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CACAO

"Simple" Interface (With Report Of Usability And Accessibility)

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eContentplus

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¹ OJ L 79, 24.3.2005, p. 1.

- 1 GOAL 3**
- 2 DESCRIPTION 3**
 - 2.1 DEMONSTRATOR 4
 - 2.2 INTERFACE INPUT 4
 - 2.3 INTERFACE OUTPUT 6
- 3 USABILITY TESTS..... 8**
 - 3.1 UNSUPERVISED TEST..... 8
 - 3.1.1 *Test results* 8
 - 3.1.2 *Session logs* 8
 - 3.1.3 *User Comments* 9
 - 3.2 MODERATED TEST 9
 - 3.3 EXPERT REVIEW AND CONCLUSIONS 10
- 4 CONCLUSION..... 10**
- 5 ANNEX A : ENLARGED SCREENSHOTS 11**

WP4: User access

Work package number :	4		Start date:	6		End date:	21				
Applicants involved:	1	2	3	6	8						

1 Goal

The purpose of the “simple” interface is to enable an early adoption of the system by CACAO-internal and CACAO-external libraries and to get feedback that may help to define the specifications for the “advanced” interface to be delivered in month 18.

The simple interface does not include all of the intelligent features of the full CACAO system which will be included in the advanced interface.

The simple interface must (a) demonstrate the functionality of the cross-lingual search service and (b) connect with the retrieval functions of the CACAO library OPACs.

2 Description

One of the project partners, FUB¹, developed **Multilingual Search Interface for Libraries (MuSiL)** for the three languages of the university: English, German and Italian. The system was developed independently from the CACAO consortium and before the project began. A screenshot of an earlier version of MuSiL was put in the CACAO Description of Work (c.f. p. 5) as a reference. Later, a second version of the interface was developed by FUB – also outside the CACAO project – and deployed after the project’s submission.

Since (a) the second version of MuSiL was born after thorough usability tests and log analysis, (b) MuSiL always worked as a front-end for a cross-lingual Information Retrieval system and (c) the interface was independently developed and FUB owns all the rights to its source code and use, FUB proposed to the CACAO consortium to reuse MuSiL interface’s design – after slight enhancements to support the additional languages – as the CACAO simple interface.

Thus, the design choices – as well as the minimal “ a-la Google” appearance – for the CACAO simple interface, are based on actual user feedback and expert review, performed internally by FUB as stated above.

As seen in the screenshot in Annex A, Figure 4, the search is not a fielded search, i.e.the input terms (*the query*) are searched in all fields; the only other task left to the user is the selection of her query’s language. The upper pane of the interface is described in more detail in section 2.2.

The output consists of a list of documents that match the query string and its corresponding translations².

¹ Free University of Bozen-Bolzano

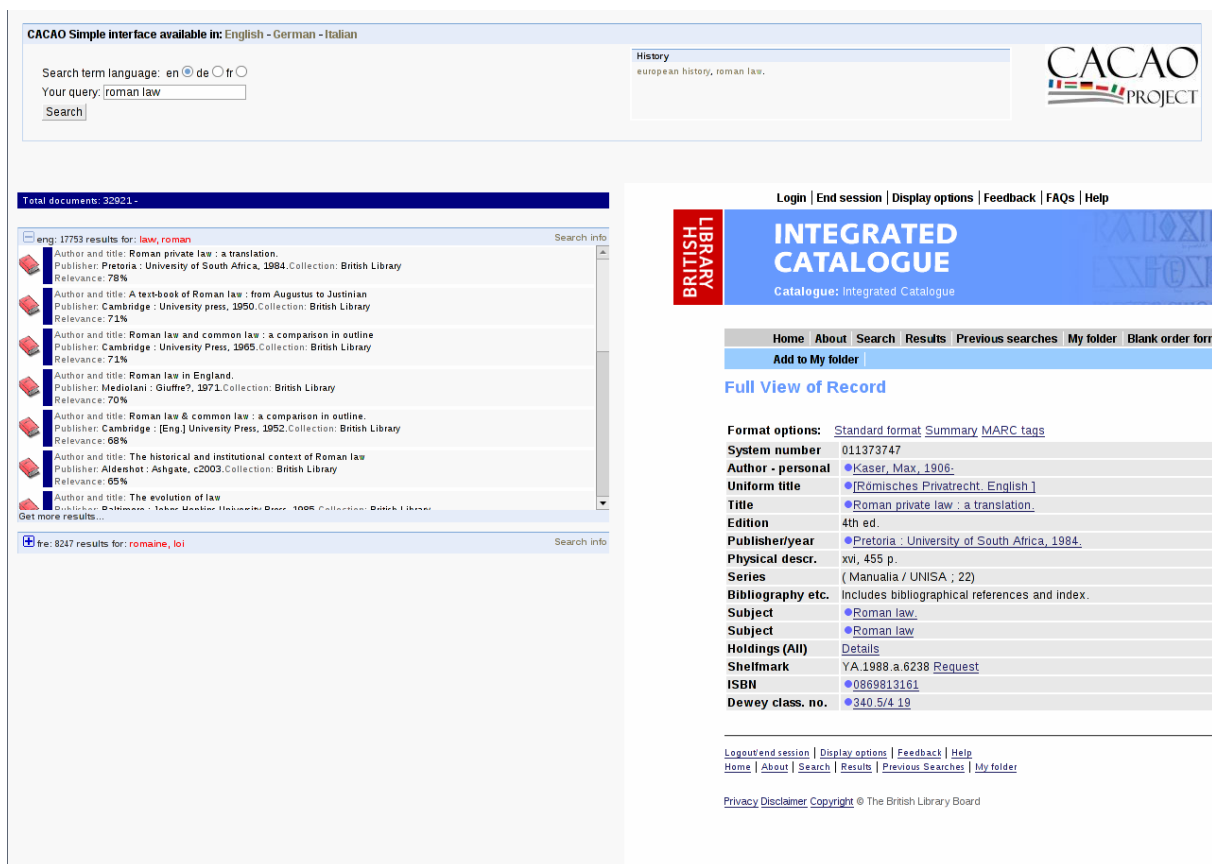
² C.f. section 2.3 for a more detailed description of the query matching strategy and enabled languages.

The matching documents are grouped by language on the left. The translated terms are shown among the results, to give visible feedback to the user on how the translation engine performed. The entire record from the partner's website appears on the right so that the user does not have to leave the CACAO interface.

The output of the interface is described in more detail in section 2.3.

2.1 Demonstrator

The simple user interface is available at <http://demo.celi.it:8095/demoUI/>. The same server hosts the CLIR demonstrator (cf. deliverable *DI.4: Fully Integrated CLIR System*).



The screenshot displays the CACAO Simple interface. At the top, it indicates the available languages: English - German - Italian. A search bar contains the query 'roman law' and a 'Search' button. A history box shows the previous search: 'european history, roman law.'. The main content area is split into two columns. The left column shows search results for 'eng: 17753 results for: law, roman', listing several documents with their titles, publishers, and relevance percentages. The right column displays a detailed record for the selected document, 'Roman private law : a translation', including its system number, author, title, edition, publisher/year, physical description, series, bibliography, subject, holdings, shelfmark, ISBN, and Dewey class number. The interface also features a 'BRITISH LIBRARY HISTORIC' logo and various navigation links like 'Home', 'About', 'Search', 'Results', etc.

Figure 1: The User Interface of CACAO

The usability tests documented in section 3 were performed with the first version of the Multilingual Search Interface for Libraries (MuSIL). The second version is currently available at <http://pro.unibz.it/opacdocdigger>.

2.2 Interface Input

The interface, including some basic help texts, is available in different languages¹ which the user may choose in the header bar. By default, the interface language is selected according to the browser's preference settings. The interface language also determines the default search

¹ At the time of this writing, the interface is available in English, German and Italian only. In a short time it will be available in all of the CACAO partners' languages.

term language, which can be changed by clicking one of the radio buttons. The language of the query may be any language supported by CACAO¹ and it will be translated into all the other available languages (i.e. the languages of CACAO partners). However, it is possible for a library to choose to make available to its end-users only a subset of the available target languages in a local installation. Of course, in a single session a user may perform a number of queries in different languages.

As mentioned before, there is only one search box. Search terms are matched against any field (e.g. title, author, keywords) of the documents as defined by the system. The text field accepts any input: single words, numbers and phrases. As described in D1.4, a query may trigger different behaviors in the CACAO system² such as proper name recognition. The User Interface search box does not force the user to interact with the system to trigger such behaviors (e.g. proper name recognition happens automatically without any interaction with the user).

Any search the user makes in the session is copied into the history box to the right of the query entry box; it allows the user to perform a previous query again without retyping the query.



Basic functionalities are guaranteed to work in any browser, but to exploit the full potential of the interface (i.e. history, live results update as described in section 2.3, etc.) a browser supporting XMLHttpRequest object (a.k.a AJAX) is needed. Any modern browser³ will allow the user to enjoy CACAO at its best.

¹ At the time of this writing only English, German and French queries are supported by the translation service.

² E.g. A word like “Paul Gauguin” is recognized as a Named Entity by the NLP component, and treated accordingly (for details c.f. D1.4)

³ Mozilla Firefox (2.0 and above) , Microsoft Internet Explorer (6.0 and above) and Apple Safari (3.0 and above)

2.3 Interface Output

The output of the CACAO system is displayed in the lower part of the interface. This space is vertically split into two halves: on the left is a list of documents matching the query. By clicking on a document of interest on the left, the user sees the detailed record (as provided from the partner's OPAC) on the right.

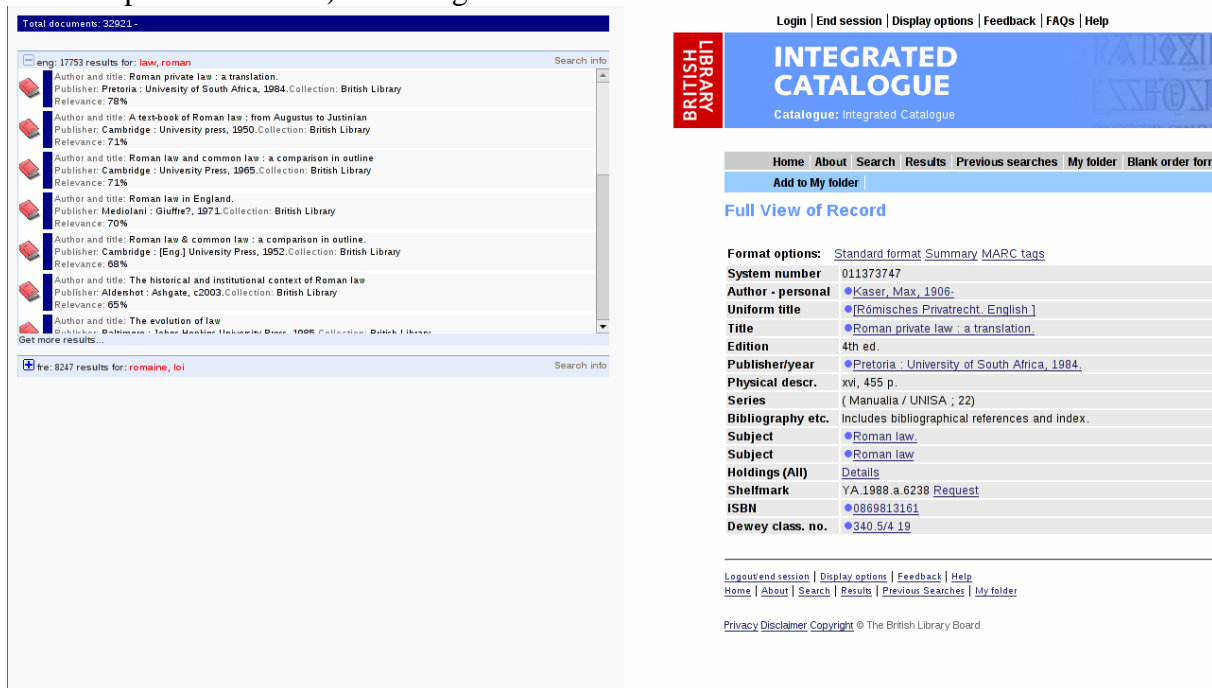


Figure 2: CACAO UI output (with a record from the British library shown on the right)

The leftmost pane is structured in such a way that it allows the user not to be distracted from the languages she is interested in; there is a list of matches for each language that may be expanded or collapsed at any time without losing its content. By default the language that matches the interface (but not necessarily the input query) is expanded, since tests have shown that users prefer this behavior¹.

At the very top of this column, the total number of matches is shown inside a bar. This bar will also contain the sorting options (such as year, title, author) as soon as a set of more consistent data is available².

Each list is initially populated with a small subset of the full hitlist³, in order to give feedback to the user as soon as possible. Then, as soon as the user scrolls down the list towards the end, a further request is performed in the background and the lists are updated. This technique is known as “Continuous Scrolling” and is a known UI pattern⁴. The behavior is only available thanks to AJAX support in the most common browsers. If the user is using old software (or if

¹ As stated previously, the interface language matches by default the user’s browser settings: the user is free to change this setting anytime and her choice is retained during the session

² The indexed data are those harvested during the TEL@CLEF campaign, and their metadata do not allow a consistent sorting (e.g. some records lack a field for date and/or author). These inconsistencies will be partially avoided by the adoption of the CACAO Application Profile the partner libraries are currently developing.

³ The value is currently set to 20 records for the whole dataset (i.e. the sum of all languages’ displayed record will be 20). This setting may be changed for every CACAO installation.

⁴ <http://ui-patterns.com/pattern/ContinuousScrolling>

the security settings restrict the availability of javascript), an alternative strategy is used allowing the user to ask for additional documents (i.e. pagination¹, where the user has to select which “page” of the results she is interested in).

For each record displayed on the left, a short view is displayed (with **Author** and **Title**, **Publisher**, **Collection** and **Relevance**). The Relevance field is computed by the CACAO system and tells the user how good the match is between the query terms and the result: this value is normalized and shown as a percentage; it is the default sort field (descendant) as well.

Additional information such as the number of matches per language and the actual performed query (the translated terms) are shown in the topmost row of each language box. This row is also visible when the list is collapsed. The user is able to check at a glance whether there were errors in translation or whether too many hits were returned, and to then change the query accordingly.

This row also shows a link that can display further information to the user if clicked: the words that the system considered a “multiword²” (e.g. “post office”) or recognized as proper name (e.g. Paul Gauguin). Since the system treats the query differently based on these options (that are automatically triggered by the system itself), the user tests have shown that such an explanation is not only welcome, but in many cases needed.

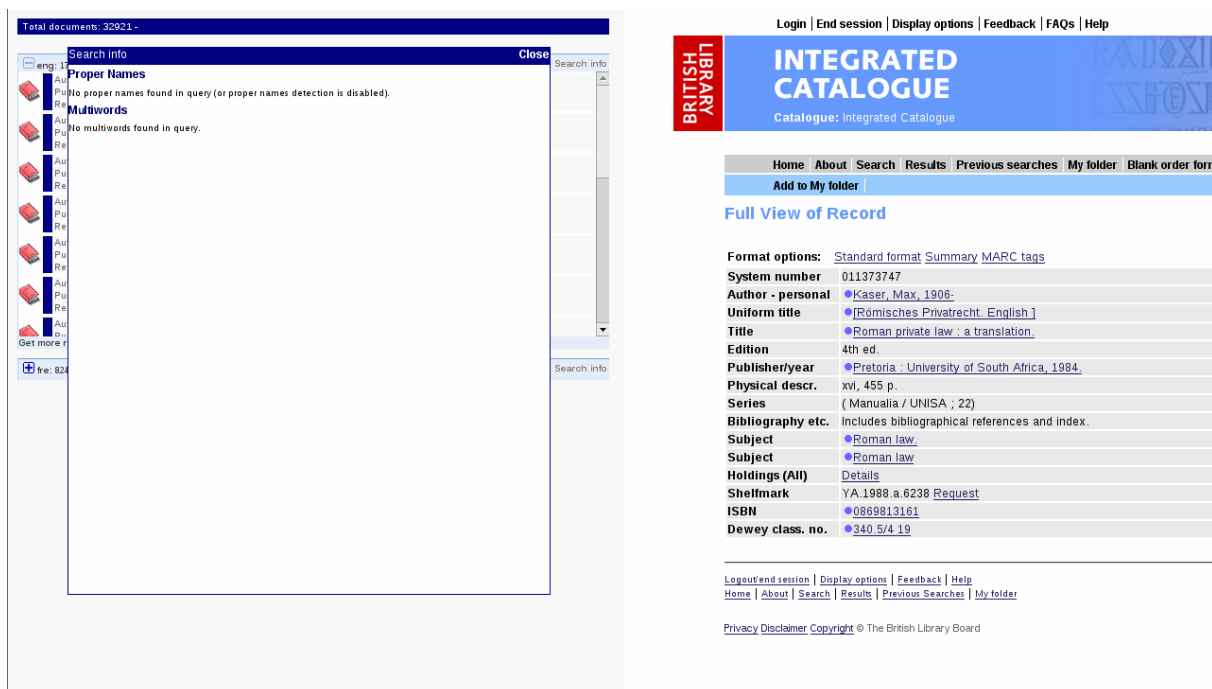


Figure 3: CACAO UI output with "Search Info" box displayed

¹ <http://ui-patterns.com/pattern/Pagination>

² http://en.wikipedia.org/wiki/Multiword_expression

3 Usability tests

Usability tests have been performed at the Free University of Bozen-Bolzano with the MuSiL interface for the University Library's catalog of Italian, German and English collections.

All tests were performed on the old MuSiL interface: the final version of the User Interface (UI) (on which CACAO UI is built) is the result of its evolution based on these tests.

Two test types were performed during a period of 21 days: In the *unsupervised test* the library offered free access to the multi-lingual search interface. The users received no introduction or assistance by a librarian; the on-line help was the only source of user guidance.

A second *moderated test* was performed with 4 users who were chosen according to a specific profile: a computer science student, a design student, a graduate student working as library helper, and a computer science Ph.D. student.

An *expert review* was also conducted by an internal member of FUB with expertise in usability and accessibility.

What follows is an excerpt of the results of the usability analysis, where the results which are not relevant for CACAO were stripped off for the sake of readability.

3.1 Unsupervised test

In the unsupervised test, the users weren't required to perform any specific task. They were requested to use the interface "as usual" and at the end of the experience they were asked to fill in a short survey which consisted in a comparison between the "standard" (monolingual) OPAC¹ and the cross-lingual search interface. In the same period, all the interactions with the website were logged to better understand users' behavior.

3.1.1 Test results

The *unsupervised test* provided few survey results, as only 6 surveys were returned. The survey showed that none of the users preferred the "standard" monolingual OPAC to the cross-lingual search interface. They considered the new interface either similar or better. Details are shown in the table below.

Table 1: Comparison between MuSiL and OPAC

	<i>worse</i>	<i>same</i>	<i>better</i>
Interface	0%	66%	33%
Effectiveness	0%	33%	66%
Ease of use	0%	50%	50%
Find resources in the same language	0%	50%	50%
Find resources in other languages	0%	33%	66%

3.1.2 Session logs

The collected user interactions made it possible to identify session logs that were interesting for the further development of the interface.

The following quantitative results were calculated from the session logs:

¹ C.f. <http://pro.unibz.it/opacuni/>

- Unique sessions: 59
- Query/session (av.): 6
- Queries: 359
 - English: 110
 - to Italian: 34
 - to German: 1
 - German: 91
 - to English: 3
 - to Italian: 1
 - Italian: 158
 - to English: 16
 - to German: 8

Although small, this set of queries allowed FUB to understand that the users were not understanding how to choose the target language in a successful way¹, resulting in the current version of the interface, where all languages are always retrieved.

3.1.3 User Comments

The surveys from unsupervised testing contained the following comments:

Positive:

- Very nice and useful
- I didn't use it long enough to be able to evaluate the approach. At first glance it seems confusing, but I think it is not more complicated than the normal OPAC.
- Very interesting project
- Good service

Negative:

- The relevance ranking is unclear. Stars are interpreted as recommendations [of books].

The negative comment was addressed by showing the relevance (an essential measure of Information Retrieval systems²) as a percentage instead of with stars.

3.2 Moderated Test

The moderated tests were conducted with a minimal test environment that included a laptop, screen recording software, a webcam to record facial expressions and a microphone to record user comments. Before the test session, the test candidates received brief training on the interface and an introduction to the test itself during which they had to perform the following tasks:

- Find a specific book (by title)
- Find books on a topic in which the user has expertise

The test finished with a debriefing session to gather feedback from the user and to explain errors that had occurred.

¹ The first version of MuSiL requested the user to explicitly select both the query and the target language (i.e. the language of the results).

² For a more detailed description of relevance c.f. D1.1

The following results were collected:

- Only 2 out of 4 users realized how the language selection works
- Expert users¹ got frustrated by the lack of advanced search techniques (e.g. by call number)
- No one understood the actual search string². The search terms were "guessed" by looking at results
- It should be possible to determine how the search results are sorted

As described in previous sections, the interface is now simpler: the language selection is now trivial, the translated search terms are shown at the beginning of each language's list and the lists themselves are sortable.

3.3 Expert review and conclusions

A member of FUB with expertise in usability and accessibility summarized the tests results and conducted an expert review of the MuSiL interface, making the following observations:

(a) About the interface:

- Language selection is cumbersome.
- Some features are hidden. The translated query (which is the actual search) is not shown unless requested.
- The sorting of the results is barely understood. Relevance ranking is not explained.
- The only available sorting criterion is by relevance.

(b) Functionality issues:

- Translation: Some words aren't translated, but no warning is shown.
- Proper names: Most users do not recognize when proper names are recognized by MuSiL.
- Multiword translation: Multiwords are sometimes translated into only one language, without notification.
- Thesaurus expansion: Some terms which are barely related to the user's search term are added by the system to the query, yielding undesirable results.

All issues were addressed while developing the new version of MuSiL and the CACAO UI, as discussed above and summarized in section 4.

4 Conclusion

The CACAO Simple User Interface is built upon MuSiL, a search interface that has been in production for two years by one of the partners. MuSiL is used on a daily basis by the users of the Library of the Free University of Bozen-Bolzano and its students. MuSiL has been thoroughly tested with respect to usability and its appearance and ease of use have been documented in this deliverable.

The most important points to highlight are:

¹ Among the users that tested the interface there was a co-worker of the library

² The translated terms were not shown to the user, one had to guess why some documents were shown in foreign languages

- The language selection is as simple as possible; only the query language has to be specified, while the results are always available in all languages.
- The number of matches (global and per language) are shown.
- The translated search terms are shown at the beginning of each list.
- The “search information” link and popup have been added to guide the user.
- The system supports multi-field sorting (e.g. first title ascending, then author descending).

The described simple user interface will allow an early adoption of the system by CACAO libraries, enabling them to get feedback that may lead to further improvements to the system and to a definition of the specifications for the “advanced” interface to be delivered in month 18.

Other issues that will be addressed when developing the advanced user interface (c.f. D4.2 *"Advanced" interface*) include (but are not limited to):

- Enable advanced search with different input fields
- Enable different sort criteria
- Enable faceted search
- Make the translation process more transparent (e.g. translation options, warnings, ...)

Other points may arise from the usage of the Simple User Interface

5 Annex A : Enlarged screenshots

CACAO Simple interface available in: [English](#) - [German](#) - [Italian](#)

Search term language: en de fr

Your query:

History

european history, roman law.

Total documents: 32921 -

eng: 17753 results for: **law, roman** Search info

- Author and title: **Roman private law : a translation.**
 Publisher: Pretoria : University of South Africa, 1984. Collection: British Library
 Relevance: 78%
- Author and title: **A text-book of Roman law : from Augustus to Justinian**
 Publisher: Cambridge : University press, 1950. Collection: British Library
 Relevance: 71%
- Author and title: **Roman law and common law : a comparison in outline**
 Publisher: Cambridge : University Press, 1965. Collection: British Library
 Relevance: 71%
- Author and title: **Roman law in England.**
 Publisher: Mediolani : Giuffre?, 1971. Collection: British Library
 Relevance: 70%
- Author and title: **Roman law & common law : a comparison in outline.**
 Publisher: Cambridge : [Eng.] University Press, 1952. Collection: British Library
 Relevance: 68%
- Author and title: **The historical and institutional context of Roman law**
 Publisher: Aldershot : Ashgate, c2003. Collection: British Library
 Relevance: 65%
- Author and title: **The evolution of law**
 Publisher: Ostfildern : J.B. Metzler, 1995. Collection: British Library

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fre: 8247 results for: **romaine, loi** Search info

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INTEGRATED CATALOGUE

Catalogue: Integrated Catalogue

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Add to My folder

Full View of Record

Format options: [Standard format](#) [Summary](#) [MARC tags](#)

System number	011373747
Author - personal	Kaser, Max, 1906-
Uniform title	[Römisches Privatrecht. English]
Title	Roman private law : a translation.
Edition	4th ed.
Publisher/year	Pretoria : University of South Africa, 1984.
Physical descr.	xvi, 455 p.
Series	(Manualla / UNISA ; 22)
Bibliography etc.	Includes bibliographical references and index.
Subject	Roman law.
Subject	Roman law
Holdings (All)	Details
Shelfmark	YA.1988.a.6238 Request
ISBN	0869813161
Dewey class. no.	340.5/4 19

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Figure 4: CACAO Simple User Interface (with a record from the British library shown on the right)

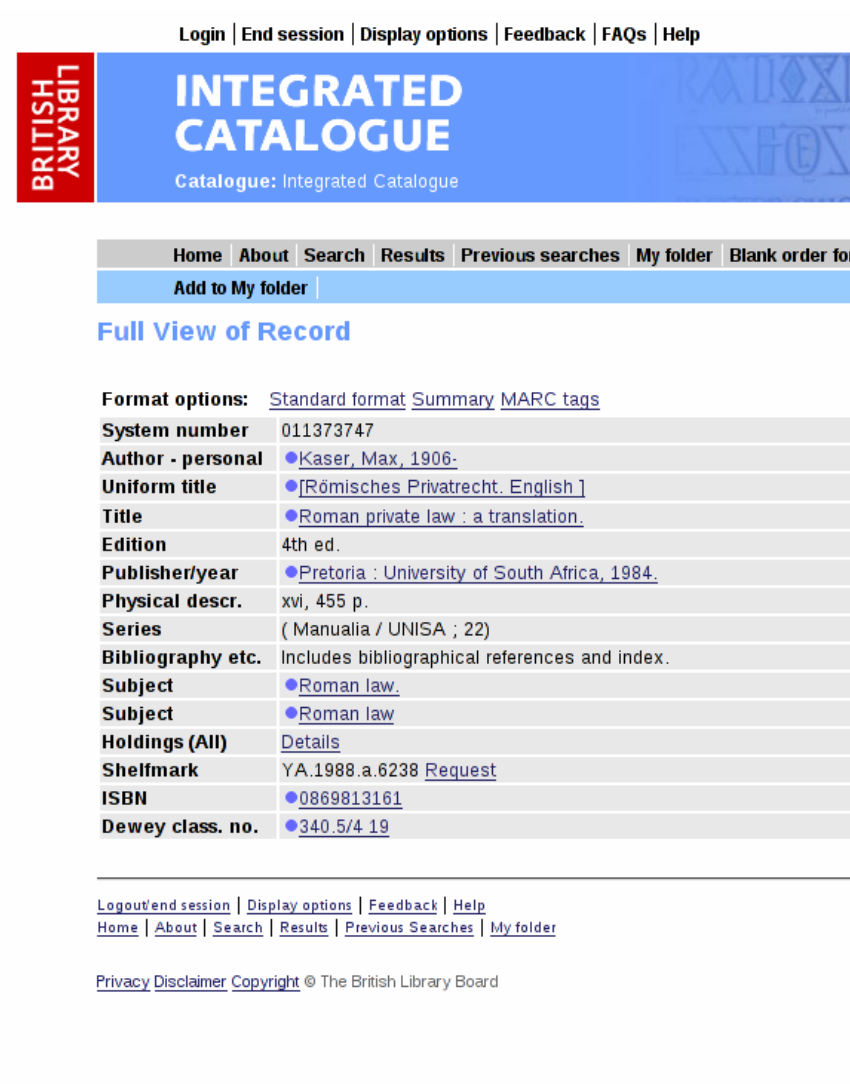
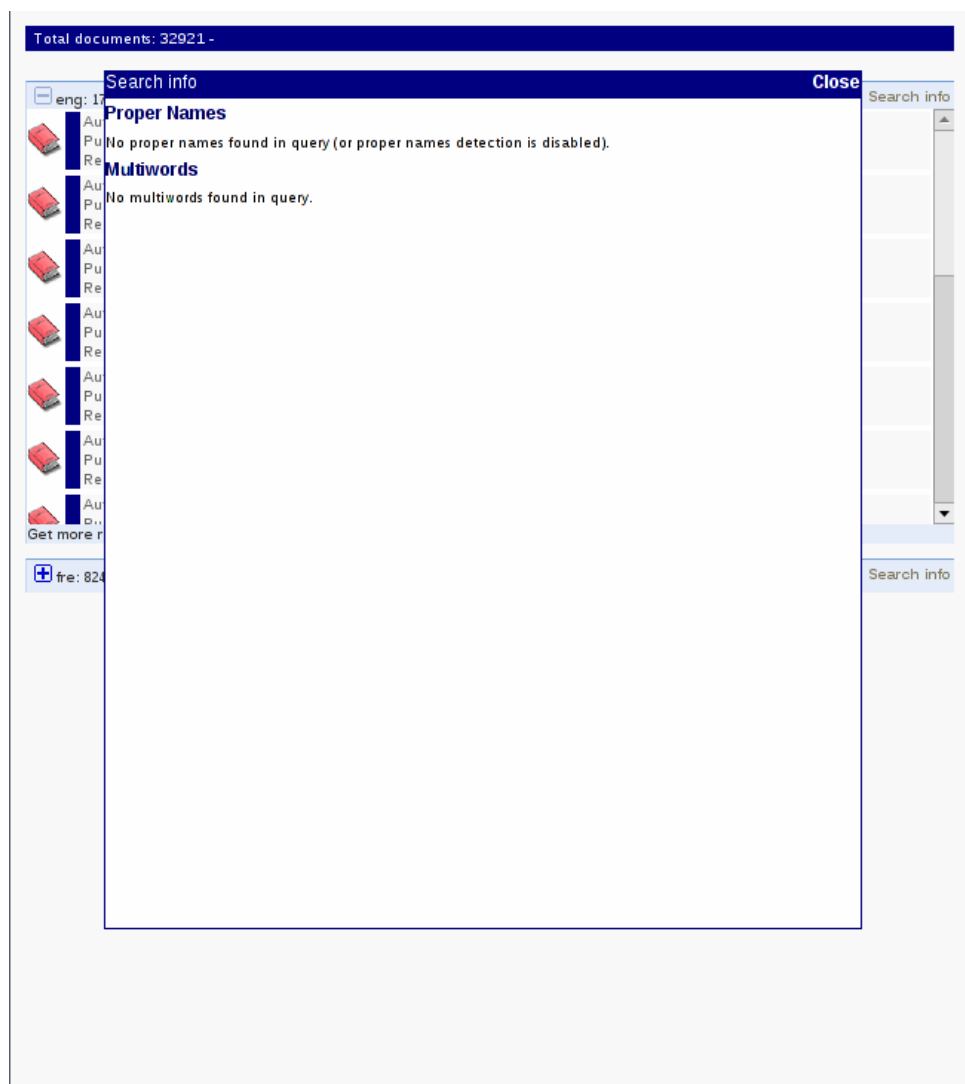


Figure 5: CACAO UI output with "Search Info" box displayed