

CONTENT DEVELOPMENT AND MANAGEMENT : CHALLENGES AND OPPORTUNITIES

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ABSTRACT :

Any database publisher must make a wide variety of decisions and undertake numerous diverse activities. Using SIRC's SPORTDiscus database as a case study, the author explains decisions related to collection development, selection criteria, vocabulary control, indexing guidelines, international collaboration, accessibility of the collection, document delivery policies, and legal and economic aspects of database production. In addition, the author considers challenges and opportunities that will affect strategic planning for database creators and owners.

INTRODUCTION

It is always a pleasure to be in the company of people who appreciate information and understand why it deserves professional attention. I need not argue that it is worth investing in the infrastructure to ensure information can travel to where it is needed, in an instant -- or explain why rigorous standards enhance the value of the information to which they are applied.

At the same time, we may be in the classic situation that we're so close to the trees -- publishing, databases, web sites, etc. -- that we cannot see the forest. In using the term forest, I refer to the overall impact our collective information efforts are having on society.

Consider the following two situations :

A young child returns home from soccer practice, disappointed because a particular skill is not being perfected rapidly enough. The child's parent, wishing to encourage future development, performs a quick search of the SPORTDiscus, retrieves a pertinent article, hands it to the child, saying : « Here, try this ! » The article presents diagrams and tips that ultimately help the child to master the desired skill and excel in the chosen physical activity.

A professor of kinesiology teaching at a well-known university is aware over time of the significant increase in quality of the research papers produced by the students. This change is attributed to the widespread access to and use of the SPORTDiscus by researchers.

These are but two anecdotal examples of how the content of the SPORTDiscus can have an effect on the development of individual skills and promote further advances in the field of sport information research.

Many of you are regular users of the SPORTDiscus database. You probably understand full well that each and every record represents a rigorous editorial process that evolved over the more than 28 years the database has been in production. Those of you

who are contributors from outside Canada surely appreciate as well that your country's sport literature shows up in the database. Those of you who are less familiar with SPORTDiscus may expect that all databases contain quality material organised in a logical fashion.

It is important to remember, however, that those very circumstances are not to be taken for granted. Database work is painstaking, challenging, sometimes frustrating -- but always rewarding. I look forward to continuing working with the international contributors, and I will take this opportunity to issue an invitation to all of you to join in the project. As we continue the work to maintain and develop the international database for sport information, the motto to keep in mind is that we are not just making the world's largest sport information database, we are making a difference !

Let me begin by presenting a few key elements in the development of the SPORTDiscus.

HISTORY

SIRC began its activities in the early seventies with a mission to provide information services to Canadian coaches. Very quickly, the need for a database to store information relevant for coaches became apparent, and the SPORT Database was created with the needs of the user community a major design consideration. The initial milestones were small, yet significant as the database grew to encompass more and more information sources. The database currently contains over half a million records, of which a significant number include a link to full text. Now named the SportDiscus, it is distributed world wide - via online delivery or on CD ROM -- and is used by many thousands of coaches, athletes, researchers, sports medicine professionals and others with an interest in sport.

I will continue now by elaborating on some of the key characteristics that enable SPORTDiscus to make a difference in the lives of its users. These include :

- Comprehensive coverage of original sources (content, collection development, selection criteria)
- International scope in one single source
- Expert analysis (vocabulary control, target audience designation, indexing guidelines)

COMPREHENSIVE COVERAGE

CONTENT

The content of a database designed for a specific user community is largely dependent on the reasoning behind its existence. Who are the clients (users)? What exactly do they require? How can we ensure that we "catch" the information items (publications, and now websites) relevant to the users? What structure and content of the individual items in the database would be most suitable? How can the age old discipline of library science and modern technology be applied to maximise the ease of finding all the material relevant to a query (recall) and at the same time ensure that very few non-relevant items "come along" with the relevant ones (precision)? If for reasons of copyright it is not possible to include

the full text of an article in a record, how can a very short summary be made as meaningful as possible? How can we ensure consistency in indexing so that the same topic is uniformly described over time and across records? These and similar questions must be dealt with at the outset when a new database is contemplated. Misjudgements, or the emergence of new possibilities that could not be foreseen, can have costly implications later.

COLLECTION DEVELOPMENT

Many of us have had to deal with the question of uncertainty in the process of writing a research paper, questioning whether all the relevant sources were covered. We work to remove all such doubt by including in SPORTDiscus all the sources important to the full range of sport information. SIRC has a thorough system in place to ensure that books from recognised publishers in the field of sport are obtained and that the content of all authoritative journals from the basic level to the research level is covered. Furthermore, a systematic search for new publishers and information sources with offerings relevant to SIRC's users is an ongoing process in SIRC's day to day activities.

In addition, SIRC recognises that good information is found everywhere -- not just in journals, books, proceedings, and reports. Therefore, we cover websites, video or multimedia and grey literature just as we do those traditional sources. One stop shopping for our users, in the true sense of the word.

As the database grows in content and more and more people become aware of its breadth, researchers contact SIRC and request that their content be included in the database. In this fashion, we see a positive reinforcing effect: Researchers contribute their data because they want it included in a database that is so well known, and the database is well known because so many researchers contribute their publications to SIRC.

SELECTION CRITERIA

At the outset, criteria dictating what materials could or could not be accepted into the database were not strict, as the volume of candidate items was not large and the goal was to analyse and enter as much content as possible in all sport related subject areas. As time went by and the volume of literature grew, it became necessary to develop more stringent guidelines in specific areas. For example, the number of articles dealing with the golf swing became so large that the selection policy for golf journals was modified to eliminate redundancy. Selection policies are evaluated on an ongoing basis, and can change as different aspects of or approaches to a particular topic are dealt with in the literature. New subject areas are often suggested by the users of the database, or are identified by the indexing staff as information sources are scanned for relevant content to add to the database.

An example of a change in selection criteria is the recent decision to create records for individual chapters from single-authored books when such chapters can "stand alone". In the past, individual records were created for those chapters written by different authors within the same monograph. For those books whose chapters cannot stand alone as individual records, the table of contents is entered in a specific field of the record. This process allows users to get a sense of the overall content of the book in question.

As a rule, we strive to include rather than exclude material in the interest of offering all users something suitable for them. At the same time, we prefer authoritative material from credible sources over less well established material.

INTERNATIONAL SCOPE

Given that humans are constructed the same way all over the planet, it would make no sense for a database dealing with sport not to be international in scope. New techniques developed in Germany can assist coaches in Australia; athletes in Canada are grateful for new training guidelines published in Spain; researchers in the United States save years of work by discovering the findings of colleagues in France. We are proud of our partnerships with Australia, China, Finland, France, Israel, Italy, Norway, Poland, Spain, Taiwan, and the United States. Submissions of indexed records from these sources make for diversified content and increased appeal of the database internationally.

Over time, we have met a few challenges similar to those met by any geographically dispersed team:

- Coding sheets were hand-written, and the writing was often difficult to read.
- Indexed records were submitted to SIRC so infrequently that it was impossible to know when to expect new content.
- Indexed records were sometimes submitted in numbers so small that the contribution amounts to no more than a « token », not at all representative of what could have been submitted.
- Where all articles in a given journal issue should have been indexed, only a few were actually indexed and submitted to SIRC. The result is a skewed representation of the literature in a given country.
- For various reasons, overseas indexers restrict their indexed content to include only English-language material. Again, the result is a skewed picture, as users are deprived of the chance to find relevant information in other languages.

Much progress has been made in a number of these problematic areas over the past few years, as indicated by the next few points.

- An increasing number of contributors are able to submit their indexed records in machine-readable format.
- The frequency of submissions has increased.
- Delivery of indexed records occurs within established deadlines. The result is that the records received can be evaluated and corrected as required in time to meet our regular update schedule.
- With the help of the Indexing web board, SIRC is able to transmit news about new descriptors added to the SIRCThesaurus. SIRC monitors all messages sent to this area and is therefore able to respond to any issues concerning the indexing of content for the SPORTDiscus.

With respect to the matter of training, it can be difficult for indexers overseas to understand the subtleties of our indexing policies, and newly hired indexers do not have the benefit of direct personal instruction from experienced indexers at SIRC. Our Indexing

Manual is intended to help meet this challenge. In addition, SIRC holds indexing workshops from time to time during events organised by IASI, NASLIN or other such information groups. It is encouraging to note the willingness of indexing partners to continue participating in the enhancement of the international database for sport information.

While the international content of the database was often restricted to English-language material at the outset, there appears to be a trend toward the inclusion of more records in other languages. Indeed, in the era of globalisation and in keeping with the increased world-wide access to the SPORTDiscus, it only makes sense to include data in as many languages as possible.

EXPERT ANALYSIS

VOCABULARY CONTROL

A database without vocabulary control would be akin to a mini-World Wide Web: Lots of information included, but good luck finding anything! Controlled vocabularies have been used since the late 1880s when scientific societies -- feeling overwhelmed by the explosion in scientific publishing -- began creating monthly listings of articles published that month. A controlled vocabulary is nothing more complex than a set of deliberately selected words, usually called descriptors, from which indexers choose when they describe a published item's subject.

The content of the SportDiscus is indexed according to the SIRCThesaurus, which has been developed over a period of twenty-eight years. The SIRCThesaurus contains approximately ten thousand terms, divided into categories. An extensive amount of cross-references have been established in order to point to the "correct" descriptor. For example, a researcher looking in the database for "high level athlete" or "periodicity" would soon learn from the SIRCThesaurus that the proper terms to use are "elite athlete" and "biorhythm", respectively. As new concepts appear in the world of sport, new descriptors are evaluated. The Thesaurus Committee -- made up of the SIRC indexing staff -- meets on a regular basis in order to discuss how to name newly identified subjects. If the decision is made to add a new descriptor, it is inserted into the existing hierarchy and is used from that time onwards. Alternatively, if it is rejected, it is nevertheless still added to the thesaurus but only as a pointer to the correct descriptor (example: "indoor cycling (competitive)" USE "track racing"). Updates to the controlled vocabulary are posted regularly to a web board that is accessible to all indexers who contribute records to the SPORTDiscus.

As a complement to the list of descriptors available to describe the content of all records added to the SPORTDiscus, there are numeric codes that provide a secondary access point to the indexed records. The written equivalents to these codes -- currently available in English, French, Spanish and Italian -- provide a multilingual access to the database content. Therefore, a Spanish-speaking user could ask for material dealing with « fútbol » and find material indexed under « soccer ». Similarly, an Italian-speaking user can search under « atletica leggera » and retrieve information dealing with « track and field ».

As a proposed future development to the SIRCThesaurus, the inclusion of cross-references that will lead the users from descriptors in other languages to the English descriptor will bring SIRC one step closer to having a multilingual thesaurus.

LABELING FOR SPECIFIC TARGET AUDIENCES

All the records that are included in the SPORTDiscus are grouped in a specific category based on their content. As the records in the database have a broad ranging appeal, it is necessary for the end-users to be able to quickly restrict their search to the content required. From the outset, it was decided that all the records added to the database would be assigned a « level of complexity » code. The « B » code is assigned to records whose content is basic or elementary; the « I » code is assigned to those records that are intermediate - slightly more of a technical nature ; while the « A » code is assigned to those records whose content is considered advanced, original research.

This means that an individual preparing to write a doctoral thesis on the subject of « the effect of sleep deprivation on the academic success of student-athletes » can avoid having to sift through the records in the basic / elementary group. This also allows the coach of the children's field hockey team looking for details on drills for the offence, to bypass research level material. This is an example of efficient, cost-effective access to qualified information.

INDEXING GUIDELINES

Indexers are concerned about achieving a high degree of consistency in two ways: "Inter-indexer consistency" means different indexers choose the same descriptors for the same article); "intra-indexer consistency" (one indexer chooses the same descriptor when presented with another article on the same topic later on). Guidance is critical.

While there is no simple method to guarantee that the exact same descriptors will consistently be chosen to represent the exact same content over time -- be it by one or various indexers -- there is a way to steer the individuals performing the indexing function in the right direction. The existence of clear guidelines -- in the form of an indexing manual -- is crucial to ensure consistent description of content and ease of retrieval by users. SIRC has such a manual and has made it available to all the indexers who contribute records to the SPORTDiscus. It contains a list of fields available for use in the database as well as a detailed description on how each field is to be filled in, with examples for different document types to support the description. Specific sections dealing with particular subject areas also provide answers to questions on how to best represent content in order to ensure accurate retrieval.

OTHER TOPICS OF IMPORTANCE

There are, of course, various other aspects to consider when dealing with a collection as large as that contained in the SPORTDiscus. The following sections will give an idea of a few of the issues to address.

ACCESSIBILITY OF COLLECTION

In the past, SIRC operated as an open documentation centre, encouraging researchers to visit and use the collection on-site. With our recent move to a new location, the focus

on our role as database publisher and the electronic document delivery services, it is no longer as necessary for the end-user to visit on-site in order to consult content. As such, it is easier to protect the world's most comprehensive sport collection while at the same time ensuring that it is made available throughout the world.

As things stand, the database can be accessed world-wide, via CD-ROM, Web interface, or through several online distributors. It is updated either monthly (online) or quarterly (CD ROM). In order to accommodate various user preferences, SIRC offers several options to consult the content. A full subscription to the database is normally the choice of academic, medical and corporate institutions. A second option -- SIRCRetriever -- enables users to choose an existing generic profile and receive a monthly listing via e-mail showing new content indexed and added to the database dealing with the chosen subject. An alternative choice is the SIRCDetective product, that allows the individual user unlimited access to the entire database, one month at a time, and features a user-friendly interface.

DOCUMENT DELIVERY

Since the days of the early indexes (Engineering Index and Chemical Abstracts were the first), the finding of a bibliographic citation was immediately followed by the challenge of finding the entire article. For many researchers, a visit to a university library was necessary in order to read the full text so tantalizingly described by the citation. SIRC offers its customers the options of requesting a photocopy or digital image file (where permitted) of an article referenced in the database. As the SPORTDiscus continues to evolve, there is an ever increasing proportion of records that include a URL link to the corresponding full text, either in html format or Adobe's portable document format (PDF).

INTELLECTUAL OWNERSHIP AND COPYRIGHT

According to accepted law concerning "creatively arranged data", all bibliographic records submitted to and created by SIRC are its intellectual property, and SIRC holds the copyright to the database. Of course, the full text of an article we reference is the property of the journal publisher or an individual author. We work with each publisher to negotiate the proper permissions and rights, keeping in mind that the presence of content is a marketing tool to increase the world-wide visibility of the publisher.

COST OF INDEXING

How much does it cost SIRC to generate its intellectual property? If one takes into account all the steps that are required before a record can be included in the database - the salaries of the staff involved, overhead costs such as computers, storage, and work space - it is evident that streamlined, cost-effective methods for describing and adding content to the database are necessary. We strive to keep our production costs per record indexed as low as possible. Below is an overview of the steps involved in creating a record at SIRC and the steps we take when receiving records from our indexing partners.

RECORDS INDEXED AT SIRC

- Receive periodical, book, thesis (etc.)
- Enter item into « production » database as an individual record
- Choose which articles or chapters are to be indexed

- Create a record from each article or chapter (with abstracts if permission to reproduce them has been granted by the journal publisher)
- Index the record using bibliography codes and descriptors (the SIRCThesaurus is available online to SIRC indexers)
- Verify accuracy of the record, then transmit the record into the « completed » component of the database.

Abstracts of intermediate or advanced level material are scanned and proofed using an optical character recognition (OCR) program (OmniPage). We find this method faster than manually typing the abstracts, and it recognises all characters and avoids spelling errors. An alternative -- where possible -- is to reproduce abstracts that appear on a particular journal's web site and paste them directly into the record. A growing number of journals provide article abstracts on the Web, which makes the task easier. Again, permission to reproduce abstracts must be obtained from the journal publisher.

There are certain steps in the creation of records that can be automated, thanks to the strengths of the current database management software (STAR) we use. Certain key fields can be automatically copied from one record to another. In the case of journal articles, for example, the periodical title, publisher name, publication place, ISSN, call number, location, URL address and e-mail address of the publisher can all be incorporated into the record for each article selected from the journal in question, simply by entering the unique identification number of the periodical. The same is true of book chapters. The unique identification number of the monograph is entered in the record for each of its chapters, and specific fields are drawn over into the record for the chapter. This automation saves time and improves content accuracy.

RECORDS SUBMITTED BY INTERNATIONAL INDEXING PARTNERS

- Confirm that the format of the machine-readable file is compatible with those in use by SIRC (field tags, layout) and search for unidentified fields that may have been added to the structure
- Verify content to ensure that no records in the new submission are already in the database (some records could have been sent in prior submissions)
- Load the records into the database
- Verify that indexing guidelines have been adhered to.

The first step (format compatibility verification) is one that must be done at the outset, before the contributing partner begins to transmit indexed data to SIRC on a regular basis. Various formats can be used, and all are readily available to most centres that contribute indexed records to SIRC. The fourth step (verification of adherence to indexing guidelines and practices) is more complex and can require up to thirty or forty hours of staff time, depending on the number of records included in the file.

These steps -- which are a form of quality control -- are performed by professional staff and must be completed before the indexed records can be included in an update to the SPORTDiscus. Great diligence is crucial in order to uphold the reputation of the database as a consistently dependable source for high quality, authoritative information.

The time spent completing these steps can increase the cost of including records in the database. In some cases, the process of verification and correction takes as much or more time as is required to perform the original indexing.

WHAT DOES THE FUTURE HOLD ?

What happens next ? How can SIRC, with the help of its staff, indexers, indexing assistants and indexing partners in various parts of the world ensure the growth of the SPORTDiscus ? What approach needs to be taken in order to ensure that the content meets the needs of the end-user community ? Here is a quick look at some opportunities and challenges.

OPPORTUNITIES -- NOW AND LATER

Estimates are that the number of people with access to our database will reach 1 billion by 2005. That is certainly a daunting picture ! As SIRC continues to pursue the role of database producer with the help of the international indexing partners, let us look at an overview of the current opportunities to enhance the content of the SPORTDiscus.

- *Indexing of book reviews.*
The creation and inclusion of a new document type for the database will allow users to consult reviews of new books. A review record will provide the user with an opinion of the content of the book in question and a link to the record for the book itself, where the publisher's email address and URL make it easy for the user to purchase a copy.
- *Partnerships with authors, research centres and publishers.*
In order to find new sources of information, it makes sense to seek out authors or publishers willing to become information partners. One example is the proposed joint venture between SIRC and ICSSPE, whereby member associations contact their membership and promote the production of research and its subsequent inclusion in the SPORTDiscus.
- *Inclusion of components from other collections into the SPORTDiscus.*
An agreement between SIRC and the AAFLA to incorporate the records from their book collection (approximately 40 thousand records) will add rich content to the database.
- *Inclusion of e-journal articles.*
With their improved access (quicker publication, improved search and retrieval tools, desktop access, lower cost), electronic journal articles are a benefit to both authors and researchers. Authors desire to be published sooner and to be more visible, while researchers require rapid access to full text. The transition from paper journals to electronic publications may proceed rapidly once the issues of reliability and archive concerns have been satisfactorily addressed.
- *Inclusion of e-books.*
With the growing public acceptance of this new information medium, it seems only a matter of time before their usage becomes widespread. With the experience gained in the inclusion of e-journal articles, the SPORTDiscus should be able to accommodate the addition of electronic books.

- *Content in PDF format on the rise.*
As e-book publishing looms in the not-too distant future and Adobe Acrobat appears poised to become the publishing format of choice, the amount of full-text material in this format included in the SPORTDiscus will likely increase as well. The issue at hand will likely be related to copyright and storage of data.
- *Further development of SPORTQuest.*
Our index to sport related web sites (using descriptors and bibliography codes from the SIRCThesaurus), greatly enhances database content. It will continue to be an integral part of the indexing department's production tasks.

CHALLENGES

Our many challenges are related to the simple fact that users want what they want, when they want it, where they want it, in the format and at the price they want it. The ability of a database publisher to respond to such demands, even to anticipate them before they are expressed, is a critical success factor. User expectations have changed and will continue to do so.

- *Cost factor.*
As R. Perkins states in his book *Infocommerce: Internet Strategies for Database Publishers*, « in the next three to five years, we will see a flight to quality among those accessing information on the Internet ». Users overwhelmed by information overload will appreciate (and pay for) services that filter, digest, and automatically present tailored information to them. In so doing, users are « expressing demand for quality digital content that has been organised by a librarian for optimal access and use ».
- *Multiple language delivery.*
As the publisher of a database with an international market, SIRC recognises the importance of multilingual access to the SPORTDiscus content. It already has incorporated French, Italian and Spanish equivalents to the English version of the bibliography codes available for searching the database. A proposal to include the German equivalents is being considered.
- *Bandwidth.*
As library resources are more frequently used to subscribe to Internet-based content, sufficient bandwidth will be required to support information services provided to the users.
- *Database design issues.*
How can the Z39.50 standard be used in order to search structured records by various criteria and retrieve matching records regardless of the format ? Can there be cross-database searching? Is XML technology an alternative solution for the ability to seamlessly cross-reference and compare database content?

CONCLUSION

Database production and management is an exercise in keeping your ear to the ground, and making sense of what you hear. As user expectations change, as availability of diverse document types increases and as technology enables the creation and distribution of information in a myriad of ways, it is imperative for the database publisher to keep in

touch with developments that offer new opportunities to serve clients with ever more flexible and valuable products.

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