

 **Futurelib**



UNIVERSITY OF
CAMBRIDGE

Imagining the future of library services at University of Cambridge.



iDiscover: Examining the user experience

Futurelib Programme – October 2017

THE FUTURELIB PROGRAMME

Futurelib is an innovation programme exploring the future role of academic libraries within the University of Cambridge. It employs ethnographic research methods and user-centred design techniques to examine the current user experience of libraries and draws on the skills of librarians from around the institution to test new service concepts.

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1. INTRODUCTION

The role of the academic library is constantly shifting. No longer just gatekeepers to information, information professionals in the higher education (HE) sector are actively collaborating with researchers to create content, working closely with teaching staff to train and educate students and often conducting their own research alongside this work. The nature of 'library resources' is becoming more and more intangible; born-digital material, open access and advancements in digital humanities mean that the notion of the 'holding library' is becoming less and less relevant to the ways in which people look for and interact with sources of information. Methods of retrieving this content are also changing, as library catalogue systems, based on relationships with traditional catalogue records and metadata, are no longer sufficient for current user needs. There has been a move across HE libraries away from the traditional catalogue to discovery systems. Conceptually, these systems are very different from catalogues; they aim to open up areas of *discovery* for their users, in basic terms, highlighting resources related to what people are searching for. Discovery systems search for local printed resources alongside ebooks, online articles and databases, institutional repository data and more. They rely on sophisticated ranking algorithms and emphasising the relevancy of resources, in order to provide an intuitive, seamless user experience without complicated pre-search options. Users of discovery systems are provided with a simple search bar and are expected to refine their search afterwards using filters.

The majority of libraries at the University of Cambridge began using the Ex Libris Primo Discovery and Delivery (henceforth 'Primo') system in September 2016, naming their version of the interface 'iDiscover'. The current version of Primo in use at the University was very new at the time it launched, with Cambridge being early adopters of the service. Although Ex Libris have conducted User Experience (UX) work which fed into the development of the Primo service, we felt that it was vital to conduct our own study to find out how people were experiencing and using the platform in Cambridge. The complicated make-up of Cambridge's physical collections, the extensive online resources held, the research-intensive nature of the University, all of these things mean that the University's library system is in an almost unique position, which leads to very specific needs and behaviours on the part of its users. As iDiscover will be a key part of the lives of Cambridge students and staff for years to come, it is important that time and effort is invested to make sure that the developing interface is based on their needs, behaviours and preferences.

This report outlines the research, analysis, findings and outputs of an intensive user experience study carried out by the Futurelib Programme between June and August 2017. The primary research methods employed were interviews and observations with people using iDiscover. Personas were developed based on this work, which were used to inform the subsequent analysis process and the resulting project recommendations and outputs. As well as talking to people about iDiscover and watching exactly how they used the service, there was a focus on finding out how this related to the ways in which people interacted with information more generally, and how this sat within their wider Cambridge experience.

2. PROJECT AIMS AND SCOPE

2.1 Aims

- To gain a deeper understanding of our users and of how people are using iDiscover.
- To identify current key issues with iDiscover.
- To visibly engage with and respond to our users.
- To find out more about what other search tools people use and for which purposes.

2.2 Scope

- Identifying potential 'quick-wins' for the iDiscover user interface.
- Collecting evidence to support requests put to Ex Libris, the supplier of the Primo service.
- Assembling information to inform the design of help pages, widgets, pop-ups and other opportunities *around* the iDiscover user interface.
- Arriving at insights and knowledge to inform changes as new iterations of the service are released.

Alongside recommendations for the re-configuration of aspects of the interface and feedback for the supplier, as the project moved forward there was an increased focus on user education and communication. How could we use the lessons we had learned from our research to inform the ways in which Cambridge library staff communicate with users of the iDiscover platform, and what are the key messages we should consistently be giving people? It was decided that the project team would work on producing materials which could be used when working with students and staff at the University, outlining key information about iDiscover and how to approach and use it effectively.

3. METHODOLOGY

3.1 Analysis of existing feedback

Since its launch, the team responsible for developing and implementing iDiscover have been actively seeking feedback from users of the service. This meant that prior to the Futurelib project there was a large amount of user data which could be analysed. In order to give some context to the project this feedback was examined, with the following considerations:

- People who had chosen to provide feedback on the development of the platform may not be representative of its users as a whole.
- Much of the feedback related to issues that had since changed.

Although useful in informing the early stages of the project, this feedback was not included in the final project analysis and was superseded by data gathered by working with iDiscover users over the course of the project.

3.2 Brainstorming session with Cambridge library staff

We recognised that the knowledge Cambridge library staff possessed about the experiences their users were having with iDiscover was of great value, and it was important to tap into this during the initial stages of the project. Over the year that the underlying Primo service had been in use at Cambridge, many developments (locally and on the part of the supplier, Ex Libris) meant that it was necessary to start to identify what the *current* key issues were. An open-invitation meeting was held, where the project was presented and library staff participated in a brainstorming session, discussing the following two questions in groups:

- What, for your users, are the current key issues with iDiscover?
- What workarounds, if any, have you put in place at your library since the launch of iDiscover?

The session was invaluable in informing the early stages of the project and gave the work a necessary context. Offers to help with the research came from library staff present at the session, which were also very welcomed.

The most valuable output of the session came from the group brainstorming sessions, particularly where library staff were asked to outline what the current key issues with iDiscover for their users were. A summary of the output of this exercise can be found overleaf.

What, for your users, are the current key issues with iDiscover?

Positive

- Searches very widely.
- You can save favourites and searches, emailing yourself a record = easy!
- Very good for keyword searches.

Negative

- Duplicate results showing for the same item.
- Students struggling to find printed books quickly.
- Reviews and newspaper articles appearing first in results lists.
- Which databases aren't indexed?
- Student confidence has gone. :(
- Incorrect information in the filters.
- Not good for searching for specific items.
- 'Multiple versions' terminology can be misleading.
- Vocabulary not helpful, e.g. thesis listed as book and working paper as article.
- Logins don't work all the time.
- Boolean search not working since last upgrade.
- No option to search by publisher.
- Too many results.
- 'May be available' electronically - remove items where we do not have access.
- Speed issues.
- Records within FRBR groups effectively disappear.
- Works like Google, which is fine if you want to find absolutely everything like Google, but not if you want to find a very specific thing.

3.3 Project team

For the project to be successful, help would be needed with data gathering, analysis and idea generation. Members of Cambridge library staff were contacted and asked whether they would be able to spend some time helping with the project. Not only would this provide a valuable opportunity for a 'hive mind' approach to the analysis work, it also meant that a starting point would be in place for the research with users, as library staff would have access to mailing lists and other means of contacting their students and academic staff. The project team consisted of:

- 3 members of staff from STEM (Science, Technology, Engineering and Medicine) libraries.
- 2 members of staff from AHSS (Arts, Humanities and Social Sciences) libraries.
- 2 members of staff from Cambridge college libraries.
- 1 member of staff from the Reader Services Desk team at the main University Library.

3.4 Interviews

Alongside observations with people using iDiscover, interviews with students and staff around the University provided a large part of the project data. The following interview questions were used to form a semi-structured interview schedule. For short, ad-hoc interviews these questions could be used on their own, for longer, more in-depth interviews the questions provided valuable starting points for deeper, more investigative conversations:

- Where, online or in person, do you look first for information and resources? Does this vary depending on the nature of your task?
- What, to you, is important in terms of a platform used to search for information and resources?
- What *types* of search do you do most often [e.g. known-item, exploratory, etc.]?
- What, for you, are the good and bad things about iDiscover?
- Can you think of a specific problem you encountered with iDiscover recently? What did you do?

Demographic information was captured for each participant, including their college, their department or faculty, whether they were a student or member of staff and what their level of study or the nature of their staff position was, their area of study or research, and their preferred device and web browser.

The interviews were conducted with a range of people, from some who used iDiscover frequently to some who had never encountered it before. This gave us the opportunity to learn more about the other search platforms people were using, which tasks they used them to perform, and why. As always, the conversations also led to valuable insights into people's wider lives at the University. In terms of people's experiences of iDiscover, there was a focus on both macro- and micro-level issues, i.e. how they interpreted, understood and approached the platform conceptually, as well as what they liked or disliked about aspects of its search functionality and user interface.

3.5 Observations

Shadowing people using iDiscover and observing them closely was vital in providing data for the project. It was essential that we worked with people from as many different disciplines and with as many different levels of academic experience as possible. With this in mind, we intentionally worked with people in and outside of library spaces, in locations where they felt comfortable. Where possible we worked with people using their own devices and web browsers, to give us as unfiltered a view as possible of their 'usual' iDiscover experience. If it was not possible to work with people on their own device, we offered them a choice of MacBook or Windows laptop to work with instead, which was a familiar setup for most people. We also conducted observations with people using iDiscover on their tablets and mobile phones.



[Above: An observation session conducted at Pembroke College 'Grads' Parlour']

We used talk-aloud protocol during our observations; asking participants to tell us exactly what they were doing, what they were currently looking at on the screen and which elements of the interface they intuitively understood, or were puzzled by. We watched as people performed tasks similar to those they would have to complete as part of their studies or research, and in the latter stages of the project also gave them tasks we had developed to complete. During the observations, as well as recording what people said, we specifically wanted to find out about:

- The initial *approach* people had to searches, i.e. which search functions, search terms and pre-search filters they used.
- Whether post-search filters were applied to refine search results.
- Which aspects of the user interface were noticed, used, missed, or ignored.
- How terminology present in the interface was interpreted and whether it was intuitively understood.
- Whether users were expecting, or were surprised by, various aspects of the interface, including the lists of results it retrieved based on their search terms.

After each observation, we conducted a brief exit interview with the participant. This allowed us to further explore their experience and gave them the opportunity to expand on what they had found intuitive and useful, as well as areas where they had struggled or found things less simple.

Across the observations we conducted, we looked for similarities from users in terms of interpretation and approach, consistencies in where people struggled with iDiscover and where they succeeded easily. Although each person we worked with was very different, over time commonalities started to emerge, which began to lead to ideas about how changes could be made to the platform that would potentially benefit the majority of its users.

3.6 Student workshops

Due to the fact that the project took place outside of Cambridge full term, it was difficult for us to recruit and work with undergraduate students. In an attempt to engage with as many undergraduates as possible, three workshops were held and promotion and advertising was directed towards these students. The workshops took place at the Engineering Department Library, the English Faculty Library and the Education Faculty. Although not attended by as many students as we had hoped, the

workshops did give us the opportunity to talk to and work with representatives of this key user group. Brainstorming sessions helped us to get a quick overview of the undergraduate iDiscover experience and the workshops allowed us to conduct interviews and observations with some of the students that attended.

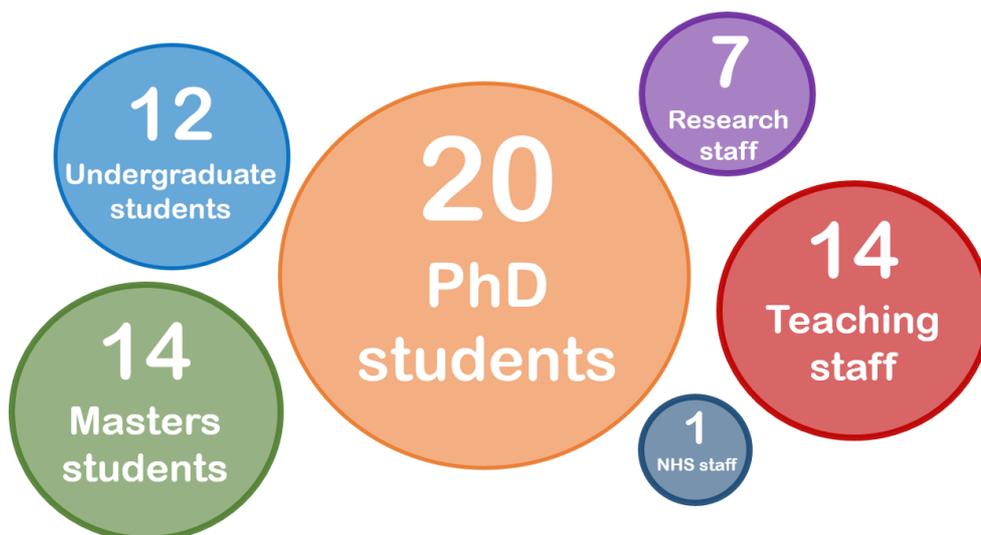
3.7 Our participants

It was key to the success of the project that we worked with people from as many disciplines and with as many different levels of academic experience as possible. It was also necessary, however, that we spent enough time with each person to really get to grips with how they approached the platform, the role it played in their work at the University and the experiences they had whilst using it. On average, we spent between 30 and 45 minutes working with each participant, which gave us the opportunity to talk to them in reasonable depth and to observe and work with them while they used iDiscover at their own pace.

Academic disciplines represented

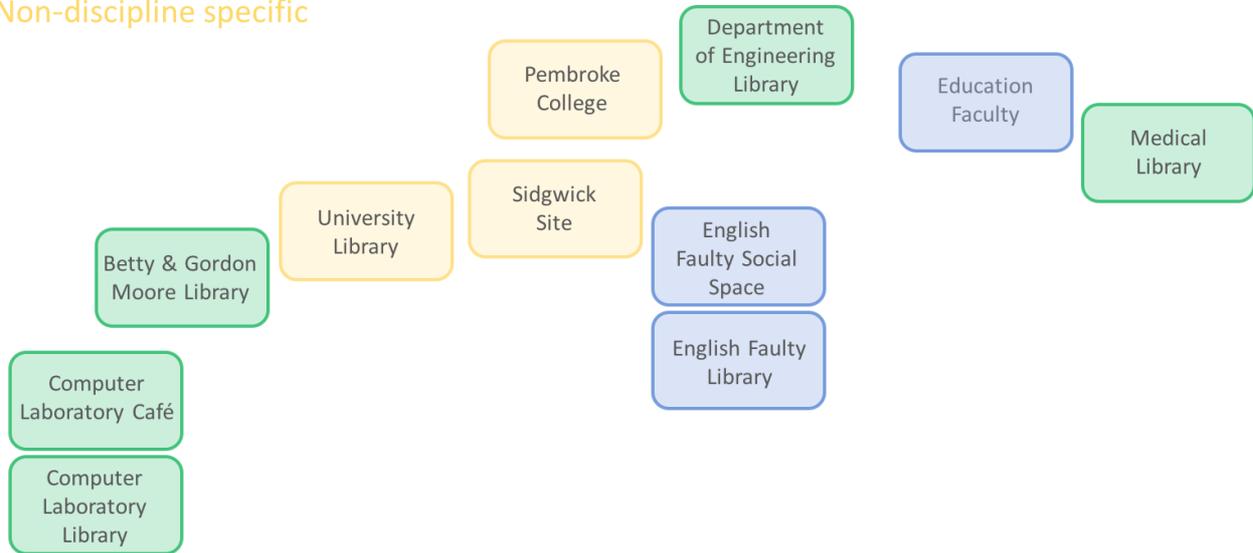
Anglo-Saxon, Norse and Celtic, Anthropology, Archaeology, Chemistry, Computer Science, Criminology, Economics, Education, Engineering, English, History, Law, Medicine, POLIS, Slavonic Studies, Veterinary Medicine

Academic 'levels' represented



Where we conducted our research

- Science, Technology, Engineering and Medicine
- Arts, Humanities and Social Sciences
- Non-discipline specific



4. INTERIM ANALYSIS

4.1 Idea generation session with project team

When the interviews and observations with users had provided sufficient data, the project team met to discuss insights gathered so far and to come up with ideas for task-based usability tests which could be used to conduct further research in the next phase of the project. Points of interest from the research so far included:

- Commonalities across academic disciplines and levels of academic experience, in terms of what people *expected* from iDiscover.
- An appreciation from users of the way the interface looked, i.e. the cleanliness of the design and the visual hierarchy of the information and options represented.
- A reluctance amongst many people to use filters during their searches, either pre- or post-search.

4.2 Developing task-based tests

Examples of the task-based tests, arrived at as a result of this session and refined afterwards, can be seen below. These are four examples from a wider range of tests, 19 in total.

<p>Find article with article information</p> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <p>[Open iDiscover and find item record for specific online article, using information from the article level metadata]</p> <ul style="list-style-type: none">- How does user approach this (i.e. search bar, filters etc.)- Is the process intuitive or are they indecisive / confused about how to approach the task?- Would they usually use iDiscover for this, or another platform- Where are the points of fail?- Are they able to complete the task?- What is confusing or unexpected during the task?	<p>Cite record for entry</p> <p>[Do this from record which has been found by user already as part of another test]</p> <ul style="list-style-type: none">- Is the [cite] button identifiable?- When found and used, what is the user's reaction to the cite window that pops up- Is the process intuitive?- Which parts of the cite window are seen as useful by user?
<p>Load previous search history</p> <ul style="list-style-type: none">- Does user correctly identify clock icon as useful for task?- Is the process intuitive or does user struggle to work out how to approach?- Does the user attempt to use any other aspect of interface to attempt to complete task?- Does user log in? Do they realise intuitively why they should at this stage?- Is task completed successfully?	<p>Pin/save list of results</p> <p>[Do this from results list already found by user as part of another task]</p> <ul style="list-style-type: none">- Does user correctly identify pin icon in top right of screen?- Is the process intuitive or does user struggle to work out how to approach?- Does the user attempt to use any other aspect of interface to attempt to complete task?- Does user log in? Do they realise intuitively why they should at this stage?- Is task completed successfully?

4.3 Developing personas

One of the aims of the project was to arrive at personas which could inform the continued development of the iDiscover platform in Cambridge. Personas are fictional characters used to represent users of a website or other service. Created based on data gathered from real users, personas provide a valuable opportunity to focus design and development. These user archetypes can be a practical reminder of the people a product or service is being developed for.



Our personas continued to take shape over the course of the project, but at this stage we were aware of some key ways in which the platform was used and some commonalities across different users. To give them their necessary context, the four personas arrived at during the analysis of the project data can be found in the 'Project Outputs' section of this report.

4.4 Identifying areas for further research

At this stage in the project we had worked with a large number of students and staff at the University, looking at the ways in which they used iDiscover and their experiences of both iDiscover and other platforms they used to find and interact with sources of information. We were conscious, however, that we had still not seen enough, in terms of how iDiscover was being used across Cambridge. There are specialised ways in which iDiscover is used which required our attention. Areas identified by the project team as being in need of further exploration included:

- Special collections: we were aware that users of special collections have very different needs from platforms such as iDiscover, and that this was an area we had not yet explored thoroughly enough.
- Undergraduate students: as previously mentioned, we had struggled to recruit undergraduates due to the time in the academic year.
- Finding printed resources: working with users in environments familiar to them had produced valuable data, but we needed to conduct more work with people trying to find printed resources in libraries, as this is a key way in which iDiscover is used.

In the second phase of the project efforts were directed towards these areas.

5. SECOND PHASE OF RESEARCH

5.1 Working with users of special collections

People working with rare books, manuscripts and archives have very different needs from digital platforms used to search for resources. At the University of Cambridge, although manuscripts and archival material are listed in various different catalogues, iDiscover is the primary system used to search for rare books. Cambridge is a research-intensive University and many of its research students and staff, particularly in the Arts and Humanities, rely heavily on its rare books collections.

During the second phase of the project we worked closely with research and teaching staff in the Arts and Humanities, several of whom made use of early printed resources frequently in their work. Many of the ways in which these academics used iDiscover and a lot of the experiences they had were similar to other participants we had worked with. Some, however, did use iDiscover in significantly different ways, for example when trying to locate resources published between specific dates, held in specific named collections and when trying to locate resources using copy-specific information.

There was a focus during the observations we conducted with these members of staff on the iDiscover Advanced Search functionality. It emerged that one way in which it may be possible to allow for more precise queries to be formulated in iDiscover, would be to include additional options and parameters in the Advanced Search. Many of the academics we interviewed and conducted observations with made use of aspects of other search platforms and catalogues (for example the British Library online English Short Title Catalogue) which were not currently present in iDiscover.

The data gathered during this work with Cambridge academics in the second phase of the project was included in the wider project analysis process and also led to specific recommendations for the development of the Advanced Search functionality in iDiscover.

5.2 Applying task-based tests

The reason for the development and application of task-based usability tests was to identify consistencies across iDiscover users, in terms of areas of difficulty and points of fail. We found during the tests, however, that approaches to the tasks, levels of persistence and the points at which participants would give up and abandon their task were too varied to provide any useful comparable data. This is not to say that the exercise was not valuable; observing participants during their attempts at completing the tasks provided us with more and more data and added to our understanding of the overall iDiscover user experience.



During this phase of the project we also concentrated on working with people who were using iDiscover to locate the records for printed library resources, predominantly books. We worked with undergraduate and postgraduate students and research and teaching staff, examining in detail the way in which people approached this activity.

We had learned from our work in the first phase of the project that many people primarily used iDiscover as a tool for finding printed books in Cambridge. We were also aware that this was an area in which people often struggled. The additional data we gathered while focusing on this aspect of iDiscover was invaluable in informing the project findings and outputs.

6. MOBILE DEVICES

During our research participants mentioned that they rarely used iDiscover on mobile devices. People told us that they accessed electronic resources through iDiscover almost solely on laptops, desktop machines or tablets, and that if they had to find and collect printed resources they would either use iDiscover on terminals in libraries, or prepare lists with the details they needed before visiting libraries. We were, however, keen to understand as much as possible about the iDiscover mobile user experience, so focused on this where possible during our observation sessions.

Many of our participants only used iDiscover on their mobile phones when they were inside library spaces, checking references for printed material. This meant that they focused on the speed and performance of the platform, as well as being able to quickly and efficiently find classmarks for specific copies of printed books, as this is what was important to them at the time.

Key findings from our research with people using iDiscover on mobile phones were:

- The responsive web design was recognised by participants as being superior to that of other similar platforms they had used.
- There was a frustration from many participants at how much mobile phone screen real estate was taken up by the iDiscover logo, search bar and login message.
- Few people intuitively understood what the Advanced Search icon represented, and that it was an active link to further search options. Those who did had often found out accidentally.
- Some people did not immediately notice the location of the 'refine my results' option, but when they did it was seen as a sensible way to incorporate the options needed into the mobile interface. – It was seen as difficult to go 'back and forth' through different screens on mobile devices, for example when moving between lists of results and item records.

N.B. As the tablet view of iDiscover was identified early on in our research as being very similar to the desktop view, testing this with users was not a key focus of our research.



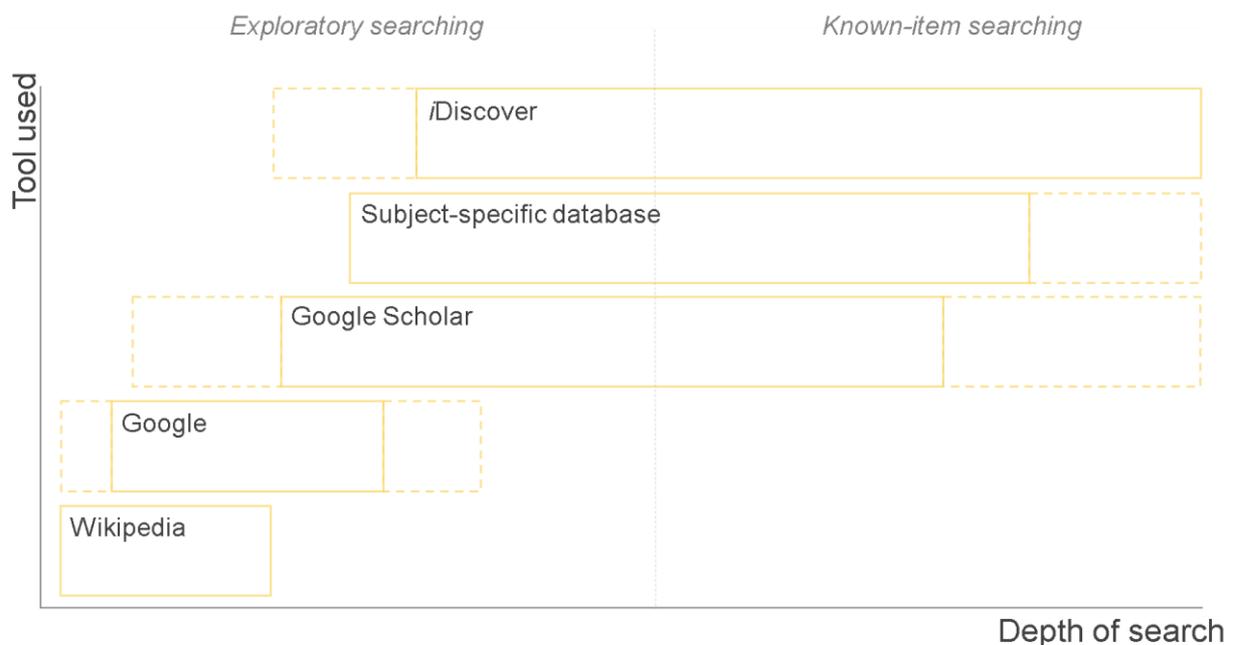
7. KEY FINDINGS

7.1 iDiscover is one of many tools used to search for resources

Our work during this project highlighted the range of different approaches people have to looking for information sources and how this affects the tools they use to do so. We spoke to research staff who relied almost solely on Google Scholar, PhD students who listed 10 or so subject-specific databases they checked regularly and Economists who talked about primarily using access-restricted government datasets. For some people, iDiscover was something they used every day and relied heavily on. For others, who had often never seen the platform, it was purely a curiosity.

- "I tried a few years back to stop using Google for everything and start using the other databases. This didn't last long..." (Engineering postdoc)
- "For general searches I use Google Scholar, MLA Bibliography, JSTOR or Early English Books Online, then iDiscover." (English PhD student)
- "I use subject-specific databases, but don't trust them to capture 100% of what's out there in the field." (Anglo-Saxon, Norse and Celtic academic)

Although behaviours and approaches varied greatly amongst the people we worked with during the project, the model below represents an approximation of the different tools participants used to search for information and the situations in which they used them.



7.2 People expect iDiscover to primarily search for local resources

Whether they used it regularly or were seeing it for the first time, the majority of participants in our research shared an expectation that iDiscover would primarily, or solely, search for resources which they could access as members of the University of Cambridge.

- “It’s the University system, so I’d expect to have access to everything I find here.” (Veterinary Medicine PhD student)
- “I’ll use Google Scholar if I’m doing general searches, with iDiscover I’m using it because I’m looking for something I know we have at Cambridge.” (English PhD student)

Some people assumed that iDiscover would prioritise resources at a more local level than institutionally. When interviewed in library spaces, there was an expectation amongst some participants that the ranking of results would prefer the library they were in:

- “I’d expect the computers in the Engineering Library to look for books in the Engineering Library.” (Engineering undergraduate student)
- “It would be good if [iDiscover] used my location to give me results in libraries near to me. I’ve come to associate iDiscover with the library - I’d use it more for books than [online] journals.” (NHS clinical staff)

The expectation that iDiscover would have been designed primarily to search the holdings of the University was common across almost all our participants. This was due to several factors, including the fact that most used other search platforms and databases to search for online content (although many used iDiscover when they had the exact reference for an electronic source they needed) and that people were familiar with more traditional library catalogues and expected iDiscover to exhibit similar behaviour. When working with people who were unfamiliar with the platform, the fact that iDiscover was hosted on a University website and had the University logo present was enough to suggest to them that it was a tool designed to search for Cambridge content.

It is important to note that during our project a large deletion of records, many of which showed content not subscribed to by the University, from iDiscover reduced this frustration greatly for our participants.



7.3 The level of simplicity of a search interface informs search approach

Over the course of our study, a key emergent theme had to do with the way in which people approached searching for resources using iDiscover. Very few people limited their results pre-search and many did not make use of the post-search refining filters. The inviting, simple-looking iDiscover search bar seemed to inspire confidence in the system and people approached it in the way they would Google, or other powerful search platforms. Many participants commented along the following lines:

- “I don’t bother with the side bar.” (Economics MPhil student)
- “It *seems* simple. The user interface seems flat but then you have to go through layers, then back to search, then back again.” (Archaeology and Anthropology PhD student)
- “You think it’s going to be easy, then after your search you think, ah, OK, this is going to need a bit of work...” (History MPhil student)

To fully understand this would need a great deal of research and was outside the scope of our project. The key insight was the expectation from users that the simple iDiscover search function would automatically return a list of results as sophisticated and relevant as they would expect from other, more powerful search platforms. This led to frustration when, for example, a search for a journal title returned a number of articles and other results before the link to the journal holdings and links to online access. At this point, when asked what they would do next, many of our participants answered by saying that they would start using another search tool. Very few of the people we worked with, regardless of academic discipline or level of academic experience, used the iDiscover Advanced Search functionality, and surprisingly few used filters to refine results after their initial search. A lot of the reluctance to use these options seemed to stem from a feeling that iDiscover should be prioritising certain types of result, without intervention from the user:

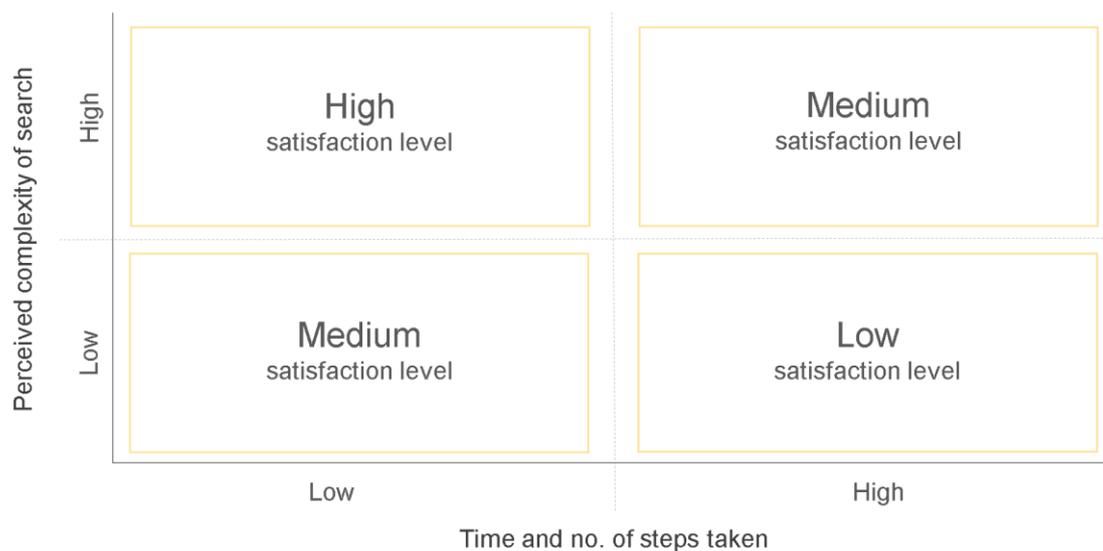
- “The ‘format’ filter is useful, but I shouldn’t *have* to use it when I want to find books.” (MML PhD student)
- “You want to get to the book straight away. That’s what it [iDiscover] is there for, right?” (Anglo-Saxon, Norse and Celtic MPhil student)

7.4 Perceived complexity of a search affects user expectations

Students and staff we worked with during the project reported distinct types of search they conducted at different points during their academic work. Sometimes they needed to explore a subject area they were unfamiliar with in order to identify themes and find out who the key contributors were in that field. At other times people were following references from footnotes or trying to locate resources they knew existed, for example when given a reading list by a supervisor. People had very different expectations when conducting these different types of search and often mentioned this to us:

- “With Google I don’t mind if it’s slower to work through the process as I *want* more resources. I want iDiscover to be fast and easy. When I use it I know what I need to find and I want it to be quick and seamless.” (MML PhD student)
- “It’s frustrating when you put in all the information [for a known resource] and other things come up.” (English undergraduate student)
- “If I type in words I expect to be given results with those words in the title.” (Archaeology PhD student)

We noticed a definite relationship between the perceived complexity of an individual’s search and the time they were willing to spend in order to find the result(s) they needed. When a search perceived as simple by the user took too much time and too many steps to resolve, it led to dissatisfaction and frustration with the tool(s) being used.



7.5 iDiscover is used by many people to conduct known-item searches

As mentioned previously, our participants often used several different search tools to look for information sources and used these for different purposes. Many people used iDiscover when they knew of a specific resource they needed to find and wanted to locate and/or access it as quickly as possible. Comments from participants included:

- "I might use [iDiscover] to look for something in a library, or if I can't find something in Google Scholar." (Veterinary Medicine PhD student)
- "To me, the most important thing is being able to quickly and easily locate books in the different libraries I use in Cambridge. iDiscover doesn't seem to be designed to do this." (History academic)
- "I use iDiscover when there is a specific book I need to find." (English PhD student)

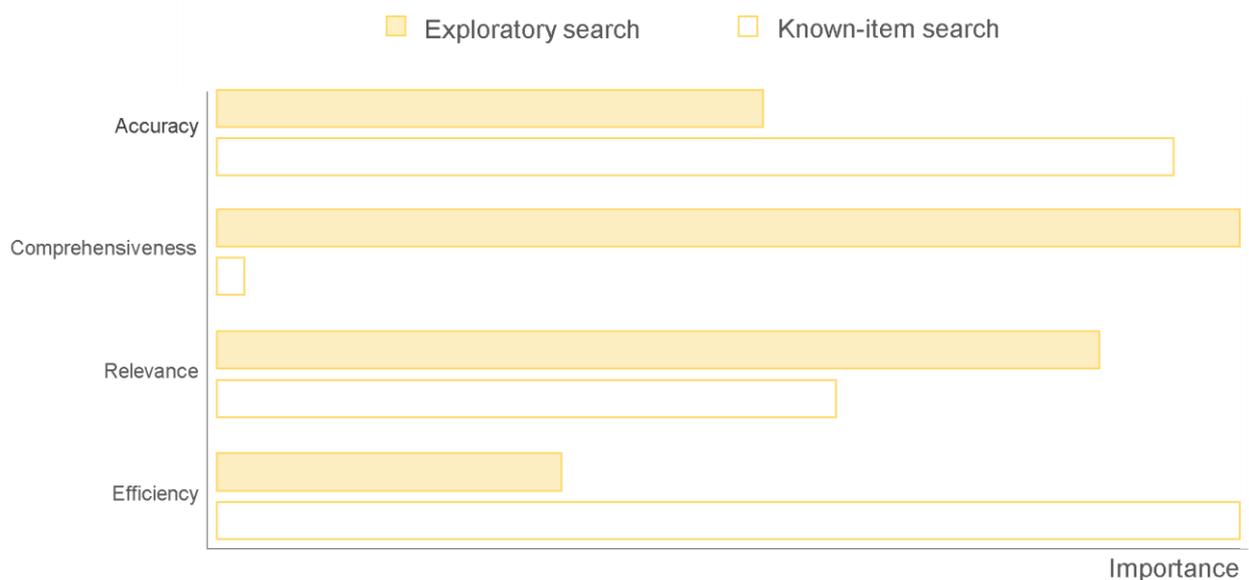
One of the fundamental aspects of discovery systems is that they are designed to open up access to millions of resources, potentially resulting in users uncovering new and valuable avenues of exploration. This is very different from the traditional library catalogue user experience, wherein with enough information it is relatively easy to 'drill down' to a specific resource. Many of the people we spoke to had found it difficult to conduct these known-item searches using iDiscover, i.e. when looking for information on how to access a specific known resource, either online or in a physical library. Part of the frustration in this regard was due to the fact that, as mentioned previously, many people saw iDiscover as a tool they would use for this purpose, rather than for the more general or exploratory searches that they would conduct with other search tools. People who had struggled to locate resources in this way often commented along the following lines:

- "It's difficult to narrow searches in iDiscover." (English undergraduate student)
- "Book reviews above books just don't make sense!" (Archaeology PhD student)
- "When looking for a book, you'll end up with a random science article." (English undergraduate student)
- "If you search for a title that only has a few words in it, even if you type it in correctly, other less relevant titles will come up first." (Education MEd student)."

In contrast, people we worked with who used iDiscover for more exploratory searches appreciated the range of results which it returned:

- “I often look first for recent and niche journal articles on a subject – iDiscover is good for this.” (English undergraduate student)
- “It’s useful that iDiscover shows newspaper articles and things like that. These wouldn’t show on PubMed and could be useful when presenting to people who don’t understand the field.” (Chemistry postdoc)
- “iDiscover is useful for e-books. You find more than you would on Google.” (Criminology MPhil student)

When conducting these different types of search, people have very different needs and expectations from the platform they are using. The chart below gives an impression of levels of importance placed by people on the behaviour of search tools when conducting known-item and exploratory searches.



It is important that we continue to be aware of the different ways in which people continue to use iDiscover, and discovery systems in general. Although there is clearly value for some in being able to search across millions of resources and multiple databases and resources types, some people also often need to use iDiscover and similar systems to quickly and easily locate specific known resources.

7.6 Quick and seamless access to resources is a priority

One of the key concerns for people we worked with over the course of the project was having quick, seamless access to the resources they needed. This often meant online articles and other electronic content, but also applied to printed library resources. Whether it was a full text online article or a classmark for a library book, people wanted to be able to access this information as quickly and easily as possible. Expectations, perhaps informed somewhat by experiences with platforms such as Google Scholar, were that it should be possible to move from an initial search to a full-text resource, for example, in one or two clicks. Comments from people we worked with included:

- "What's important to me is quick, immediacy of access to online resources." (Law PhD student)
- "I want a list of links that takes you to a paper, not a link to a link to a link." (Criminology MPhil student)
- "I don't want to see this 'send to' when I look for a paper. I want to see the abstract." (Engineering PhD student)

Often, people did not realise that the 'Full text available' option in the iDiscover results list view would, in many cases, take them directly to the online resource. This added to the perception of iDiscover as being complicated and forcing them to go through too many stages to get access. This approach and expectation may be because, by the time the user had successfully found the listing for the content they needed, they had already gone through several steps and therefore expected to have to go through more. During our observations participants commented:

- "I just want a big button saying 'pdf'." (Engineering postdoc)
- "[I want to be able to] search it, find it, click it, access it!" (Law PhD student)

After having found the listing for a resource they needed in the results list and clicking through to the item record, participants sometimes assumed that the item record screen would have the full text present and were confused when they were unable to see it. Although some people need and use a lot of the bibliographic information present in both the results and item screens of iDiscover, in a lot of cases people are looking for either the link they need to access an online resource or the location information they need to find a physical resource.

7.7 System performance and efficiency are very important

During our research people often mentioned being frustrated when having to wait for websites to load while they carried out searches and navigated between screens. Our participants had often experienced these issues with iDiscover, but also talked about having had similar problems with other online tools they used to search for information resources. People were particularly discouraged by this activity when they had to look for a number of resources in the same visit to a website. iDiscover seemed to perform reasonably well when people used University networks, where people had encountered real issues with its speed and performance it had tended to be when they were away from the University. Some people mentioned giving up when in these situations, as iDiscover was taking too long to load search results, or would not load them at all.

- “iDiscover is very slow. Because it’s looking for all these resources you’re not interested in, it takes ages to bring back the results.” (History academic)
- “There’s too much going on in iDiscover – it’s clunky, not smooth.” (Criminology MPhil student)

Due to this frustration with loading times, aspects of the iDiscover user interface which were perceived by users to take processing power from their devices were often seen as ‘overkill’. Two things which people commented on specifically were the diamonds shown when iDiscover is loading new screens and lists of results, and the screens which slide across lists of results showing item-level information. This added to the frustration people already had when having to move back and forth through different layers of iDiscover to find classmarks for books, bibliographic information, access links and so on.

It is worth mentioning that the introduction of the Ex Libris ‘Alma’ library management system at the University should improve many of the issues users are experiencing in this area at the time of writing. The system is designed to work with Primo and the speed with which data is retrieved should increase significantly. At present Cambridge metadata is held on several databases, with the implementation of Alma the metadata will be held on one database instead, which will have a positive effect on the performance of iDiscover. Although it is an important part of the user experience, we were aware during this project that work was being done to alleviate these issues, so it was not a primary focus of our work with people using iDiscover.

7.8 Relevant results are key to a successful user experience

When asked what was most important to them in terms of platforms used to search for information resources, the words 'relevance' and 'relevant' were used by a large number of our participants. This was directly linked to a desire for seamless, efficient searches which yielded appropriate and useful results, without the need to use pre- or post-search options to limit or refine them. People were often frustrated at the lack of perceived relevancy in the initial results list, after having used the main iDiscover search function.

- "There's no logic to the order in which things come up." (Education PhD student)
- "I tried iDiscover when it first launched. It didn't give me any relevant results, so I gave up." (Chemistry postdoc)
- "How are the results listed? What is the reasoning behind the relevance? And why is there no indication of this?" (Engineering MPhil student)
- "The results [iDiscover] returns seem to be random and only loosely related to what I'm searching." (Archaeology PhD student)

During our research, many people expected that iDiscover would be powerful and sophisticated enough to prioritise lists of results in the way that other platforms such as Google do. This may, as previously stated, have been partly due to the confidence inspired by the clean, simple, initial search bar. People also often thought that iDiscover would make conceptual links, looking for resources related to their search terms, when those terms were not present in the metadata for the resources they needed. One example came from a PhD student we worked with at the Computer Laboratory Library. They were trying to find a book using iDiscover which they knew was in the Library, which, from their understanding, was about big data architecture. The search terms 'big data architecture' would return the book as a result in Google Scholar, but not in iDiscover, due to the fact that the words did not appear in the title, subject headings, etc. for the resource.

While we were aware that the relevancy of search results was a key issue for users of iDiscover from an early point in the project, we also knew that this would improve over the time the platform will be in use at the University. Because of this, during our interviews and observations with iDiscover users we intentionally tried to spend time exploring other aspects of the interface as well, with the aim of identifying areas for improvement.

As with the performance issues, a lot of development work is focusing on the way in which iDiscover retrieves and ranks results. Many people we worked with had noticed improvements over the time they had been using iDiscover, particularly when attempting searches they had struggled with previously. Several of our participants mentioned that the results iDiscover retrieved during our observations were a significant improvement on those from previous attempts they had made with the same search terms and approach.

7.9 Library systems are seen as reliable and trustworthy

When our participants talked about iDiscover, particularly in terms of why and when they would use it instead of other platforms, many focused on its trustworthiness and reliability. In the case of undergraduate students, this was often in relation to the content they expected it to retrieve:

- “I would expect more reliable sources [in iDiscover] than I would in Google.” (Engineering undergraduate student)
- “Google might have more news articles, [iDiscover] would have more academic articles.” (Computer Science undergraduate student)

When working with postgraduate students and academic staff, we found a strong reliance on, and faith in, iDiscover in terms of the metadata it held and retrieved. Many people used it to find the correct bibliographic details for references they had been given or found, and also to check standardised formats for aspects such as journal titles and author names:

- “I use iDiscover to plug in missing bits of information from secondary sources.” (History academic)
- “I use iDiscover to check the standardised format for author names, and for finding other bibliographic details.” (Anglo-Saxon, Norse and Celtic academic)

It was reassuring to find this confidence in ‘the library’ from both students and academic staff. Although many of our participants preferred other search tools because of aspects such as speed and efficiency, many people used iDiscover when they needed to be sure that the resources or metadata they found would be reliable. This is an important consideration for the development of discovery systems, as in order to continue to be seen as valuable by their users they need to appeal to existing attitudes, approaches and behaviours. In this case, maintaining this reliability, or perceived reliability.

8. CONSIDERATIONS FOR DEVELOPMENT

iDiscover is a platform which will continue to develop and evolve over the time that it will be in use in Cambridge. There will be many opportunities for the needs, behaviours and preferences of our users to feed into this process. This may be when considering the implementation of new functionality in iDiscover itself, when designing web pages and online help tools, or when communicating in-person with people using iDiscover. Although this activity should be ongoing, the following considerations for continued development and design are based in the findings of this project.

Continued development should be based on the tasks people use iDiscover for

One of the key findings of our research was that people use many different tools to search for information resources. Our research has shown that people use iDiscover for specific tasks, so time and effort spent on developing the platform should focus on optimising these.

Areas to do with the relevancy of search results should be prioritised

The relevancy of search results is key to the iDiscover user experience. During our research participants most often expressed frustration with iDiscover when the results they received after conducting a search did not seem relevant to them. People had noticed improvements to this over the time that they had been using iDiscover and this was recognised as being of significant value to them. In order for iDiscover to continue to be seen as useful by members of the University, it is essential that attention continue to be directed towards providing what our users judge to be relevant sets of search results.

iDiscover should continue to focus on providing access to Cambridge resources

Our research participants shared an expectation that iDiscover would search primarily for content which they could access as members of the University of Cambridge, specifically printed and full text online resources, rather than non-subscribed resources, book reviews and abstracts. As this expectation is so prevalent, continued development of iDiscover should focus on highlighting the extensive printed and online collections held at, or subscribed to by the University. Providing information about other resources should be seen as a secondary priority. This aspect of the iDiscover user experience should improve with the introduction of a tabbed search bar, giving people the option to limit their searches. The tabbed interface, although not a direct output of this project, is based on feedback from users and is directly corroborated by evidence gathered during this project.

Where possible, the facility for a tailored user experience should be provided

The user experience of a search tool can be significantly improved by providing people with the ability to tailor aspects of its functionality to their own preferences. People we worked with often mentioned that they would like to be able to 'set' preferences, such as their preferred library/ies or resource type, some also mentioning that it would be useful to be able to turn on or off aspects of functionality such as predictive text. Wherever possible during the development of iDiscover, opportunities for customisation of this nature should be provided to the user.

User choices should be consistently applied throughout the search process

One thing which people find frustrating when using iDiscover is when refining a search in a certain way does not have the effect that they expect or are aiming for. A specific example is that when refining a search by an individual Cambridge library, people are confused when that library's holdings are not prioritised in subsequent search steps, i.e. in the results list and item view after they have refined their search. If possible, as iDiscover develops, priority should be given to this issue and changes made to searches by the user should have an effect on the user interface at as many levels as possible, as would seem natural to the individual conducting the search.

Quick, seamless resource access should continue to be prioritised

It is of paramount importance to users of iDiscover to have quick and seamless access to resources. This may mean finding the classmark for a printed book, or finding and accessing the full text for an online source. It cannot be stressed enough how key this is to the overall user experience and development should be focused in this area.

Consistent help options should be integrated into the iDiscover interface

Users often do not know where to look for help and advice when using iDiscover. We would recommend that help options be provided at every stage in the user interface. One way this could be achieved would be to include a link to the LibAnswers service on each page in the iDiscover interface.

Multiple results lists should be user-centred and intuitive

Where there are options for the user in terms of resource type, the list of options should reflect user preferences and existing behaviours. Specifically, printed book records should appear before ebook records and subscribed online content should appear before non-print legal deposit resources, for both books and journal articles.

9. CONFIGURATION SUGGESTIONS

The following suggestions for the continued development of the iDiscover interface are more specific than the 'considerations for development' listed in the previous section. They accompany a set of very specific, micro-level suggestions for re-configuration of the interface, which can be found in [Appendix 1](#) of this document.

- Users should be able to apply multiple post-search filters using tick-boxes or similar functionality, rather than being sent to the top of a 'new' page after each filter is applied or removed.
- If possible, holdings information for 'multiple versions' records should expand and collapse within the results list view, rather than slide across in a new window.
- A 'back' button should be included to move from item record screens to results lists, in addition to the existing 'X' option.
- More than 10 results should be included in the initial list of results retrieved, if this can be achieved without losing too much speed and performance in the interface. This would need further testing to be optimised.
- Access links should be prominent and obvious and aspects of the interface suggesting access should be active links wherever possible. An example is the green 'Full text available' text at the top of item record screen for online resources, which at present sits next to a hyperlink symbol in the interface but is often not active.
- In cases where printed material is held in 'dark store' locations and inaccessible to users, there should be clear and prominent information advising users to request a free Inter-Library Loan. At the moment this link is too hidden amongst other aspects of the interface and the meaningful information users need is held away from iDiscover and is difficult to find.
- If possible, without detracting from other important elements of the interface, citation numbers should be included in the results view for online resources.
- The visibility of the Primo 'bX' functionality which suggests related resources should be increased. Many of our participants used and enjoyed similar functionality in other systems they used, but were not aware of its presence in iDiscover.
- Continued efforts should be placed on ensuring that search retrieval algorithms prefer words found together and in key fields such as title and author. During our observations often results were prioritised that contained many instances of a word in the description or abstract for a resource.

10. PROJECT OUTPUTS

This project was a first for the Futurelib Programme, in that it concentrated on the use of an existing, third party service. The outputs took many different forms, which we hope will be useful both at the University of Cambridge and to inform the continued development of the Primo service.

10.1 Suggestions for reconfiguration of the iDiscover interface

In addition to those outlined in the 'Configuration suggestions' section of this report, a number of suggestions for specific changes to the iDiscover user interface were arrived at based on the project data. It is important to note that the intention was to provide an impartial user perspective. We are aware that some changes will be more difficult to implement than others, that some may not be possible with the current configuration options in Primo, and that others may not be achievable at a local level and would rely on development work from Ex Libris. A weighted table of these recommendations can be seen in [Appendix 1](#) of this document.

10.2 Recommendations for Ex Libris

In addition to this report, documentation has been prepared to inform Ex Libris, the supplier of the Primo service which iDiscover acts as a 'front end' for, of the main findings of the project. This document contains evidence and recommendations to inform the development of the Primo service. As Cambridge are the first major research-intensive University to begin using the current Primo software, we hope that this evidence-based account of the ways in which Primo is being used and experienced at the University will be a valuable way of communicating the needs of our users.

10.3 Education and communication: tools and recommendations

As mentioned previously in this report, key outputs which were considered throughout the project were tools which could be used by library staff working with users of iDiscover. It is key to the success of the platform that Cambridge library staff give consistent and positive messages to people using iDiscover throughout its development. Working closely with the team responsible for implementing changes to iDiscover has led to a number of ideas about how to communicate these messages to our users.

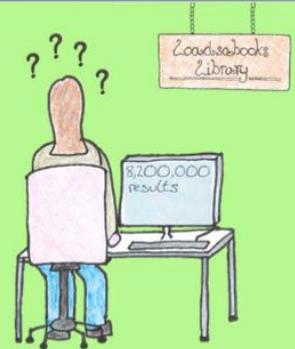
The document overleaf is one example of tools arrived at on the basis of these discussions, aimed at new students starting at the University, with no previous experience of iDiscover.

10 things you need to know about.. iDiscover

1 iDiscover, the main search platform for Cambridge library content, will show you listings for almost all of the printed and electronic library resources held at the University. With one search you can find e-books, online articles, printed books, journals, maps, music, and more.



2 The University holds millions of books and has access to millions more articles and sources online. Searching all of this together means that you will need to refine your iDiscover searches. To find the resource you need, try using the filters on the screen to search by the libraries you have access to, or by the author you need, etc. Use the "Available in the library" filter to cut out almost all electronic resources.



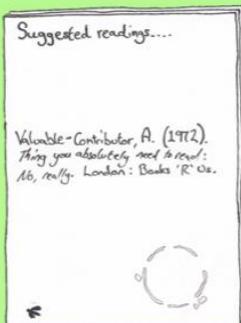
3 iDiscover uses responsive web design, which means it adapts well when used on mobile phones, tablets and computers.



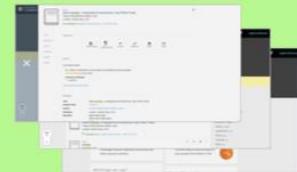
4

iDiscover presents different levels of information about resources at different points and on different screens. You may have to 'click through' a few times to see the code you need to find a book, or the link to an online resource.

5



To find sources which you have information about, for example from a reading list, try to search with a few key words, for example, the author's surname and a couple of distinctive words from the title.



6

iDiscover is not (quite) exhaustive. For some resources it may be necessary to use the 'databases a-z', linked at the top of the main iDiscover webpage.

7 iDiscover has lots of functionality designed to make your life easier! Look for the icons below, they can be used to export references, email information to yourself, and check your recent searches. Lots of other useful features exist, you'll come across these when you start exploring iDiscover.



8

The icons to the left of results tell you what the resource is, or if there are multiple listings for a search result. Use these to help you find the things you need.



9

The iDiscover Advanced Search lets you combine things like title words and author names. This can be a useful way to search when you are looking for a specific resource.



10

Library staff can help! If you have any questions at all, about iDiscover or any other issues related to information, speak to a member of staff in one of the libraries you have access to. More information about iDiscover can be found here:

libguides.cam.ac.uk/idiscover

10.4 Personas

The personas presented in the following pages of this document represent archetypal users of iDiscover. They are based on data gathered during work with real users, with different needs, goals, motivations and approaches. Importantly, each persona does not represent a level of study or members of a specific academic discipline, rather a distinct set of values and expectations, which could be found, for example, in an undergraduate student *or* member of research staff.

This project provided a large amount of data and insights which will allow for some immediate and short-term changes to iDiscover. It is important to note, however, that both iDiscover and the underlying Primo platform will continue to develop over the coming months and years. While it will be essential to continue working with real users as this happens, we hope these personas will prove useful when considering the implementation of features and functionality to iDiscover.

We believe that one persona may be missing from this set. During the project, we worked with few undergraduate students; those that we did were in their second, third or fourth year of study. Due to the stage in the academic year we were also unable to work with any graduate students who were new to the University. Lacking the necessary research data, we were unable to confidently design the fifth persona, someone who would have had very little experience of using academic libraries and associated systems.

More information on personas and how they are used in the design process can be found here:

<https://www.usability.gov/how-to-and-tools/methods/personas.html>

The project personas can be found on the following four pages of this document.

Sofía



“My top priority is getting on with my work”

Sofía finished her PhD 5 years ago at the University of Manchester. Since 2013 she has been employed by the University of Cambridge as a member of research staff, working within a number of different research groups in the Department of Engineering. Her work is often lab-based and involves visiting various academic and industrial partners in and outside of the UK. Sofía enjoys working in a fast-moving and varied field and feels motivated when collaborating with people who are conducting research in other academic disciplines.

Needs and goals:

- Wants to be able to find and access content such as peer-reviewed journal articles and conference proceedings as quickly and simply as possible.
- Needs enough information to identify and access the resource she is looking for.
- Expects search algorithms to be sophisticated enough to link related terms and concepts and to prioritise results accordingly.

Pain points:

- Having to go through multiple website screens and spend time moving from a search to the desired online resource.
- Key resource access links being ‘hidden’ alongside lots of other textual information, e.g. links and other options.
- Having to use complicated search methods in order to achieve her goal.
- Seeing lots of references to content she is unable to access.

Real *i*Discover users say:

- “It’s frustrating to see so many things I can’t access, before the things that I can.”
- “Search it, find it, click it, access it!”
- “I just want a big button saying ‘pdf’.”

Alex



“Studying at Cambridge is hard enough - I don’t want to waste my time and mental energy on the admin that goes along with it”

Alex received a first class honours degree after completing his undergraduate studies at the University of Oxford. He enjoys the research side of the Criminology master’s degree he is currently pursuing at the University of Cambridge and is happiest when conducting interviews with practitioners. He often needs to use different resources, such as books, academic journal articles and government publications. He rarely uses libraries except when he needs to borrow books and would rather be conducting research in the field than reading or writing.

Needs and goals:

- Needs different resources at different points in his studies and prioritises having quick and uncomplicated access to these.
- Likes websites that feel familiar and has converted to using the complete range of Google products as this means a high level of compatibility and one login.
- Often needs remote access to electronic resources when on field work away from the University.

Pain points:

- Being confused and overloaded by information he doesn’t see as important or relevant.
- Having to learn to use various different complicated systems that don’t feel familiar.
- Not having quick and easy access to electronic resources when away from University computers and wireless networks.

Real iDiscover users say:

- “I like Google as once you’re logged in, you’re logged into everything.”
- “It annoys me when it takes too many clicks to get from the results page to the article.”
- “I prefer websites that look similar to ones I’ve used in the past.”

John



“I’m willing to take the time, but things need to be done right”

John has had a long and varied career in academia and has worked at a number of prestigious institutions around the world. Over time his work has shifted from teaching students to conducting his own research. John has published three successful monographs in theological anthropology and is considered one of the key experts in the field. John prides himself on being conscientious and thorough in his research. He is primarily motivated by wanting to make a valuable contribution to the discourse in his academic discipline.

Needs and goals:

- Is often trying to find records of as many copies of a specific text as possible, held both at the University of Cambridge and elsewhere.
- Will happily spend time searching for information sources, if the outcome is a relevant and suitably exhaustive list of what he needs.
- Needs to compile and check extensive bibliographies on a regular basis.

Pain points:

- Knowing that a suitably structured search for resources has not yielded appropriate and relevant results.
- Not being able to easily find the editions and copies of the printed books he needs to complete his work.
- Being overloaded with software functionality which he sees as irrelevant and not useful for the task he is trying to complete.

Real *iDiscover* users say:

- “Sometimes it’s useful to see the book review, but 99 times out of 100 I want the object itself.”
- “It’s important to be able to filter results effectively.”
- “I often need to check the standardised format for author names and other bibliographic information.”

Angelica



“I’m always looking for new and niche articles – it’s a competition at Cambridge!”

Angelica is in her second year of an undergraduate degree in History at the University of Cambridge. She has always had a passion for reading and exploring different areas that are related to what she is currently studying. She is keen to become an author of historical novels and much of her spare time is spent pursuing this. She enjoys challenging herself with the essays she writes as part of her degree course and is constantly trying to improve her writing and provide new and original points of view.

Needs and goals:

- Wants to keep ‘ahead of the game’ and enjoys publications by authors who question established academic theory.
- Is often looking for resources that have not yet been discovered and read by her peers.
- Compiles long lists of further reading for herself, so that if she is unable to read the whole of a resource at the time she comes across it she can find it again later.

Pain points:

- Missing out on resources she may have found useful or interesting, by not being able to find them.
- Not understanding how a website works and how her interactions with it affect its behaviour.
- Feeling patronised when presented with overly-simplified functionality or too much help information.
- Not being able to find the printed books she needs quickly and easily.

Real *iDiscover* users say:

- “I like the fact that *iDiscover* shows you lots of different and new articles.”
- “I don’t understand why the results are in that order.”
- “I like databases which have options before you search, as otherwise you have to narrow down your results afterwards and it takes ages.”

11. LIMITATIONS OF PROJECT

Due to the nature of the Primo platform, i.e. that it is constantly developing and much of the work in this regard is done by its supplier, it was necessary for us to apply established, 'traditional' user experience research methods in a non-traditional setting, i.e. a software platform which we at the University are unable to re-design. The ideal methodology would have involved an initial period of research with users of iDiscover, followed by a re-configuration and re-design of the platform based on this, followed by further research to measure differences in the user experience, repeating this until the experience had been optimised. Although outside the scope of this project, we hope that, resource permitting, this may be possible to achieve in essence over a longer period of time, as the platform develops.

Another method which would have added depth to our data would have been the use of digital eye-tracking technology, to record which aspects of the iDiscover user interface were identified by users at different points in their search processes. Although the talk-aloud protocol used during our observations gave us valuable data and insights, in some cases we were unsure whether an aspect of the interface had been seen and interpreted correctly by the participant, before having to ask them, which meant that their response could not necessarily be relied on.

We are aware that iDiscover is part of a much wider University experience for students and academic staff. Although we learnt a lot about these experiences during our study, we did not focus efforts on examining what happened directly before and after people used iDiscover. Examples could include the specific behaviours and approaches taken by students directly after receiving a reading list, or examining the processes people follow when trying to find a printed library resource, directly after using iDiscover to find its location and classmark.

12. CONCLUSION

This project has given us a deep level of understanding in terms of how people interpret, approach and use iDiscover, and how this fits with the ways they in which they interact with information more generally. It reiterated for us the importance of identifying how people understand the "library" in the context of their wider lives studying, conducting research and teaching at the University. This knowledge should underpin the development of all aspects of our services, including our digital products. It should also inform the way we communicate with and educate our users.

The data gathered and analysed during the project has provided information which can be used to improve and enhance the iDiscover user experience. Alongside this, it has given us an evidence base which can be used to inform further decisions as the product develops and support requests put to its supplier. The recommendations and other outputs detailed in this report do not represent the entirety of the project outputs; close work with the implementation team will see more changes to iDiscover, including aspects such as the Advanced Search configuration, the placement and content of online help information and tools for user education.

This project would not have been possible without the interest, enthusiasm and dedication of the project team. A huge thank you to Beth, Helen, Jo, John, Louise, Natalie, Nicholas and Sonya for their efforts throughout the data gathering, analysis and idea generation processes. Special thanks also go to those who gave their time to the project at the initial kick-off meeting for library staff.

Although the institutional context of this work is extremely important, we believe that the insights and knowledge gained will be useful and of interest to those outside of the University of Cambridge. The version of Primo under study here represents the 'new wave' of resource discovery systems. We hope that our findings will be of use to other institutions considering, or currently implementing, similar products.

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Appendix 1

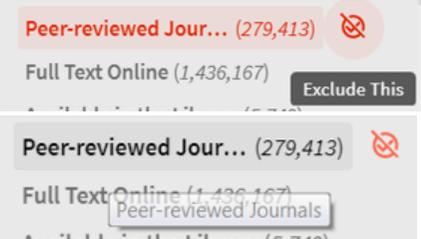
Area	Issue	Action	Screenshot	Weight
'Static' aspects of UI	<p>People are frustrated at the amount of screen real estate which is 'wasted' post-search in the initial results list view. This is very damaging to the overall user experience.</p> <p><i>[In Advanced Search view post-search the users screen does not change at all (particularly on small-medium sized laptops) as the search box still takes the whole of the screen.]</i></p>	<ul style="list-style-type: none"> - Significantly reduce size of iDiscover logo and (if possible) move to left of search bar. N.B. This is only an issue on results lists screens, not on main desktop simple search screen <i>pre</i>-search. - Reduce size (height) of main search bar. - Reduce size of 'Sign-in' banner: see "The signing in processes are confusing to people[...]" section of this document. - Consider removing some text from some records in results list view. See "Bibliographic information included for each result in results list view" section of this document. 		10
Terminology	<p>"... and other locations" is not intuitively understood. The assumption is sometimes that only the holding library shown in the results list view holds the item.</p>	<p>With physical items held at multiple locations, change (e.g.) "Available at UL: Order in Reading Room (9003.c.5212) and other locations" to "Check where you can find this"</p>		10
Terminology	<p>NPLD message not understood</p>	<p>[If not using NPLD terminal]:</p> <ul style="list-style-type: none"> - Link to screen with brief information and list of libraries with NPLD terminals. <p>OR</p> <ul style="list-style-type: none"> - Change message to "Access restricted to certain PCs: ask library staff for assistance." 		10
Terminology	<p>"Affiliate libraries" not understood</p>	<p>See "NPLD message not understood".</p>		10
Buttons etc.	<p>Advanced Search option rarely seen</p>	<p>Increase size of text (and move?)</p>		10
Filters	<p>[Library] filter can take up too much real estate of the side bar, which stops people seeing and using the filter groups below.</p>	<p>Show first five holding libraries in [Library] filter in first instance and allow people to expand this as with the other filter groups.</p>	Screenshot 4	9

<i>Filters</i>	People are used to seeing filters on the left of the screen and expect to see them there in iDiscover. This contributes to filters on right side of screen being missed and not used.	Move right hand filters to left side of [Results list view] screen.		9
<i>Interpretation and approach</i>	The signing in processes are confusing to people. They often don't understand the different between the two log-in processes and what effect logging in has.	Reduce size of "Sign in to get complete results" bar under search bar on results list screen. When using University wired/wireless networks signing in does not affect the number of results iDiscover retrieves when users search. When 'off-campus' the number of results does increase after signing in, however, the sign-in bar takes up a large of screen real estate, which is frustrating to users and it does not mention the other benefits of signing in, i.e. pinning functionality etc. Clicking 'Login to iDiscover' on the top right (desktop version) should link to login screen, not ask the user to click again with a slightly different view of the text/button.	Screenshot 5	9
<i>Terminology</i>	"Expand beyond library collections" not understood and giving wrong message (i.e. when search already returns results for content which people are unable to access)	Include link to help pages explaining what this functionality means and does. Salford: Link on top right here: http://bit.ly/2uXt4Mg Links to here: http://salford.libanswers.com/e-resources/faq/92201		9
<i>Buttons etc.</i>	Limited help and contact options are available/visible to iDiscover users and these are not located within the UI.	Include LibAnswers 'button' where possible. Ideally inside the interface but also 'around' it.		8
<i>Filters</i>	Date filter is used a lot across disciplines and levels of study/research.	Move date filter near top of list, as suggested in " Suggested order of filters[...] " section of this document		8
<i>Terminology</i>	"Multiple versions" is not understood. Taken to mean either format, edition, or copy, or all.	Change to (e.g.): "12 listings found, click here to see".		8

<i>Terminology</i>	"May be available" is confusing to people.	Change "May be available" to "Check access". BUT lots of this issue negated by EBSCO record removal and by tabbed U.I.? AND pre-Alma will not help with some college print records?		7
<i>Buttons etc.</i>	Item record: 'navigation panel' on left, i.e. 'Top', 'Send to', etc. is confusing. People think it will link to new pages and are surprised when it does not. Particularly in the case of the 'More' button.	Consider removing.		7
<i>Filters</i>	It is currently not possible to exclude [Full text online] results using the filters. This would be useful for people trying to filter to printed resources.	If there is no reason for this it should be consistent with other filters and the option to exclude these results should be included.		7
<i>'Static' aspects of UI</i>	People like seeing abstract (and even full-text) text in records, both in iDiscover and in other platforms.	Consider this as iDiscover develops, BUT balance this carefully with screen real estate for each result and visual information hierarchy. Would require testing with users.		6
<i>'Static' aspects of UI</i>	Bibliographic information included for each result in results list view. [A key issue for people using iDiscover (particularly results list view) is screen real estate. People using phones, tablets, smaller laptops etc. get very frustrated at how few results they see at once.]	<i>Used frequently and seen as useful:</i> <ul style="list-style-type: none"> - Title - Author - Holdings / access info and links - Edition no./year - Journal title, Vol. and Issue nos. <i>Could remove:</i> <ul style="list-style-type: none"> - Place of publication (BUT this not possible due to the fields the information is taken from?) - Page nos. in journal - Second instance(s) of author information, (i.e. from 7XX fields?). 		6
<i>Icons</i>	The meanings of the resource type icons are often unclear to people.	Move 'Book', 'Article', etc. text nearer to icons if possible.	Screenshot 2	6

Icons	 <p>Meaning of “Multiple versions” icon is particularly unclear to people.</p>	<p>See “The meanings of the resource type icons is often unclear to people.” Section.</p> <p>OR do we have other options here in terms of the icon which is used?</p>		6
Icons	<p>Cover images are very useful for people, both for printed and electronic content.</p>	<p>Include wherever possible and at as early a stage as possible, i.e. ideal would be in [Results list view] and onwards and for [Multiple versions] listings.</p> <p>N.B. We understand that it is very probable that the data will not allow for this.</p>		6
Terminology	<p>“Books” is often taken to mean printed, physical objects.</p>	<p>Add “Ebooks” to [Resource type] menu, assuming results/metadata can be differentiated.</p>		6
Terminology	<p>“New records” interpreted as meaning newly <i>published</i> content.</p>	<p>Change “New records” to “Recently added”.</p>		5
Filters	<p>People are frustrated when having to filter online content to “Full Text Online”, as they assume all listings for online content will be ones in which they can access the full text.</p>	<p>Hopefully solved somewhat by deletion of EBSCO records and tabbed UI, in which first and second search scopes will do this automatically?</p>		5
Terminology	<p>“Stack request” and related messages often not understood.</p> <p>N.B. This will only apply to users of the main UL and therefore could be considered reasonably low priority.</p>	<p>[Results list view]: Change “Order in Reading Room” to “Order to Reading Room”.</p> <p>[Item record view]: Leave “Check request options” as it is.</p> <p>[Request options view]:</p> <p>Change “Order in Reading Room” to “Order to Reading Room</p> <p>Change “Place a Reading Room closed stack request” to “Order to Reading Room.”</p>		5

'Static' aspects of UI	Diamonds shown whilst loading are appreciated by some as they show that iDiscover is 'working' but others are frustrated as they take (or are perceived to take) a lot of processing power away from some devices.	Keep a visible loading 'signal' but investigate whether this could be achieved through a mechanism which takes (or is perceived by users to take) less processing power from devices.		4
'Static' aspects of UI	Screens which slide across , i.e. moving from results list view to 'holdings view' frustrate people as they take (or are perceived to take) a lot of processing power away from some devices.	Investigate whether this could be achieved through a mechanism which takes (or is perceived by users to take) less processing power from devices. This could be possibly take the shape of expandable/collapsible lists below the listing for the item in the results view. N.B. We are aware that current Primo functionality may not allow for these options. If it does, we would recommend that any changes in this regard be tested with users.		4
Terminology	"Available" sometimes not correct as e-books may be in use, for example.	Change to: "University has access"?		4
Buttons etc.	 Search history functionality is seen as very useful but often missed.	Place more prominently and enlarge icon.		4
Icons	Resource type not specific enough , with conference proceedings and print PhD theses showing as 'Book', for example.	Probably to do with the metadata and therefore a job for a data specialist?		4
Icons	 People are sometimes frustrated by this icon , as it currently doesn't differentiate between peer-reviewed content and, for example, newspaper articles.	Probably to do with the metadata and therefore a job for a data specialist? IF differentiation is possible then two or more different icons should be used to denote peer-review or lack of.		3
Terminology	In Advanced Search, "Specific date" does not accurately describe the task performed.	Change "Specific date" to "Specify date range".		3
Icons	"Other" gives people no way to evaluate the resource.	Probably to do with the metadata and therefore a job for a data specialist?		3

'Static' aspects of UI	People like and use citations nos. in other platforms (e.g. Google Scholar).	Include if possible in results list view and/or item view. If not current functionality consider if possible in future releases.		3
<i>Interpretation and approach</i>	<p>At present the messages given when hovering over different filters are inconsistent and can be confusing to users.</p> 	Hover text should be consistent, i.e. 'Include this' as well as 'exclude this'. At present, the (e.g.) 'Peer-reviewed Journals' hover text gives no additional information to the user.		3
<i>Buttons etc.</i>	Ability to [ctrl+left click] to open content in a new tab is inconsistent. It is not possible to do this in most cases (e.g. when clicking "[x] versions of this record exist. See all versions" but in some cases (e.g. when clicking hyperlink for a [Uniform title] in an item record it is possible and has peculiar results, in this case reverting active item view window to previous results list window/tab and opening new Advanced Search window/tab with parameters applied.	Allow [ctrl/cmd+left click] functionality if possible to do so consistently and in a way the user would expect. If not possible to do this consistently remove functionality from all areas of iDiscover. N.B. Aspects of this behaviour seem like they may be due to bugs rather than intended functionality.		2
Terminology	"Material Type" used in Advanced Search. This is not consistent with "Resource Type" used elsewhere.	Use "Resource Type" in both cases, i.e. change in Advanced Search.		2
Buttons etc.	Tagging functionality. People mentioned that it would be useful to be able to tag item records in the full public-facing UI as well as in their own saved records.	Look into the possibility of this in future releases and include if possible.		2

Terminology	Mix of upper and lower case present at start of words in areas of the UI.	Standardise this, including in Advanced Search and on hover notices over 'iDiscover', 'e-journals A-Z' etc. above main search bar on main desktop screen.		2
Terminology	"Classmark" not always understood.	Would suggest leaving, as the word is understood by many users and alternatives may be just as confusing to some.		1
Terminology	"Collection" rarely understood in filter groups and filter not used by anyone we worked with.	Consider removing [Collection] filter group OR leave at bottom of list.		1
Icons	 Not usually noticed immediately, but once found are intuitively understood by most people.	Keep as is, or conduct further testing with users.		1
Icons	 Not always intuitively understood.	Could include explanation text when cursor hovers over, or help buttons below. BUT most people using the related software will understand the terms ('BIBTEX' etc.), hence the low priority weighting.	Screenshot 3	1
Filters	Users in some disciplines mentioned that they were often looking specifically for material based on locality , for example legal precedent in a certain country or NHS sources.	If possible, it may be useful to some users to include a [Place of publication] filter. If included this should be near the bottom of the filters bar, only above [New records] (renamed) and [Collection] filters in the " Suggested order of filters[...] " section of this document.		1
'Static' aspects of UI	People like search words highlighted in yellow in results list view.	Keep		1
'Static' aspects of UI	Seeing "87,000 Results" etc. in results list view is useful, as people know whether they should refine their search.	Keep		1
Buttons etc.	Mac IOS: When using simple search bar, once right hand drop down menu is opened it is not obvious that more options exist below 'University Library' due to lack of down arrow	Include side bar with down arrow if possible, as with Windows etc. view of interface	Screenshot 1	1
Buttons etc.	Copy and paste citation functionality seen as useful by many people	Keep		1
Buttons etc.	Email button is used by some to email references	Keep		1

Interpretation and approach	There is an assumption by some people that logging in leads to personalised results, i.e. preferring College Library results etc.	<p>Pop-up after log-in explaining how the experience will change?</p> <p>Only use if it is possible to include a 'don't show me this again' option.</p> <p>- <i>Needs further discussion with implementation team</i></p>		N/A
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Screenshot 1:

The screenshot shows a web browser window with the URL `idiscover.lib.cam.ac.uk/primo-explore/search?vid=44CAM_PROD&lang=en_US&sortby=rank`. The browser's address bar and tabs are visible at the top. Below the browser, the University of Cambridge logo and navigation links are present. A search bar with the text "Search our collections" is highlighted, and a dropdown menu is open, listing various collection types: "All Libraries/Collections", "Books", "eBooks", "Online Resources", and "University Library".

UNIVERSITY OF CAMBRIDGE

IDISCOVER MY LIBRARY ACCOUNT HELP & CONTACT US EJOURNALS A-Z DATABASES A-Z

Search our collections

All Libraries/Collections

Books

eBooks

Online Resources

University Library

What is iDiscover?

Use iDiscover to search the University's libraries print and online collections using a single search. Find books, ebooks, videos, theses, open access content and more. Log in to manage your loans, requests, fines and saved search results.

Which login do I use?

- Log in to MY LIBRARY ACCOUNT to manage your loans, requests, fines and saved search results.
- Log in to iDiscover to view your favourites, and to view FULL search results (some databases only show results if you are logged in). Place the cursor on 'Login to iDiscover' and log on.

Where can I get help?

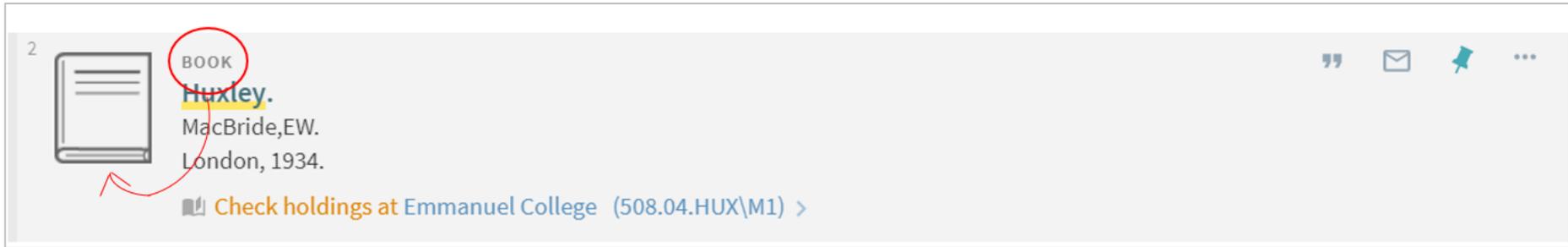
Click on the [HELP & CONTACT US](#) link to:

- access quick guides on how to use iDiscover
- find answers to questions about iDiscover,

What am I searching?

You are searching the catalogues of physical items in the majority of the libraries in the University,

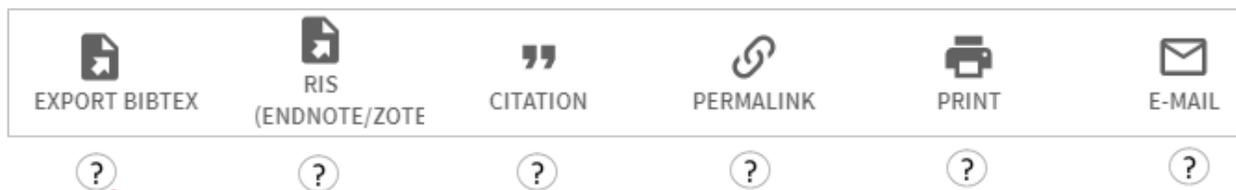
Screenshot 2:



Screenshot 3:



Could include explanations of these when cursor hovers over each.



Could also do this, but would probably clutter interface and I would imagine functionality does not exist.

Screenshot 4:

Check holdings at Emmanuel College (508.04.HUX/M1) >

4 REFERENCE ENTRY ” ✉ 📌 ⋮
 **Boyhood and education in Germany | Move to Britain and research on nerve fibres | Australia, war service, and marriage | Return to Britain**
 Huxley, Andrew
 Oxford University Press
 Oxford Dictionary of National Biography
[Full text available](#) >

5 ARTICLE / multiple sources exist. [see all](#) ” ✉ 📌 ⋮
 **Huxley**
 Nature, 1934, Vol.134(3378), p.124[Peer Reviewed Journal]
[Full text available](#) >

6 ARTICLE / multiple sources exist. [see all](#) ” ✉ 📌 ⋮
 **Huxley**
 E. Ray Lankester
 Nature, 1925, Vol.115(2897), p.702[Peer Reviewed Journal]
[Full text available](#) >

7 ARTICLE / multiple sources exist. [see all](#) ” ✉ 📌 ⋮
 **HUXLEY.**
 The Lancet, 1925, Vol.205(5306), pp.987-987[Peer Reviewed Journal]
 “ day. There was a time when Huxley's name could hardly... The Lancet Annotations. HUXLEY, Thomas Henry... Huxley was born at Ealing on May 4th, 1825, and ”
[Full text available](#) >

8 ARTICLE ” ✉ 📌 ⋮
 **Huxley**
 American Journal of Physical Anthropology, Apr 1, 1939, Vol.25(1), p.492[Peer Reviewed Journal]
[Full text available](#) >

African Studies Centre Li... (20)
 Ancient India & Iran Trust (12)
 Archaeology & Anthrop... (74)
 Art and Architecture Library (5)
 Asian & Middle Eastern St... (3)
 Astronomy: Institute of As... (2)
 Biochemistry: Colman Lib... (1)
 Botanic Gardens: Cory Li... (21)
 Cambridge Centre for Chr... (2)
 Cambridge Theological F... (28)
 Cambridge Union Society (3)
 Christ's College (57)
 Churchill College (27)
 Clare College (21)
 Classical Faculty Library (65)
 Computer Laboratory Lib... (1)
 Corpus Christi College (45)
 Criminology: Radzinowicz... (5)
 Darwin College (48)
 Divinity Faculty Library (34)
 Earth Sciences Library (15)
 Education Faculty Library (6)
 Emmanuel College (84)
 Engineering Library (3)
 English Faculty Library (175)
 Fitzwilliam College (31)

PAGE 1
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N.B. This was taken from a relatively large screen monitor.

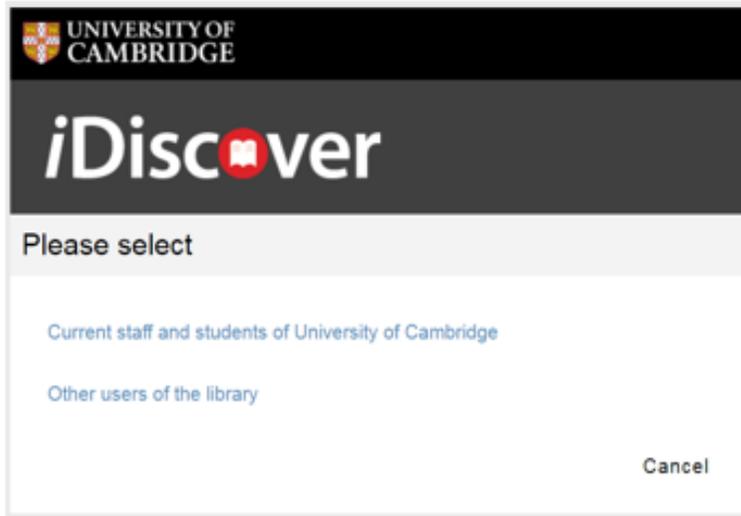
Screenshot 5:



This, when clicked, should link straight to login options



This button should not be needed and this entire screen should be skipped



Suggested order of filters (results list view)

- [Sort by]
- [Availability]
- [Resource type]
- [Date]
- [Library]
- [Author/creator]
- [Subject]
- [Language]
- [New records] – [change to “Recently added”](#)
- [Collection]