WHICH TOOLS FOR SCIENTIFIC CURRENT AWARENESS IN CEMAGREF?

M.P. Baligand
Cemagref Lyon
3 bis quai Chauveau
69336 Lyon cedex 09

A. Dao
Cemagref Antony
BP 44
Parc de Tourvoie, 92163 Antony cedex

C. Giansily
Cemagref Montpellier
BP 5095
361 rue J.F. Breton
34033 Montpellier cedex 01

A. Regolini
Cemagref Grenoble
Domaine Universitaire
BP 76
2 rue de la Papeterie
38402 Saint Martin d'Hères cedex

O. Hologne
Cemagref Antony
DSIC
BP 22
Parc de Tourvoie
92163 Antony cedex

Abstract: Cemagref is a French public scientific research institute in agricultural and environmental engineering. Its scientific and technical community is multidisciplinary and consists of ten regional centres in France.

Each centre is equipped with an information service. Information professionals must offer Cemagref researchers homogeneous and efficient information services throughout the organisation.

Tools offered by publishers for accessing to scientific and technical information increase each year, and become more effective and more diversified. Resources are scattered. Researchers need to be directed to tools best adapted to their needs.

Cemagref information professionals' concern is to identify tools, and to choose the most cost effective solution in collaboration with researchers.

Working closely with researchers and having a good knowledge of their needs is a major advantage.

This paper deals with the study methods and the results obtained in response to researchers information needs .

Introduction

Cemagref, a research institute for agricultural and environmental engineering, is a public establishment with a scientific and technological vocation under the responsibility of the ministries for agriculture and research. Its 1000-strong personnel conducts applied research in the following areas : understanding and preventing natural risks, management of soils and aquatic environments, engineering of water and waste treatment facilities, engineering of agricultural and agri-foodstuffs facilities.

Its 500 engineers and researchers have varied and complementary scientific and technological skills: from life sciences to engineering sciences, from biology to landscaping, from fluid mechanics to hydrology, ever mindful of the social and economic aspects.

Set up in 1981, from 2 technical institutes, it had to become a research institute. Research activities are conducted in around thirty research units, set up at 10 sites in France.

Cemagref's documentary organisation is based on the body's geographical distribution, each site having a documentation centre. 22 persons are employed in document handling, with the primary aim of meeting the information needs of the establishment's researchers. The documentary network is co-ordinated by the IST department (Scientific and Technical Information), at General Management level. Setting up computerised documentation, a thesaurus and a document utilisation system has given this network considerable experience in collective work, which is made all the richer by the arrival of Internet. As Cemagref and its research policy develop, the traditional research laboratory libraries are becoming fully-fledged information services at the hub of the various networks. However, the researchers' work remains the main inspiration of all the work conducted.

1.   Information professionals' role

The advent of electronic information brought a new challenge to information professionals. Indeed, since one can access the information directly, a researcher could avoid consulting a documentation centre. In this context, information professionals have to assist researchers in accessing to a virtual documentation centre and in giving them means to directly access to judicious information resources.

Thus, the information professional has to bring added-value services to face this plethora of information. This necessity implies that the information professional is well integrated in research teams, knows the degree of acceptance of ICT (Information and Communication Technologies) by researchers and heightens researchers' awareness of it.

Principal services offered are:
- analysing information resources and classifying them to ensure access to primary information;
- monitoring and synthesising information because it is always too voluminous and abundant;
- evaluating tools.

When one reads this list, one could think that the information professionals' function hasn't changed. However, information professionals have to transfer a part of their know-how and competence to assist researchers in their research work.
For instance, we can cite:
- organising training periods for using tools. These periods need to be short, as researchers have little spare time,
- writing directions for use and FAQ (Frequently-Asked-Questions), which would allow an easy use of information resources,
- identifying and training some people to communicate information.

Thus, information professionals of Cemagref will increase the standing of their functions by transferring a part of their experience to users, establishing a permanent dialogue to anticipate and supply their needs at best. Though their know-how is not put into question, information professionals need to adapt these new conditions by widening their competence field, working upstream as well as listening to their research teams. In short, information professionals still provide access to information.

Thus, information professionals have to face a real paradox. They must share their working know-how with their client to justify the interest of their functions. It is the cost of their building a new place within their own organisation.

2.   Analysis of researchers' needs

In Cemagref, laboratories often are multi-institutional units (e.g. UMR – Mixed Unit of Research; IFR – Federative Institute of Research). From this fact is drawn the necessity to share resources. Researchers work more and more on cross-disciplinary themes and they have to use several information search tools because of scattered resources. Researchers can hardly hand their bibliographic work over. They need to know emerging subjects, to follow trends, their current subjects of research and subjects from former research.

In this context, making users as autonomous as possible thanks to tools that are adapted to their needs is the challenge of Cemagref information professionals.

A survey shows that researchers appreciate portals, because several resources are available from a single tool. Which portals have to be favoured for Cemagref's researchers?

According to the survey, the most appreciated functionalities seem to be the following ones:

- subject coverage is as large as possible and time coverage spans at least ten years;

- selected tools give a "browse" and a "search" access to allow the complementary approach of either "search" function or profiles used when researchers leaf through periodicals' abstracts;

- a direct link between bibliography and complete article and the possibility of passing directly from an article to another;

- access to full text of periodicals is very appreciated. This formula is still recent in Cemagref as first agreements with publishers were concluded at the beginning of 2001 but it was quickly adopted. For researchers, immediate acquisition of the document is a plus because they no longer have procedures to obtain primary document. Moreover, the article (PDF format) can be printed out in colour, which is very convenient for schemes;

- alerts systems are interesting when they allow immediate access to primary documents. Indeed, if the delay between request of the article and its receipt is too long, the researcher may no longer be dealing with the topic which made him ask for the document;

- presence of the author's e-mail address allows fast and direct contact between scientists who work in the same field;

- export of data in a universal format is an important criterion because Endnote software is a bibliographic software chosen by our researchers.

These elements proved to be precious when the study led in Cemagref got synthesised.

Methodology of the study

Though information is abundant today, one must be aware when choosing products for users. Cemagref multidisciplinarity and need to rationalise costs were factors that needed to be considered at this step. Cemagref information professionals led this study by communicating with each other through their network to rationalise the tasks.
As these tools evolve quickly, we recommend the reader to pay attention to the study's methodology rather than to its results.

1.   Review of existing scientific awareness tools

Tested tools belong to totally different types but they can complement each other to obtain complete access to information. Different providers were asked for some test periods to fulfil this study's needs.

Four types of products were studied:

- Free multidisciplinary databases on internet web
- Article@inist: database from INIST (CNRS), first French provider of scientific articles;
- Ingenta-Uncover
- Fee-based multidisciplinary databases
- Information Quest (IQ): database marketed by Rowecom company
- Inside: database marketed by British Library
- Publishers' portals
- ScienceDirect (SD) from Elsevier
- Ideal from Academic Press
- Institute for Scientific Information (ISI) products
- Web of Science (WoS)
- Current Contents version CCSearch-WebSPIRS from SilverPlatter (CCS)

2.   Elaboration and validation of a grid for analysing products

Cemagref information professionals have defined an analysing grid to compare these tools in an optimal way. A certain number of practicalities were pointed out. For instance, we can cite:
- search engine power
- updating periodicity, available coverage

- possibility to save profiles or search histories.

The complete analysing grid can be seen in annex 1.

3. Test of different tools on search strategies in collaboration with research teams

During a defined period, tools were tested using different search requests on different sites of Cemagref.

For instance, the following three subjects were analysed at Lyon Cemagref for the years 1999-2001 :

Subject 1: Influence of climate changes on fish
        Equation 1: Climat* Chang* AND Fish*

Subject 2: Semi-permeable membrane device
Equation 2: SPMD OR (Semi permeable membran*device*) AND NOT (Parallel* Process*OR Comput* OR program*)

Subject 3: Effects of copper on bacteria or alga of biofilms (or periphytons)
Equation 3: Copper AND (Bacteri* OR Alga* OR Seaweed*) AND (Biofilm* OR Periphyton*)

Two ratios were established for every search request and tool:
Number of relevant references/total number of references
Number of references, which are exclusively present in the considered database/total number of relevant references in the tested database.

For these two ratios:
- Information Quest was compared with Article@Inist and Ingenta
- Information Quest and Inside were compared with ScienceDirect
- ScienceDirect was compared with ISI products

Synthesis of obtained results

First, tools were compared from their principal functionalities side.
Results were assembled in a grid (annex 2).

This first analysis points out that products set can be divided into two categories:

Ingenta / Article@Inist / Information Quest
Inside / ScienceDirect / Ideal / WoS / CC Search / CC Connect

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1. Comparison between Ingenta-Uncover, Article@inist, Information Quest

Due to their functionalities, these tools belong to the same range of products. They don't allow a complex search. It means that it is not possible to combine several search steps. These products either do not allow or allow little access to full text.

Ingenta-Uncover retrieves fewer relevant references than Article@inist.
Therefore, amidst free databases, Article@Inist is the product which provides most results and has the most powerful search engine.

Article@Inist and Information Quest (IQ) give about the same number of relevant references.

Due to their functionalities, these tools can only complement each other. They cannot be compared to the following products.

2. Comparison between Information Quest and Inside

Since Information Quest uses British Library database, it gives good results. However, the search form , which is a search string limited to 80 characters, is very deceptive and answering delays are very long. Moreover, updating appears not to be frequent. Information Quest sometimes allows access to full text but Rowecom has few agreements with publishers that supply Cemagref.

Therefore, in its current state, Information Quest can hardly allow Cemagref's staff to access to full text.

As for Inside, on the one hand, all users approve it for its search engine which is performing and allows access to proceedings references.

On the other hand, the low number of abstracts in the database is deplorable for both those two tools.

Inside and Information Quest results are as good as ScienceDirect's but they are different from them and hence complementary to them.

3. Comparison of ISI's products with ScienceDirect and Ideal

All these products give access to full text.

a) *Ideal*

This product will be soon excluded from comparisons since the subjects it deals with are too narrow and mostly medical.

Moreover, one has to negotiate every year to have access to collections backfiles. It is a budget strain and a constraint for users.

ScienceDirect

Due to its functionalities, ScienceDirect was compared with ISI products (Current Contents Search and WoS). For information professionals of Cemagref, the underlying question was to know whether ScienceDirect could replace Current Contents. ScienceDirect product is well done but one cannot find in it the same quality of indexing as in ISI databases. Indeed, a search by author's name is hard to perform and references are redundant.

ScienceDirect is a publisher product whose main goal is to access to full text. Bibliographic products of ISI (WoS, CCS, CCC) are mostly oriented toward research and scientific current awareness. It is why they have a tested search technology and a larger field of investigation.

Thus, at first sight, although these products are hardly comparable, they complement each other. However, ScienceDirect occupies a different position from the other publishers since it is organised in portals (accommodation of other editors, agreement with other database producers), its thematic coverage keeps on increasing and its search form may regularly get improved. Moreover, its functionality called "Cited by" openly places it on the 'bibliometric territory' of WoS, even though its coverage still is more limited than that of WoS.

Results retrieved from ScienceDirect alone represent about one third of those from Web of Science (WoS). Most of ScienceDirect references actually are in WoS.

Mixing of the two approaches consolidated by their technology of complementary links would allow a coherent and complete tool to Cemagref researchers.

Annex 3 shows a comparative analysis of ISI products

b)   *WoS*

WoS is the product whence most results are obtained.

WoS is a powerful tool of bibliographic search. It allows rapid identification of articles about a subject. Moreover, bibliographical links permit surfing rapidly from reference to reference and reaching full text is possible thanks to ISI Links technology.

This product has been very appreciated by researchers: it provides current awareness and allows rapid construction of an efficient bibliography. Getting to a new research subject can also be achieved by following an intuitive approach (navigation links). Nevertheless,

one can regret that the electronic address of the author does not appear. Indeed, it is a hindrance for direct contacts between researchers.

c)   CC Search

CC Search is an awareness tool but also provides retrospective searching if one can afford its backfiles.

This product gets advantages from SilverPlatter's technology
- single search form for chosen databases
- a well-made search unit .

It allows crossfile searching (CC + other databases) and it can use SilverLinker links technology. Hence, it brings a plus in comparison with CC Connect.

The alerts system is interesting although it doesn't allow a direct link to full text.

d)   CC Connect

This product will be excluded because it doesn't allow access to full text in its current state and retrospective searches cover a limited backfile.

Conclusion

In order to supply Cemagref researchers' needs, product(s) acquired must offer: an extensive backfile, a multidisciplinary coverage, a double possibility of search (retrospective search and awareness), access to full text. In the range of free products, information professionals of Cemagref recommend to use Article@inist (INIST-CNRS). According to budget constraints and negotiation possibilities, several scenarios can be conceivable for fee-based products:

1.   ScienceDirect and Web of Science in Science file[*]
2.   ScienceDirect and CC Search[*]
3.   ScienceDirect and thematic bibliographic databases (CAB, Econlit, INSPEC)
4.   Science Direct and Inside*

However, it must be reported that though its cost is high, access to an important multidisciplinary bibliographic database, such as Web of Science won't allow Cemagref to avoid negotiations with publishers for access to full text. It is why Cemagref belongs to Couperin university consortium and concludes step by step some agreements with high-profiled scientific publishers.

[*]This device could be completed by the acquisition of focused databases.

References

Agropolis, 2001. *Besoins d'usagers, politiques d'acquisition, offres commerciales : cohérence ou divergence d'intérêts ?* Journée Commission IST Agropolis Montpellier, 9 mars 2001. <http://www.agropolis.fr/ist/infos/9-mars.html>

Baligand M. P., 2000. Network collaboration to improve scientific intelligence, *In : New skills for the millennium : Eighth Biennial meeting of the European Association of Aquatic Science Libraries and Information Centres (EURASLIC), Aberdeen, Scotland, 3-5 May 2000* . 3 p.

Chartron G., 2000. L'édition scientifique face à Internet, *In : Bibliothèques numériques. Cours INRA, 9-13 octobre 2000, La Bresse (France),* Paris : Editions ADBS, 189-227 <http://www.ccr.jussieu.fr/urfist/inria2000/inriasupport.htm>

Chartron G., Salaun J. M., 2000. La reconstruction de l'économie politique des publications scientifiques. *Bulletin des Bibliothèques de France*, 2000, 45(2) :32-42, <http://www.enssib.fr/bbf/>

Chartron G., 1999 Intermédiaires pour les revues scientifiques électroniques: Veille sur l'évolution de l'offre.
<http://www.urfist.jussieu.fr/urfist/presse/intermed.htm>

Delherbe N., Regolini A., 2001. Links between information professionals and researchers. *2001 Information Science Conference. Cracow, Poland, 19-22 june 2001.*

Depetro, T. 2000. *ScienceDirect: Elsevier's Science MegaSource.* Econtents, December 2000.<http://www.econtentmag.net/awards/award21.html>

Hoffman, D.J. 2001 .Think links – Full text Linking Projects, *Online Magazine*, N°1, 6 p.

Hyett D., 2000, New roles and skills for Librarians , *In : New skills for the millennium :* Eighth Biennial meeting of the European Association of Aquatic Science Libraries and Information Centres (EURASLIC), Aberdeen, Scotland, 3-5 May 2000. 5p.

Jake : *Compare Databases.*
<http://jake.med.yale.edu/updates/compare_db.php3>

Ministère de l'Education Nationale, 2000. *Enquête ressources électroniques, groupements d'achats recensés ou en projet.*
<http://www.sup.adc.education.fr/bib/acti/electro/consort.htm>

Polity Y.,1999. Le comportement des chercheurs dans leur activité (y compris face à la documentation). In *: Actes de la journée d'études du XXIXème congrès national de l'ADBU, Dunkerque, 17 septembre 1999,* <http://www-sv.cict.fr/adbu>

Internet Sites

- Article@inist (INIST-CNRS) : http://services.inist.fr/public/fre/conslt.htm
- Ingenta : http://www.ingenta.com/
- Information Quest : http://www.eiq.com/
- Inside (British Library) : http://www.bl.uk/online/inside/
- Ideal : (Academic Press) : http://www.idealibrary.com/
- ScienceDirect (Elsevier) : http://www.sciencedirect.com/
- SilverPlatter : http://www.silverplatter.com/
- Current Contents et Web of Science (ISI) : http://www.isinet.com/isi/

Annex 1
Products analysing grid

Name of the product:

URL	
Brief description (product for information professionals or researchers, retrospective, awareness…)	
Details	
Contact	
Subject coverage	
Time coverage	
Frequency of updating	
Contents	
Agreement: lodging of other databases	
Links technologies: DOI Crossref…	
Support : Internet, Intranet	
Localisation of software and mirror sites	
Technical reliability	
Functionalities	
Search form : simple, advanced	
Combination of search steps	
Data saving	
Alerts system	
Saving profiles and / or search steps (on software)	
Alerts on queries	
Statistics of product use	
On line help (language…)	
Access to primary documents - by a provider - full text - e-mail address of authors - links in the bibliography	
Experience of the product -within Cemagref -outside Cemagref	
Degree of interest of the product (research teams, geographic group, establishment)	
Fixing of a price scale (number of potential users,	

number of simultaneous access...)	
Technical means	
Human means	
Users' opinion (synthesis)	
Comments	

Annex 2
Comparison grid of tools (June 2001)

	Over cast period	Agreements	Speed	Combination of search steps	Abstracts	Export towards Endnote	Access to full text on the publisher's site	Saving of queries Alerts on queries	Author's e-mail	Links : in the bibliography	Sorting out according number of citations	Contents Alerts
Ingenta	1988->	Medline, Uncover, ScienceDirect, Catchword	-	No	Yes (according to publishers)	No	Yes	No No	No	No	No	Yes
Article@Inist	1990->	Pascal Francis	+	No	Yes	No	No	No No	No	No	No	No
Inside	1993->	None	+	Yes	Few	No	No	Yes Yes	No	No	No	Yes
IQ	1990->	BL	-	Very easy search (< 80 char.)	Few	No	For some publishers only	Yes No	No	No	No	Yes
Science direct	1995->	INSPEC, EconLit, Biosis and databases produced by Elsevier : Compendex, Fluidex, Embase, Geobase, Oceanbase, Biobase, Biotechnobase, Beilstein Abstracts	++	Yes	Yes	Yes	Yes	Yes Yes	Yes	Yes	No	Yes
WoS	1945 ->	Biosis, CAB (in progress), GenBank, Derwent	+++	No	Yes	Yes	Yes	Yes (search steps) No	No	Yes	Yes	No
CC Search	1994->	Multibase search via Webspirs	+++	Yes	Yes	Yes	Yes	Yes Yes	Yes	No	No	Yes
CC Connect	1990 ->	None	+++	Yes	Yes	Yes	No	Yes Yes	Yes	No	No	No

Annex 3
Comparison grid of ISI products :
Current Contents Connect (CCC), Current Contents Search (CCS) and Web of Science (WoS)

	Web of Science	CC Search (SilverPlatter WebSpirs version)	CC Connect (web version of ISI)
Description	WoS is multidisciplinary. It corresponds to ISI Citation Databases. Thus, it can be used as a base of bibliographic references and summaries as well as a source of information about cited authors, teams and research themes (cited reference searching). Coverage : Multidisciplinary in Sciences, Health Sciences, Arts and Humanities. 8000 periodicals, organised in 3 series of available backfiles: Science (since 1945) Social sciences (since 1956) Arts and humanities (since 1975)	Awareness oriented bibliographic base, which can use an search form (WebSPIRS-SP) allowing retrospective and multibase search. Coverage: since 1994 Coverage: multidisciplinary, 7000 titles of periodicals + 2000 documents in series organised in 7 series: Agriculture, Biology & Environmental Sciences Engineering, Computing & Technology Social & Behavioral Sciences Arts & Humanities Clinical Medicine Life Sciences	Awareness oriented bibliographic base Coverage: since 1990? Coverage: multidisciplinary, 7000 titles of periodicals + 2000 documents in series organised in 7 series: Agriculture, Biology & Environmental Sciences Engineering, Computing & Technology Social & Behavioral Sciences Arts & Humanities Clinical Medicine Life Sciences Physical, Chemical & Earth Sciences
Advantages	- Double possibility Awareness + Retrospective search, adapted to double need of Cemagref - Double possibility of search: classical and on cited references. This second option allows to apprehend teams, which work on a theme identical to one's own topic . - Intuitive search. - Links technology ISI Links: links from article reference toward: full text, other bibliographic bases, aggregators, OPAC. - Possibility of bouncing with in fine bibliographic links (*cited references*) and articles that cite the reference (*Citing Articles*), as well as related articles (*Related References*) and those from	- Double possibility of awareness or retrospective search Simple and comfy search form ; powerful enough, 'trainer'. Interrogation on the whole period or a part of it; flexibility of choice offered to user (last release, term, part or complete base) - Simultaneous or chosen interrogation of series - Building of the search by steps - Access to index - Saving of search steps - Alerts service on queries (DSI) - SilverLinker technology of links: link toward full text (possible insertion of parameters); toward providers of primary	- Simple search form , adapted to regular search on queries - Possibility to question the whole period - Queries on forms that are saved by the user (HTML pages) - E-mail address of the author can be clicked on -Current Web contents: web sites selection by ISI - Possible surfing between CCC and WoS

	eventual interconnected bases (e.g. links toward WoS Proceedings). - Automatic downloading toward EndNote v.4 - Sending of selected references by e-mail.	documents; toward one's own OPAC, aggregators - author's e-mail address - Possible insertion of display parameters by user - Surfing throughout references such as author, source, complete summary of the magazine links - Downloading toward EndNote - Z 39.50 connection - Sending of references through e-mail - Selection of web sites and search engines (September 2001 version) In the framework of multiple subscriptions: homogeneous approach, whatever the interrogated database is (single search form); possibility of multibase search	
Withdrawals	- Absence of the author's e-mail address - In fine bibliography: absence of references titles that don't belong to ISI database, limits interest of their citation - Difficulty to build a step-by-step search (and therefore to save a true search history): the single data capture box does not allow this approach. The form isn't assisted enough and it requires the building of a complex search request - No alerts system on queries or contents - No access to index (considered as useful under their CC Windows version)	- Access to profiles: necessity to settle a more customised access (lack of confidentiality) - Not abundant backfiles (begins in 1994) More flexibility would be appreciated for search form (announced for Sept 2001 release)	- Not abundant backfiles - User doesn't master the knowledge from the last on line release (choice Last Week; Last Four Weeks) - Insertion of customised parameters is not possible for user - No links toward full text - Number of steps by profile is limited to 10 (no possible insertion of parameters) - No standardised alert service (does exist as an option) - No histories saving
Assessment	+++ Despite some would-be appreciated development, especially in order to narrow the questioning field and contact the authors through electronic bulletin board. Its strong points are the overcast periods, double interrogation ,Article search-'cited articles search and	+++ Coverage back to 1994. Flexible and efficient; numerous offered functionalities by search form ; strong point is the possible association to other databases. Difficulty to decide between CCS and WoS because their	+ Easy to use search form that is adapted to a search on queries . In comparison with CC Windows, there isn't a real progress despite the desktop multi-platform interrogation , which is characteristic of all Web versions .

	bounds that link references. Its interrogation mode is less good in matter of regular search on profile or when one has to build a 'classic' request, although it is perfect for an intuitive search to approach a subject. Difficulty to decide between CCS and WoS because their approach is very different.	approach is very different.	