at that institution not receiving equal access to the collection and the opportunity for purchases beneficial to that user group being missed. When this is combined with relatively novel approaches which patron driven acquisition prompts, such as considering some of your e-book collection as temporary, the problem is magnified. This is not the only adjustment in thinking which one has to make, in the coming report terminology such as ‘ordering’ is used. However vital it may be to create a trail for auditing from one’s vendor to one’s financial systems terming this an ‘order’ when in many instances the acquisition of content will already have been completed, perhaps indicates how constrained one is by processes not designed for these purposes.

Discovery

It is possible that an established consortium would have shared facilities available for discovery. This could range from a completely shared LMS with associated OPAC, to a shared discovery layer which provides a converged display of data from different LMSs. In the following passages it is assumed that participants are not sharing an LMS with their consortium partners, as a programme of PDA such as that envisaged in this report might cause institutions with no previous affiliations to collaborate. Where a shared discovery

¹ Thanks are due to staff at Cardiff University, Courtauld Institute of Art, National Gallery, National Museums Scotland, National Railway Museum, Natural History Museum, Orbis Cascade Alliance, Royal Academy of Arts, Royal Botanic Gardens Kew, Royal Holloway University of London, University of Hertfordshire and University of Salford Manchester whose responses to questions were very much appreciated. Thanks also to Ex Libris whose input was valuable.

² JISC Collections (2013) ‘Talking to publishers about consortial PDA: a report by JISC Collections for E-BASS25’ Available at <http://ebass25.rhul.ac.uk/files/2013/02/JISC-Collections-EBASS-report.pdf> [Online] (Accessed: 15th February 2013)

service is available, it is often the case that this is not the first point of search for users, more used to their local interface. In these circumstances it becomes preferable to also have records for discovery available in a local catalogue or discovery service. This piece will proceed on the understanding that of the elements of a PDA project which might be shared across a consortium, discovery is unlikely to be foremost.

There are different methods for providing local points for discovery of PDA material, these are outlined below.

Use of MARC records in an LMS

MARC records can be made available from the publisher or an intermediary such as an aggregator or metadata service provider. These can usually be provided with local customisations, for example URLs in the 856 field which direct to content through the locally selected means of authentication. Often however, libraries opt to make further modifications to the records. Favoured options are using MarcEdit software or Perl scripts to remove, modify or add fields. Commonly, a 'project marker' needs to be inserted on all candidate records. Typically, during a PDA project of types 1, 2 or 3 this marker is then altered if content is purchased, allowing the records for unpurchased content to be retrieved and removed. Additionally, refinements such as a local subfield appended to the 856 to ensure it displays as a concise instruction to users, are also often made. In cases where substantial quantities of records are required to be loaded into an LMS, subtraction of less pertinent fields from the MARC records could be considered as a mechanism to reduce the quantity of data which the system needs to process, which can become relevant for system performance.

As the number of records involved in patron driven programmes can often be large, loading them into an LMS can present problems. It has been reported that performance can be affected if loads are conducted while the system is online, especially slow running of indexes. It is also a necessity to consider what type of match and merge processes one would wish to have – would one require a record which duplicates with any existing ones to reject for example, would one like the record for the e-book to merge with an existing print record if the ISBN data were available in the record to accomplish this.

If a PDA project were to be conducted over a significant amount of time and were of a type where additional content could be made available as it progresses, one would also need to make provision for the loading of further records and possibly deletions (where, for example a publisher removes content from an aggregator). The frequency of these modifications and its ramifications for system functionality need to be determined. Retrieval and removal, at the end of a programme, of those records related to those titles which have not been purchased can cause similar issues to the loading of records; where re-indexing can lead to poor system performance. Timing imperatives become paramount here, as users could potentially find records with broken links, should the removal of the MARC records be delayed beyond when e-book suppliers have stopped providing content. It is also worth factoring in, when considering the time resources necessary to complete this type of work, that many libraries may wish to substitute the candidate record with a more complete MARC record when a title is purchased and will become part of the permanent collection.

Despite having listed some difficulties with this method of providing records for discovery, it has advantages. For one, it is a method with which most libraries will be familiar and for those without a discovery layer or link resolver technology, it is an available means for providing records locally. When we come on to discuss methods for financial management we shall also see that it is a distinct advantage to have records available in the LMS in this way.

Use of MARC records in a discovery service

For those libraries which operate a discovery service, the option of loading MARC records directly into this system presents itself³. As a set these can be denoted as 'for PDA' so there is less necessity to modify records to contain project markers or the like (unless one would wish users to be aware of their provenance). Normalisation rules can be set to present users with clickable links and to alter the display of fields as desired. Fewer issues emerge as a consequence of the volume of data – as this is distinct from the LMS and functions which other system users will be utilising. Removals and updates can be performed easily with sets being deactivated and refreshed with a revised collection as needed. This method accords well with the temporary status which most records in a PDA programme will have. MARC records can be made available in the LMS for financial processes and in line with local cataloguing standards as purchases are made, should this be desirable.

Use of knowledge base and link resolver

As more metadata for e-book offerings is added to commercially available knowledge bases it is becoming possible to manage PDA discovery via link resolvers. Of the e-book providers who responded to the JISC Collections questionnaire most stipulated that they did make metadata for their collections available⁴. Titles available in the PDA collection can be activated as a sub-set of a provider's whole collection and records with direct links to the content can be fed into a discovery service. Again, this is a method which takes account of the transitory nature of the PDA collection and exploits technology which journals workflows have utilised for some time, to deal with altering content. Removing and refreshing of collections can be done promptly (taking into account the scheduled times for harvesting records into the discovery service). There are however, some issues reported with the timeliness of knowledge base updates. One is reliant upon metadata being supplied to the knowledge base provider and being made available regularly in order to track additions and deletions in supplier's offering. If a knowledge base providers' updating of metadata does not correspond to a library's wished for cycle of updates for the local system, a gap in the data can exist. This process, as detached from the LMS also requires a supplementary process for financial management. As KB+ develops as a community resource, there could be scope for e-book collections to form part of the holdings information contained within it, this would have the potential to assist in this process⁵.

³ I am particularly grateful to respondents at University of Salford Manchester for their description of this process

⁴ op. cit. p.6

⁵ More information on this project is available at <http://www.jisc-collections.ac.uk/knowledgebaseplus/>

Discovery in the native interface

If one has not the necessary resources for any of these processes which make records available locally, it is worth noting that discovery can often be done on the native interface for the publisher/aggregator. Extensive metadata is usually provided or sometimes full-text indexing, thus providing a valid means for discovering titles. It does however, become a user-education issue to raise awareness of the platform, a promotion which one might not necessarily wish for if behaviour is to be 'natural' especially in relation to ones consortium partners. Some institutions have resolved to utilise this method during their projects as a means of suppressing usage. While this may have important positive corollaries for financial management, its success is clearly predicated on an understanding that this is a less satisfactory method for discovery.

Discovery in 'library services platforms'

The next generation of library tools, which some have termed 'library services platforms'⁶ promise much for the management of projects such as consortium based PDA. Providing integrated workflows for the management of print and electronic resources, they should overcome problems which arise from discovery and financial information being siloed. There is also much on the sharing of data which can be accomplished working on cloud based services – which should allow consortiums to load and provide MARC records for all members to manipulate. However, it is perhaps too early in the lifespan of these products to say conclusively what they will offer a project of this type, especially given the nature of consortiums which exist in the UK, which often don't share library management tools.

Assessing the relative discovery demands of PDA models

Although each model examined as part of this report requires work in relation to the provision of discovery records, it is possible to identify some particular issues which arise as a consequence of the nature of the models.

Model 1 PDA purchase	<ul style="list-style-type: none"> • Model encourages a diverse and wide-ranging profile for content to provide users with choice. Large loads of MARC records might be required at the outset which can cause system issues. • If project continued over long period, updates to the titles available through the profile will happen and hence updates will need to be made to MARC records or titles tracked in a link resolver • Removal of large set of records at end of project – coupled with need to maintain records for purchased titles.
Model 2 PDA rental	<ul style="list-style-type: none"> • Model encourages perhaps the most diverse and wide-ranging profile for content as the model itself implies some esoteric material will be included for loan only. Large loads of MARC records might be required at the outset which can cause system issues. • If project continued over long period, updates to the titles available through the profile will happen and hence updates will need to be made to MARC records or titles tracked in a link resolver • Removal of large set of records at end of project – coupled with need

⁶ Grant, Carl (2012) 'The future of library systems: library services platforms' *Information Standards Quarterly* 24 (4) p.4-15 [Online]. Available at: http://www.niso.org/apps/group_public/download.php/9922/FE_Grant_Future_Library_Systems_%20isqv24no4.pdf (Accessed: 15th February 2013)

	to maintain records for purchased titles.
Model 3 PDA usage	<ul style="list-style-type: none"> • If the aim of the consortium is to purchase material, this model might possibly invite a more narrow pre-selection of titles as too great a diversity of content might result in no purchases being made. This could lighten the initial load of records for discovery • Thus there might be fewer records for removal – but the issue of removing some and leaving others for the permanently acquired titles remains.
Model 4 evidence-based	<ul style="list-style-type: none"> • There is perhaps no implication in favour of a broad or narrow profile of content for this model. However, it is perhaps more likely that a subject package or grouping in its entirety would be offered, which has positive consequences for the tracking of titles using knowledge bases and link resolvers. • One is perhaps less likely to see updates of content as newer material would be at a 'disadvantage' in terms of use compared to material included at the outset and would provide an inaccurate picture for purchasing decisions. • Removal of titles at the conclusion would still be an issue – but would occur at a pre-specified time rather as a response to spend. As titles would not necessarily be selected at this point, all titles could be removed in bulk – purchased titles could be added back in later.

Financial management

Patron driven acquisition can require some intensive work for the monitoring of expenditure, with some models having micro-payments, loan amounts and purchase costs all accrued, sometimes automatically, every hour of the day. One needs to decide how rigorous it is necessary to be when tracking outlays of funds. This may depend on whether a deposit has been made, or whether expenditure is accumulated during the project. If one chooses the latter option it is of great significance to determine an adequate frequency of invoicing. This research has determined that it is not uncommon for libraries to wish to record orders and purchases against individual titles when they are acquired (in models 1, 2, 3). This would require that a local bibliographic record be found in the LMS on which to register this order and spend. Some e-book suppliers may have practices in place for the automatic supply of ordering and invoicing data via protocols such as EDI. Without this, registering purchases is a manual and labour intensive task. For models in which loan or micro-payments are made, the scale of transactions occurring make it most unlikely that library would have the resources available to attach payment to a specific title, most preferring instead to accrue amalgamated amounts against an open order. This report suggests that any project to undertake PDA as a consortium would have to rely heavily on the e-book supplier to provide accurate information on which titles exactly have triggered spend and that this might need to be stored outside of the LMS.

Many of the suppliers questioned during the JISC Collections research expressed a preference for managing financial transactions with a central body for the consortium⁷. Indeed, if any time efficiency gains, in relation to systems, were to be made through the operation of a PDA as a consortium one feels it would need to be located in the financial management. Projects which require closing off when a specified spend limit has been

⁷op. cit. p.6

reached also require consistent monitoring; a central body with responsibility for predicting trends in spend and sending notification to conclude the project would seem to be a necessity for some models (1, 2, 3).

Assessing the relative financial management demands of PDA models

It is possible to suggest which of the models examined would require most work with regards to the co-ordination of financial data.

Model 1 PDA purchase	<ul style="list-style-type: none"> • Potentially larger number of purchases than other models, therefore leading to more budgetary transactions to monitor and record • No loan payments to track however • Method of monitoring pre-purchase loans to predict future purchasing would be useful
Model 2 PDA rental	<ul style="list-style-type: none"> • Loan payments to track as well as purchasing costs • Method of monitoring loans in real-time to track expenditure would be necessary • Model potentially has element of mediation. Who is to do this and how – via email/ centrally/ institutional level?
Model 3 PDA usage	<ul style="list-style-type: none"> • Must be able to track micro-payments • No additional spend at point of purchase – but might some sort of order record be necessary for tracking purposes?
Model 4 evidence-based	<ul style="list-style-type: none"> • Need to create encumbrance upfront – but no need to create payments as ongoing feature • No necessity to monitor usage as project unfolds – just to monitor <i>some</i> usage is occurring • Selection decisions could be made at a local level at the close of the project, therefore local decisions on the management of financial data could be made – less necessity for a centralised process.

Authentication

None of the e-book vendors questioned foresaw an issue with authentication⁸. They suggested that they were compliant with the main methodologies used to provide access to electronic content and that co-ordination of this across a consortium shouldn't entail any difficulties.

Usage reports

Most vendors surveyed can provide usage statistics⁹. If a library purchased titles from the same provider through different channels, for example through PDA and through individual title selection by librarians, one could wish to compare usage for the differing types. In addition the SCONUL return currently requests that candidate PDA titles are to be excluded from the count of usage for e-books at an institution. Therefore, in these circumstances, there would need to be an indicator in the usage statistics to distinguish between the

⁸ ibid. p.6

⁹ ibid. p.6

acquisition methods. Without customisation like this, one would need to do significant work manipulating the reports to separate e-books acquired under different methods. Should titles be available consortially, perhaps under a license which allowed sharing of a copy between institutions, one would need to be aware of whether the usage provided in the report is based on an individual institution's usage or an aggregate. A service equivalent to JUSP for e-books would be advantageous as a means for gaining efficiency in these processes.

Key points for consideration

Key points for consideration at institutional level

- Which method for discovery are you to use
- How frequently might you want to commit time to update these records, if applicable
- At the close of the project do you have a method established for the removal of candidate records and the maintenance of high quality records for purchased content
- How stringent a financial tracking procedure will you need to have in place. Will this require loading additional records into your LMS or implementation of EDI protocols

Key points for consideration at consortium level

- Ensuring parity across the institutions in terms of discovery procedures
- If payments are to be centralised how might staffing and systems for this be provided. In this scenario how might data about the financial transactions be distributed to institutions for local use
- Might monitoring of usage need to be centralised in order to co-ordinate a close at an appropriate payment limit

Appendix 1: the models

1. PDA Purchase

- The library sets up a PDA agreement with a supplier to make a range of e-books available to users

Typically, libraries create a profile based on a set of parameters (such as subject, date of publication, publisher, price, language, readership level etc.), and the suppliers makes all e-books matching these criteria available to users. Alternatively, library staff may select a publisher's collection, or a list of individual titles.

- Once the titles have been selected, the library makes the content visible and discoverable to users.

Libraries may import MARC records into the catalogue and/or by activate resources in the link resolver so that they are visible in the library's discovery system. Typically the e-books are presented in the catalogue in the same way as pre-purchased or subscribed e-books, so to the user they simply appear to be part of the library collection, even though the library has not purchased them

- Users have full access to the e-books. Limited usage is allowed without charge, but if usage of a particular book passes a threshold level, a payment is triggered and the book is automatically purchased by the library.

Different suppliers may use different criteria and set different levels to define the purchase threshold. Typically, there are two elements which determine the threshold:

- The extent of use which counts as a '**significant use**'. Typically, viewing a book for just a few minutes or viewing a small number of pages does not counts as a significant use and does not trigger payment. Viewing for more than few minutes, or any downloading or printing from the book is counted as a significant use.
- The number of significant uses before purchase is triggered. Typically, the first significant use is free, but a second significant use triggers a purchase.

So for example:

- User 1 views two pages of a book. This does not count as a significant use.
- User 2 views the book for ten minutes, and prints two pages. This does count as a significant use, but at this stage no payment is triggered.
- User 3 views the book for one minute. This does not count as a significant use.
- User 4 downloads a chapter of the book. This counts as a second significant use, and at this point the book is automatically purchased and payment is made by the library.
- Once purchased, the e-book becomes permanently available to all library users, typically with the same limits on the maximum number of users / uses that would apply if the book were purchased under a traditional model.
- If the library decides to end the PDA agreement, access to any books which have not been purchased is withdrawn, and the library removes records for these books from the catalogue.

In this model, the library typically has control over a limited number of the settings

- The library may decide whether or not to require the user to 'click to continue reading' beyond the significant use threshold, alerting them that the book will be purchased and a charge incurred by the library.
- The library may be able to limit the maximum significant use per user per day.
- The library does *not* normally control the number of significant uses which triggers a purchase, which is set by the supplier.

Examples

- **Arizona University Libraries** (closed consortium)
- Ontario Council of University libraries (2010 pilot, closed consortium)

- CTW Library Consortium, Connecticut (2010 pilot, closed consortium)

2. PDA Rental (or PDA short-term-loan)

- The library sets up a PDA agreement with a supplier to make a range of e-books available to users

Typically, libraries create a profile based on a set of parameters (such as subject, date of publication, publisher, price, language, readership level etc.), and the suppliers makes all e-books matching these criteria available to users. Alternatively, library staff may select a publisher's collection, or a list of individual titles.

- Once the titles have been selected, the library makes the content visible and discoverable to users.

Libraries may import MARC records into the catalogue and/or by activate resources in the link resolver so that they are visible in the library's discovery system. Typically the e-books are presented in the catalogue in the same way as pre-purchased or subscribed e-books, so to the user they simply appear to be part of the library collection, even though the library has not purchased them

- Users have full access to the e-books. Limited usage is allowed without charge, provided that it falls below the threshold of 'significant use'.

Different suppliers may use different criteria and set different levels to define 'significant use'. Typically, viewing a book for just a few minutes or viewing a small number of pages does not count as a significant use. Viewing for more than few minutes, or any downloading or printing from the book is counted as a significant use and triggers a payment.

- If a user continues to use a book beyond the threshold of '**significant use**', a rental or short-term loan is triggered:
 - o The book is temporarily 'loaned' to the user, and for the duration of the loan period that user can make full use of it without triggering any further fees.
 - o The library pays a fee for the loan, typically a percentage of the full list price
 - o The fee depends on the duration of the short-term loan. For example, if the user has access to the e-book for just one day, the library pays 10% of the list price, but if the user gets access for seven days, the library may pay 25% of the list price.
- Further significant use triggers further loans and payments. So if a book is used a second time, or by a second user, a second short-term loan is triggered and a second fee is payable.
- After a given number of loans, the next significant use triggers an automatic purchase and the library pays the full list price of the book.

Once purchased, the book becomes part of the library's collection and is permanently available to all library users, typically with the same limits on the maximum number of users / uses that would apply if the book were purchased under a traditional model.

- If the library decides to end the PDA agreement, access to any books which have not been purchased is withdrawn, and the library removes records for these books from the catalogue.

In this model, the library typically has control over several of the settings.

- The library may decide whether or not to require the user to 'click to continue reading' beyond the significant use threshold, alerting them that a short-term loan or purchase will be triggered and a charge incurred by the library.
- The library may decide whether or not to require approval (mediation) from a librarian before the user is able to continue reading beyond the significant use threshold. Depending on the model, it may be possible to apply mediation to all requests that trigger a payment, or only to use that triggers a purchase, or only to use that triggers a payment over a certain amount.

- The library may be able to limit the maximum significant use per user per day, for example by limiting the number of short-term loans per user.
- The duration of the short-term loan can be chosen by the library, from a range of options, giving the library some control over the size of the fee payable for each short-term loan.
- The number of loans made before a purchase is triggered can be chosen by the library, giving the library some control over the point at which usage is considered sufficient to warrant purchase of the e-book.

Examples

- **Orbis Cascade** (2010 pilot now regular service, closed consortium)
- Colorado Alliance of Research Libraries (2010 pilot, closed consortium)
- Western New York Library Resources Council (2012), Boston Library Consortium (2012)
- No known UK consortial examples

3. PDA Usage

- The library sets up a PDA agreement with a supplier to make a range of e-books available to users

Typically, libraries create a profile based on a set of parameters (such as subject, date of publication, publisher, price, language, readership level etc.), and the suppliers makes all e-books matching these criteria available to users. Alternatively, library staff may select a publisher's collection, or a list of individual titles.

- Once the titles have been selected, the library makes the content visible and discoverable to users.

Libraries may import MARC records into the catalogue and/or by activate resources in the link resolver so that they are visible in the library's discovery system. Typically the e-books are presented in the catalogue in the same way as pre-purchased or subscribed e-books, so to the user they simply appear to be part of the library collection, even though the library has not purchased them

- Users have full access to the e-books. Each significant use of a book triggers a charge to the library.

Different suppliers may use different criteria and set different levels to define '**significant use**'. In some models, viewing a book for a few minutes may be free, but viewing for more than few minutes, or any downloading or printing may be counted as a significant use and trigger a payment, for example 10% of the list price. In some models, any use may trigger a micro-payment for example a cost per page viewed.

- If the total charges payable for the book reach a given level, then the book is deemed purchased and becomes a permanent part of the library's collection.

In some models, the purchase threshold may be the same as the list price of the book, but in other models it may be greater than the list price.

- If the library decides to end the PDA agreement, access to any books which have not been purchased is withdrawn, and the library removes records for these books from the catalogue.

The library may have the option to pay an extra fee to purchase books which have seen high usage but have not quite reached the purchase threshold.

Examples

- **JISC e-books for FE** (closed consortium)
- JISC Collections 123 e-books deal (open consortium offer)
- York / Springer (non-consortial)
- No known US examples

4. Evidence-Based Selection

- The library sets up a PDA agreement with a publisher to make a range of e-books available to users for a defined period.

This model is currently only available directly from publishers. Typically, libraries select one or more of the publishers' collections to be made available for a year.

- The library pays a fee upfront.

The fee is typically greater than the cost of subscribing to the collection, but less than the cost of purchasing the collection. This fee will eventually be used to purchase books, but no titles are selected at this stage.

- The library makes the content visible and discoverable to users.

Libraries may import MARC records into the catalogue and/or by activate resources in the link resolver so that they are visible in the library's discovery system. Typically the e-books are presented in the catalogue in the same way as pre-purchased or subscribed e-books, so to the user they simply appear to be part of the library collection, even though the library has not purchased them

- Users have full access to the e-books. Any usage during the year is recorded.
- At the end of the year, librarians review the 'evidence' of usage statistics and select the books they wish to own as part of the library's collection. The library can select titles up to the value of the fee originally paid at the start of the year, and each title is typically charged at list price.
- If the library decides not to continue with the agreement, access to books not purchased is withdrawn and the records removed from the library catalogue.
- Alternatively, if the library decides to continue with the agreement, another fee is paid and users continue to have access to the full range of books for a further year. At the end of the second year, a second batch of books may be selected for purchase, and so on.