

STUDY by FRANÇOIS FEYLER

Taking the example of information “for and about education” as its starting point, this latest study tackles the delicate issue of the compatibility and interoperability of documentary languages, determining factors in correctly locating relevant information within ever growing and increasingly numerous sources. François Feyler explains that when you are faced with a multitude of indexing systems, there must be a plan for a system of equivalent terminology between the concepts in each of the controlled languages, without necessarily having to modify the original indexing. This is illustrated by the OTAREN project, developed by the CNDP for the French National Education Authority.

From compatibility to interoperability in terms of locating relevant information

The issues and the example of OTAREN

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IN FRANCE, ANYONE SEARCHING FOR INFORMATION “for and about education” is faced either with the MOTBIS thesaurus, used by the information and documentation centres (CDI) of schools and colleges and by the SCEREN-CNDP¹ network, or with the RAMEAU² directory, used by the National Library of France (BnF) and university libraries in particular, or with both of these vocabularies at the same time, as is the case in the teacher-training university institutes (IUFM). This is why a search interface (a matching system) which would allow people to access both languages together has to be created: the proposed search tool must allow the user to find the relevant documentary information, whether it has been indexed using the MOTBIS or RAMEAU systems.

If we approach the issue in a more general way and from the point of view of examining the English-language and French-language databanks, we must not forget to take the UN and UNESCO multilingual catalogues, the *European Education Thesaurus* (TEE) and the *General Multilingual Environmental Thesaurus* (GEMET) into account and, at least initially, in their English-language (American English) and French-language versions.

Regulations, standards and interoperability

Faced with this multitude of indexing systems, one cannot be limited to the “physical reindexing” procedures of two among them (RAMEAU and MOTBIS, for example) and therefore to a top-down (and depleting) compatibility approach.

It would seem that we have to consider a system of conceptual equivalents between the representations of concepts in each of the languages in question, without necessarily having to modify the original indexing.

The classic schema of using documentary languages, these single tools for indexing and searching for relevant references also has its limits: indeed, there is an apparent contradiction between the need to create documentary

¹ SCEREN: Service Culture Éditions Ressources pour l’Éducation Nationale
CNDP : Centre National de Documentation Pédagogique

² RAMEAU: Répertoire d’autorité-matière encyclopédique et alphabétique unifié.

languages used by the largest possible number of documentation centres in order to exchange document references, and the particular needs of specific user categories. This contradiction can be overcome if we agree to distinguish the idea of *indexing language* and that of *search interface*.

These interfaces must be created to be compatible with the pre-existing indexing languages and it is preferable that the representations of concepts which appear in the latter are not ambiguous. Lastly, it would also be highly advisable for this discussion to not limit itself to documentary research in the strictest sense, but also to extend to the specific details inherent in searching for information in full text in multilingual databases. This creates increasingly acute problems in locating relevant information and, by all accounts, this is particularly true for users who lack experience in handling the sources.

1. Multiple sources of information and interoperability between documentary languages

If we limit ourselves to only those languages currently used in the bibliographical databases in French schools or in the CD-Rom databases which are widely used in France, apart from RAMEAU and MOTBIS, we can mention the THEA thesaurus for the documentary databases of agricultural teaching institutes (today known as *Thésagri*, this thesaurus is now fully compatible with MOTBIS 2006), as well as lists of specific descriptors in the FRANCIS and PASCAL bibliographical databanks of the INIST³.

This situation poses a real problem in locating relevant information to the extent that the same concept will be represented, depending on the case, by heterogeneous descriptors (or by subject headings in the case of RAMEAU). This problem was highlighted in articles published in 1997 and 1998 by Jacques Maniez and by Danièle Dégez⁴ and deserves to be taken into account in the interfaces which aim to help users in their searches.

2. Recent and foreseeable developments in the “controlled vocabularies” of knowledge representation

The change to the title of the ANSI/NISO Z39.19 standard between the 2003 version (*Guidelines for the construction, format and management of monolingual thesauri*) and the current version published in 2005 (*Guidelines for the construction, format and management of monolingual controlled vocabularies*) is not merely anecdotal and should be placed in the more general context of the evolution of documentary vocabularies and classification systems since the mid 1970s and especially since the beginning of this decade on the North American, French and international level⁵. Indeed, it should be noted that for more than a century, new developments in this field have appeared in the English-speaking world, in North America especially, before being taken up in Europe and standardised in French (AFNOR) and international (ISO) standards: thus, as regards pre-coordinated documentary languages, the Dewey *Decimal Classification System* predates the *Universal Decimal Classification System* and the *Library of Congress Subjects Headings* (LCSH) by more than 20 years, the latter appearing more than sixty years before its Quebecoise version (the RVM Laval⁶, which itself appeared in the 1940s) was adopted by the Public Information Library (BPI). We see a similar phenomenon with post-coordinated documentary languages: the first thesaurus appeared in the United States at the end of the 1950s, and the monolingual thesauri were standardised both on an American (ANSI/NISO) and on the international (ISO) and French (AFNOR) levels at the beginning of the 1970s (1974 for the first edition of Z39.19).

³ INIST: Institut de l'information scientifique et technique (CNRS).

⁴ Jacques Maniez, “Fusion des banques de données documentaires et compatibilité des langages d'indexation”, *Documentaliste – Sciences de l'information*, 1997, vol. 34, n° 4-5, p. 212-224.
Danièle Dégez, with contributions by Claudine Masse, Florence Rénier and Anne-Marie Sardon, “Compatibilité des langages d'indexation: mariage, cohabitation ou fusion? Quelques exemples concrets”, *Documentaliste – Sciences de l'information*, 1998, vol. 35, n° 1, p. 3-14.

⁵ See pages 66 and following

⁶ RVM : Répertoire de vedettes-matière de la bibliothèque de l'Université Laval.

We can also note that if ISO and AFNOR standardisation in this field has hardly changed since the 1980s, it continued to evolve far more regularly in the United States, evidenced by the fact that the current version of the ANSI/NISO standard is the second published since the beginning of the year 2000. Of course, this has its consequences: when faced with the current limits in French and international standards in this field, French researchers are constantly referring to the latest changes to the American standard...

Of course, the thesauri themselves have been the dominant documentary languages within the context of the mass computerisation of documentation centres and libraries (in the 1980s in France at the earliest, almost twenty years after the Library of Congress). Yet these, at least in the National Education sector, have not taken the place of the major national lists of subject headings (LCSH, RVM, RAMEAU, etc.) which, moreover, hold a predominant position (alongside decimal classification!) in bibliographical⁷ data information exchanges on a national and international level and on the “invisible web”. In terms of the Internet itself, and particularly in relation to metadata systems and the semantic web, the thesauri are increasingly confronted with (or rivalled by?) other organisation and knowledge representation tools such as ontologies.

From a more general point of view, the thesauri are perhaps also victims: - of the constraints of the standardisation which affects them, a very restrictive aspect which sometimes simplifies the possibility of creating concept hierarchies; a strict limitation on the use of descriptors in representing ideas which constitute a “subject” (to the exclusion of all other contexts of use); - of prevention against poly-hierarchy (though explicitly provided for by the existing standardisation); but also the current limits of a standard (AFNOR, ISO) which is now twenty or twenty-five years old.

And, more generally, we should ask ourselves if the underlying schema on which the very idea of documentary language itself has been resting for more than a century - the same tool for all indexers using the same documentary indexing system and for database users, bibliographic databases or otherwise, searching for the most relevant information on the subject which they are concerned with at that given moment - is still truly effective nowadays when compared to the heterogeneity of resources which are instantly accessible and the knowledge and know-how of the users involved.

3. Interoperability of controlled vocabularies and global interoperability system

If, as mentioned earlier, we should make a clear distinction between *compatibility* and *interoperability*, we must also note that interoperability devices were put into operation even before the term was used and highlighted: the ISBD, UNIMARC formats (bibliographical and subject headings data) and ISO 2709, the OSI, TCP-IP, Z39.50 model, etc., to give some examples from different fields.

If this idea of interoperability is currently at the centre of discussions on the development and standardisation of controlled vocabularies (in the future British standard relating to this issue, it should form only a part of fifty or so pages), it should be placed in the wider context of digital information management; for this purpose, it is interesting to refer to the *General interoperability frame of reference* (RGI) published by the Ministry of Budget and State Reform in 2005⁸. It is also interesting to refer to the document from the Ministry of governmental service in Quebec entitled *Common interoperability framework*⁹.

4. The emergence of the idea of interoperability

The idea of interoperability is relatively new in France. Even though the term “*interopérabilité*” often appears in French documents on the Internet, it is far from being as commonly used as its English equivalent *interoperability*: a Google search on 31 December 2006 on the term *interopérabilité* and its English equivalent gave 1,310,000 pages in French (of which 1,070,000 “Pages: France”) for the former, versus 17,900,000 pages for the latter.

⁷ See “block 6” of UNIMARC – Bibliographical format.

⁸ <https://www.ateliers.modernisation.gouv.fr/ministeres/>

⁹ www.msg.gouv.qc.ca/fr/administration/standards/cadre.asp

Similarly, if you check the dictionaries of the Conseil international de la langue française (CILF)¹⁰ [International Council for the French Language], you cannot find the term, while checking the *Grand Dictionnaire terminologique*¹¹ yields a positive result giving the English equivalent and the following definition: “*The ability of heterogeneous computer systems to function together by using common languages and protocols, and giving mutual access to their resources. Note: Interoperability means that a programme running on an open system will also work on another system. Interoperability needs more than just good technical connectivity as it requires the use of elements such as programming interfaces and standardised data formats. Interoperability as defined here is technical interoperability, yet there are other types like semantic interoperability which is linked to a way of describing information contained in a database (this description forms metadata)*”

Furthermore, if we search in the RAMEAU subject headings database of the National Library of France (BnF) for “*RAMEAU heading containing interoperability*”, there is only a single result on the construction “*Network interconnection (telecommunications)*” which points towards 16 bibliographical headings in the BN-OPALE+ database only one of which has the term “*interoperability*” in the title. On the other hand, a search for “*Title containing interoperability*” on 31 December 2006 yields 14 references, all published since 1994 (with the exception of two which were published in 1988 and 1989 respectively).

A search also carried out on 31 December 2006 on SUDOC¹² for “*interoperability*” or “*inter-operability*” in the title yields 45 results: among the references found, 38, in other words more than 80%, were published in the previous ten years (since 1996) and only two were prior to 1990 (1988 and 1989 respectively).

Indeed, beyond the interoperability of computer systems (or technical interoperability) as defined during the 1980s by the OSI model and the various computer network protocols (TCP-IP protocol, http protocol, etc.), current discussions are increasingly concerned with the interoperability of data itself and it is within this context that the issue of terminology interoperability arises.

5. Terminology interoperability and locating relevant information

Since the beginning of the decade, several documents, from the English-speaking world for the most part, have highlighted the interest and importance of interoperability in this area.

▼ **Firstly, several papers dealing with this issue were presented during the 67th, 68th and 69th general conferences of the IFLA¹³ (2001-2003).**

• *Improving Z39.50 interoperability: Z39.50 profiles and testbeds for library applications*, by William E. Moen (2001)¹⁴.

This paper by a member of the School of Library and Information Sciences of the University of North Texas emphasises the interoperability targets sought by the ANSI-NISO protocol defined “*in the early 1980s*” and on the improvements brought in the late 1990s (Z39-50 profiles) right from the introduction. He then goes on to present the features and contributions of the “*Bath profile*” published in 2001 to improve interoperability in this area.

In the case of this first document, it should be specified that the interoperability being sought was not limited to the terminology interoperability on indexes of different natures and origins, but rather deals with all bibliographical notices in heterogeneous MARC formats. However this is the case to be found in the majority of cases where terminology interoperability systems are likely to be put into operation.

• *Subject-based interoperability: Issues from the High Level Thesaurus (HILT) Project*, by Dennis Nicholson (2002)¹⁵.

¹⁰ www.cilf.org/bt.fr.html

¹¹ Quebec office of the French language: www.oqlf.gouv.qc.ca/ressources/gdt.html

¹² SUDOC: University Documentation System, a collective catalogue of French university databases, managed by the Bibliographical Agency of Higher Education (ABES).

¹³ IFLA: International Federation of Library Associations

¹⁴ www.ifla.org/IV/ifla67/papers/050-203f.pdf

¹⁵ www.ifla.org/IV/ifla68/papers/006-122e.pdf

This paper by a member of the Digital Library Research Centre at Strathclyde University, Glasgow presents the different phases of the project mentioned in the title and the “*Subject-based interoperability*” prototype TeRM (*Terminologies Route Map*) put into operation in 2001-2002 on LCSH and the UNESCO and AAT thesauri using a Z39.50 approach.

- *Ensuring interoperability among Subject Vocabularies and Knowledge Organisation Schemes: a Methodological Analysis*, by Lois Mai Chan and Marcia Lei Zeng (2002)¹⁶.

This paper by two members of the School of Library and information Science of the University of Kentucky deals with the problem mentioned in the title within the context of the “*heterogeneous environment of information retrieval on the World Wide Web [...], the need of interoperability among [...] different vocabularies and others focusing on different languages*” and describes a panorama of methods used to ensure interoperability.

- *Metadata Schemas for Subject Gateways*, by Lynne C. Howarth (2003)¹⁷.

The author of this paper is a member of the Faculty of Information Studies at the University of Toronto, and starts by presenting the different types of definable subjects, before moving on to study the different metadata structures applicable to these varied subjects and study the ways to improve current devices, amongst which the issue of interoperability is placed to the fore: “*the requirement for enhanced cross-domain metadata protocols and crosswalks to support the exchange of records will grow; metadata standards to support interoperability at the technical, semantic, organisational, inter-community and international levels may need to be developed or enhanced.*”

▼ **Secondly, the publication of the first edition of the ISO 16642 standard: Computer applications in terminology – Terminological markup framework (August 2003).**

The introduction of this standard defines a meta-model of a digital platform based on an “*integrated approach*” which can be used “*both in the analysis of existing terminology classification systems and in defining new systems*” and deliberately places this approach with SGML (ISO 8879, 1986) and XML (W3C) formats in mind. It also indicates that the specific implementation of a terminology meta-model expressed in XML is called TML (Terminological Markup Language). Furthermore, point 4 of this standard defines “*the general principles and the principle of interoperability*” applicable to a set of TML markups.

▼ **Lastly, the change in the title of the North American ANSI-NISO Z39.19 standard** which, in the latest edition published in August 2005, as already mentioned above, has changed to *Guidelines for the construction, format and management of monolingual controlled vocabularies* whereas it mentioned “*monolingual thesauri*” when it was first published in 1974.

One of the major new features of this new edition is the fact that it devotes around fifteen pages in its appendices to the issue of interoperability which it seeks to establish between the existing controlled vocabularies of different types (lists of subject headings such as LCSH and RAMEAU, but also thesauri like ERIC¹⁸, etc.) and considers several forthcoming devices.

- ▼ In addition to these documents which are basically of English-speaking origin (North American and British), as we have just seen, we must also mention the **MACS European multilingual project, MACS (Multilingual Access to Subjects)** studied by the National Library of France (BnF) at the beginning of this decade.

Thus, as stated by the BnF¹⁹, this project “*aims to develop multilingual access to subjects so as to enable the end user or professional to directly examine the content of foreign catalogues in his/her native language: thus a French user can search all the documents marked by the catalogues of foreign libraries for the subject matter in question in French, even if these are indexed in German, English, or any other language. In the proposed prototype, the user can choose to make a search query for subjects in English, German or French in the catalogues of four national partner libraries: The Swiss National Library (SNL), the National Library of France (BnF), the British Library and the Deutsche Bibliothek. But, this project has been designed to be extended to other languages. Multilingual*

¹⁶ www.ifla.org/IV/ifla68/papers/008-122f.pdf

¹⁷ www.ifla.org/IV/ifla69/papers/053f_trans-Howarth.pdf

¹⁸ ERIC: Educational Resources Information Center.

¹⁹ See BnF-RAMEAU Cooperation internationale.mht.

searches have been made possible thanks to the work done by the managers of the three indexing languages used in these libraries: RAMEAU (for French), LCSH (for English), SWD (for German) [...] Thus by linking the term to the existing indexing languages through matches should enable the user to access millions of indexes already made in these languages via the Z39.50 protocol."

▼ **On the French national level, we should also mention the paper entitled "Subject access in digital libraries: the role of "thesaurus"-type documentary language"** in the book *Digital Libraries* edited by Fabrice Papy²⁰.

This work, chapter 8 of a study carried out under the direction of a teacher-researcher from the Paris-8 University, deals with the following points in succession:

- "The issue of subject access in digital libraries";
- "Semantic interoperability and documentary languages";
- "The macrothesaurus in action: applied in a government context".

In the third part the study presents and compares the EUROVOC (European Union), TSBGC (*Government of Canada Core Subject Thesaurus*), GILS Topic Tree (United States) and GLL (*Government Category List*, Great Britain) macrothesauri.

Even though it was not initially created within this view of multilingual interoperability, the OTAREN project, undertaken on an experimental basis by the SCEREN-CNDP since 2004, deals with a similar issue.

The example of the OTAREN project

General context behind the creation of OTAREN

OTAREN (Outil Thématique d'Aide à la Recherche pour l'Éducation Nationale) is the experimental prototype of a family of research languages likely to be provided to different categories of users by the CNDP in the near future: it has been designed according to a general context and, moreover, has been developed within the framework of this special themed issue, whose main points are:

- the diversification of the ways to access information on the resources which are accessible using PCs and its consequences in terms of "locating relevant information";
- the contribution of documentary searches both in free text (summary words, keywords, etc.) and controlled language (thesaurus descriptors);
- the issue of distinguishing between indexing languages and search interfaces.

The possibility of carrying out "full text" searches on a set of fields (title, summary and indexing words, both controlled and otherwise...) on a PC which arose in the early 1980s has highlighted three phenomena.

- **Searches which are only carried out on a controlled indexing area by the indexing language still produce "false negatives"**, even if these are very effective in terms of countering "false positives". Good prior knowledge of the installed documentary language as well as the enhanced search procedures (using up-posting on the thesaurus) enables users to get good results without reaching completeness in terms of relevance.

- **"Full text" searches often enable you to unearth totally relevant documentary references** which could not be found using the installed documentary language. On the other hand, "full text" searches can also produce false positives (searches on ambiguous strings) at the same time as sometimes very significant false negatives.

- **The chances of improving the search results are increased if the user knows how to use top-down posting** (in the case of a theme-based search with a thesaurus) **and truncation together**, while remaining aware of any potential ambiguity in certain strings. However, with the majority of tools in use today, this type of search essentially corresponds to an "expert" documentary search; a target which has yet to be achieved in a training system in documentary searches but, by all accounts, is not the case with the majority of students, at the beginning of their secondary education at least.

OTAREN development stages (2004-2006)

²⁰ Hermès – Lavoisier, 2005. P. 151-177.

• **History of the development of OTAREN 2006:** 15 January 2004-28 April 2006

The Direction des ressources et des technologies (DRT) [Head Office of Resources and Technology] of SCERENCNDP began developing OTAREN in January 2004 initially based on a previous version of the MOTBIS thesaurus (version 3.1 from 2001) and the list of ID-MEMO identifiers (a MOTBIS supplement of names of characters and sites kept by the CRDP de Poitou-Charentes between 1992 and 2004). The dual aim was to create a new version of the thesaurus (MOTBIS 2006) and top-down compatibility with the RAMEAU indexing system used to index bibliographical references in the majority of large French bibliographical databases: BN-Opale of the BnF, SUDOC of ABES, ELECTRE, etc.).

It was developed with the aid of G3I software (Indexing and Query Interface Manager), a “client-server” tool for creating and maintaining documentary languages which is also used to maintain the MOTBIS thesaurus.

In its latest version (end of April 2006), OTAREN contains 7,989 declared concepts which match 59,825 other terms, with 29,804 RAMEAU “constructions” among them.

The available vocabulary is currently French for the most part, but matches in other languages used in European Union countries (American English, German, Spanish, Italian, etc.) are relatively easy to establish through RAMEAU (LCSH) and through terminology tools such as the dictionaries of the International Council for the French Language (CILF) and the *Grand Dictionnaire terminologique* of the Office québécois de la langue française. The same three sources (RAMEAU, CILF dictionaries, GDT) have also been used to establish 1,335 definitions (relating to 1,335 of the 7,989 “kernel” concepts in OTAREN 2006).

As regards the “dictionary” aspect of OTAREN, each preferred term can be accompanied by a definition (“Definition” field of the “term file” in G3I) specifying the meaning of the concept held in the search tool and in the indexing languages (RAMEAU, MOTBIS, etc.) with which it is compatible. As of 28 April 2006, 1,335 of the 7989 “preferred terms” in OTAREN 2006 included a definition (for the most part taken from RAMEAU notes or the definitions in the CILF dictionaries, or on rarer occasions when dealing with words of more recent usage, from the *Grand Dictionnaire terminologique*). The current definitions were established for purely explanatory purposes and the development of this system of definitions and its use by end users (school and college students, for example) will certainly be dealt with in legal negotiations with the producers (BnF, CILF, Office québécois de la langue française) on the possibility of using their sources for the definitions as well as through a discussion on how well-founded their use is and how exactly they will be formulated.

Towards a bilingual OTAREN (French-English)

Once the matches were established between OTAREN on the one hand, and the French indexing systems (RAMEAU et MOTBIS) on the other, it seemed logical to use the links already established between RAMEAU and the major North American indexing systems (LCSH and, less frequently, MeSH). Taking this same idea further, matches were also established with multilingual indexing systems: the UN Thesauri (UNBIS-ENG and UNBIS-FRE), the UNESCO thesauri (UNESCO-ENG and UNESCO-FRE). Indeed, these indexing systems present multiple interests (as the publications of international institutions, they provide representation of concepts which to a large extent match those in OTAREN and are easily accessed on the Web).

The work undertaken since the beginning of May 2006 has meant that currently (as of the end of December 2006, in spite of interruptions due to annual leave) more than 11,000 additional matches have been established with the 8,000 or so ideas presented in OTAREN. In the current state of operations, this could mean that by the end of the 2006-2007 school year, we could have an interoperability tool in the order of 85,000 terms comprising 8,000 representations of unambiguous ideas and around 77,000 matches. The table below shows the major stages in development from a chronological and statistical point of view.

MAIN STAGES IN THE DEVELOPMENT OF OTAREN

	Situation at the outset 15/01/2004	OTAREN 2004 0/10/2004	OTAREN 2005 30/10/2005	OTAREB 20/12/2006	Evolution 2004-2006
Total number of terms	15,759	47,016	61,815	80,854	+ 65,095

Number of “kernel” terms	9,651	8,598	8,215	978	- 1,973
Number of “periphery” terms	6,107	38,410	53,600	68,860	+ 66,769
Number of RAMEAU, LCSH, UNESCO, etc. matches		16,951	26,347	41,232	+ 41,232
Number of associations	4,539	5,341	6,156	6,741	+ 2,202
Total number of links	25,043	62,698	82,334	104,135	+79,092

Two examples of terminology matches in OTAREN

The first of the two examples shown below, the era of Louis XIV (which could also be formulated as “France, 1643-1715”), is a representative choice which enables the user to go through around 9,650 representations of concepts and entities in MOTBIS 3.1 and ID-Mémo (a little over 9,000 in MOTBIS 2006) and just under 8,000 in OTAREN.

In this example, as is the case with the second, the “Te” (representations of the concept in question in other indexing systems apart from MOTBIS) appear separate from the “Ep” (representations of the concept in question in MOTBIS or in natural language). The G3I software includes a “Transform” function which allows the user to merge the two lists under the single “Te” name. The source indexing system is shown in brackets.

<p>era of Louis XIV: 1643-1715 1130</p> <p>Te Bordeaux (Gironde) 1652-1663 (Uprising) [RAMEAU] Colbert, Jean Baptiste (1619-1683) [RAMEAU] Fouquet, Nicolas (1615-1680) [RAMEAU] France 1643-1661 (Regency) [RAMEAU] France 1643-1715 (Louis XIV) [RAMEAU] France 1648-1653 (Fronde) [RAMEAU] France History L ouis XIV, 1643-1715 [LCSH] La Reynie, Gabriel Nicolas de (1625-1709) [RAMEAU] Louis XIV (king of France; 1638-1715) [RAMEAU] Mazarin, Jules (1602-1661) [RAMEAU] Vauban, Sébastien Le Prestre (1633-1707; marquis de) [RAMEAU]</p> <p>Ep cardinal Mazarin Colbert, Jean-Baptiste: 1619-1683 [MOTBIS] colbertism court of Louis XIV era of Louis XIV Fouquet, Nicolas: 1615-1680 [MOTBIS] France of Louis XIV Fronde: 1648-1652 [MOTBIS] La Reynie: 1625-1709 [MOTBIS] Louis the Great : 1638-1715 Louis XIV: 1638-1715 [MOTBIS] Louis XIV, king of France Mazarin, Jules: 1602-1661 [MOTBIS] Nicolas de La Reynie Nicolas Fouquet Regency: 1643-1661 regency of Anne of Austria: 1643-1661</p>	<p>Tg 17th century Bourbon kingdom: 1589-1789 Ts protestant question: 1685-1715 Ta Versailles château classicism: 17-18th centuries Great Britain: 1603-1714 Thirty Year' War: 1618-1648 mercantilism music of Lully : 1632-1687 music of Vivaldi: 1678-1741 works of Molière: 1622-1673 works of Madame de Sévigné: 1626- 1696 works of Pierre Corneille: 1606-1684 works of Racine: 1639-1699</p> <p>Id frCNDP-03.09.032323 Pr Yes No NC. periods and events Og OTAREN2006 / MB 2007 / Lg fre Mt 944.033 / Ds 29/09/2003 Cr -03.09.29. Dm 27/03/2006 Dp 29/09/2003 Su -03.09.29. / PPPBBBPF-03.09.29. / Va No Am No Nt 1130</p>
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reign of Louis XIV reign of Louis XI : 1643-1715 kingdom of Louis XIV under Louis XIV times of Louis XIV Vauban: 1633-1707 [MOTBIS]	
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The second example reveals a variety of slightly different formulations relating to a concept in the educational field, teaching tools, in the different languages checked.

These two examples, like the other 7,976 others which make up OTAREN, should, of course, be assessed according to the conceptual homogeneity of the 7,978 "terminology clusters" which they propose, their suitability to such and such public user (in the current state of operations, OTAREN represents a general prototype aimed at adults and, by all accounts, should be adapted to more targeted user categories) and at various search tools and situations (bibliographical or otherwise). The experiment and assessment of the OTAREN prototype are scheduled for the current calendar year, 2007.

teaching tool 2105 Te audiovisual aid [TEE-ENG] Audiovisual aids [UNESCO-ENG] autoinstructional aid [TEE-ENG] Auxiliaire audiovisuel [UNESCO-FRE] Edition scolaire [RAMEAU] Educational publications [UNESCO-ENG] Educational publishing [LCSH] guide de l'enseignant [TEE-FRE] Livre de l'enseignant [UNESCO-FRE] matériel autodidactique [MOTBIS 3.1 / TEE-FRE] Matériel didactique [RAMEAU / UNESCO-FRE] Matériels didactiques [UNBIS-FRE] moyen audiovisuel [TEE-FRE] moyen d'enseignement [TEE-FRE] Publication éducative [UNESCO-FRE] teacher's guide [TEE-ENG] teaching aid [TEE-ENG] Teaching guides [UNESCO-ENG] Teaching materials [UNBIS-ENG / UNESCO-ENG] Ep aide audiovisuelle aide didactique autoscopie auxiliaire autodidactique édition pédagogique imprimerie scolaire livre du maître matériel d'enseignement matériel éducatif matériel pédagogique média pédagogique publication scolaire support didactique Tg technique pédagogique Ts didacticiel éducation aux médias jeu éducatif laboratoire de langues	manuel scolaire théâtre scolaire TICE Ta BCD CDI. Centre de Documentation et d'Information centre de documentation pédagogique cours : éducation équipement audiovisuel équipement scolaire film documentaire film éducatif instructions pédagogiques méthode audiovisuelle pratique de classe séquence d'enseignement support de diffusion télévision éducative Id frCNDP-02.09.003863 Pr Oui No NC. cas général Og MOTBIS 3.1 / MOTBIS 2006 / Lg fre / Mt 371.3 / Ds 04/01/2002 Cr PPMIHNGF-02.09.17. Dm 09/11/2006 Dp 17/09/2002 Su PPMIHNGF-02.09.17. / P PMPKEOG-05.09.23. / Va Non Am Non Gr IUFM /DRTSJ / Nt 2105
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