
INTERACTIVE SOCIAL BOOK SEARCH - DATA DOCUMENTATION

DATA DOCUMENTATION

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ABSTRACT

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1 Interactive Social Book Search 2014 – 2016

The interactive Social Book Search (iSBS) track was an evaluation campaign that ran for three years 2014–2016 [Hall et al., 2014, Gäde et al., 2015, 2016]. As part of the Social Book Search lab at CLEF [Koolen et al., 2015, 2016], it focused on studying how book searchers use book information from traditional sources (publisher-provided metadata, library catalogues) in combination with social media data about books like online reviews and user ratings. Such social data is different in nature from curated metadata in many ways [Koolen et al., 2012], but it can be used effectively for retrieval in many book search tasks [Koolen, 2014]. Reviews contain highly subjective aspects about a user’s reading experience of the reviewed book, and have a heavy popularity bias, with popular books having hundreds or thousands of reviews, while many books have no or only a few reviews. To understand how users of book search systems deal with these different types of information, over the course of three years the iSBS track collected questionnaire and transaction log data from over 300 respondents, who participated in a range of different book search tasks.

This document provides a detailed documentation of the three iterations the iSBS track went through. The iSBS 2014 data is to be treated as a pilot study, but there were only minimal changes between the iSBS 2015 and iSBS 2016 data-sets, thus they can also be re-used as one.

2 iSBS 2014

The iSBS 2014 experiment was run as a pilot study. As a result the number of participants is comparatively low and based on the experience major changes were made for the following years, which limits comparability.

2.1 Ethics

Ethics approval was gained from Edge Hill University's Research Ethics Board. Participants were required to confirm that they were willing to have all the data outlined below collected and that they consented to the collected data being distributed to the research community. Participants were provided with a unique code and via this were allowed to request that their data be removed during a two-week period after the experiment concluded. After this the unique code was deleted from all data.

2.2 Base Data

The track builds on the INEX Amazon/LibraryThing (A/LT) collection [Beckers et al., 2010], which contains 2.8 million book descriptions from Amazon, enriched with content from LT. This collection contains both professional metadata and participant-generated content. The iSBS 2014 experiment uses a sub-set of this collection, filtered to include only those books that have a thumbnail image, creating a reduced data-set of approximately 1.5 million book descriptions. No further pre-processing was performed.

Each book record is an XML file with fields like *isbn*, *title*, *author*, *publisher*, *dimensions*, *numberofpages* and *publicationdate*. Curated metadata comes in the form of a Dewey Decimal Classification in the *dewey* field, Amazon subject headings in the *subject* field, and Amazon category labels in the *browseNode* fields. The social metadata from Amazon and LT is stored in the *tag*, *rating*, and *review* fields.

2.3 System

The experiment was conducted using the experiment support system¹ [Hall and Toms, 2013]. This in turn loaded the core system that the participants used to undertake the tasks. The core system consisted of a backend providing access to the data and a web-based user interface.

2.3.1 Backend

The data-set was indexed using an ElasticSearch² instance, with text analysis only performed on the *title* and *review* fields.

The search system was accessed via a backend built using the PyIRE system Hall et al. [2013]. In addition to providing the intermediary between the search system and the user interface, the PyIRE system also provided the logging functionality, capturing all aspects of the interaction between participant and system. The software is no longer available.

2.3.2 User Interface

The user interface was built using Python/HTML/CSS/JavaScript to provide a dynamic and interactive user interface. Two versions of the user interface were provided, a baseline interface and a multi-stage interface.

The baseline interface provided the participant with a simple search box, results list, a book-bag for collecting books, and a search history list with the last 5 searches (fig. 1). Selecting a book from the result list, showed the book view (fig. 2) from which the participant could add a book to their book-bag. In both screens, the participants could attach tags to the books they have collected in the book-bag. In the item view, clicking on a metadata entry performed a search using that metadata entry. The participant's task was shown on both screens.

The multi-stage interface was an attempt to build an interface that mapped to Vakkari's three search phases (pre-focus, focus formulation, and post-focus) [Vakkari, 2001]. The pre-focus stage aimed to support fast exploration with an overview result view (fig. 3), the focus stage implemented a standard faceted-search interface (fig. 5), and the

¹<https://github.com/biirrr/experiment-support-system/>

²<https://www.elastic.co/>

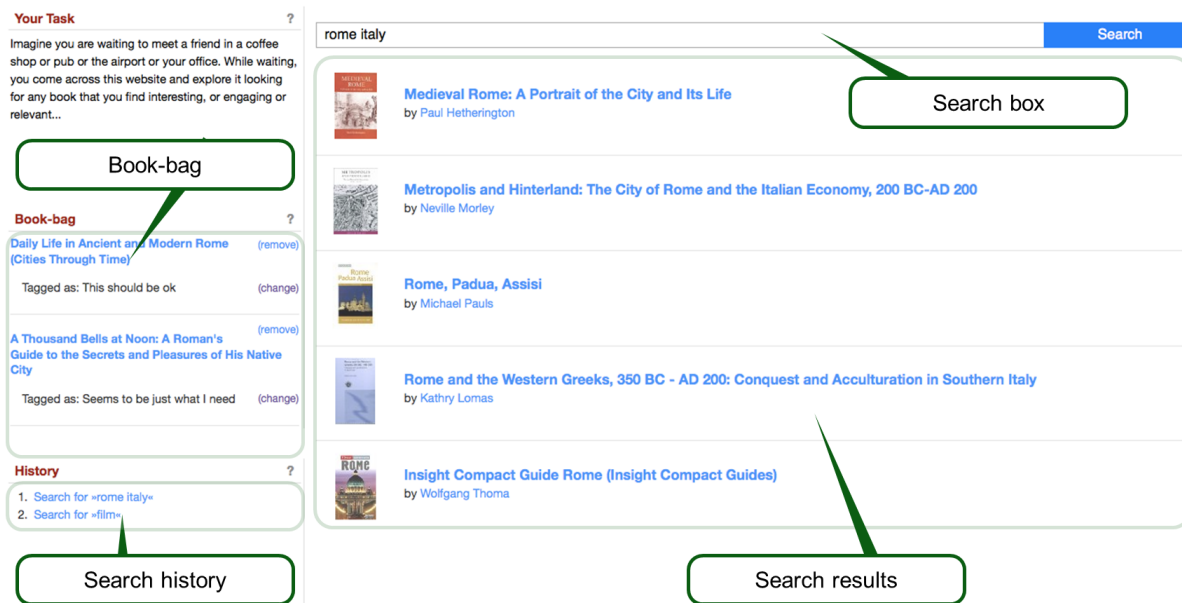


Figure 1: Baseline search interface, showing the search box, result list, book-bag with collected books, and the recent search history. Books in the book-bag could be tagged by the participant.

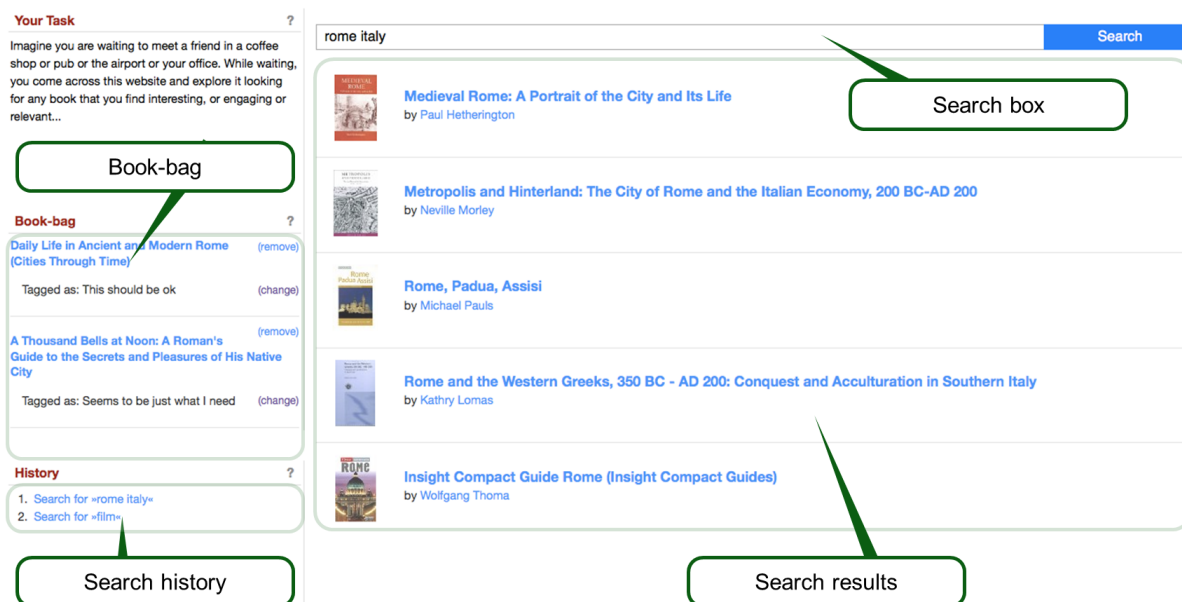


Figure 2: Baseline item view interface, showing the book details, the button to place a book in the book-bag, the book-bag with the ability to tag books, the recent searches list, and the search bar.

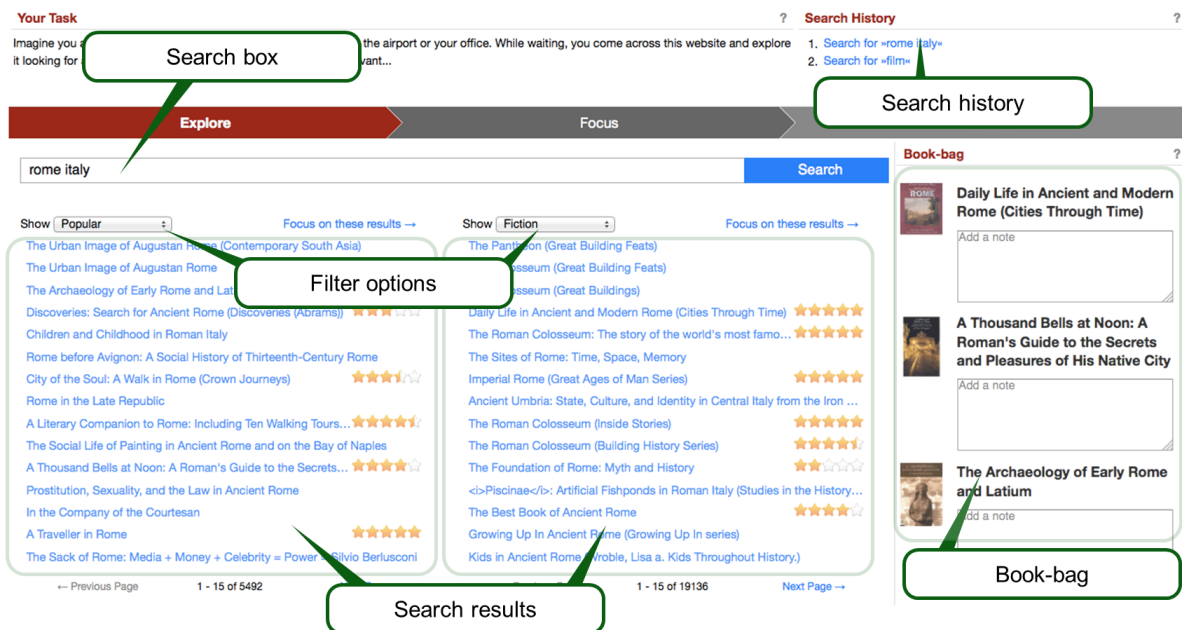


Figure 3: Screen for the pre-focus (explore) stage, showing the search box, the two filterable result lists, and the book-bag.

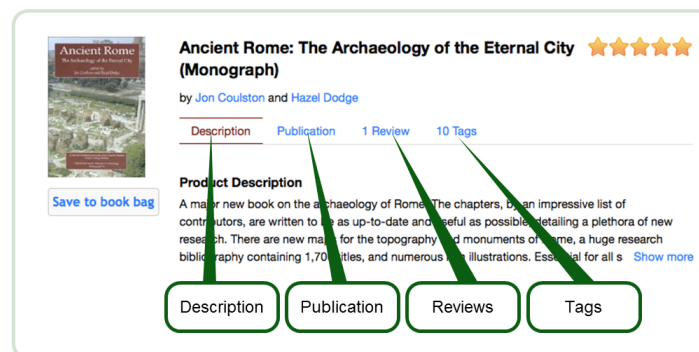


Figure 4: Selecting a book in the pre-focus stage showed this screen as a popup overlay over the pre-focus screen. In the focus stage, this screen was shown for each book in the search result list. The participant can access the description, publication details, reviews, and tags.

post-focus stage supported exploration of the book-bag and similar items (fig. 6). In both the pre-focus and focus stages, the participant could see a book's detailed metadata (fig. 4).

The main feature of the pre-focus (explore) stage is that after searching, the participant is shown two result lists, which can be filtered using a number of filters, which mapped to the facets provided in the focus stage. The participant could focus on a result set, which would switch them into the focus stage and pre-select the appropriate facets. If the participant clicked on a book title, then they were shown a popup overlay with the book's details (fig. 4).

In the focus stage, two facets were provided for filtering. The "Filter by Topics" option used the Amazon *subject* field and the "Filter by participant tags" used the LT *tag* field. The result list showed each book in detail, using the same layout as in the item popup overlay in the pre-focus stage.

In the post-focus stage, the participant was shown each book they had placed into the book-bag in detail. They could then run a simple search to find more books or request a list of similar books. The similar books were based on the Amazon meta-data.

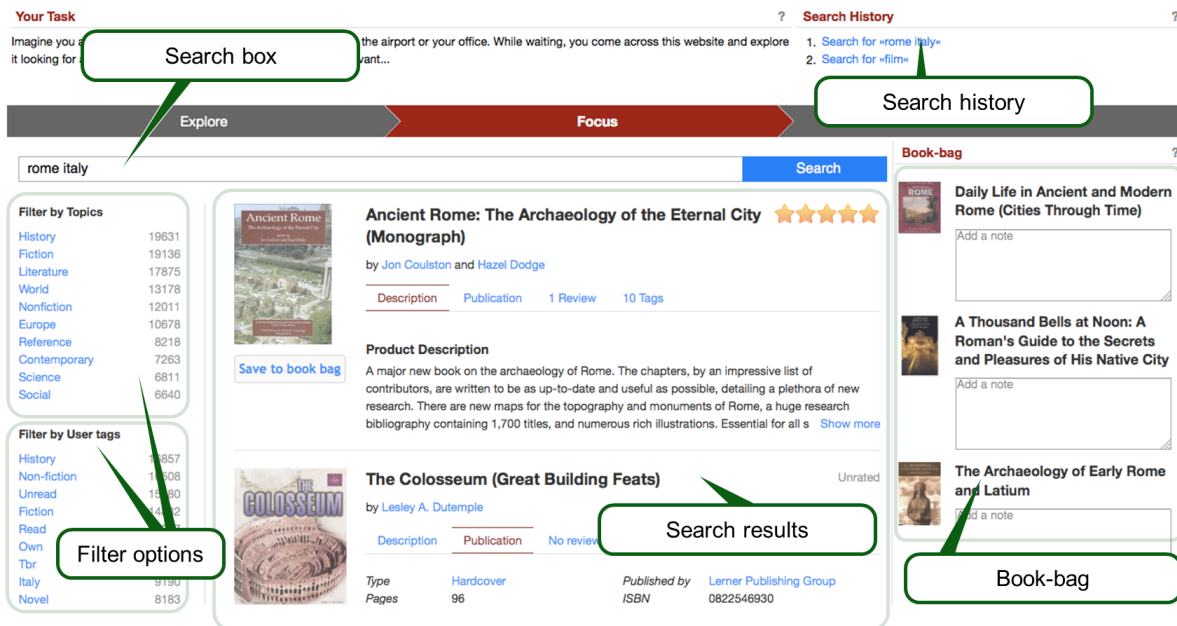


Figure 5: Screen for the focus stage, showing the search box, two filter options, the search results with the details for each book, and the book-bag.

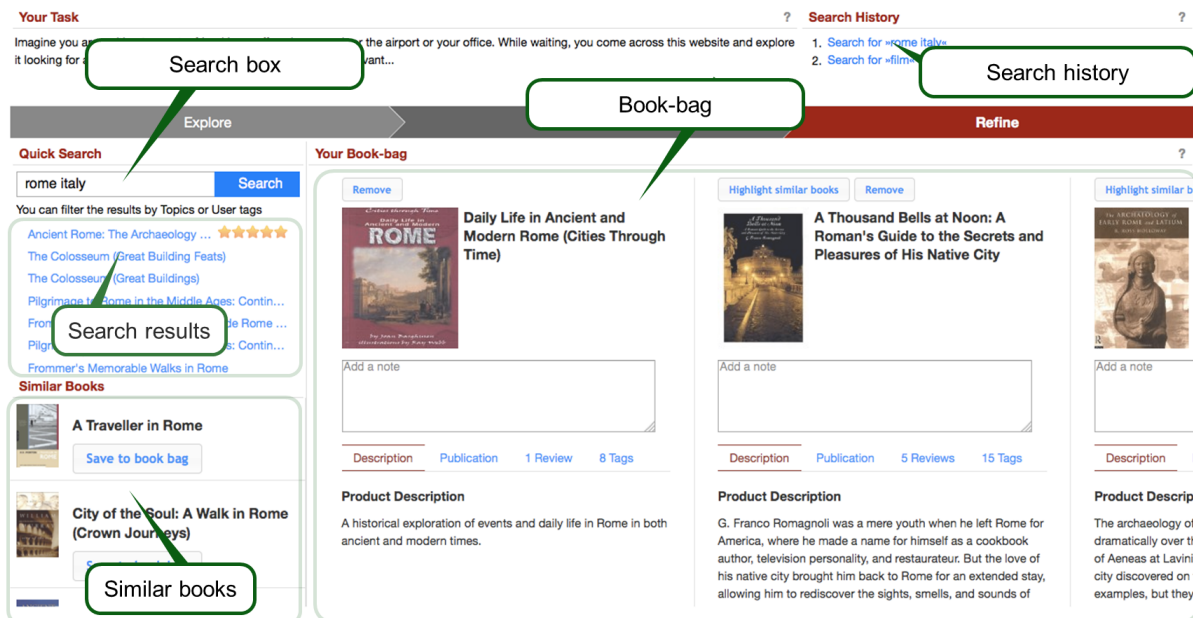


Figure 6: Screen for the post-focus (refine) stage, which allowed participants to see all the books they had collected into their book-bag. They could either search for more books or show similar books.

Table 1: Overview of the participating teams and number of participants per team 2014

| Institute | # participants |
|-----------|----------------|
| Aalborg | 7 |
| Amsterdam | 7 |
| Edge Hill | 10 |
| Humboldt | 17 |
| Total | 41 |

Across all three screens the book-bag allowed the participant to provide a textual annotation. Additionally at the top of the interface the participants were always shown their task and the search history.

2.4 Procedure

The following procedure was used to run the actual experiment.

2.4.1 Recruitment

A total of four teams participated in the track, together recruiting 41 participants (tab. 1). Participants were recruited by e-mail (Aalborg, Amsterdam) and in class (Edge Hill, Humboldt).

2.4.2 Tasks

Two tasks were used as part of the experiment. A goal-oriented, “simulated leisure task” [Skov and Ingwersen, 2008]:

Imagine you are looking for some interesting physics and mathematics books for a layperson. You have heard about the Feynman books but you have never really read anything in this area. You would also like to find an “interesting facts” sort of book on mathematics

and an non-goal, open-ended task [Toms and Hall, 2013]:

Imagine you are waiting to meet a friend in a coffee shop or pub or the airport or your office. While waiting, you come across this website and explore it looking for any book that you find interesting, or engaging or relevant...

2.4.3 Flow

The experiment acquired interaction data and participant responses for the two interfaces (baseline & multi-stage) and two tasks (goal-oriented & non-goal). For the interface condition a between-subject approach was used, while for the two tasks a balanced within-subject approach was used. The experiment support system provided automatic, best-effort balancing of the two conditions.

The flow through the experiment was as follows:

1. *Consent* – all participants had to confirm that they understood the tasks they would be asked to undertake and the types of data collected in the experiment. Participants also specified who had recruited them;
2. *Demographics* – the following factors were acquired in order to characterise the participants: gender, age, achieved education level, current education level, and employment status;
3. *Culture* – to quantify language and cultural influences, the following factors were collected: country of birth, country of residence, mother tongue, primary language spoken at home, languages used to search the web;
4. *Pre-Task 1* – participants were shown the first of the two tasks;
5. *Task 1* – participants were shown the allocated interface with the first task;
6. *Post-Task 1* – in the post task questions, participants were asked to judge how useful each of the interface components and meta-data parts that they had used in the first task were, using 5-point Likert-like scales;
7. *Pre-Task 2* – participants were shown the second of the two tasks;
8. *Task 2* – participants were shown the allocated interface with the second task;

9. *Post-Task 2* – in the post task questions, participants were asked to judge how useful each of the interface components and meta-data parts that they had used in the second task were, using 5-point Likert-like scales;
10. *Engagement* – after participants had completed both tasks, they were asked to complete the O’Brien and Toms [2009] user-engagement scale.
11. *Thank you* – Participants were thanked for their participation.

2.5 Post-processing

The participant responses and log data collected during the experiment were post-processed before their release. The scripts used to clean up the raw data are included in this data-set.

For the participant responses, the cleaning step was used to remove all participants who had started the experiment, but not given their consent or completed the experiment. It then also re-structured the results (creating separate columns depending on task and interface) to simplify interaction with the data-set.

The raw log data is very verbose and includes full details of all the data the participants provided to the system (queries, facet selections, collected books, ...) and the full data that was displayed to the user after each interaction. A cleaned log is also provided, which provides a simplified list of interactions with the system, with selected pieces of data from the interaction.

2.6 Data-set

The data is split into two files. `results_cleaned.csv` contains the participant responses gathered via the various questions, while `activity_cleaned.log` contains the logged interactions between the user and the two book exploration interfaces. Additionally the raw `activity_raw.log.bz2` is also provided

2.6.1 Participant Responses

For the two tested interfaces “classic” refers to the baseline single-page interface, while “modern” refers to the multi-stage interface.

For the two tasks “open” refers to the open-ended task, while “focused” refers to the goal-oriented task.

The fields are in alphabetic order in the CSV file, except for the fields in the ‘General’ section, which are at the front.

General

- *participant_id_*: The unique participant identifier used to link the questionnaire responses with the log data
- *interface*: The interface the participant used (“classic” or “modern”)
- *order*: The task order that the participant followed (“open then focused” or “focused then open”)
- *source.institution*: The institution that recruited the participant
- *source.location*: The location of the participant: “lab” – In a lab, “other” – Somewhere else

Culture and Language

- *culture.**: Culture information on the participant. “home_language” is the language spoken at home, “mother_tongue” their mother tongue, “web_language” the languages they use to search the web (1 in the column means they use that value, NA means they do not use that language), “residence” is the country of residence. Country values are: BR - Brasil, DE - Germany, DK - Denmark, GB - Great Britain, NL - Netherlands Language values are: da - Danish, de - German, en - English, es - Spanish, fa - Persian (Farsi), nl - Dutch, pt - Portuguese, pt_BR - Portuguese (Brasil), ru - Russian, tr - Turkish

Demographics

- *demographics.age*: Participant age. 1 – 18-25, 2 – 26-35, 3 – 36-45, 4 – 46-55, 5 – 56 - 65, 6 – 66+
- *demographics.education*: The education levels that the participant has achieved (“completed”) and is currently undertaking (“current”). The following levels are supported: secondary – High School / Secondary School, further – Further education / College diploma, undergraduate – Undergraduate, masters – Masters, doctorate – Doctorate, professional – Professional qualification A value of 1 means the participant has achieved or is currently undertaking the given level

- *demographics.gender*: The participant's gender.
- *demographics.status*: The participant's current economic status: "employed", "student", "unemployed", or "other".

Task

- *task.timer.**: The amount of time spent on the task in seconds.

Post-Task All responses provided after the task are either for the "open" and "focused" tasks, specified in the column name. Rating responses use the following coding sequence: unused – Participant did not use the element, 1-5 responses on the scale between 1 – "Not at all" and 5 – "Extremely".

- *bookbag.**: Post-task open-ended text review of the book items the user has collected
- *post_task.classic.**: Assessment of the UI elements on the "classic" interface
- *post_task.explore.**: Assessment of the UI elements on the "Explore" tab (step 1) of the "modern" interface
- *post_task.focus.**: Assessment of the UI elements on the "Focus" tab (step 2) of the "modern" interface
- *post_task.meta_data.**: Assessment of the book meta-data elements across all tabs of the "modern" interface
- *post_task.refine.**: Assessment of the UI elements on the "Revine" tab (step 3) of the "modern" interface

Engagement The following questions were asked using a 5-point Likert-like scale:

- *engagement.engagement.ae1* – This website is attractive
- *engagement.engagement.e2* – This website was aesthetically appealing
- *engagement.engagement.ae3* – I liked the graphics and images used on this website
- *engagement.engagement.ae4* – This website appealed to my visual senses
- *engagement.engagement.ae5* – The screen layout of this website was visually pleasing
- *engagement.engagement.en1* – Exploring this website was worthwhile
- *engagement.engagement.en2* – I consider my experience a success
- *engagement.engagement.en3* – This experience did not work out as I had planned
- *engagement.engagement.en4* – My exploration experience was rewarding
- *engagement.engagement.en5* – I would recommend exploring this website to my friends and family
- *engagement.engagement.fa1* – I lost myself in this experience
- *engagement.engagement.fa2* – I was so involved in this experience that I lost track of time
- *engagement.engagement.fa3* – I blocked out things around me when I was exploring this website
- *engagement.engagement.fa4* – When I was exploring, I lost track of the world around me
- *engagement.engagement.fa5* – The time I spent exploring just slipped away
- *engagement.engagement.fa6* – I was absorbed in exploring
- *engagement.engagement.fa7* – During this experience I let myself go
- *engagement.engagement.fi1* – I was really drawn into my exploration task
- *engagement.engagement.fi2* – I felt involved in this exploration task
- *engagement.engagement.fi3* – This exploration experience was fun
- *engagement.engagement.no1* – I continued to explore this website out of curiosity
- *engagement.engagement.no2* – The content of the website incited my curiosity
- *engagement.engagement.no3* – I felt interested in my exploration task
- *engagement.engagement.pu1* – I felt frustrated while exploring this website
- *engagement.engagement.pu2* – I found this website confusing to use
- *engagement.engagement.pu3* – I felt annoyed while visiting this website
- *engagement.engagement.pu4* – I felt discouraged while exploring this website

- *engagement.engagement.pu5* – Using this website was mentally taxing
- *engagement.engagement.pu6* – This experience was demanding
- *engagement.engagement.pu7* – I felt in control of my exploration experience
- *engagement.engagement.pu8* – I could not do some of the things I needed to do on this website

2.6.2 Cleaned Log Data

The cleaned log data is provided as a CSV file `activity_cleaned.log`

Fields

- *participant*: The unique participant identifier for linking with the participant responses
- *timestamp*: The ISO timestamp of the given log entry
- *action*: The action the user undertook
- *params*: Parameters for the action

Available actions

- *start*: Start a new session for the given task. Parameters “interface” and “task”.
- *show-layout*: Shows the given “layout” to the user. Available layouts are “classic” for the baseline interface and “explore”, “focus”, and “refine” for the modern interface, and “review” for the book-bag review post-task stage. If the “facet” and “value” parameters are present, this means that the user selected the “Explore this result” link in the “explore” page to pre-select the given “facet” and “value” in the “focus” page.
- *query*: The user ran a query, either manually or by clicking on book meta-data or by selecting a query from the history. Parameter “q” contains the actual query.
- *paginate*: The user paginated through the results. Parameter “start” contains the index of the first item to display. If a “list” parameter is present, then this is the index of the result list on the “explore” page that was paginated.
- *add-to-bookbag*: Add the book with the given “id” and “title” parameters to the book-bag.
- *remove-from-bookbag*: Remove the book with the given “id” parameter from the bookbag
- *explore-facet*: Select the facet to display on the “explore” page. The “list” parameter is the index of the result list for which the facet was changed. The “facet” parameter holds the facet field, while the “value” parameter holds the facet value.
- *add-facet*: Add the facet to the list of facets being used to restrict the result list. The “facet” parameter holds the facet field, while the “value” parameter holds the facet value.
- *remove_facet*: Remove the facet from the list of facets. The “facet” parameter holds the facet field, while the “value” parameter holds the facet value.
- *highlight*: Highlight the books with the given “id” values in the “similar books” section on the “refine” page
- *show-item*: Show the book with the given “id” parameter.
- *metadata*: Select the given metadata “tab” for the book with the “id” parameter.
- *show-results*: Switch back to the results page

2.6.3 Raw Log Data

The raw log data differs from the cleaned log data in the depth of detail. The raw log data includes all the data that was sent from the user to the system and all the data that was sent from the system to the user.

Fields

- *participant*: The unique participant identifier for linking with the participant responses, including the interface they saw
- *timestamp*: The ISO timestamp of the given log entry
- *app*: The experiment app. Always “sbs”.

- *layout*: The layout the user was shown, see details above
- *action*: The action the user undertook. “_start” means the user started the task. “_root” indicates that the user switched layout. “_signal” is an interaction between user and system, where data was sent from the user to the system or vice-versa. “_ping” is an interaction with the UI that did not lead to data being exchanged between user and system.
- *data*: Data that the user sent to the system for the action
- *components*: Data sent to the UI components for display

Signals The following signals are exchanged between user and system:

- *query*: Run a new query;
- *start*: Paginate through the results;
- *start_at*: Paginate through the results;
- *add_to_bookbag*: Add the book to the book-bag;
- *remove_from_bookbag*: Remove the book from the book-bag;
- *select_facet*: Select a facet in the pre-focus stage of the multi-stage interface;
- *add_facet*: Select a facet in the focus stage of the multi-stage interface;
- *remove_facet*: Remove a selected facet in the focus stage of the multi-stage interface;
- *highlight*: Show the similar books in the post-focus stage of the multi-stage interface;
- *explore*: Switch to the pre-focus stage of the multi-stage interface;
- *show_item*: Show an item in the baseline interface;

Pings Pings are log entries generated by the UI and have to be distinguished based on the parameters sent:

- *tab* and *book_id*: Switching between the tabs on the item display (fig. 4) in the multi-stage interface;
- *book_id*: Show an individual book in the pre-focus stage of the multi-stage interface;
- anything else: Switch back to the list of results in the pre-focus stage of the multi-stage interface;

Components The two interfaces used the following components:

- *collect_paginate*: A pagination component. The same component name is used for all interfaces and screens;
- *bookbag*: The book-bag component;
- *search*: The search box;
- *facet*: The search facet component on the multi-stage focus screen;
- *history*: The search history component
- *results*: The component showing the result list. The same component name is used for all result lists in all interfaces and screens;
- *similar*: The component on the post-focus stage showing the similar books list;
- *sections*: The component showing the pre-focus, focus, post-focus stages;

3 iSBS 2015

The iSBS 2015 experiment was designed based on the experience of conducting the 2014 version and included a number of changes to tighten the experiment methodology. In particular, both the baseline and multi-stage interface were redesigned to remove needless variation between the interfaces and allow a focus on the core distinction between standard faceted search and the multi-stage interface.

3.1 Ethics

Ethics approval was gained from Edge Hill University's Research Ethics Board. Participants were required to confirm that they were willing to have all the data outlined below collected and that they consented to the collected data being distributed to the research community. Participants were provided with a unique code and via this were allowed to request that their data be removed during a two-week period after the experiment concluded. After this the unique code was deleted from all data.

3.2 Base Data

The track builds on the INEX Amazon/LibraryThing (A/LT) collection [Beckers et al., 2010], which contains 2.8 million book descriptions from Amazon, enriched with content from LT. This collection contains both professional metadata and participant-generated content. The iSBS 2014 experiment uses a sub-set of this collection, filtered to include only those books that have a thumbnail image, creating a reduced data-set of approximately 1.5 million book descriptions. No further pre-processing was performed.

Each book record is an XML file with fields like *isbn*, *title*, *author*, *publisher*, *dimensions*, *numberofpages* and *publicationdate*. Curated metadata comes in the form of a Dewey Decimal Classification in the *dewey* field, Amazon subject headings in the *subject* field, and Amazon category labels in the *browseNode* fields. The social metadata from Amazon and LT is stored in the *tag*, *rating*, and *review* fields.

3.3 System

The experiment was conducted using the experiment support system³ [Hall and Toms, 2013]. This in turn loaded the core system that the participants used to undertake the tasks. The core system consisted of a backend providing access to the data and a web-based user interface.

3.3.1 Backend

The data-set was indexed using an ElasticSearch⁴ instance. For indexing and retrieval the default parameters were used, which means stopwords are removed, but no stemming is performed. The Dewey Decimal Classification numbers were replaced by their natural language description. That is, the DDC number 573 was replaced by the descriptor "Physical anthropology". User tags from LibraryThing were indexed both as text strings, such that complex terms are broken down into individual terms (e.g. "physical anthropology" is indexed as "physical" and "anthropology") and as non-analyzed terms, which leaves complex terms intact and is used for faceted search.

The search system was accessed via a backend built using the PyIRE system Hall et al. [2013]. In addition to providing the intermediary between the search system and the user interface, the PyIRE system also provided the logging functionality, capturing all aspects of the interaction between participant and system. The software is no longer available.

3.3.2 User Interface

The user interface was built using Python/HTML/CSS/JavaScript to provide a dynamic and interactive user interface. Two versions of the user interface were provided, a baseline interface and a multi-stage interface.

The baseline interface presented the participants with a standard faceted search interface (fig. 7). Unlike in the 2014 version, the baseline interface presents everything in a single view, including the full book details. Also, the book-bag has been standardised across the two interfaces, to always allow for a free-text note to be added to collected books.

³<https://github.com/biirrr/experiment-support-system/>

⁴<https://www.elastic.co/>

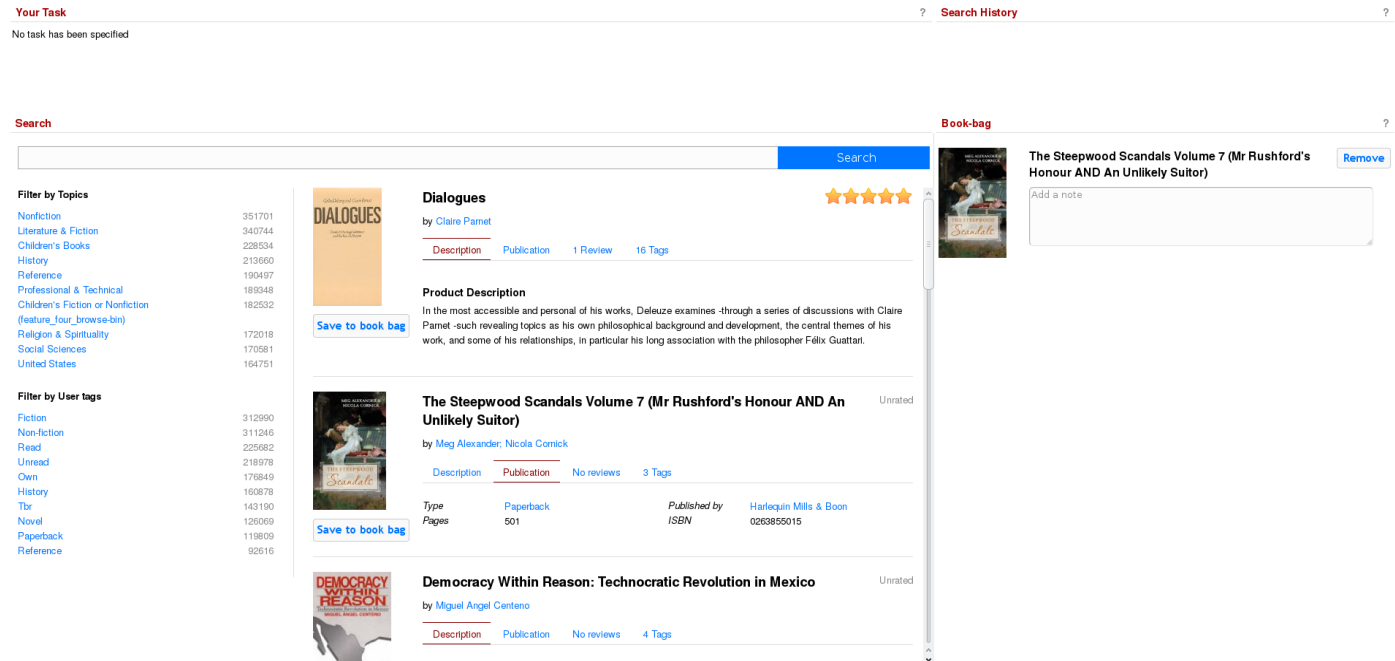


Figure 7: The 2015 baseline interface, showing the task and search history at the top, the book-bag on the right and a standard faceted search interface.

The multi-stage interface keeps the basic pre-focus, focus, post-focus interface concept, but maps it to more distinct activities. In the initial pre-focus (browse) stage (fig. 11), the user is presented with a browseable topic hierarchy. The hierarchy was built based on the Amazon category labels. Selecting a topic shows the books in a dense list aimed at showing the participant as broad a view as possible. Clicking on a book shows the same popup with the detailed meta-data as used in the 2014 version (see fig. 4).

The focus stage shows the same faceted search interface as the baseline, except that the book-bag has been removed (fig. 12 and has been moved into the post-focus stage(fig. 13). The post-focus stage book-bag shows all collected books and lets the participants annotate them. Additionally, the participant can ask the system to show them books with similar titles, authors, topics, and user tags. Clicking on a book in the similar books list shows the same book-details popup as in the pre-focus stage.

3.4 Procedure

The following procedure was used to run the actual experiment.

3.4.1 Recruitment

A total of seven teams participated in the track, together recruiting 192 participants (tab. 2). Participants were recruited by e-mail (Aalborg, Amsterdam, Edge Hill, Stockholm University) and in class (Edge Hill, Humboldt). Three participants selected “Other” as the recruiting team, but did not provide any detail, so cannot be allocated to team.

3.4.2 Tasks

Two tasks were used as part of the experiment. A goal-oriented, “simulated leisure task” [Skov and Ingwersen, 2008]:

Imagine you participate in an experiment at a desert-island for one month. There will be no people, no TV, radio or other distraction. The only things you are allowed to take with you are 5 books. Please search for and add 5 books to your book-bag that you would want to read during your stay at the desert-island:

- Select one book about surviving on a desert island
- Select one book that will teach you something new

Your Task

No task has been specified

The screenshot shows the 'Browse' section of the interface. On the left, a 'Topics' sidebar lists various categories with their respective counts. 'Europe' is highlighted with a count of 2686. The main content area, titled 'Business & Investing > Europe', displays a list of books. Each book entry includes a small thumbnail, the title, author, and a star rating. The books listed include 'John Muir: From Scotland to the Sierra', 'Gilding the Market: Luxury and Fashion in Fourteenth-Century Italy', 'European Business Customs & Manners', 'The Efficient Secret: The Cabinet and the Development of Political Parties in Victorian England', 'A Dictionary of Old Trades, Titles and Occupations', 'Wages, Welfare Costs and Inflation in Classical Athens', 'Dressing Modern Frenchwomen: Marketing Haute Couture, 1919-1939', 'London Markets', 'Europe: A Fearless Guide to International Communication and Behavior', 'Blackwells 1879-1979: The History of a Family Firm', 'Living and Working in Italy: Staying in Italy-All You Need to Know', 'Why Ireland Never Invaded America', 'The City of London: Volume 1: A World of Its Own 1815-1890', 'The European Union: Readings on the Theory and Practice of European Integration', 'Women in an Industrializing Society: England 1750 - 1880', 'The Human Face of the Book Trade: Print Culture and Its Creators', 'Charlatans or Saviours?: Economists and the British Economy from', 'Money and the Rise of the Modern Papacy: Financing the Vatican, 1850-1950', 'The Financial System in Nineteenth-Century Britain', 'German National Cinema', 'The Oligarchs: Wealth And Power In The New Russia', 'Living, Studying, and Working in Italy: Everything You Need to Know To Fulfill Your Dreams of Living Abroad', 'The Autobiography of Shibusawa Eiichi: From Peasant to Entrepreneur', 'On Her Ther Lives Depend: Munitions Workers in the Great War', and 'French Fur Traders and Voyageurs in the American West'. Each book entry has a star rating and a 'Save to book bag' button. The bottom of the screen shows '1 - 25 of 2686' and 'Next Page'.

Figure 8: The 2015 multi-stage interface, showing the initial pre-focus (explore) stage screen. The participant can browse the topic tree on the left. Selecting a topic shows the books that are annotated with that topic on the right. Clicking on a book shows a popup with the book details.

Your Task

No task has been specified

The screenshot shows the 'Focus' stage of the interface. The top navigation bar remains the same. The left sidebar now shows a 'Filter by Topics' section with a dropdown menu set to 'Europe'. Below this, there are two sections: 'Filter by Topics' and 'Filter by User tags'. The main content area displays detailed information for three books. Each book entry includes a thumbnail, title, author, and a 'Save to book bag' button. The 'John Muir: From Scotland to the Sierra' book has a 'Description' tab selected, showing a detailed product description. The 'Gilding the Market: Luxury and Fashion in Fourteenth-Century Italy' book has a 'Description' tab selected, showing a detailed product description. The 'European Business Customs & Manners' book has a 'Description' tab selected, showing a detailed product description. The bottom of the screen shows '1 - 25 of 2686' and 'Next Page'.

Figure 9: The focus stage screen of the multi-stage interface, which uses the same faceted search interface as the baseline.

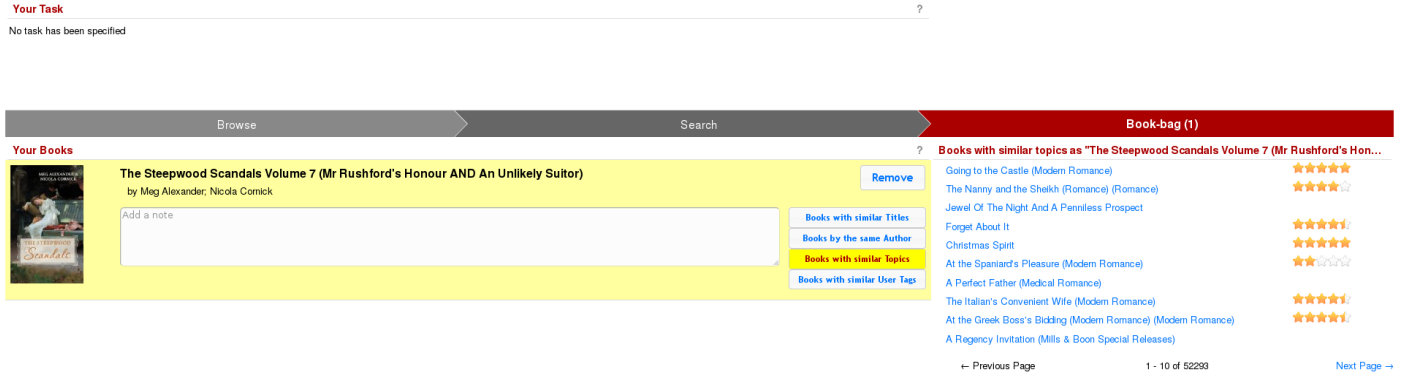


Figure 10: The post-focus stage screen of the multi-stage interface. This shows the books the participant has collected and via the “Books by...” buttons the participant can show a list of similar books based on different criteria. Clicking on a book in the similar books list shows a popup with the book details.

Table 2: Overview of the participating teams and number of participants per team 2015

| Institute | # participants |
|------------------------------------|----------------|
| Aalborg University | 36 |
| University of Amsterdam | 22 |
| Edge Hill University | 20 |
| Humboldt University | 67 |
| Manchester Metropolitan University | 23 |
| Oslo & Akershus University College | 20 |
| Stockholm University | 1 |
| Other | 3 |
| Total | 192 |

- Select one book about one of your personal hobbies or interests
- Select one book that is highly recommended by other users (based on user ratings and reviews)
- Select one book for fun

Please add a note (in the book-bag) explaining why you selected each of the five books.

and a non-goal, open-ended task [Toms and Hall, 2013]:

Imagine you are waiting to meet a friend in a coffee shop or pub or the airport or your office. While waiting, you come across this website and explore it looking for any book that you find interesting, or engaging or relevant. Explore anything you wish until you are completely and utterly bored. When you find something interesting, add it to the book- bag. Please add a note (in the book-bag) explaining why you selected each of the books.

3.4.3 Flow

The experiment acquired interaction data and participant responses for the two interfaces (baseline & multi-stage) and two tasks (goal-oriented & non-goal). For the interface condition a between-subject approach was used, while for the two tasks a balanced within-subject approach was used. The experiment support system provided automatic, best-effort balancing of the two conditions. Additionally, after completing the core part of the study, participants could undertake one or more optional tasks.

The flow through the experiment was as follows:

1. **Consent** – all participants had to confirm that they understood the tasks they would be asked to undertake and the types of data collected in the experiment. Participants also specified who had recruited them;

2. **Demographics** – the following factors were acquired in order to characterise the participants: gender, age, achieved education level, current education level, and employment status;
3. **Culture** – to quantify language and cultural influences, the following factors were collected: country of birth, country of residence, mother tongue, primary language spoken at home, languages used to search the web;
4. **Pre-Task 1** – participants were shown the first of the two tasks;
5. **Task 1** – participants were shown the allocated interface with the first task;
6. **Post-Task 1** – in the post task questions, participants were asked to judge how useful each of the interface components and meta-data parts that they had used in the first task were, using 5-point Likert-like scales;
7. **Pre-Task 2** – participants were shown the second of the two tasks;
8. **Task 2** – participants were shown the allocated interface with the second task;
9. **Post-Task 2** – in the post task questions, participants were asked to judge how useful each of the interface components and meta-data parts that they had used in the second task were, using 5-point Likert-like scales;
10. **Engagement** – after participants had completed both tasks, they were asked to complete the O'Brien and Toms [2009] user-engagement scale.
11. **Thank you** – Participants were thanked for their participation.
12. **Optional Task** – After completing the mandatory part of the study, participants could undertake one or more of the optional tasks using the interface they were allocated. No user responses were collected after this.

3.5 Post-processing

The participant responses and log data collected during the experiment were post-processed before their release. The scripts used to clean up the raw data are included in this data-set.

For the participant responses, the cleaning step was used to remove all participants who had started the experiment, but not given their consent or completed the experiment. It then also re-structured the results (creating separate columns depending on task and interface) to simplify interaction with the data-set.

The raw log data is very verbose and includes full details of all the data the participants provided to the system (queries, facet selections, collected books, ...) and the full data that was displayed to the user after each interaction. A cleaned log is also provided, which provides a simplified list of interactions with the system, with selected pieces of data from the interaction.

3.6 Data-set

The data is split into four files:

- **results_cleaned.csv** contains the participant responses gathered via the various questions,
- **activity_cleaned.log** contains the logged interactions between the user and the two book exploration interfaces,
- **activity_raw.log** contains the raw log interactions between the user and the two book exploration interfaces,
- **bookbag_cleaned.csv** contains the bookbag contents for each user

3.6.1 Participant Responses

General Fields containing general information about each participant

- **participant**: The unique participant identifier used to link the questionnaire responses with the log data
- **interface**: The interface the participant used ("baseline" or "multistage")
- **order**: The task order that the participant followed ("open then focused" or "focused then open")
- **source.institution**: The institution who recruited the participant
- **source.location**: The location of the participant: "lab" – In a lab, "other" – Somewhere else

Culture and Language

- **culture.birth:** The country of birth
- **culture.home_language:** The language spoken at home at least 50% of the time
- **culture.mother_tongue:** The participant's mother tongue
- **culture.residence:** The country of residence
- **culture.web_language.*:** The languages the participant uses to search the web. This is a set of columns, one for each language at least one participant used. A "1" in the column for a language means they use that language, "NA" means they do not use that language

Country values are: AT - Austria, BD - Bangladesh, BE - Belgium, BG - Bulgaria, BR - Brasil, CN - China, CO - Colombia, CR - Costa Rica, DE - Germany, DK - Denmark, ES - Spain, ET - Ethiopia, FR - France, GB - Great Britain, GR - Greece, HN - Honduras, HU - Hungary, IN - India, IR - Iran, IS - Iceland, IT - Italy, KZ - Kazakhstan, MX - Mexico, MY - Malaysia, NG - Nigeria, NL - Netherlands, NO - Norway, PH - Philippines, PL - Poland, PS -Palestinian Territories , RO - Romania, RU - Russia, SA - Saudi Arabia, SL - Sierra Leone, TR - Turkey, US - United States of America

Language values are: ace - Achinese, akk - Akkadian, af - Afrikaans, am - Amharic, ar - Arabic, bg - Bulgarian, bn - Bengali, ca - Catalan, cpe - English-based Creole or Pidgin, crp - Creole or Pidgin, cs - Czech, da - Danish, de - German, el - Greek, en - English, es - Spanish, fa - Persian (Farsi), fil - Filipino, fr - French, gl - Galician, he - Hebrew, hu - Hungarian, is - Icelandic, it - Italian, ja - Japanese, ko - Korean, ms - Malay, nl - Dutch, no - Norwegian, pl - Polish, pt - Portuguese, ru - Russian, sk - Slovak, sv - Swedish, ta - Tamil, tr - Turkish, uk - Ukrainian, zh - Chinese, zza - Zaza

Demographics

- **demographics.age:** Participant age:
 - 1 – 18-25
 - 2 – 26-35
 - 3 – 36-45
 - 4 – 46-55
 - 5 – 56 - 65
 - 6 – 66+
- **demographics.education.completed.:** The education levels that the participant has achieved. This is a set of columns, one for each of the following categories:
 - **doctorate** – Doctorate
 - **further** – Further education / College diploma
 - **masters** – Masters
 - **professional** – Professional qualification
 - **secondary** – High School / Secondary School
 - **undergraduate** – Undergraduate

A "1" in any of these columns means that the participant has achieved this level of education, an "NA" indicates that they have not.

- **demographics.education.current.:** The education level that the participant is currently undertaking ("current"). This is a set of columns, one for each of the following categories:
 - **doctorate** – Doctorate
 - **further** – Further education / College diploma
 - **masters** – Masters
 - **professional** – Professional qualification
 - **secondary** – High School / Secondary School
 - **undergraduate** – Undergraduate

A "1" in any of these columns means that the participant are undertaking this level of education, an "NA" indicates that they have not.

- **demographics.gender:** The participant's gender.
- **demographics.status:** The participant's current economic status: "employed", "student", "unemployed", or "other".

Task

- **task.timer.(focusedlopen)**: The amount of time spent on the task in seconds.

Post-Task In the post-task stage, participants were shown annotated screenshots of the various screens they saw and then asked to rate how useful the elements of the screens were.

All responses provided after the task are either for the "open" and "focused" tasks, specified in the column name. Rating responses use the following coding sequence:

- unused – Participant did not use the element
- 1-5 responses on the scale between 1 – "Not at all" and 5 – "Extremely".

The following responses are provided:

- **post_task.baseline.*(focusedlopen)**: Assessment of the UI elements on the "baseline" interface. The following UI elements were assessed:
 - **bookbag** – The bookbag
 - **search_box** – The search box
 - **search_facets** – The faceted search interface
 - **search_history** – The list of previous searches
 - **search_results** – The list of search results
- **post_task.browse.*(focusedlopen)**: Assessment of the UI elements on the "Browse" tab (step 1) of the "multistage" interface. The following UI elements were assessed:
 - **individual_books** – The list of books for a selected topic
 - **topic_explorer** – The hierarchical topic explorer
- **post_task.search.*(focusedlopen)**: Assessment of the UI elements on the "Search" tab (step 2) of the "multistage" interface. The following UI elements were assessed:
 - **search_box** – The search box
 - **search_facets** – The faceted search interface
 - **search_history** – The list of previous searches
 - **search_results** – The list of search results
 - **search_topic** – The search topic selector that carried over the search topic from the "Browse" stage
- **post_task.bookbag.*(focusedlopen)**: Assessment of the UI elements on the "Bookbag" tab (step 3) of the "multistage" interface. The following UI elements were assessed:
 - **notes** – The input field for storing notes
 - **similar_books** – The interface for finding similar books for a book
- **post_task.meta_data.*(focusedlopen)**: Assessment of the individual book meta-data on either interface. The following elements were assessed:
 - **description** – The description tab, which contained long-text descriptions of the book's content
 - **publication** – The publication tab, which contained publication meta-data
 - **reviews** – The reviews tab, which contained user-provided reviews
 - **tags** – The tags tab, which contained user-provided tags

Engagement The following questions were asked using a 5-point Likert-like scale:

- **engagement.engagement.ae1** – This website is attractive
- **engagement.engagement.e2** – This website was aesthetically appealing
- **engagement.engagement.ae3** – I liked the graphics and images used on this website
- **engagement.engagement.ae4** – This website appealed to my visual senses
- **engagement.engagement.ae5** – The screen layout of this website was visually pleasing
- **engagement.engagement.en1** – Exploring this website was worthwhile

- **engagement.engagement.en2** – I consider my experience a success
- **engagement.engagement.en3** – This experience did not work out as I had planned
- **engagement.engagement.en4** – My exploration experience was rewarding
- **engagement.engagement.en5** – I would recommend exploring this website to my friends and family
- **engagement.engagement.fa1** – I lost myself in this experience
- **engagement.engagement.fa2** – I was so involved in this experience that I lost track of time
- **engagement.engagement.fa3** – I blocked out things around me when I was exploring this website
- **engagement.engagement.fa4** – When I was exploring, I lost track of the world around me
- **engagement.engagement.fa5** – The time I spent exploring just slipped away
- **engagement.engagement.fa6** – I was absorbed in exploring
- **engagement.engagement.fa7** – During this experience I let myself go
- **engagement.engagement.fi1** – I was really drawn into my exploration task
- **engagement.engagement.fi2** – I felt involved in this exploration task
- **engagement.engagement.fi3** – This exploration experience was fun
- **engagement.engagement.no1** – I continued to explore this website out of curiosity
- **engagement.engagement.no2** – The content of the website incited my curiosity
- **engagement.engagement.no3** – I felt interested in my exploration task
- **engagement.engagement.pu1** – I felt frustrated while exploring this website
- **engagement.engagement.pu2** – I found this website confusing to use
- **engagement.engagement.pu3** – I felt annoyed while visiting this website
- **engagement.engagement.pu4** – I felt discouraged while exploring this website
- **engagement.engagement.pu5** – Using this website was mentally taxing
- **engagement.engagement.pu6** – This experience was demanding
- **engagement.engagement.pu7** – I felt in control of my exploration experience
- **engagement.engagement.pu8** – I could not do some of the things I needed to do on this website

3.6.2 Cleaned Log Data

The log file contains all interactions between the participant and the search interface.

Fields

- **participant**: The unique participant identifier for linking with the participant responses and bookbag
- **timestamp**: The ISO timestamp of the given log entry
- **action**: The action the user undertook
- **params**: Parameters for the action in url-encoded format

Available actions The system recorded the following actions:

- **start**: Start a new session for the given task. Parameters “interface“ and “task“. If the participant reloaded the page, then a participant will have more than one start action within a session.
- **show-layout**: Shows the given “layout“ to the user. Available layouts are "baseline" for the baseline interface and "explore", "focus", and "refine" for the multistage interface, and "review"
- **query**: The user ran a query, either manually or by clicking on book meta-data or by selecting a query from the history. Parameter “q“ contains the actual query.
- **paginate**: The user paginated through the results. Parameter “start“ contains the index of the first item to display. If a “list“ parameter is present, then this is the index of the result list on the "explore" page that was paginated.

- **add-to-bookbag**: Add the book with the given “id” and “title” parameters to the book-bag.
- **remove-from-bookbag**: Remove the book with the given “id” parameter from the bookbag
- **add-facet**: Add the facet to the list of facets being used to restrict the result list. The “facet” parameter holds the facet field, while the “value” parameter holds the facet value.
- **remove_facet**: Remove the facet from the list of facets. The “facet” parameter holds the facet field, while the “value” parameter holds the facet value.
- **show-item**: Show the book with the given “id” parameter.
- **metadata**: Select the given metadata “tab” for the book with the “id” parameter.
- **mlt**: Find more books like this, by searching using the “text” parameter in the field specified by the “field” parameter
- **explore_path**: Browse the topic tree “branch”. Nodes in the branch are separated by “::” and the last node is the current node the user just selected.
- **annotate-item**: Add an annotation “note” to the book with the “id” parameter
- **sort-items**: Sort the items in the bookbag into the order specified by the “id” parameters.

3.6.3 Raw Log Data

The raw log data differs from the cleaned log data in the depth of detail. The raw log data includes all the data that was sent from the user to the system and all the data that was sent from the system to the user.

Fields

- **participant**: The unique participant identifier for linking with the participant responses, including the interface they saw
- **timestamp**: The ISO timestamp of the given log entry
- **app**: The experiment app. Always “sbs”.
- **layout**: The layout the user was shown, see details above
- **action**: The action the user undertook. “_start” means the user started the task. “_root” indicates that the user switched layout. “_signal” is an interaction between user and system, where data was sent from the user to the system or vice-versa. “_ping” is an interaction with the UI that did not lead to data being exchanged between user and system. “bookbag:annotate_item” is an interaction where the participant modified the annotation of a book. “bookbag:sort” is an interaction where the user re-ordered the books in the bookbag.
- **data**: Data that the user sent to the system for the action
- **components**: Data sent to the UI components for display

Signals The following signals are exchanged between user and system:

- **query**: Run a new query;
- **start**: Paginate through the results;
- **add_to_bookbag**: Add the book to the book-bag;
- **remove_from_bookbag**: Remove the book from the book-bag;
- **add_facet**: Select a facet in the focus stage of the multi-stage interface;
- **remove_facet**: Remove a selected facet in the focus stage of the multi-stage interface;
- **show_item**: Show an item in the baseline interface;
- **mlt**: Show the similar books in the post-focus stage of the multi-stage interface;
- **explore_path**: Select a topic in the pre-focus stage of the multi-stage interface;

Pings Pings are log entries generated by the UI and have to be distinguished based on the parameters sent:

- **metadata**: Switching between the tabs on the item display (fig. 4) in the multi-stage interface;
- **show_item**: Show an individual book in the pre-focus or post-focus screens of the multi-stage interface;

Components The two interfaces used the following components:

- **explore_results**: The search results component used in the multi-stage interface pre-focus screen;
- **sections**: The navigation component used for switching between screens in the multi-stage interface;
- **search_paginate**: The pagination component used in all interfaces;
- **history**: The search history component shown in both interfaces;
- **review_results**: The search results component used in the multi-stage interface post-focus stage screen;
- **search_facets**: The search facets component used in the baseline interface and the multi-stage interface focus stage screen;
- **search_results**: The search results component used in the baseline interface and the multi-stage interface focus stage screen;
- **bookbag**: The book-bag component;
- **search_box**: The search box used in the baseline interface and the multi-stage pre-focus and focus stage screens;

3.6.4 Book-bags

The bookbag data contains all books the participants added to their bookbags in the different tasks. Books that the participants added, but then removed from their bookbags are not contained in this data-set. The books are not in the order that they were added to the bookbag.

Fields

- **participant**: The unique participant identifier for linking with the participant responses and log data
- **task**: The task that the participant was undertaking when they added the book.
- **book_id**: The unique identifier of the book in the data-set
- **title**: The book's title

4 iSBS 2016

The iSBS 2016 experiment is a continuation of the 2015 version, with one major tweak, which is the removal of the baseline experiment and a reduction in the number of tasks undertaken by participants. The only other changes were minor bugfixes to the multi-stage interface.

4.1 Ethics

Ethics approval was gained from Edge Hill University’s Research Ethics Board. Participants were required to confirm that they were willing to have all the data outlined below collected and that they consented to the collected data being distributed to the research community. Participants were provided with a unique code and via this were allowed to request that their data be removed during a two-week period after the experiment concluded. After this the unique code was deleted from all data.

4.2 Base Data

The track builds on the INEX Amazon/LibraryThing (A/LT) collection [Beckers et al., 2010], which contains 2.8 million book descriptions from Amazon, enriched with content from LT. This collection contains both professional metadata and participant-generated content. The iSBS 2014 experiment uses a sub-set of this collection, filtered to include only those books that have a thumbnail image, creating a reduced data-set of approximately 1.5 million book descriptions. No further pre-processing was performed.

Each book record is an XML file with fields like *isbn*, *title*, *author*, *publisher*, *dimensions*, *numberofpages* and *publicationdate*. Curated metadata comes in the form of a Dewey Decimal Classification in the *dewey* field, Amazon subject headings in the *subject* field, and Amazon category labels in the *browseNode* fields. The social metadata from Amazon and LT is stored in the *tag*, *rating*, and *review* fields.

4.3 System

The experiment was conducted using the experiment support system⁵ [Hall and Toms, 2013]. This in turn loaded the core system that the participants used to undertake the tasks. The core system consisted of a backend providing access to the data and a web-based user interface.

4.3.1 Backend

The data-set was indexed using an ElasticSearch⁶ instance. For indexing and retrieval the default parameters were used, which means stopwords are removed, but no stemming is performed. The Dewey Decimal Classification numbers were replaced by their natural language description. That is, the DDC number 573 was replaced by the descriptor “Physical anthropology”. User tags from LibraryThing were indexed both as text strings, such that complex terms are broken down into individual terms (e.g. “physical anthropology” is indexed as “physical” and “anthropology”) and as non-analyzed terms, which leaves complex terms intact and is used for faceted search.

The search system was accessed via a backend built using the PyIRE system Hall et al. [2013]. In addition to providing the intermediary between the search system and the user interface, the PyIRE system also provided the logging functionality, capturing all aspects of the interaction between participant and system. The software is no longer available.

4.3.2 User Interface

The multi-stage interface remains unchanged from the 2015 version, except for bug-fixes (fig. 11, 12, 13).

4.4 Procedure

The following procedure was used to run the actual experiment.

⁵<https://github.com/biirrr/experiment-support-system/>

⁶<https://www.elastic.co/>

Your Task

No task has been specified

Browse Search Book-bag (1)

Topics

- Arts & Photography 85651
- Biographies & Memoirs 93275
- Business & Investing 96764
- Arts & Photography 2726
- Biographies & Memoirs 2527
- Business 6340
- Computers & Internet 9450
- Cooking, Food & Wine 974
- Economics 26687
- Entertainment 2677
- Europe 2686**
 - Home & Garden 99
 - Travel 340
 - History & Criticism 1473
 - Home & Garden 2010
 - Illustrated 5804
 - Industries & Professions 21029
 - International 7080
 - Investing 4869
 - Job Hunting & Careers 10337
 - Law 4919
 - Management & Leadership 27418
 - Marketing & Sales 7347
 - Outdoors & Nature 3415
 - Personal Finance 5155
 - Popular Economics 24469

Business & Investing » Europe

- John Muir: From Scotland to the Sierra
- Gilding the Market: Luxury and Fashion in Fourteenth-Century Italy (The Middle Ages Series)
- European Business Customs & Manners: A Country-by-Country Guide to European Customs and Manners
- The Efficient Secret: The Cabinet and the Development of Political Parties in Victorian England (Political Economy of Institutions and Decisions)
- A Dictionary of Old Trades, Titles and Occupations
- Wages, Welfare Costs and Inflation in Classical Athens
- Dressing Modern Frenchwomen: Marketing Haute Couture, 1919–1939
- London Markets
- Europe: A Fearless Guide to International Communication and Behavior (Put Your Best Foot Forward, Vol. 1)
- Blackwells 1879 1979: The History of a Family Firm
- Living and Working in Italy: Staying in Italy-All You Need to Know (Living & Working in New Zealand)
- Why Ireland Never Invaded America
- The City of London: Volume 1: A World of Its Own 1815-1890
- The European Union: Readings on the Theory and Practice of European Integration
- Women in an Industrializing Society: England 1750 - 1880 (Historical Association Studies)
- The Human Face of the Book Trade: Print Culture and Its Creators (Print Networks, 3)
- Charlatans or Saviours?: Economists and the British Economy from
- Money and the Rise of the Modern Papacy: Financing the Vatican, 1850-1950
- The Financial System in Nineteenth-Century Britain (Victorian Archive Series)
- German National Cinema (National Cinemas)
- The Oligarchs: Wealth And Power In The New Russia
- Living, Studying, and Working in Italy: Everything You Need to Know To Fulfill Your Dreams of Living Abroad
- The Autobiography of Shibusawa Eiichi: From Peasant to Entrepreneur
- On Her Ther Lives Depend: Munitions Workers in the Great War
- French Fur Traders and Voyageurs in the American West

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Figure 11: The 2016 multi-stage interface, showing the initial pre-focus (explore) stage screen. The participant can browse the topic tree on the left. Selecting a topic shows the books that are annotated with that topic on the right. Clicking on a book shows a popup with the book details.

Your Task

No task has been specified

? Search History

Browse Search Book-bag (1)

Europe Search

Filter by Topics

- Europe 2686
- Business & Investing 2686
- History 2404
- Economics 1442
- Non-fiction 1297
- England 1199
- World 1058
- Popular Economics 1011
- Social Sciences 986
- Economic History 671

Filter by User tags

- History 943
- Non-fiction 615
- Economics 348
- Europe 248
- Whistler 238
- Economic History 217
- Britain 122
- Politics 118
- 19th century 105
- 20th Century 104

John Muir: From Scotland to the Sierra Unrated

by Frederick Turner

Description Publication No reviews 3 Tags

Product Description

This biography of John Muir explores the life of this traveller, inventor, botanist, writer and pioneering conservationist. While others dreamed of escaping into the wilderness beyond the range and comforts of civilization, few actually lived the dream as Muir did. He initiated the concept of national parks in the United States. The book recounts the story of a Scot who became an American hero, a man who in his singular way, rediscovered America. Frederick Turner is the author of "Geronimo" and "Beyond Geography: The Western Spirit Against the Wilderness". Show more

Gilding the Market: Luxury and Fashion in Fourteenth-Century Italy (The Middle Ages Series) Unrated

by Susan Mosher Stuard

Description Publication No reviews 15 Tags

Product Description

In the fourteenth century, garish ornaments, bright colors, gilt, and military effects helped usher in the age of fashion in Italy. Over a short span of years important matters began to turn on the cut of a sleeve. Fashion influenced consumption and provided a stimulus that drove demand for goods and turned wealthy townspeople into enthusiastic consumers. Making wise decisions about the alarmingly expensive goods that composed a fashionable wardrobe became a matter of pressing concern, especially when the market caught on and became awash in cheaper editions of luxury wares. Show more

European Business Customs & Manners: A Country-by-Country Guide to European Customs and Manners 4.5 stars

by Mary Murray Bosrock

Figure 12: The focus stage screen of the multi-stage interface, which uses the same faceted search interface as the 2015 baseline interface.

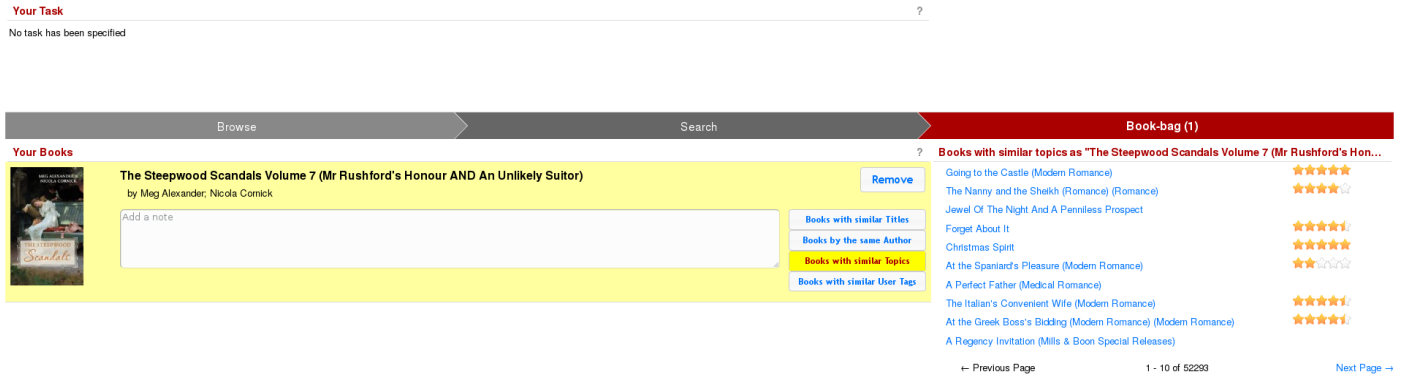


Figure 13: The post-focus stage screen of the multi-stage interface. This shows the books the participant has collected and via the “Books by...” buttons the participant can show a list of similar books based on different criteria. Clicking on a book in the similar books list shows a popup with the book details.

Table 3: Overview of the participating teams and number of participants per team 2016

| Institute | # participants |
|---|----------------|
| Aalborg University | 14 |
| Edge Hill University | 12 |
| Humboldt University, Berlin | 7 |
| Manchester Metropolitan University | 13 |
| Oslo & Akershus University College of Applied Sciences | 15 |
| Peking University, China and Stockholm University, Sweden | 29 |
| University of Duisburg-Essen | 22 |
| Total | 111 |

4.4.1 Recruitment

A total of seven teams participated in the track, together recruiting 111 participants (tab. 3). Participants were recruited by e-mail (Aalborg, Amsterdam, Edge Hill, Stockholm University) and in class (Edge Hill, Humboldt). Three participants selected “Other” as the recruiting team, but did not provide any detail, so cannot be allocated to team.

4.4.2 Tasks

Two tasks were used as part of the experiment. A goal-oriented, “simulated leisure task” [Skov and Ingwersen, 2008]:

Imagine you participate in an experiment at a desert-island for one month. There will be no people, no TV, radio or other distraction. The only things you are allowed to take with you are 5 books. Please search for and add 5 books to your book-bag that you would want to read during your stay at the desert-island:

- Select one book about surviving on a desert island
- Select one book that will teach you something new
- Select one book about one of your personal hobbies or interests
- Select one book that is highly recommended by other users (based on user ratings and reviews)
- Select one book for fun

Please add a note (in the book-bag) explaining why you selected each of the five books.

and an non-goal, open-ended task [Toms and Hall, 2013]:

Imagine you are waiting to meet a friend in a coffee shop or pub or the airport or your office. While waiting, you come across this website and explore it looking for any book that you find interesting, or engaging or relevant. Explore anything you wish until you are completely and utterly bored. When

you find something interesting, add it to the book- bag. Please add a note (in the book-bag) explaining why you selected each of the books.

In addition to these two tasks, participants could undertake one additional tasks after the their first task. These tasks were derived from discussions in the LT data-set and the “extra_tasks.csv” file includes the original LT topic identifier. The following eight task instructions were used:

You're interested in non-fiction history books on the background to and the actual time of the Boer War in South Africa. Search the collection using any of the interface features to find at least one book that meets these criteria.

You enjoy books covering the Elizabethan era (English monarch, 1558-1603) and have read books by George Garrett, e.g. "The Death of the Fox" and "The Succession". You'd like to find other books in this theme that look engaging, either fiction or non-fiction. Search the collection using any of the interface features to find at least one book that meets these criteria.

For a university project you're looking for books about communication on the internet, that are well-written and well-researched. The books could be about how communication in general has changed or how language has changed. Search the collection using any of the interface features to find at least one book that meets these criteria.

You've read a few books about specific paintings, i.e. "Portrait of Dr. Gachet" by Cynthia Saltzman, about the painting with the same name, by Vincent Van Gogh, "Strapless" by Deborah Davis, about John Sargent's painting of Virginie Gautreau and "The Lost Painting" by Jonathan Harr, about a missing painting by Caravaggio. You'd like to find more books about specific paintings. Search the collection using any of the interface features to find at least one book that meets these criteria.

You like reading mystery novels (including thriller, crime and suspense) that have very complex plots. Search the collection using any of the interface features to find at least one book that meets these criteria.

You're interested in astronomy and astrophysics, but have only beginners knowledge on these subject. You're looking for good beginners books on these two subjects. Search the collection using any of the interface features to find at least two books that meet these criteria and together cover both astronomy and astrophysics.

You're interested in mystery and thriller novels that also have romance. Search the collection using any of the interface features to find at least one book that meets these criteria.

You've read "For Whom the Bell Tolls", which is set during the Spanish Civil War and would now like to read a good fiction book set during the French Revolution. Search the collection using any of the interface features to find a book that meets these criteria.

4.4.3 Flow

The experiment acquired interaction data and participant responses for the multi-stage interface, the two required tasks (goal-oriented & non-goal), and the optional task. For the two tasks and the eight optional tasks a balanced between-subject approach was used. The experiment support system provided automatic, best-effort balancing of the conditions.

The flow through the experiment was as follows:

1. **Consent** – all participants had to confirm that they understood the tasks they would be asked to undertake and the types of data collected in the experiment. Participants also specified who had recruited them;
2. **Demographics** – the following factors were acquired in order to characterise the participants: gender, age, achieved education level, current education level, and employment status;
3. **Culture** – to quantify language and cultural influences, the following factors were collected: country of birth, country of residence, mother tongue, primary language spoken at home, languages used to search the web;
4. **Pre-Task 1** – participants were shown one of the two required tasks;

5. **Task 1** – participants were shown the multi-stage interface for the required task;
6. **Post-Task 1** – in the post task questions, participants were asked to judge how useful each of the interface components and meta-data parts that they had used in the first task were, using 5-point Likert-like scales;
7. **Pre-Task 2** – if participants agreed, they were shown the one of the additional tasks;
8. **Task 2** – participants were shown the multi-stage interface for the optional, additional task;
9. **Post-Task 2** – in the post task questions, participants were asked to judge how useful each of the interface components and meta-data parts that they had used in the second task were, using 5-point Likert-like scales;
10. **Engagement** – after participants had completed both tasks, they were asked to complete the O'Brien and Toms [2009] user-engagement scale.
11. **Thank you** – Participants were thanked for their participation.

4.5 Post-processing

The participant responses and log data collected during the experiment were post-processed before their release. The scripts used to clean up the raw data are included in this data-set.

For the participant responses, the cleaning step was used to remove all participants who had started the experiment, but not given their consent or completed the experiment. It then also re-structured the results (creating separate columns depending on task and interface) to simplify interaction with the data-set.

The raw log data is very verbose and includes full details of all the data the participants provided to the system (queries, facet selections, collected books, ...) and the full data that was displayed to the user after each interaction. A cleaned log is also provided, which provides a simplified list of interactions with the system, with selected pieces of data from the interaction.

4.6 Data-set

The data is split into five files:

- **results_cleaned.csv** contains the participant responses gathered via the various questions,
- **activity_cleaned.log** contains the logged interactions between the user and the two book exploration interfaces,
- **activity_raw.log** contains the raw log interactions between the user and the two book exploration interfaces,
- **bookbag_cleaned.csv** contains the bookbag contents for each user,
- **tasks.csv** contains the task definitions for the required tasks,
- **extra_tasks.csv** contains the task definitions for the optional tasks

4.6.1 Participant Responses

General Fields containing general information about each participant

- **participant**: The unique participant identifier used to link the questionnaire responses with the log data
- **source.institution**: The institution who recruited the participant
- **source.location**: The location of the participant: "lab" – In a lab, "other" – Somewhere else
- **task1**: Which task they undertook for the mandatory task: "open" – The open-ended task, "focused" – The focused task. The exact task instructions are in the "tasks.csv" file.
- **task2**: Which task they undertook for the optional task: The full list of tasks and instructions is in the "extra_tasks.csv" file

Culture and Language

- **culture.birth**: The country of birth
- **culture.home_language**: The language spoken at home at least 50% of the time
- **culture.mother_tongue**: The participant's mother tongue
- **culture.residence**: The country of residence

- **culture.web_language.*:** The languages the participant uses to search the web. This is a set of columns, one for each language at least one participant used. A "1" in the column for a language means they use that language, "NA" means they do not use that language

Country values are: AT - Austria, BD - Bangladesh, BE - Belgium, BG - Bulgaria, BR - Brasil, CN - China, CO - Colombia, CR - Costa Rica, DE - Germany, DK - Denmark, ES - Spain, ET - Ethiopia, FR - France, GB - Great Britain, GR - Greece, HN - Honduras, HU - Hungary, IN - India, IR - Iran, IS - Iceland, IT - Italy, KZ - Kazakhstan, MX - Mexico, MY - Malaysia, NG - Nigeria, NL - Netherlands, NO - Norway, PH - Philippines, PL - Poland, PS -Palestinian Territories , RO - Romania, RU - Russia, SA - Saudi Arabia, SL - Sierra Leone, TR - Turkey, US - United States of America

Language values are: ace - Achinese, akk - Akkadian, af - Afrikaans, am - Amharic, ar - Arabic, bg - Bulgarian, bn - Bengali, ca - Catalan, cpe - English-based Creole or Pidgin, crp - Creole or Pidgin, cs - Czech, da - Danish, de - German, el - Greek, en - English, es - Spanish, fa - Persian (Farsi), fil - Filipino, fr - French, gl - Galician, he - Hebrew, hu - Hungarian, is - Icelandic, it - Italian, ja - Japanese, ko - Korean, ms - Malay, nl - Dutch, no - Norwegian, pl - Polish, pt - Portuguese, ru - Russian, sk - Slovak, sv - Swedish, ta - Tamil, tr - Turkish, uk - Ukrainian, zh - Chinese, zza - Zaza

Demographics

- **demographics.age:** Participant age:
 - 1 – 18-25
 - 2 – 26-35
 - 3 – 36-45
 - 4 – 46-55
 - 5 – 56 - 65
 - 6 – 66+
- **demographics.education.completed.:** The education levels that the participant has achieved. This is a set of columns, one for each of the following categories:

- **doctorate** – Doctorate
- **further** – Further education / College diploma
- **masters** – Masters
- **professional** – Professional qualification
- **secondary** – High School / Secondary School
- **undergraduate** – Undergraduate

A "1" in any of these columns means that the participant has achieved this level of education, an "NA" indicates that they have not.

- **demographics.education.current.:** The education level that the participant is currently undertaking ("current"). This is a set of columns, one for each of the following categories:

- **doctorate** – Doctorate
- **further** – Further education / College diploma
- **masters** – Masters
- **professional** – Professional qualification
- **secondary** – High School / Secondary School
- **undergraduate** – Undergraduate

A "1" in any of these columns means that the participant are undertaking this level of education, an "NA" indicates that they have not.

- **demographics.gender:** The participant's gender.
- **demographics.status:** The participant's current economic status: "employed", "student", "unemployed", or "other".

Task

- **task1.timer:** The amount of time spent on the first task in seconds.
- **task2.timer:** The amount of time spent on the second task in seconds. Shows NA if the participant did not undertake an optional task

Post-Task Post-task questions. Answers are provided for the first task (**post_task1...**) and the second task (**post_task2...**). All answers use the following values:

- **NA** – Participant did not answer this question. Will only appear for **post_task2...** if the participant did not undertake the second task.
- **unused** – Participant did not use the element
- **1-5 responses** for how useful the interface element was on a scale between 1 – "Not at all" and 5 – "Extremely".
- **post_taskX.browse.***: Assessment of the UI elements on the "Browse" tab (step 1) of the multistage interface. The following UI elements were assessed:
 - *individual_books* – The list of books for a selected topic
 - *topic_explorer* – The hierarchical topic explorer
- **post_taskX.search.***: Assessment of the UI elements on the "Search" tab (step 2) of the multistage interface. The following UI elements were assessed:
 - *search_box* – The search box
 - *search_facets* – The faceted search interface
 - *search_history* – The list of previous searches
 - *search_results* – The list of search results
 - *search_topic* – The search topic selector that carried over the search topic from the "Browse" stage
- **post_taskX.bookbag.***: Assessment of the UI elements on the "Bookbag" tab (step 3) of the multistage interface. The following UI elements were assessed:
 - *notes* – The input field for storing notes
 - *similar_books* – The interface for finding similar books for a book
- **post_taskX.meta_data.***: Assessment of the individual book meta-data on either interface. The following elements were assessed:
 - *description* – The description tab, which contained long-text descriptions of the book's content
 - *publication* – The publication tab, which contained publication meta-data
 - *reviews* – The reviews tab, which contained user-provided reviews
 - *tags* – The tags tab, which contained user-provided tags

Engagement The following questions were asked using a 5-point Likert-like scale:

- **engagement.engagement.ae1** – This website is attractive
- **engagement.engagement.e2** – This website was aesthetically appealing
- **engagement.engagement.ae3** – I liked the graphics and images used on this website
- **engagement.engagement.ae4** – This website appealed to my visual senses
- **engagement.engagement.ae5** – The screen layout of this website was visually pleasing
- **engagement.engagement.en1** – Exploring this website was worthwhile
- **engagement.engagement.en2** – I consider my experience a success
- **engagement.engagement.en3** – This experience did not work out as I had planned
- **engagement.engagement.en4** – My exploration experience was rewarding
- **engagement.engagement.en5** – I would recommend exploring this website to my friends and family
- **engagement.engagement.fa1** – I lost myself in this experience
- **engagement.engagement.fa2** – I was so involved in this experience that I lost track of time
- **engagement.engagement.fa3** – I blocked out things around me when I was exploring this website
- **engagement.engagement.fa4** – When I was exploring, I lost track of the world around me
- **engagement.engagement.fa5** – The time I spent exploring just slipped away
- **engagement.engagement.fa6** – I was absorbed in exploring
- **engagement.engagement.fa7** – During this experience I let myself go

- **engagement.engagement.fi1** – I was really drawn into my exploration task
- **engagement.engagement.fi2** – I felt involved in this exploration task
- **engagement.engagement.fi3** – This exploration experience was fun
- **engagement.engagement.no1** – I continued to explore this website out of curiosity
- **engagement.engagement.no2** – The content of the website incited my curiosity
- **engagement.engagement.no3** – I felt interested in my exploration task
- **engagement.engagement.pu1** – I felt frustrated while exploring this website
- **engagement.engagement.pu2** – I found this website confusing to use
- **engagement.engagement.pu3** – I felt annoyed while visiting this website
- **engagement.engagement.pu4** – I felt discouraged while exploring this website
- **engagement.engagement.pu5** – Using this website was mentally taxing
- **engagement.engagement.pu6** – This experience was demanding
- **engagement.engagement.pu7** – I felt in control of my exploration experience
- **engagement.engagement.pu8** – I could not do some of the things I needed to do on this website

4.6.2 Cleaned Log Data

The “activity_cleaned.log” log file contains all interactions between the participant and the search interface.

Fields

- **participant**: The unique participant identifier for linking with the participant responses and bookbag
- **timestamp**: The ISO timestamp of the given log entry
- **action**: The action the user undertook
- **params**: Parameters for the action in url-encoded format

Available actions The system recorded the following actions:

- **start**: Start a new session for the given task. Parameters “interface” and “task”. If the participant reloaded the page, then a participant will have more than one start action within a session.
- **show-layout**: Shows the given “layout” to the user. Available layouts are “baseline” for the baseline interface and “explore”, “focus”, and “refine” for the multistage interface, and “review”
- **query**: The user ran a query, either manually or by clicking on book meta-data or by selecting a query from the history. Parameter “q” contains the actual query.
- **paginate**: The user paginated through the results. Parameter “start” contains the index of the first item to display. If a “list” parameter is present, then this is the index of the result list on the “explore” page that was paginated.
- **add-to-bookbag**: Add the book with the given “id” and “title” parameters to the book-bag.
- **remove-from-bookbag**: Remove the book with the given “id” parameter from the bookbag
- **add-facet**: Add the facet to the list of facets being used to restrict the result list. The “facet” parameter holds the facet field, while the “value” parameter holds the facet value.
- **remove-facet**: Remove the facet from the list of facets. The “facet” parameter holds the facet field, while the “value” parameter holds the facet value.
- **show-item**: Show the book with the given “id” parameter.
- **metadata**: Select the given metadata “tab” for the book with the “id” parameter.
- **mlt**: Find more books like this, by searching using the “text” parameter in the field specified by the “field” parameter
- **browse**: Browse the topic tree “branch”. Nodes in the branch are separated by “::” and the last node is the current node the user just selected.

- **annotate-item:** Add an annotation “note” to the book with the “id” parameter
- **sort-items:** Sort the items in the bookbag into the order specified by the “id” parameters.
- **reset-search:** Reset the query term and remove all selected facets
- **similar:** Find similar books that match at least one of the “facet” parameter values.

4.6.3 Raw Log Data

The raw log data differs from the cleaned log data in the depth of detail. The raw log data includes all the data that was sent from the user to the system and all the data that was sent from the system to the user.

Fields

- **participant:** The unique participant identifier for linking with the participant responses, including the interface they saw
- **timestamp:** The ISO timestamp of the given log entry
- **app:** The experiment app. Always “sbs”.
- **layout:** The layout the user was shown, see details above
- **action:** The action the user undertook. “_start” means the user started the task. “_root” indicates that the user switched layout. “_signal” is an interaction between user and system, where data was sent from the user to the system or vice-versa. “_ping” is an interaction with the UI that did not lead to data being exchanged between user and system. “bookbag:annotate_item” is an interaction where the participant modified the annotation of a book. “bookbag:sort” is an interaction where the user re-ordered the books in the bookbag.
- **data:** Data that the user sent to the system for the action
- **components:** Data sent to the UI components for display

Signals The following signals are exchanged between user and system:

- **query:** Run a new query;
- **start:** Paginate through the results;
- **add_to_bookbag:** Add the book to the book-bag;
- **remove_from_bookbag:** Remove the book from the book-bag;
- **add_facet:** Select a facet in the focus stage of the multi-stage interface;
- **remove_facet:** Remove a selected facet in the focus stage of the multi-stage interface;
- **show_item:** Show an item in the baseline interface;
- **mlt:** Show the similar books in the post-focus stage of the multi-stage interface;
- **explore_path:** Select a topic in the pre-focus stage of the multi-stage interface;

Pings Pings are log entries generated by the UI and have to be distinguished based on the parameters sent:

- **metadata:** Switching between the tabs on the item display (fig. 4) in the multi-stage interface;
- **show_item:** Show an individual book in the pre-focus or post-focus screens of the multi-stage interface;

Components The two interfaces used the following components:

- **explore_results:** The search results component used in the multi-stage interface pre-focus screen;
- **sections:** The navigation component used for switching between screens in the multi-stage interface;
- **search_paginate:** The pagination component used in all interfaces;
- **history:** The search history component shown in both interfaces;
- **review_results:** The search results component used in the multi-stage interface post-focus stage screen;
- **search_facets:** The search facets component used in the baseline interface and the multi-stage interface focus stage screen;

- **search_results:** The search results component used in the baseline interface and the multi-stage interface focus stage screen;
- **bookbag:** The book-bag component;
- **search_box:** The search box used in the baseline interface and the multi-stage pre-focus and focus stage screens;

4.6.4 Mandatory Task Data

- **instructions:** The instructions shown to the user.
- **task:** The task type: "open" – the open task, "focused" – the focused task.

4.6.5 Optional Task Data

- **instructions:** The instructions shown to the user
- **task:** The task type used in the ****task2**** column in the participant responses.
- **topic_id:** The original LibraryThing topic identifier.

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