

Ercim Technical Reference Digital Library

Search and Browse Services

Antonella Andreoni, Carlo Carlesi, Pasquale Pagano, Serena Pisani
IEI – CNR, Via S. Maria 46, 56126 Pisa, Italy
{andreoni, carlesi, pagano, pisani}@iei.pi.cnr.it

Abstract

The ERCIM Technical Reference Digital Library (ETRDL) provides the access to a distributed collection of grey literature (technical reports, theses, workshop proceedings, pre-prints, etc.) in the areas of Computer Sciences and Applied Mathematics produced by members of the ERCIM Consortium. The ETRDL service currently allows public access through Internet to the technical reports produced by seven ERCIM organisations. ETRDL functionality regards searching and browsing ERCIM collections to retrieval existing documents, submitting new documents in a specific collection and administer the ERCIM collections via a Web user interface. The aim of this document is to present an user guide for the information seekers that want to browse the ETRDL collections and search documents in one or more selected collections.

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1 Introduction

The ERCIM Technical Reference Digital Library (ETRDL) provides the access to a distributed collection of grey literature (technical reports, theses, workshop proceedings, pre-prints, etc.) in the areas of Computer Sciences and Applied Mathematics produced by members of the ERCIM Consortium.

ETRDL currently provides access to collections of the following ERCIM Institutions:

- **CNR** (Consiglio Nazionale delle Ricerche - Italy),
- **CWI** (Centrum voor Wiskunde en Informatica - The Netherlands),
- **FORTH** (Foundation of Research and Technology - Hellas - Greece),
- **GMD** (German National Research Center for Information Technology - Germany),
- **INRIA** (Institut National de Recherche en Informatique et en Automatique - France),
- **SICS** (Swedish Institute of Computer Science - Sweden) and
- **SZTAKI** (Magyar Tudományos Akadémia - Számítástechnikai és Automatizálási Kutató Intézete - Hungary).

Moreover, the user of ETRDL can access directly the collection of the US Networked Computer Science Technical Reference Library (NCSTRL) [NCSTRL].

An infrastructure has been installed in order to support a Digital Library service among the ERCIM Institutes. The infrastructure is based on the DIENST system (version 4.1.9) developed by the Cornell University[Lagoze1][Lagoze2].

The ERCIM Digital Library service currently allows public access through the Internet to the technical reports produced by seven ERCIM organisations of the 14 ERCIM national labs. This number should be increased as more of the institutions implement the system [ETRDldemo].

The end users are intended to be not only members of the ERCIM Institutions, but of the international scientific and academic community in general [DELOS].

ETRDL functionality regard searching and browsing ERCIM collections to retrieval existing documents, submitting new documents in a specific collection and administer the ERCIM collections. All these functionality are provided via a Web user interface.

The aim of this guide is to provide a manual reference for the information seekers that need to retrieve documents from the NCSTRL and ERCIM collections through ETRDL interface. The users of ETRDL are assumed to be moderately experienced with Web browsing. Instructions for how to use the ETRDL Search and Browse User Interface are organised in the following sections:

- Technical requirements: what the user needs to access to ETRDL.
- How to access to the ETRDL: the collections description and user interface characteristics.
- The ETRDL services: ETRDL metadata, how to retrieve document using the search service and how to explore the ETRDL collections using the browse service.

2 Technical Requirements

The user can access ETRDL via Web, this means that he/she can use which kind of computer and operating system you prefer. However, to search documents and browse ETRDL collections the user must have:

- Internet access availability
- some knowledge of Web browsing
- a Web browser such as Netscape Navigator or MS Internet Explorer having JavaScript capabilities.

As ETRDL documents have different file format (PostScript, PDF, text, HTML, TIFF) the user needs additional tools to display documents such as:

- PS viewer for PostScript documents,
- Adobe Acrobat Reader for PDF documents,
- TIFF viewer for TIFF images.

3 Access to ERCIM Technical Reference Digital Library

The ERCIM Technical Reference Digital Library (ETRDL) provides the access to a distributed collection, consisting of the set of the local collections. These are maintained on the local servers of each partner institution. This has comported the implementation of two levels of Homepages. A centralised access point has been provided to the system through the DELOS¹ Web site (<http://www.iei.pi.cnr.it/DELOS/ETRDL>), whereas a local homepage is installed on each local server.



Figure 3-1 The centralised homepage.

The user who accesses the system through the centralised homepage (see Figure 3-1) can access a local server by clicking one of the Institution logos which are shown in the main picture or he/she can use the Institution hyperlink in the left frame (at present FORTH and CWI servers are not accessible). For example if the user clicks the CNR logo or hyperlink he/she accesses to the CNR local server. In Figure 3-2 the CNR local homepage is shown.

¹ The DELOS Working Group, part of the ERCIM Digital Library Initiative, is funded by the ESPRIT Long Term Research Programme (LTR No. 21057) within the Fourth Framework Programme of the Commission of the European Union. Its objective is to promote research into the further development of digital library technologies.



Figure 3-2 CNR homepage.

The local homepage interface caters simultaneously for two user classes: information seekers and information providers by offering two main options: search/browse any collection (these services are explained below); submit/withdraw a document to/from a local collection. From the local homepages, the search and browse functions can be activated over the entire NCSTRL collection, over the ERCIM collection, or over the collection(s) of the local institution (the collections are described below). Note that local collections are disjoint sub-sets of the ERCIM collection and ERCIM collection is a sub-set of NCSTRL collection (see Figure 3-3).



Figure 3-3 NCSTRL, ERCIM and local collections

In each case, the user is not only accessing a different collection (or sub-collection), but is provided with a different perspective on the information, depending on the functions that have been implemented at that particular level, this means that ETRDL services are specialised depending on the particular collection.

3.1 NCSTRL collection

NCSTRL (pronounced "ancestral") is an international collection of computer science research reports and papers made available for non-commercial use from a number of participating institutions and archives. Some of the documents in NCSTRL are part of the technical report collections of participating institutions. For the most part, NCSTRL institutions are universities that grant PhDs in Computer Science or Engineering, with some industrial or government research laboratories. Other documents are contents of other document archives that participate in the NCSTRL technical infrastructure. NCSTRL stands for Networked Computer Science Technical Reference Library [NCSTRL] [NCSTRLD0C]

3.2 ERCIM collection

The ERCIM collection consists of all kinds of grey literature produced by the participating ERCIM Institutions (technical reports, proceedings of conferences or workshops, theses, project deliverables, etc.) and is managed by a set of interoperating servers. At present, ETRDL server sites have been set up at five of the seven participants in the ETRDL project (see Table 3-1). The user that accesses to the ERCIM collection perceives it as a federation of collections. Each collection is composed of the documents produced by a single ERCIM Institution (publishing authority) except for the CNR collection that it is a federation of collections too.

Institutions	Server URL	Server Physical location
CNR (Italy)	http://exlibris.ian.pv.cnr.it	CNR-IAN
	http://dienst.cib.na.cnr.it	CNR-IC
	http://dienst.iei.pi.cnr.it	CNR-IEI
	http://dienst.iesi.ba.cnr.it	CNR-IESI
	http://dienst.ifcai.pa.cnr.it:8080	CNR-IFCAI
CWI (The Netherlands)	Not available	
GMD (German)	http://ncstrl.gmd.de:80/Dienst/htdocs/index.html	GMD
FORTH (Greece)	Not available	
INRIA (France)	http://www-ncstrl.inria.fr/Dienst/htdocs/index.html	INRIA
SICS (Sweden)	http://dienst.sics.se	SICS
SZTAKI (Hungary)	http://www.szataki.hu:8000	MTA-SZTAKI

Table 3-1 ERCIM servers.

3.3 Local collection

A local collection consists of all kinds of grey literature produced by a single ERCIM Institution. A local collection can be composed of sub-collections, for example the CNR collection is composed of fifteen CNR Institutions (see the Table 3-2).

Institutions	Server URL	Server Physical location
Area della Ricerca (Palermo)	http://dienst.ifcai.pa.cnr.it:8080	CNR-IFCAI
Istituto CNUCE (Pisa)	http://dienst.iei.pi.cnr.it	CNR-IEI
Istituto di Analisi Numerica (Pavia)	http://exlibris.ian.pv.cnr.it	CNR-IAN
Istituto di Cibernetica (Napoli)	http://dienst.cib.na.cnr.it	CNR-IC
Istituto di Elaborazione dei Segnali e delle Immagini (Bari)	http://dienst.iesi.ba.cnr.it	CNR-IESI
Istituto di Elaborazione della Informazione (Pisa)	http://dienst.iei.pi.cnr.it	CNR-IEI
Istituto di Fisica Cosmica con Applicazioni all'Informatica (Palermo)	http://dienst.ifcai.pa.cnr.it:8080	CNR-IFCAI
Istituto di Linguistica Computazionale (Pisa)	http://dienst.iei.pi.cnr.it	CNR-IEI
Istituto di Matematica Computazionale (Pisa)	http://dienst.iei.pi.cnr.it	CNR-IEI
Istituto di Ricerca sulle Onde Elettromagnetiche (Firenze)	http://dienst.iei.pi.cnr.it	CNR-IEI
Istituto di Studi sulla Ricerca e sulla Documentazione Scientifica (Roma)	http://dienst.iei.pi.cnr.it	CNR-IEI
Istituto di Tecnologie Didattiche e Formative (Palermo)	http://dienst.ifcai.pa.cnr.it:8080	CNR-IFCAI
Istituto per le Applicazioni Telematiche (Pisa)	http://dienst.iei.pi.cnr.it	CNR-IEI
Istituto per la Matematica Applicata (Genova)	http://exlibris.ian.pv.cnr.it	CNR-IAN
Istituto per le Applicazioni della Matematica e dell'Informatica (Milano)	http://exlibris.ian.pv.cnr.it	CNR-IAN

Table 3-2 CNR servers.

3.4 The multilingual user interface

The ETRDL has a bilingual user interface, as most local servers maintain interfaces in English and in the local language. When the user accesses an ETRDL local homepage the system shows him/her the English user interface. Depending on the local server selected, the user are given a choice of language. To switch to the local language user interface he/she must click on the hyperlink below the title of the homepage. (see Figure 3-4).

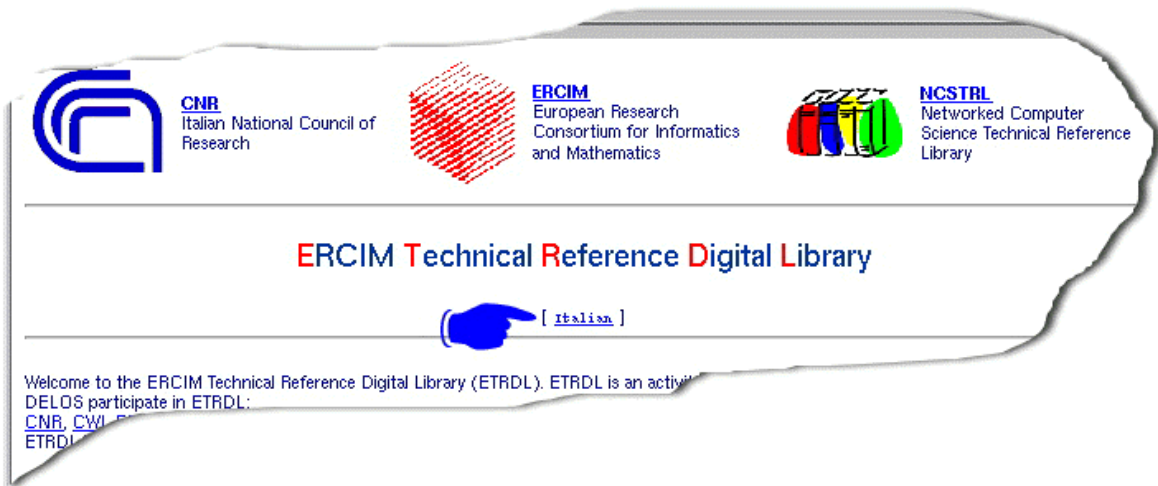


Figure 3-4 Choose local language user interface.

For example, if the user accesses to an Italian CNR server he/she can switch to the Italian homepage that appears as shown in Figure 3-5



Figure 3-5 The Italian version of the ETRDL homepage at CNR site.

3.5 The ETRDL on-line help

ETRD on line help, is available at <http://dienst.iei.pi.cnr.it/README> (Figure 3-6). This documentation is directed to four different kind of users: the system administrators, the digital library administrators, the information seekers and the information providers. System administrators are involved in the installation and configuration of the system and digital library administrators are involved in the management of the ETRDL documents.

An access to ETRDL from this site is also provided.



Figure 3-6 ETRDL help on line and documentation. The homepage.

During the search session users can access the help document directly from the search page as shown in Figure 3-7. Depending on the chosen language for the interface the user can access the on-line helps either in English or local language.

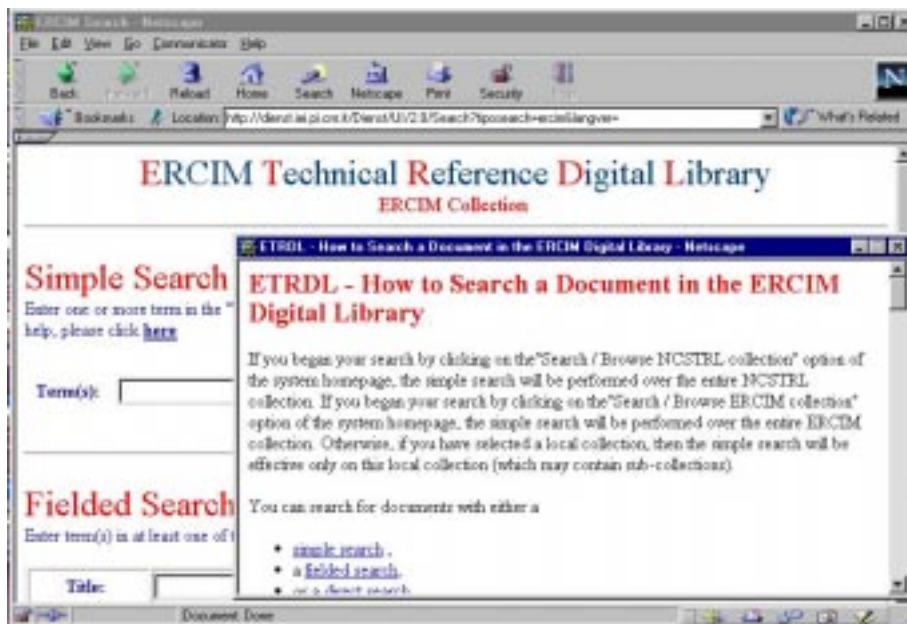


Figure 3-7 Search procedure help on line.

4 ETRDL Services

There are three main classes of ETRDL services:

- 1 Search and browse
- 2 submission/withdrawal of documents
- 3 DL administration

The ETRDL *search and browse service* offers functionality such as subject searching and browsing, moreover provides users with a basic cross-language search functionality. The *submit/withdraw service* aims at assisting the authors by providing facilities to classify their documentation (using classification schemes for both computer science and the mathematics) quickly, easily and correctly. The *administration service* assists the librarians by providing mechanisms to manage the digital documentation efficiently.

In this document search and browse services are described. The search and browse services are different depending on the collection selected (NCSTRL, ERCIM or local). The user can choose to search over the entire ERCIM collection or select one or more specific Institution (publishing authority) to restrict the information space. Indeed, the browse service allows to explore a single publishing authority: this helps the user to realise which kind of information he/she can retrieve from a certain publishing authority.

For more information about the submit and the administration services please refer to [SUBMIT] and [ADMIN] respectively.

4.1 ETRDL Metadata

In the ERCIM and Local collections each document has a common metadata description associated. This description is based on the Dublin Core metadescription standard and represents an extension of the basic Dienst metadata set, that is used in NCSTRL collection.

Title, author and abstract are the basic Dienst metadata elements used by search and browse services. The full ETRDL metadata set comprehends the following additional elements: abstract in local language and its language, subject (free keywords, ACM and MSC codes/descriptors), type, year and language of the document.

The user can employ the ACM Computing Classification [ACM98] and/or the AMS Mathematics Subject Classification [MSC91], and/or free keywords to represent subject terms for document classification during the submission procedure and for retrieval when querying the system.

The ACM and AMS schemes are accessible on-line and can be browsed during both retrieval and submission; codes with associated descriptors can be selected and inserted in the appropriate fields.

Authors must enter codes/descriptors from at least one classification. Searches are performed on all three fields by default.

4.2 SEARCH service

ETRDL offers three kinds of search service to satisfy the needs of different kinds of information seekers: novice users, expert users and librarians. Information seekers can search for documents with either a:

- simple search,
- a fielded search,
- or a direct search.

4.2.1 Simple Search

Simple search is the first approach to query the ETRDL collections. This service is simple to use and similar to the most popular search engines functionality. Simple search consists of a single field in which the query terms are entered and two buttons: one to activate the search, the other to clear the field of previously entered values. The query can consist of one or more words. The terms entered in this field are searched in all indexed bibliographic fields and are always "Ored " together . The search request will be performed over all publishing authorities of the selected collection (NCSTRL, ERCIM or local).

4.2.2 Fielded Search

The fielded search has different capability on different collections.

The fielded search form for the NCSTRL collection has three logical components:

- The bibliographic fields: Title, Author, Abstract;
- Two radio buttons to specify whether the values entered in the fields should be "ANDed" or "Ored".
- A menu to select one or more collections on which to perform the search, and a check box to select all collections.

The following picture shows the NCSTRL fielded search form (Figure 4-1).

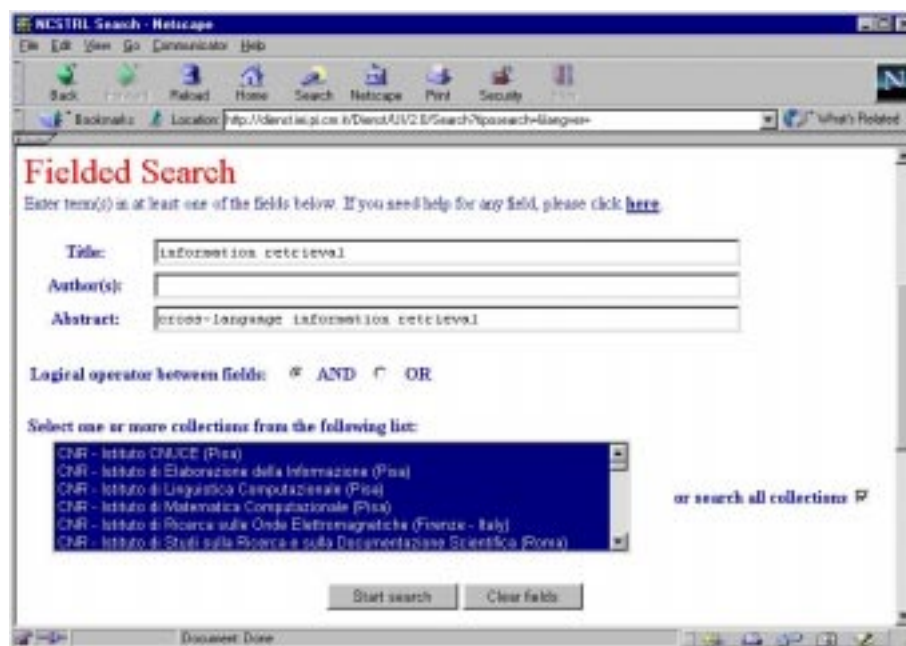


Figure 4-1 The NCSTRL fielded search form.

Instead, the fielded search form for the ERCIM/Local collection has four logical components:

- The bibliographic fields: Title, Author, Abstract and Abstract in other language with a selector to specify the language, Subject. The selector for the language of the second abstract is only operating if a value is entered in the other abstract field.
- Two radio buttons to specify whether the values entered in the fields should be "ANDed" or "Ored".

- Three selectors to refine the search according to Type, Year, Language.
- A menu to select one or more collections on which to perform the search, and a check box to select all collections.

The following picture shows the ERCIM fielded search form (Figure 4-2). By default, the local fielded search form is equal to the ERCIM one except for the collections list. By the way each institution can customise it to match its own requirements. This is true also for the other local services.

Figure 4-2 The ERCIM fielded search form.

Both the NCSTRL user interface and the ERCIM/Local one have two buttons: the first starts the search and the second clears the values entered in the fields.

Search criteria are based on the following rules:

- 1) To specify search criteria based on bibliographic fields, it is necessary to fill in at least one of the keyword fields listed below and activate either the AND or the OR button to determine the relationship between the fields. The default value is OR.
- 2) Words entered in any single bibliographic field are ANDed by default. Other criteria can be used according to the rules specified in the *Rules for bibliographic keyword matching* paragraph.
- 3) The field semantics available in the fielded search is the following:
 - Author, Title, Abstract have a obvious means (both in NCSTRL and ERCIM/Local fielded search);
 - Local Abstract - Words in the local language abstract of a document. The user can specify a language otherwise the terms entered will be matched with all possible languages other than English. The selector for the language of the second abstract is only operating if a value is entered in the local abstract field.
 - Subject - Subject search is possible using
 - Or free keywords.
 - Or codes/descriptors of the ACM (Association for Computing Machinery) Computing Classification System (CCS), Version 1998.

- Or codes/descriptors of the AMS (American Mathematical Society) Mathematics Subject Classification (MSC), Version 1991.

As far as possible, the user should use standard vocabulary from the discipline. As the CCS allows the use of proper names as "implicit" descriptors, he/she may enter names of programming languages (e.g., "C++") or of people.

- 4) If the user wishes to refine the search results according to type, year, or language, he/she has to fill in one or more of the following fields:
 - Language - Select a language from the pulldown menu.
 - Type - Select a type from the pulldown menu.
 - Year - Enter a year (e.g.: 1998)

The search criteria will be rejected if the user does not enter a value in at least one bibliographic field and select at least one collection.

4.2.3 Direct Search

Direct search consists of a text entry field in which the unique document identifier can be entered to access that document directly and two buttons: one to active the search, the other to clear the field of previously entered value. The use of this kind of search is directed especially to the librarian users because it need the knowledge of the document identifier.

4.2.4 Rules for bibliographic keyword matching

Words that the user enters in any bibliographic keyword field (Author, Title, Abstract, Abstract in other language, Subject) are matched to bibliographic entries according to the following rules:

- 1) Each string that the user enters matches any word in the respective field that begins with the respective string. For example, the string "comp" matches "computer", "computation", "comprehensive", etc.
- 2) Words entered in the same field are "ANDed" by default. For example, if you enter "computer vision" in the abstract field, the search will return documents that have both the words "computer" and "vision" in their abstracts.
- 3) The user may also use logical connectors AND and OR explicitly within fields. For example, if the user enters "robotics or vision" in the abstract field, the search will return documents that have the word "robotics" or "vision" in their abstracts. If the user enters "robotics and vision" in the abstract field, the search will return documents that have both the word "robotics" and "vision" in their abstracts. Finally, the user may use parentheses to group words. For example, if the user enters "Gries or (Teitelbaum and Field)" in the author field, the search will return documents authored by "Gries" or by "Teitelbaum" and "Field".

Note: The user should not use short, common words or single letters in the bibliographic keyword fields (e.g., "a", "for", "in", "of", "s", "the", etc.). Words with high frequency, such as "use", "well", etc, are considered to be common words as well, and are automatically discarded. The user will be asked to re-enter his/her search if the keyword he/she enters matches too many words in the database.

4.3 Retrieved documents

The results of a search are first displayed in summary - the number of documents found is displayed for each publisher. The documents found are listed publisher by publisher and the

title, the author(s) and the document identifier of each document are displayed. The picture below shows the results of a search (Figure 4-3).

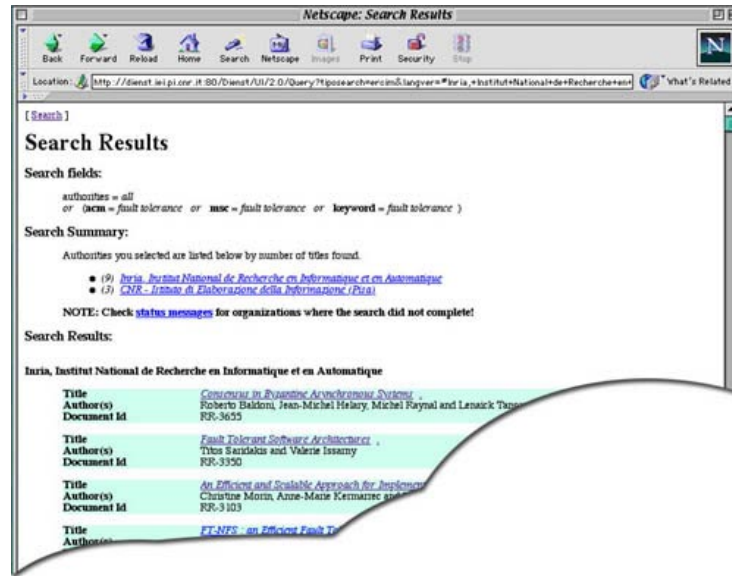


Figure 4-3 Search results.

By clicking on a given document the user can view its bibliographic description: the title, the author(s), the document identifier (Bib-Code), the date, the subject fields (free keywords, ACM, MSC), the type, the language, the abstract and the local language abstract if exist (see Figure 4-4). If the author, during the document submission, has inserted the document file in one of the accepted format, the user can view it.

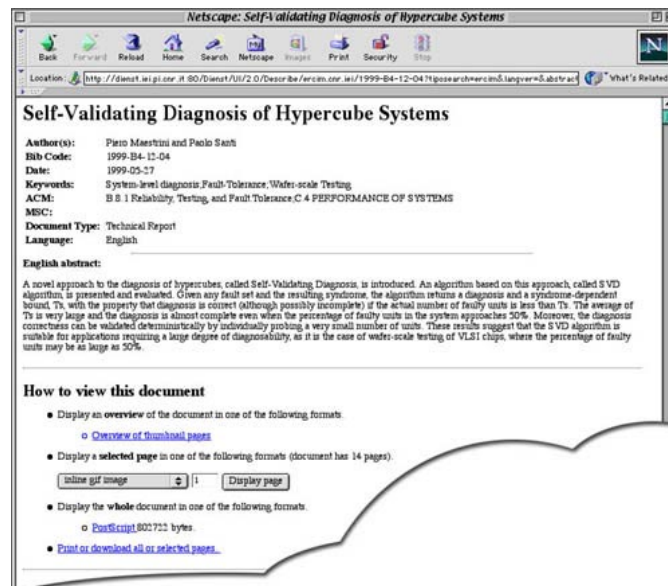


Figure 4-4 Display of a selected document.

Depending on the file format, the user can choose to display an overview of the document (the whole document in thumbnail format, or page by page, see Figure 4-5) or display the

entire document using the suitable viewer. He/she can also download and/or print out the whole document or a range of pages.

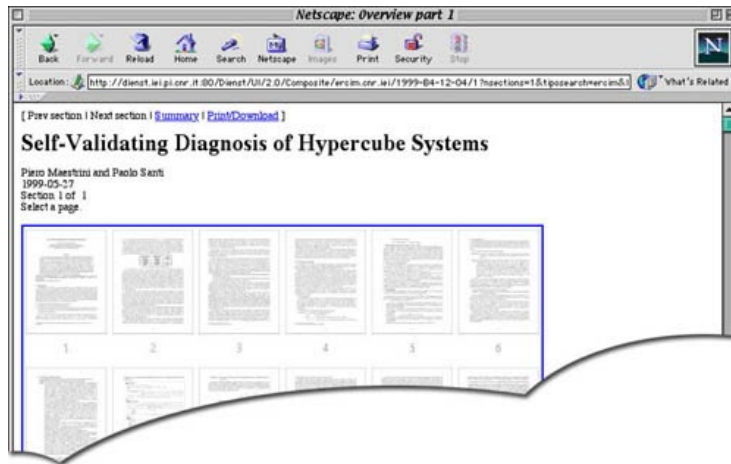


Figure 4-5 Display of document thumbnails.

4.4 BROWSE service

The browse function is used to acquire an idea of the content of the collections of the separate ERCIM and NCSTRL Institutions. This function in ETRDL has been extended with respect to NCSTRL where the user can browse the collections only by year or by author (see Figure 4-6). On the other side, the user can browse the ERCIM collections also by subject classification (see Figure 4-7).

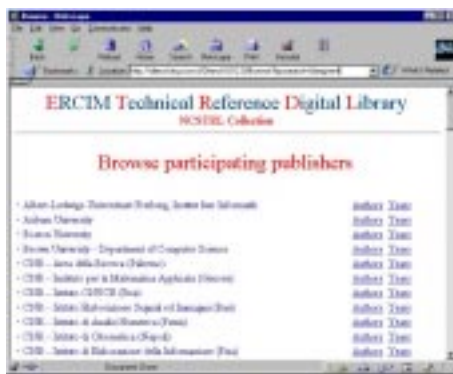


Figure 4-6 Browse the NCSTRL collection.



Figure 4-7 Browse the ERCIM collection.

A document is selected and viewed by clicking on it with the mouse. Selected documents are displayed as explained in the Retrieved documents section and can be downloaded and then printed.

4.4.1 Browse by Authors

The user can choose to browse all authors or browse a range (e.g. from M to O) or browse a single letter. After the user has made his/her choice the system shows him/her an ordered list of authors. For each author the list of his/her document is shown. For each document, the title, document identifier, and date are shown. The user can click on the title to see the document.

4.4.2 Browse by Years

The user can choose to browse all years or browse a range or browse an single year. After the user has made his/her choice the system shows him/her an ordered list of years. For each year a list of documents is shown. For each document, the title, document identifier, authors and date are shown. The user can click on the title to see the document.

4.4.3 Browse by Keywords

The user can choose to browse all keywords or browse a range (e.g. from M to O) or browse a single letter. After the user has made his/her choice the system shows him/her an ordered list of keywords. For each keyword, a list of documents is shown (title, document identifier and date). The user can click on the title to see the document.

4.4.4 Browse by ACM codes and descriptors

The user can choose to browse all ACM codes or browse a range (e.g. from M to O) or browse a single letter.

After the user has made his/her choice the system shows him/her an ordered list of ACM codes. For each codes, a list of documents is shown (title, document identifier and date). The user can click on the title to see the document.

4.4.5 Browse by MSC codes and descriptors

The user can choose to browse all MSC codes or browse a range (e.g. from M to O) or browse a single letter. After the user has made his/her choice the system shows him/her an ordered list of MSC codes. For each code, a list of documents is shown (title, document identifier and date). The user can click on the title to see the document.

5 References

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(<http://www.acm.org/class/1998>)
- [DELOS] DELOS Working Group
(<http://www.iei.pi.cnr.it/DELOS/>)
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(<http://purl.org/metadata/dublincore>)
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(<http://www.iei.pi.cnr.it/DELOS/EDL/handout99/handout99.html>)
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(<http://cs-tr.cornell.edu:80/Dienst/UI/2.0/Describe/ncstrl.cornell/tr96-1595>)
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(<http://www.cs.ait.ac.th/~tbaker/dc-multilingual.html>)
- [MSC91] AMS (American Mathematical Society) Mathematics Subject Classification (MSC), Version 1991
(<http://www.ams.org/msc/home.html>)
- [NCSTR L] Networked Computer Science Technical Report Library
(<http://www.ncstrl.org>)
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