Sports Information in the third Millennium

Proceedings
of the 11th IASI World Congress

Lausanne
25th, 26th and 27th April 2001

International Association for Sports Information (IASI)

Founded in September 1960, IASI aims to stimulate, support and develop activities in the field of documentation and information for physical education and sport.

It is a unique international organization that brings together a world-wide network of sport scientists, documentalists, librarians, information experts and managers of specialised information and documentation centres.

IASI has a long-standing collaboration with the International Council of Sport Science and Physical Education (Member of the Association's Board). In 1994 IASI was also recognised by the International Olympic Committee.

Today, IASI comprises 193 members from 74 countries over the five continents.

Each four years, IASI organizes its World Congress. The 11th IASI World Congress *Sports information in the third Millennium*, held on April 2001, was organized by the the Institute for Sport Sciences and Physical Education (University of Lausanne) and the Olympic Museum and Studies Centre (International Olympic Committee).

Cover design
Grand Large, Lausanne

Cataloguing information
Sports information in the third Millennium: Proceedings of the 11th IASI World Congress, Lausanne, 25 – 27 April 2001 / [organized by the Institute for Sport Sciences and Physical Education of the University of Lausanne and the Olympic Museum and Studies Centre] - Lausanne: Olympic Museum and Studies Centre, 2001 - 526 p.: fig.; 30 cm
ISBN 92 - 9149 073 3

Subjects: Sports information – Congress – International Association for Sport Information (IASI)

The contents of this book cannot be reproduced, neither in whole nor in part, without the previous written consent of the authors.

© 2001 INTERNATIONAL OLYMPIC COMMITTEE

Table of Contents

Sports Information in the Third Millenium

The articles published in the *Proceedings of the 11th IASI World Congress* do not necessarily reflect the opinion of the International Olympic Committee.

Opening Speeches of the Congress

Wednesday, 25th April 2001

Message from the President of IASI

Nerida Clarke

As the President of the International Association for Sports Information it gives me great pleasure to introduce to you the Proceedings of the 11th IASI World Congress. These proceedings present a diverse range of papers on the subject of sport information which have been prepared by experts in the field from all continents.

No longer is the creation and dissemination of sport information confined to printed resources; today we find sport information resources in a variety of mediums and increasingly in electronic format. These Proceedings reflect the diversity of sport information resources now available and demonstrate the complexity associated with managing these resources particularly in the context of globalisation, the increasing use of technology and the increasing worldwide demand for information by consumers and participants at all levels of sport.

Within these Proceedings are papers dealing with both the theoretical and practical aspects of sport information. These papers I believe represent IASI's dual endeavours; to develop the sound scientific discipline of sport information and to develop practical useful consumer oriented sport information products and services.

I commend the Olympic Museum and the Olympic Studies Centre of the International Olympic Committee for publishing these Proceedings, which enable the knowledge imparted at the highly successful Congress to be presented to the world.

Message from the Mayor of Lausanne

Jean-Jacques Schilt

A city of culture and studies, Lausanne is also a city of sports. For over 80 years it has been honoured to host the head office of the IOC and the Olympic Museum, settled since 1993 on the shores of the beautiful Lake Geneva. Designated Olympic Capital in 1994 by the IOC President, Lausanne is also delighted to be home to a number of International Sports Federations, which contribute to giving to sport the place that it deserves in the city.

A city of sport, Lausanne has a great deal more to offer its visitors. All year round, it has a full programme of cultural events including dance, music, and theatre, and owes much of its international renown to the famous artists who perform there. Maurice Béjart and his famous ballet company, the Chamber Orchestra of Lausanne and its conductor Christian Zacharias, the Lausanne Opera directed by François-Xavier Hauville, as well as the Theatre of Vidy directed by René Gonzalez have all contributed to the Lausanne's cultural reputation. Many museums and galleries present exhibitions and high quality collections : among the best known are the "Collection de l'Art Brut", the "Fondation de l'Hermitage" the "Musée de l'Elysée" devoted to photography, while the Olympic Museum attracts thousands of visitors.

Located in an exceptional setting, between lake and forest, opposite the Savoy Alps, in the heart of Europe and at an important communication crossroads, our city has always been a place of exchanges and meetings. Ouchy and Vidy offer the pleasure of lakeside strolls, the woods of the Jorat are ideal for long walks , while the old town around the Cathedral is particularly interesting to history lovers and rich in cultural life. Lausanne undeniably has a good quality of life. We therefore hope that our guests will find some spare time during this congress to visit it and that its charms will seduce them enough to draw them back for them to get to know it better.

We wish you a pleasant stay, and hope to see you again soon in Lausanne !

Message from the Rector of the University of Lausanne

Jean-Marc Rapp

In the name of the Rectorat of this University I am pleased to host the opening session of this Congress in our auditoriums.

I would like to welcome all participants of these three days and hope you will have fruitful exchanges on a subject, Sport in general, which is more and more important for our societies and is closely linked to Universities and to this University in particular. The various subjects, which will be presented and discussed, are for most of them of academic interest and could well be offered in various teaching and research activities in the different faculties of our University.

Lausanne University and his Institute for Sport Sciences and Physical Education is offering a complete sport and related science curriculum, it is only fair, due to the proximity of our international neighbour, the International Olympic Committee. Due to its favourable location next to the lake Leman and close to the Alpine ridge, our University is particularly fit to offer excellent infrastructure and good condition for practising and teaching sport and physical education.

We are also proud to host the Academy for study in sport and related activities, developing various post graduate programmes in "sport and law", "sport and risk management" using the synergy of a complete University and the traditional interest of our region for sport in general and education in particular.

In the name of the rectorat of this University allow me to welcome all participants and wish you all a beautiful stay and smooth debates on the rich topics offered in your programme.

Message from the President of the International Olympic Committee

Juan Antonio Samaranch
Marqués de Samaranch

Ladies and Gentlemen,

Welcome to Lausanne, Olympic Capital, for the 11th International Association for Sports Information (IASI) World Congress, organised by the University of Lausanne and the International Olympic Committee.

Much of your work will be taking place at the Olympic Museum, whose main role is to serve as the showcase of the Olympic Movement and provide all kinds of information on its current affairs, history and special events, as well as to enrich its collections. You will therefore be at the source of Olympic information, and the Olympic Studies Centre is available to assist you in finding any information you might need.

Aware as I am of the importance of your role in terms of communication and the globalisation of sport, particularly through the use of new technology, I should like to take this opportunity to thank you for your ongoing help in the promotion of sport and the Olympic Movement.

I wish you an excellent and unforgettable stay in Lausanne.

Opening Conference

Wednesday, 25th April 2001

Study of the Role of the Document in Sports History

Christian Vivier, Jean-Francois Loudcher
UFR STAPS[1] Besançon, France
ISSEP Lausanne, Switzerland

Many are the documents that the historian may work with in the framework of his research. Among his possible sources are public texts derived from the national archives (departmental or municipal), private records (for example, the meeting proceedings of directing committees and of general assemblies of sports associations), printed sources such as brochures and periodical publications, written sources based on the work of another author (most usually after that author's death), or still yet bibliographical[2] works and articles. To these traditional sources one can add such diversified material as newspaper and magazine articles and their photographs, films, shows and exhibitions, and even television programs. We also see the ever-greater frequency of interviews and testimonies, not surprisingly within the context of present day history[3].

It is not our intention here to address the problems related to the distinction between archive[4] reserves and library manuscripts[5]; moreover, the expertise incumbent on any archivist prohibits what would be a presumptive approach on our part in that discipline. Records and archives will therefore not figure in this treatise, but rather the historical document in its broadest sense. While the record-keeper staggers under his under the responsibility of his articles[6], the sports historian must, on his part, interpret the documents he handles with one single concept as a starting point: that of physical practices, in the most general sense of the term. Activities which, an undeniable reflection of the societies who create and sustain them, stir human emotions and passions. The role of the sports historian is to render this sensibility[7] coherent. If the document represents a neutral tool, it must nevertheless be dealt with in such a way as to give meaning as it is composed of a multitude of indicators that will necessarily be interpreted by the journalist, the historian, or the public, each as they see fit. This translation of indicators, or signs, must be executed according to the context and the element whose development the historian is attempting to follow. To this end, he should avoid interfering with the document and its perception as much as possible[8]. Hereafter it is the decoding of an element or elements which motivates and behoves the historian. While the public may be seduced by a snapshot, intense and

[1] "Unité de Formation et de Recherche en Sciences et Techniques des Activités Physiques et Sportives" (Training and Research Unit; Science and Technique of Physical and Athletic Activities).

[2] In order to clarify simply the distinction between source and bibliography, we call upon the principle which states that books, periodicals or contemporary brochures on the treated subject can be considered as sources by their lack of critical distance, whereas the bibliography is composed of the ensemble of works subsequent to the studied period with greater critical disengagement.

[3] "L'Institut du Temps Présent" is directed by H. Rousso in Cachan.

[4] Favier J. (1975) - *Les archives*. "*Archives are the ensemble of documents received or constituted by persons physical or intellectual, or by a public or private organization, resulting from their activity, organized in consequence of the same activity, and conserved in the possibility of eventual use.*" Paris, P.U.F.

[5] Library's manuscripts are the works, not necessarily classified, left by scholars who did not publish.

[6] The constitutive whole assembling classified and standardized pieces for each repository according to the serie, recorded under the shelfmark of the bundle or in the register (with a title and the dates of the oldest and most recent documents in the bundle), and measured by the meter.

[7] To paraphrase Bernard Jeu, sport is emotion. Jeu B. (1977) - *Le sport, l'émotion, l'espace*. Paris, Vigot.

[8] In this perspective, it is possible to refer to the ensemble of Alain Corbin's work.

emotive, of an athletic feat, the historian must be aware of the drama and symbolism being played out. As Roland Barthes writes: *"What the public demands is the illusion of passion, not passion itself"* [9].

But must not the historian, contrarily to the public, take into consideration the event or sign without being swayed by it ? Moreover, is he not obliged to organize these indicators differently than would the journalist, the filmmaker, the editorialist, the photographer, or the writer ? What should be the order of these signs ? We will see that the approach to athleticism within the context of the historical document poses significant problems.

1. Sport and mythology

In the eyes of Roland Barthes, sports have a mythical function, that is to say a mode of significance, which is not defined by the object of its message but instead by the manner in which it is put forth.[10] Certainly, our everyday life abounds with myths, and sports form an integral part of this culture: automobiles, plastic, advertisements… and sports, *"every object in this world is capable of metamorphasizing from a mute, static existence into an verbalized phenomenon, open to appropriation by society, for no law, natural or otherwise, prohibits our speaking of these things"*.[11] Obviously, the outcome of Olympic Games competition on live television is no longer a mere sporting event. It is a "grande finale", embellished, adapted for the broadest appeal, adorned with satisfied exclamations, idioms, superlatives, interjections, metaphors, cries and whoops of admiration; in short, the social usages that add to the reality of the event.

But if the myth exists on a daily basis, it can evolve, and it is one of the purposes of the historian to *"interrogate our myths"*, as Georges Vigarello[12] asserts. We can cite as an example the general nod given to Ancient Greece as our athletic origins, drawing from an undying folklore tending to convince us of a wholesome restoration to that Golden Age. And yet, the incongruity between the ancient games and modern sports has been largely demonstrated by social historical works.[13] The former, stemming from the sacred, differs from the latter, which is founded on the secular.[14] While the modern Olympic Games constantly quest for a new world record, the Greeks rituals of antiquity celebrated the values of courage, sacrifice, beauty, and harmony. History reveals the distinct, separate foundations of these two attitudes and thus the vanity of a restorative enterprise that would only take into account certain aspects of the Greek culture (i.e. amateurism and courage) while eschewing others (elitist, proud, misogynist, and violent society).

In the face of the Olympic myth, it is necessary, as suggests Roland Barthes, to introduce the idea of a semiological break down of language[15] in order to understand how language functions. In particular, the three levels of system which are the significant (the outward configuration of the sign), the signified (its definition), and the sign (which represents the associative totality of the first two terms), the whole representing a complex structure which cannot be broken down without risking anachronism. Thus, to

[9] Barthes R. (1957) – *Mythologie*s. Paris, Seuil, 233 pages, p. 16.

[10] *Ibid.*, p. 181.

[11] *Ibid.*, pp. 181-182.

[12] Cf. Lecture given at the I.N.S.E.P., 1994.

[13] For example: Ulmann J. (1965) - *De la gymnastique aux sport modernes*. Paris, P.U.F. ; Thibault J. and Ehrenberg A. (1980) - *Aimez-vous les stades*? Paris, Research; Pocciello C.(1981) - *Sport et société*. Paris, Vigot.

[14] It's one of the criteria proposed by Allen Guttmann, *From ritual to record*, 1978, in his socio-historical approach of sports: *"secularization, equality, specialization of roles, rationalization, bureaucratic organization, quantification, quest for the record"*. The work has nevertheless endured numerous criticisms which would be too long to go into here. Guttmann A. (1978) - *From ritual to record: the nature of modern sports*. New York, Columbia University press.

[15] Barthes R., *Mythologies. op. cit.*, p. 7.

imbue the events of the ancient Olympic Games with a universal or modern status is to accept the phenomenon without capturing the sense of what it refers to. We might agree with Roland Barthes that semantic mystification leads to a *"certain liberation of the significant"* [16], in other words, the disengagement of the sign from its context, in particular the connection it has between the significant and the signified. Another revealing example is given in Georges Vigarello's study[17]. In this case the historian explains that the bathing rituals of the Middle Ages do not revolve around the same values as in the 18th and 19th centuries. The festive nature of the first shares no similarities with the progressive quest for hygiene in the latter two.

Yet, with the study of myths, Roland Barthes distinguishes in fact two semiological systems far removed the one from the other[18]. On the one hand, language (or more accurately its relative and varied representations) is **the** language, or method of expression, which the myth manipulates in order to construct its own system, and, on the other hand, the myth itself, or *"meta-language"* [19], which constitutes a second language commenting on the first. In order to avoid any possible ambiguity, Roland Barthes attributes different terms to describe the significant, the signified, and the mythic sign which become respectively form, concept, and significance. Thus, during a track race, the numerous descriptive details recounting the crossing of the finish line (the significant) could be considered differently depending on the individuals analysing them. The journalist would linger over the aspect of physical pain (the signified) to better evoke the emotion of the feat, whereas the technical expert would calculate an analysis of movement with the hope of improving of time and execution and therefore efficiency (here again, the signified).

The resulting signs consequently address different semiological systems. In so much as the technician references a linguistical register targeting the refinement of technique and performance, the journalist on his part situates himself in the mythical realm of the victory, comparing the accomplishment of the athlete to that of no other. Indeed, the next-day headlines praising the victor and his prowess to the skies give the substance to a mythical order which has for concept (in the sense put forth by R. Barthes) the surpassing of one's self and, for significance, the ever-continuing progress of mankind. The reflection effected by the semiologist or even the mythologist speak all the more to the sports historian in that the concept of the incessantly receding limits of humankind, an element inextricably bound to the phenomenon of "stadium gods" and sports heroes, has an eminently unstable character in that it is engendered, altered, and eventually deconstructed or even completely forgotten within the timeframe in question. We could, for example, ponder the contemporary alteration of the myth in view of the recent and multiple scandals involving drug-taking.

The linguistical and mythical systems are interwoven somewhat like those graphic optical illusions that manage to present two different images in one setting. Like these illusions, there is no conflict, no contradiction, no opposition. As a result, the onlooker is required to relinquish the image that initially "grabs" him as the language-object that represents a purely significant awareness, and move on to the identification of the other image, seemingly hidden, like the meta-language wrought from a consciousness purely "imageante". So, alternating his perception of one or the other images at will, the onlooker seizes the form of one whilst the other dissipates. From that point on, the image that initially escaped him lures him to the point of distraction. This deliberate force which draws the observer to systematically recapture that which he hadn't recognized in the beginning, this unrelenting attraction that he undergoes and that summons him to accept the ambiguity of the image, permeates into the same territory where resides the myth.

[16] *Ibid.*

[17] Vigarello G.(1985) - *Le propre et le sale*. Paris, Seuil.

[18] Barthes R., *Mythologies. op. cit.*, p. 188.

[19] *Ibid.*

2. History and semiology

The semiology envisioned by Roland Barthes as *"that function which harbours the impurity of language, the linguistical jetsam, the instantaneous corruption of the message"* [20] could only collide serendipitously with history. Detached from the event and its fatality, the semiological approach experiences in our days a healthy curiosity and a veritable fascination for the signs, primarily those which remain unravelled, hidden, or forgotten whether deliberately or unconsciously, *"nothing less than the desires, fears, mimics, intimidations, advances, caresses, protestations, excuses, aggressions, melodies, of which an active language is made."* [21] In short, all which constitutes the very essence of history and which consists of elevating the real.

Once again, Roland Barthes provides an excellent example of the significance appropriately attributed to the diminutization of a champion bicyclist's name. Louison Bobet becomes just Louison and Raphael Geminiani is by turns Raph or Gem[22]. These spared down names simultaneously inter both superhuman status and an intimacy instigated and rendered by the journalist. The unwitting historian is of course far removed from this mixture of susceptibility, admiration, and prerogative which transforms the masses into eavesdroppers of their heroes and consequently leaves them incapable of scrutinizing the selfsame mixture. Roland Barthes proposes even a *"characteristic lexicon"* of the runners having acquired an assured semantic value. The Tour de France proves to be a privileged example of a complete myth. Not only is it a national and increasingly international event, but also a fascination expressed as something of an epic of a precarious moment in history *"where man, though clumsy (...) throughout impure fables, nonetheless forges in his fashion a perfect equilibrium between himself, the community, and the universe."* [23] This is also applicable to the geographic layout of the Tour de France, subjugated to meet the herculean standards of the event. The natural elements and the course itself are personified to prepare it for its confrontation with man, who is naturalized. It is first and foremost a question of the pitting of one will against another on equal ground. Lastly, the adjectives employed by the journalist have for purpose not the recounting of an athletic competition in a natural setting, but the saga of man grappling with existential themes and putting his powers of perception and judgement to the test. Some would have the Tour a recollection of that ancient period where *"man incarnates Nature to better confront it and rid himself of it."* [24] And is not the Tour a perfect setting for man to reproduce the vicissitudes of existence, with its highs (winning a leg of the race) and lows (defeats, falls, pulling out of the race) and in doing so create a myth ?

3. Linguistics and the history of sport

The methods borrowed from linguist should not send the sports historian on a tangent distancing him from the initial object of his interest, but rather to open to paths of interpretation. Their interest consists of "establishing new facts with the weight of proof". Two major reasons explain the historian's interest of a linguistic investigation.

In the first place, it assures the researcher of a certain distance in regards to the text and requires him to consider its facts and form. A lexical inventory related to the principal official texts in physical education in France do not constitute an end themselves, but a means of instructive progression.

[20] Barthes R.(1978) - *Leçon inaugurale* …. Paris, Seuil, p. 31.

[21] *Ibid.*, pp. 31-32.

[22] Barthes R., *Mythologies. op. cit.,* p. 104.

[23] *Ibid.*

[24] *Ibid.*, p. 106.

Another example, the study of the written sports press such as *L'Auto*, *Le Miroir des Sports*, or *L'Equipe*, imposes a detailed analysis of a given journal's structure. Before entering into the content of the article, the researcher must commit himself to careful consideration of the source which he wishes to study. He can single out headlines, editorials, photographs, drawn images, importance based on first or last-page appearance, advertisements, classifieds ads, letters from the reader, area of distribution, circulation, format, price, etc, all of which are important elements of analysis. For example, the headlining, controlled by the editors and serving to capture the reader's attention, serves as a "mirror effect" permitting a quite clear idea of how the editors perceive their audience. Satirical cartoons play a particular role much in the same manner. They are drawn from stereotypes which themselves implicate a social and symbolic code and therefore the public's complicity. Jacques Faizant's caricature appearing in *Le Figaro* during the 1960 Olympic Games, depicting General de Gaulle in a warm-up suit, suitcase in hand and ready to embark for Italy, saying: *"Decidedly, I've got to do* ***everything*** *in this country"* is most revealing. The disastrous results of the French athletes throughout the course of these games undoubtedly affected the readers of *Le Figaro*. The question of readership is imperative in order to understand the journal's orientation.

The mission of the editor is to adhere as much as possible to the values which he supposes to be those of his public. The historian must then try to understand why the printed word that he is studying is bought: Is it because of ideological fidelity ? Simply the convenient location of its distributor? The image projected ? Habit ? The sports historian considering a research of the press is without a doubt faced with a multitude of questions before even having undertaken the content analysis of an article. What are the leanings of the paper ? Who are the editors ? What is the scale of the readership ? What kind of relations does the editor keep up with his reader? Circulation is a fundamental key to a newspaper's livelihood. It follows that newspapers aspiring to a large circulation embrace the general consensus. On the contrary, a newspaper with a low circulation, often more expensive, seeks out a loyal readership. By espousing the interests of a professional or ideological group the create a following as in the case of *Revue EPS*[25]. These varying elements of course complicate the analytical process and therefore compel a certain amount of circumspection.

Another benefit to this linguistic approach is that it unmasks, *"Further and adjacent to the explicit meaning, a second, veiled message"* [26] as Antoine Prost says. The texts are not only approached for their intentional testimonies but for the traces of involuntary signs which indicate or, in spite of themselves, betray an activity which goes beyond these testimonies. To briefly illustrate this point, we can again use the example of the written press, in particular on the regional level. The goal of a journalist consists of transmitting information as well as opinions, to entertain, to perpetuate the values of a society and to bring together the individuals of a shared community. Of these four functions, the role of « bringing together » takes on a primordial interest as it touches on a virtual goldmine of responsive sociability. It explains the incontestable popularity of a regional newspaper. The reader is interested in that which is defined by his sphere of existence, be it a region, a township, a social group, local industry, profession, or whatever. Interestingly enough this idea of unity is never straightforwardly articulated. For the sports historian, however, it merits particular attention.

In short, the argument concerning the "how" is just as compelling, if not more so, as the "what". The manner in which one speaks or writes is not innocent; *"beyond their evident utility, such expressions reveal how one perceives and organizes reality through one's denominating of it"*.[27] Thus treated, and complemented by

[25] *Revue Education Physique et Sport*: The famous french professional magazine in physical education and sport.

[26] Prost A.(1996) - *Douze leçons d'histoire*. Paris, Seuil.

[27] *Ibid.*, p. 270.

ethnological studies, the linguistic process permits an intriguing access to mentality and, further still, to sensibility in history. In this perspective, the disciplines of lexicology[28] and semantics are fertile ones.

We can cite yet another example. To study the place of health in the context of the official discourse in French physical education, Jean-Nicolas Renaud[29] became especially interested in the official instructions appearing since 1923. An initial reading permitted him to single out terms strictly correlating with the theme of health were regrouped in ideal types[30]. Seven large families (balanced, medical, negative, particular, physical, and hygienic) considered as the principle health indices within the official physical education were discerned. Then, after verification, the computer-generated list was shortened by the elimination of those words used in a context outside that of the subject of research. The author was able to demonstrate through synthesis graphs that the measure of a word's frequence could perhaps be directly linked to its ideological impact.

The official discursive mode relating to health in physical education is therefore appropriate to each text considered even if the theme is recurrent throughout the studied period. The example furnished shows us the that the relevance and the value of historical studies based on a linguistic evaluation depend on both the historian's questions and his body of work. He searches for data on the thought processes of a group of legislators or the mentality of a social group of leaders of a sports association, for example, on dates and in places perfectly predetermined. It is obviously very difficult for him to effectively interpret the ill-sorted ensembles of texts of uncertain origin or date. The quality and the clarity of his work is a guarantee of the success of his undertaking.

Thus, it is of first order the difficult task of defining the body of a work used in a historical study contemplating as its subject the texts regarding physical education and appearing since the late 60's. How to define beforehand the ensemble of periodicals producing articles on this topic and upon which the researcher can work methodically ? How to take into account all at once the position of the periodical, the content of the text, and the researcher's position ? The definition of the corpus consequently depends heavily on the researcher. While the linguist can effectively work without hindrance from a diversified corpus and an approximate timeframe, the historian needs to work from an extremely well focused body of work. If he wants to emphasize the contrasts between different groups or time periods, he must *"assemble his corpus out of comparable texts, spread out over several dates and/or issued from several proof-readers whose judgement he can consider representative of his own."* [31] Linguistics has at least the advantage of making itself understood to the historian by relaying back to him *"the historical question of these particular acts."* [32]

Finally, we can contemplate the reflection made by Antoine Prost[33] that the quote is, in its usual form, status of proof for the historian. Putting aside the linguistic system evoked by the latin adage, father Didon's *"Citius, altius, fortius"*, taken in its mythical sense, illustrates a school of thought at the turn of

---

[28] According to Antoine Prost, the study of semantic and/or lexical fields *"consists of establishing, in a systematic manner, categories of equivalence; that is to say, a series of terms or expressions susceptible to interchangeability in a given text and, symmetrically, the networks of opposition or exclusion".*

[29] Renaud J.-N.(1999) - *Santé et éducation physique, Mythe et réalité d'un discours officiel.* "Mémoire" for "maîtrise" STAPS under the direction of C. Vivier, Besançon, UFR STAPS, 1999, 2 volumes.

[30] Weber M.(1965) - *Essai sur la théorie de la science.* Paris, Plon, p. 180. According to Max Weber, the idealtype is obtained by unilaterally accentuating one or several points of view "by connecting a number of phenomena occuring separately, diffused and inconspicuous, that we find in turns in great and small numbers and in certain places not at all, ordered according to precedent points of view and chosen unilaterally to form a framework of homogenous thought".

[31] *Ibid.*, p. 273.

[32] *Ibid.*, p. 275.

[33] Prost A., *Les mots*, pp. 255-285. In Remond R. (1988) - *Pour une histoire politique.* Paris, Seuil,.

the century establishing the greater likelihood of myth in the quote than the notion of a historic olympic truth. The multiplication of quotes having illustrative value does not, for all that, constitute undeniable proof: *"That's the logic of a lawyer, not a scholar."* [34] To avoid this impasse, the historian may attempt the quantitative methods such as content analysis or lexical statistics (factor analysis of correlations, specificity analysis, simultaneous occurrences, and inventories of repeated segments). The lexical frequencies represent reliable indications in regards to the study of texts, even if these methods globally present the major inconvenience of treating texts as word populations. Lexicometry thus reaches its limits and is required to give way to syntax, without which there would be no sentences.

4. Photographic shock value… the statement

Every image is, in a manner of speaking, a story. Iconology, like semiology, figures as a very instrumental tool to history. Often more directly than directly, depending on how well we read between the lines. And what can we say about the ingenious sports photography that is so expertly manipulated that they fail to really touch us ?

In the end, the person exposed to these photos finds himself completely dispossessed of his own judgement. Of these shock-shots, which so endeavour to flabbergast or capture the terrible yet somehow do not manage to shake their audience, Roland Barthes says: *"they have shuddered for us, they have thought for us, they have judged for us: intellectually, the photographer leaves us with but the right to yield; we are bound to these images exclusively by the technical expertise. A subliminal expression of the artist's handiwork, they cannot speak their own tale, and the onlooker, faced with this deliberate and artificial creation, finds himself stripped of his prerogatives."* [35] When the photographer seizes the most fleeting movements, like the extreme point in mid-jump or the violent impact of punch deforming the blood-and-sweat-drenched face of its adversary, this captured moment comes across as deliberate, gratuitous, and wrought from a too-great desire to make the moment "speak". These too perfect images therefore hold only minimal interest for the historian aware that they did not even startle or trouble its initial audience.

Documents that one glance suffices to take it in, they can inform the historian on some points, for example the apparel and equipment used. But in any other context, the signs the photograph presents us are too pure. The reading of the scene is too bent on that singular act for the contemporary to hope to find other signs. What a contradiction, the critical historical process which attempts to suppress the evidence and unequivocal language in exchange for the clues, forgotten or hidden, that could unravel the tightly-knit fabric of this stylised and singular moment ![36] For Barthes, these shock-shots are false. Somewhere between a literal and inflated fact; they are *"too deliberate for photography and too exact for painting."* [37] They provoke neither profound thought nor judgement on the part of the onlooker; the photographer has already painstakingly fashioned it for him. Nevertheless, there are notable exceptions. Marey's and Demeny's color photography studies of movement calls the attention of the sports historian to the significance of the relation between science and physical practices at the end of the 19th century.

[34] *Ibid.*, p. 259.

[35] Barthes R.- *Mythologies, op. cit.*, p. 98.

[36] *Ibid.*, p. 99.

[37] *Ibid.*, p. 100.

5. From iconology…

Contrary to perfect athletic images, the composition of paintings which treat the theme of sports escapes this absence of information available for history as much as it encourages an absence of emotion in the beholder. The painters do not fail to add, along with the transmission of a movement's acme, the amplified sign of the unstable, the *"idealization of the elusive"* [38] which catches the eye and makes the heart pound. Roland Barthes calls it the *"numen"*, which we may approximately translate into English as numinous. It is also he who encourages the sports historian to search for signs rife with meaning in the everday depictions of the artist's work. No better example may be found than the work of Daumier.[39]

With a perfect mastery of charcoal, pen, and soft lead pencil, he suggests the instability of an attitude thanks to the technique of the false-stroke. The arms and legs of the bathers exist in profusion; the bodies of gymnasts and skaters of the mid-19th century literally come to life before our eyes. This implication of movement confers upon the drawings of Daumier an additional interest for the individual interested in the history of the practices of physical exercise. Thomas W. Gaehtgens[40] signals that, if the acuteness of the drawer's observation spills over to the graphic representation of a situation through means of alteration and deformation, the pulling away from, and paradoxically, the personal implication, together evince a great originality. Daumier is fond of the street... he gives it life in what it most concretely has to offer. He dares communicate the meanest human attitudes, and he takes sides.

But to what extent does his work move beyond its creator to enable a historical interpretation of physical activity in the 19th century ? This is the undertaking[41] we have attempted based on the painstaking work executed by Loys Delteil[42] in 1925-26 who reproduced a complete catalogue of Daumier: nearly 4,000 lithographic plates and 1,000 drawings on wood published by various satirical newspapers such as the weekly *La Caricature* (1832-1835) or the famous daily *Le Charivari* (1833-1872). The attentive examination of this exceptional and priceless compilation permits us to select a total of 366 lithographic plates whose subject is, either as illustration or decor, physical activity. If hunting and bathing scenes represent more than two thirds of the activities sketched by the illustrator, the practices of boating, gymnastic, billiards, horse-back riding, skating, and boxing nonetheless hold an important place.

A detailed analysis of these lithographs relating bodily exercise have led to the singling out of 80 drawings specifically covering the theme of health. From this scaled down body of work, we have been able to put forward two existing critical theories which compose the study of physical activity connected to the notion of health in Daumier's lithographs dating from the middle of the 19th century. The analysis of brochure representations reveals a pivotal period (1853-1854) through the course of which general conceptions find themselves transformed. Before this period the illustrator's satires severely rebuked corporeal exercise for the dangers they posed; we see, however, a shift after 1850, when the attacks on lithographs limited themselves to criticisms of precise arguments, without putting into question the broader purpose and benefit of physical practices. Hereafter, we can ask ourselves

[38] *Ibid.*, p. 99.

[39] H. Daumier is above all a sketch artist, but also an important painter and a true modeler of form.

[40] Gaehtgens T.-W., Berthold M. (1980) – *Caricaturama.* Paris-Gembloux, Duculot, Bibliographie pour tous, pp. 209-210.

[41] Loudcher J.-F.,Vivier C., *La santé dans les pratiques corporelles au milieu du XIXème siècle selon H. Daumier* , pp. 475-483. In Terret T. (Ed.) (1999) - *Sport et santé dans l'histoire*, proceedings of the 4th HISPES Congress, Alcamia Verlag, Sanket Augustin.

[42] Delteil L. (1925-1926) - *Le peintre-graveur illustré XIX-XXème siècles.* 32 vol., lithogrphy by H. Daumier, vol.20 to 29, Paris, Frazier Soye.

whether Daumier didn't play a pioneering role, demonstrating the all-importance of fitness due to physical activity (the ostensible risk of accidents, falls, illnesses, and trials related to this discipline notwithstanding).

Consequently, it is not surprising to see, through the study of Daumier's work, that the notion of danger undergoes a serious transformation in the 19th century. We see an enriched prospective of analysis beginning in the early 1850's with the movement that progressively weighs the moral consequences of inactivity against the corporeal dangers of physical practices. What's more, the satirical pamphlets targeting pathological phenomena or deviations inherent to physical exercises prove themselves indispensable, disclosing to the readers of these satires the underlying existence of normal and healthy people[43]. The proposition of Roger Chartier[44] of analysing a work according to the social categories who embrace that work could serve as the point of departure into new research.

Does the study of Daumier's lithographs complicate the proposal of a history (having enriched this history) founded on the *"subjectivity of representation"* ?[45] According to Roger Chartier, the *"subjectivity of representations"* opposes the *"objectivity of structures"* which would be more certain historical territory, that, through the handling of massive, serious, and quantifiable documents, reconstructs societies as they actually were. Yet, logic would indicate that the breadth of available historical material imposes a choice from analysed series, in the same manner that Michel Foucault chooses the public record.[46] Daring to "invent one's sources" is perhaps the first level of a process which could engender the construction of an another, unusual historical "truth". Because Daumier's satirical lithography is destined as much for the eye as the ear, it could be inscribed under this new method which brings to the fore the invaluable document. The immediate legibility of the concentrated handwriting, whose ambition is the spontaneous and direct effect of surprise or even speechlessness, is coupled with an "oralization" and a global commentary throughout the course of which it is read aloud to a listening public. There can be no doubt, as Maurice Agulhon[47] shows, that the bourgeois of the 19th century abandoned themselves to the discussion of Daumier's satires in the circle where they habitually gathered with their newspapers.

6. ... to the interpretation of a musical score

Somewhat marginally of the usual manuscripts and traditional publications, musical scores represent original documents capable of piquing the interest of the sports historian. Of course one could envision a lexicographic analysis as did Thierry Terret with the sung texts accompanying gymnasts' music at the turn of the century.[48] This approach in fact possesses strong similarities with the studies choosing classic literary texts about which we have already spoken. Certainly, song is often accompanied by some movement of dance that no doubt deserves an itemized and comparative analysis. In theory, such a task has never been actually carried out because it necessitates a multidisciplinary background, incorporating historic methodology and lexicometry as well as music and dance. Yet, once again, reaching beyond the manifest word, here the lyric, the historian can locate musical elements all the more favourable to the meaningful interpretation of hidden signs.

[43] Canguilhem G. (1975) - *Le normal et le pathologique*. Paris, P.U.F.

[44] Chartier R. (1989) – *Le monde comme représentation* in a*nnales ESC*. Nov.déc., n°6, pp. 1505-1520.

[45] *Ibid.*, p. 1513.

[46] Foucault M. (1969) - *L'archéologie du savoir*. Paris, Gallimard.

[47] Agulhon M.(1977) - *Le cercle dans la France bourgeoise (1810-1848)*. Paris, A. Colin.

[48] Terret T., *Le son du corps : gymnastique et chant à la fin du XIXème et au début du XXème siècle*, pp. 47-73 in Aranud P., Terret T. (1996) - *Sport, éducation physique et art XIXème-XXème siècle*, Paris, CTHS.

Take for example the key in which the song *"Gais canotiers"* [49] composed by Horeb and Derial in 1882 for the Societe Nautique Bisontine.[50] How to explain the rhythm change and the transition from 6/8 to 3/4 time (waltz) between the verse and the refrain ? The more serious lyrics of the verse, which enumerate the goals of the athletic society and the honourable qualities of its members, merit a less cavalier beat, while the waltzing refrain succumbs to the undeniable gaiety of the oarsmen, for whom everything finishes around a song and a drink. A musicological study could surely examine in more detail the rhythmic structure, the harmony, and various other nuances which characterize this musical piece.

Obviously, the very essence of the song is that it is not straightforward in its significance, music being eminently suggestive. It is therefore pointless to lay out everything in the song's text. The music thus logically resembles a mythic object which deserves the whole attention of the historian, even if, as can be expected, the sports historian is initially more sensitive to the movement of the body that this music evokes rather than the rhythm or harmony themselves. This significant entity, be it written, verbal, auditory, visual, or even sensitive (objects can themselves become lyrical), can be considered as a discourse, dialogue, language, etc.[51]

7. Conclusion

Without a doubt, this incomplete analysis of documents relative to the history of sports shows that the specific study of forms, that we have frequently brought together with semiology and iconology in the theoretical framework of Roland Barthes, in no way contradicts the indispensable foundations of its historic totality. On the contrary. The monographic analysis of an athletic society which gives the base of a historical study of the emergence of a sport in a determined time and place is, at the same time, formal and historic, social and anthropological, semiological and ideological, economic, cultural, political... Are these not the best examples of the construction of an effective and comprehensive criticism which consequently transforms the envisioned history into something more than a mere chronicle ? We have seen that the history of sports is not a chronology of major events occurring one after the other, no more than it is a series of photographs of athletic gestures, still less the extract of a film aiming to relive the past. Finally, it is not either the activity of a memorialist.

The sports historian would like, in the end, to explain why man exerts himself or commits himself to an athletic discipline, and, more generally, the reasons behind his gestures and behaviour in a specific timeframe. To do this, the historian works from references of the period in question. He selects his facts and sources and then interprets them. This last endeavour is all the more difficult given that his analysis is inextricably linked to his experience and culture. The questions that the historian utilizes to extract the desired information from his document are influenced by what he is, what he knows, what he lives and what he has lived. Seen in this light, a historical construction cannot hope to aspire achieve objectivity; indeed, the mere aspiration towards objectivity is a feat in itself. The critique of a document is most certainly a privileged tool in this delicate quest. It takes on different forms (criticism of the restoration of an original document, criticism of origin, criticism of interpretation, determination of the sense of the literal and the real to which linguistics largely participates, or criticism of sincerity and exactitude) which all contribute jointly. Every document, because it exists, possesses its share of truth. It is for the historian to extract this truth.

[49] Merry oarsmen.

[50] Besancon Nautical Society.

[51] Barthes R., *Mythologies, op. cit.*, p. 183.

Michel Foucault's analysis in *Les mots et les choses*[52] asserts the emergence of a new linguistic, quite different from philology, at the root of a shift in the epistemological foundation. The political lexicology of the E.N.S. in St-Cloud, the historical lexicology (in a general manner), and the analysis of discourse all reflect a major change at the heart of human sciences, although this change has not yet affected all forms of history[53]. The exponential inflation of scientific literature subsequent to the decomposition of terms, and to lexicology, as well as the poignant philosophical questions of semiologists (which Roland Barthes interprets as the possible existence of a mythology of the mythologist), have quite naturally aroused the scepticism of historians. History perhaps finds here the possible limitations of linguistics, or at least its tendency to come full circle.

The schools of thought furnishing examples of regarding the topics we have just mentioned on the theme of interpretation in the history of sports cross paths with the work of Michel Foucault.

To conclude, the final blow of the whistle at any sports event or the game point that gives the victory to a tennis player are an abrupt and brutal end, the "conclusive point of a demonstration". The applause of the participants, the passionate cheers, the handing over of the trophy all seek to prolong the heightened emotion, without ever really managing to make us forget that the event is over. Nevertheless, they make up part of the athletic document. These aspects are also laden with meaning: that of the denouement of an athletic language but also, the beginning of the interpretation of a myth.

[52] Foucault M. (1966) - *Les mots et les choses*. Paris, Gallimard.

[53] Prost A., *Les mots*, *op. cit.*

1st Plenary Session
New Technology in Sports Information

Wednesday, 25th April 2001

Moderator:

Jill Haynes
Manager, National Sport Information Centre
Australian Sports Commission, Australia

Telecommunications: Providing the Framework for the Future of Information Delivery

Nerida Clarke
IASI President, Australia

When Alexander Graham Bell in the late 19th century began his work to develop an "Electrical Speech Machine" as a social device to assist the deaf, little did he know that he was about to invent a device which would not only assist deaf people but one which would be considered one of the world's most significant inventions in terms of social impact, and the device that would pave the way for the Information Superhighway of today.

On 10 March 1876 when Bell shouted into his mouthpiece *"Mr Watson – come here I want you"* and he was heard and understood by Watson in the next room Bell was making a connection to another human being – this connection and communication being the first step in developing the world of telephony which today connects millions of people in all parts of the world every second of the day.

The telephone along with inventions such as the Television, the Refrigerator and the Computer is considered to be one of the world's most significant electrical inventions of the past 150 years.

Put simply a telephone is an apparatus for reproducing sound especially that of the voice at a great distance by means of electricity; consisting of transmitting and receiving instruments connected by a line or wire which conveys the electric current. Generally a telephone is any device that conveys sound over a distance, its name being derived from the Greek words "Tele" meaning afar and "Phone" meaning voice or voiced sound.

Once invented the telephone spread in popularity and telephone lines began to appear all over the United States and subsequently in other countries. It is said that in the late 18th Century that the Postmaster General in England scoffed at the telephone stating that in England that the postal system with its network of postboys for delivering mail was a much more efficient way of communicating than through a device such as the telephone. It would indeed be interesting to see the reaction of the Postmaster today to the global residential and business communication network which exists today based on telephony.

It is not the intention of this paper to describe the technology of telephony in detail however in order to understand the impact of the telephone on society and sport in particular then it is necessary to have some idea of the history of the device and the changes which have taken place over the past 125 years.

In general, telephone connections to other people are made through pairs of copper wires which run to a house or a business, these wires are in turn connected to a thick cable running along the street which is packed with 100 or more copper pairs. This thick cable then runs into a telephone company's switch in the area, or it will run to a box about the size of a refrigerator that acts as a digital concentrator. The concentrator digitises the voice, combines it with the voice of hundreds of others and sends them all down the same line either by a coax cable or fibre optic cable to the phone company office or exchange and here the connection is made to the person you wish to speak to.

Over the years enhancements have been made to telephone networks to allow for higher quality voice transmission and for data to be carried over networks thus facilitating access to the Internet and to

other services known as broadband services that allow the transmission of video over the network. Today the telephone and its infrastructure is part of what is known as the telecommunications network which permits the *"transmission of sound, video, computer data and other information between the telephone or other terminal device (such as a computer or facsimile machine) of one party and the telephone of another party by establishing a connection between the telephones or terminal devices of the parties".* (Glass, Steven 1997)

The telephone networks, which have been described above, are generally known as "fixed" telephone networks because the telephones are connected by a fixed wire to the telephone network. These networks require, access to electricity, considerable infrastructure in cabling and are not inexpensive to install hence the considerable disparity which we see between the developing and developed world in terms of access to telephone services with the majority of people in the world still waiting to make their first telephone call. Evidence of this disparity in access to telephony can be seen in the fact that there are more telephones in the city of Tokyo than there are in the whole of Africa.

Perhaps one of the greatest advances in telephony in the last 25 years has been the development of the mobile phone or the cell phone which is really an extremely sophisticated radio, a duplex device which uses 2 frequencies one for talking and a separate frequency for listening as distinct from simplex devices like a CB radio which because they use the same frequency to transmit and receive only allow one party to talk at a time.

Mobile Phones really began to become popular in the 1980s when the cell phone standard called AMPS (Advanced Mobile Phone System) was approved for analog mobile phones.

In more recent times Digital Cellular Phones have replaced analog phones and compress voice into digital 1s and 0s allowing between 3 and 10 cell phone calls to occupy the space of a single analog voice call. Today in many countries the AMPS standard has been replaced by GSM (Global System for Mobiles) and digital handsets have replaced analog handsets.

GSM allows for more secure transmission of telephone calls from mobile phones, for more global use of the handsets, for higher quality voice transmission and for the transmission of computer data. These phones have allowed service providers to offer a range of value added services such as paging and email to consumers and have transformed the way in which business is done. Each day in the USA alone something like 30,000 people sign up for and start using a cellular phone and it is interesting to note that already 3 times as many users have adopted the mobile phone than the internet. (Gartner Group, *www.gartner.com*)

What a mobile phone gives the user is the freedom to move where he or she desires carrying the telephone and the ability to make and receive calls at all times provided that he or she is within the cell area covered by the mobile network.

In recent times we have also seen the development of Satellite Mobile Communications where specifically designed mobile phones transmit radio signals directly to, and receive them from certain telecommunications satellites positioned 1,300 kilometres above the earth. The advantage of this system is that no cellular networks are required on the ground. When calls are made on the satellite phone the telephone transmits the call to a low earth orbiting satellite. The satellite then transmits the call to the satellite earth station, which then passes the call to a telephone exchange, and then the call travels over the normal network.

Satellite telecommunication is expensive with expensive handsets and depending on the orbit chosen; if the satellite is used for two-way communication there can be unacceptable transmission delays. There is also the added disadvantage that satellites have a limited life span however the technology is generally

reliable and does have the advantage of having set-up costs and running costs that are independent of terrain.

Microwave technology has also been used as an alternative to wire-based telecommunications cabling. This point-to-point transmission system has limitations in terms of distance and relies on an uninterrupted line of sight between a transmitter and a receiver but in some cases it is an economical alternative to laying cables for telephony.

A further step in the development of mobile phones has come with the introduction of Wireless Application Protocol or WAP, which is the platform for media phones. It provides an open universal standard for bringing Internet content and advanced value added services to mobile phones and other wireless devices. WAP sums up a range of devices that can connect to a specialised version of the Internet allowing access to text and graphical information from a handset without the user being shackled to computer screens modems and telephone lines. WAP phones are heralding a new era in business mobility, which means that customers, partners and employees are able to access information resources, and services whenever they want from wherever they are. Up until recently most mobile users could only use Short Message Services applications, which provide a limited functionality, compared to Internet services. This is now changing with WAP. WAP will eventually lead to a variety of services that will extend the way people use their phones and it is estimated that in 2002 there will be 48 million users of the Internet enabled smart phones world-wide and 204 million by 2005.

With the developments of General Packet Radio Services which is a higher speed data packet system (which exploits the fact that most data and voice connections are episodic) comes the possibility of having a range of WAP devices permanently connected to the Internet and then the ability for users, not to pay for the time connected (as they do now) but to pay for the amount of data they send or receive.

WAP has been developed on the experiences of the Web era and telecommunications companies have designed WAP tools that take into account the critical constraints of the wireless world namely, the current limited bandwidth, challenging conditions of use and the specific user interface characteristics and processing characteristics of mobile phones.

Currently WAP devices are being used for flight bookings, stock reporting, weather, directories, news, wireless banking and sports results and they are increasingly being used for business purposes e.g. Sales staff in the field placing orders and checking stock levels by being able to connect to office based intranets and databases. We will soon see Public Key Infrastructure and Digital Certificates available on WAP devices allowing the transfer of secure information, which will pave the way for mobile e-commerce. The marriage of WAP and mobile positioning devices will soon enable the user to ask their WAP device *"Where is the nearest bed and breakfast ?"* or *"Where is the nearest ATM ?"* when standing on the street corner.

An IDC research firm report recently predicted that Wireless mobile commerce will top USD 1 billion in 2001 and the number of mobile or cell phones will top 600 million with 160 million of these in the Asia Pacific region – this means 1 in 6 people on earth will have a mobile phone. It is predicted that by the end of 2001 that there will be more using mobile phones than fixed phones.

In Japan a system called I-Mode rather than WAP is in use by the company DoCoMo which has 15 million wireless internet subscribers (growing at 300,000 per week). I-Mode provides faster throughput and is not so hard to develop for as WAP. I-Mode also allows for what is known as push technology, which allows a tethered Internet connection to collect preferences and then for information on

personal preferences e.g. weather, particular sports etc to be pushed out to the mobile device held by an individual. This feature will also become available with the next generation of WAP phones.

In Japan and other parts of the developed world young people are taking to WAP phones because they are used to the short sharp communication skills required of the WAP phone which are similar to those they use in internet chat rooms. The popularity of the use of the mobile phone as a messaging device was evidenced in Australia over the Xmas period when 19 million short text messages were delivered from the December 25 to January 1, 2001 thus showing that people are happy to use their mobile phone for more than voice calls. Pocket News (Surf Reports, Sports News) a service recently introduced by the Australian telecommunications company Telstra which provides Surf Reports and Sports News experienced an increased demand of 486% between December 9 and January 13, 2001.

Whilst WAP technology has begun to revolutionise the use of the mobile phone it has been somewhat limited by the constraints of GSM which only permits the delivery of text and relatively simple graphics. With the development of 3G or UMTS comes the capacity to deliver much higher data rates to mobile phones and to other wireless devices. In the future the mobile phone will be able to receive sounds, text and video clips from any location and this will herald a new era in mobile phone usage in all aspects of life including sport.

What we are now beginning to see is mobile phones now being integrated with other devices such as Personal Digital Assistants (Palm Pilots), MP3 (or MPEG-1 Audio Layer 3) players (a device for playing music which has been digitally compressed and recorded from a CD or downloaded from the Internet) like the Samsung Uproar Wireless phone/MP3 player and refrigerators which are being developed by a number of countries.

In Denmark Electrolux and Ericsson are currently trailing a screen fridge in 50 homes in Copenhagen through the telecommunications company Tele Danmark. This screen fridge can deliver full motion video; live TV, a high-speed internet connection and an inbuilt phone speaker, which allows the receipt and sending of voice calls. This is technological convergence at its best. With this convergence of devices some of the inherent problems with WAP phones such as the small screen size and small input keys will be overcome. With the increasing use of wireless technology in telephony, voice recognition systems and convergence we are likely to see a range of innovative devices over the next few years – even electronic clothing with the ability to communicate with the world through the buttons on our jackets.

Whilst there have been significant developments in wireless telephony in recent years fixed telephony has also developed with developments such as Natural Language Voice Recognition systems. This development takes away the annoying Press 1 for this and Press 2 for that etc and enables intelligent back end systems to recognise a callers voice pattern and stated needs and to take calls and respond accordingly without the need for human intervention. Clearly this development is significant for high volume information request systems where enquiries are generally fairly standard and require standard responses. In particular these systems are being used to provide Online betting systems, directory assistance, stock quotes, banking & scores.

Another significant development in fixed telephony has been the development of voice portals on the internet whereby internet users with multimedia PCs and certain software installed can speak to each other over the internet without having to go offline and use a traditional telephone handset to make the call. Voice over IP (VoIP) services such as Click To Call enable the integration of data and voice services and are particularly useful for Help Desk services associated with online applications. For example if a user was using an application online and encountered a difficulty they could immediately seek help by contacting a person on a Help Desk service without going offline. It is predicted that by

2006 most of the world's telephone traffic will be over IP (Internet Protocol) as voice quality via VoIP improves.

Not only have the changes in the technology of the telephone caused it to be used in many different ways, its use has also been driven by several other factors including the privatisation of networks, which were previously in many countries government owned assets, the relaxation of trade barriers and increased competition. Whilst in general it can be said that these developments have provided consumers in the developed world with telephony at a cheaper cost and have provided greater access to enhanced services, this is not true universally.

Despite the incredible changes that have taken place in telephony and telecommunications over the past 125 years there are still huge inequities in access to telecommunications throughout the world. This "Digital Divide" which is the term used to describe the separation of those who are wired up and those who are not is evidenced by the fact that in the developed world there are 49.5 phone lines per 100 people but just 1.4 phones in low income countries. To emphasise the presence of the "Divide" it should be noted that the US has more computers than the rest of the world combined, in South Asia with 23% of the world's people there are less than 1% of the world's internet users and of the estimated 332 million people online (March 2000) less than 1% live in Africa. In Bangladesh a computer costs the average Bangladeshi more than 8 years income. These are sobering facts to those of us who have telecommunications services at our fingertips at work and in our social lives.

In late 2000 the United Nations announced that a special representative of Kofi Annan, Jose-Maria Figueres, had been appointed to head up the UN Information and Communication Technologies Group. This Group includes one of the founders of the internet and representatives of large software and telecommunications hardware companies (CISCO Nokia HP Alcatel) and is tasked to tackle the Digital Divide and to report on the establishment of a special ICT trust fund. We can only hope that initiatives such as these will see the benefits of technology being delivered to those many countries where the majority of people are yet to make a phone call.

Despite these inequities, on the positive side we are beginning to see a number of initiatives to utilise the technology as a resource to assist in development, for example in Mauritius the University of Mauritius Faculty of Agriculture is using the Internet with audio files in 2 local languages on a website offering advice about growing potatoes and has developed icons representing practices in production, to be added to text based information. These initiatives should not be ignored as they are a positive sign that technology can be used to assist in worldwide development.

Clearly recent developments in telephony such as solar powered phones and mobile satellite phones present opportunities for telephony to be introduced into a number of countries, which in the past have not been able to afford the in-ground infrastructure for telecommunications.

It was Alexander Graham Bell's vision to invent a socially useful device for the disadvantaged which he did, we can only hope that in this new millennium that the social benefits of telecommunications can be spread more widely so that larger numbers of the world's socially disadvantaged can benefit from the technology.

As is to be expected with a device like the telephone which has impacted on all aspects of society the telephone has also had an impact on sport and one can see that as the telephone has become more pervasive in society so too has it become more pervasive in sport.

This is most clearly evidenced when one looks at the use of the telephone at the Olympic Games. In the Official Report of the Winter Olympic Games held in Chamonix in 1924 we find the first mention of the telephone with the statement that the technical equipment consisted of 4 telephones. In the Official Report of the Los Angeles Summer Olympic Games in 1932 mention is made of the telephone being used to transmit results from the Cycling, Equestrian, Shooting and Pentathlon and Yachting events to the press headquarters. Even though these devices were used clearly they were not a "Trusted" device as the Report states *"Sports Technical Staff provided at the end of each day detailed written reports on the results which were sent by a* "Special Messenger" *to the Records Department".*

In Melbourne the Post Master General's Department built a new telephone exchange at the main stadium with 12 lines, 69 extensions and 28 direct lines. Total overseas telecommunications capacity was 250,000 words per day so it was lucky that there were only 800 accredited journalists and that only 589 actually showed up to report on the Games.

Even then the Olympics stretched the technology, which handled over 30,000 enquiries in and around the Games and international calls to and from Melbourne increased by nearly 50% to 2,046 calls.

Contrast this to the Sydney 2000 Olympic Games which was the world's biggest technology project for the year 2000 encompassing the biggest telecommunications network ever built for a single event and the highest density mobile phone network ever built.

The Sydney 2000 Millennium Network was built by the Australian telecommunications company Telstra over 9 years (compared to the one year build for the 1956 Olympics) and provided a 4,800 kilometre optic fibre network which serviced more than 35 competition venues, 3 Olympic Villages, the International Broadcast Centre (IBC), the Main Press Centre and more than 50 non-competition venues. This network provided approximately 30,000 new phone lines, capacity for more than 15,000 mobile phones for Olympic media & officials, 280 video links (more than 11 times more than was used to broadcast the 1998 World Cup), 3,200 audio links, 250 data lines for scorekeeping and 60 private cable TV channels to provide live coverage to the IBC, Olympic venues and villages. The network was serviced by 1,100 Telstra staff, a far cry from the *"twenty-eight specially briefed telephone operators who handled calls coming into the Los Angeles Olympic Headquarters in 1932 on two eighty line switchboards".* (Ditzel, 1984)

Whilst it is clear that telecommunications use has increased with every Olympic Games, Sydney was certainly the first "Mobile" Games. In Sydney Samsung provided 25,000 mobile phones to volunteers, officials and the media and mobile phone usage in Sydney quadrupled that experienced in Atlanta in 1996, with the Atlanta usage doubling that of Nagano in 1998.

More than one million mobile phone calls were made from Homebush Bay on the first Friday and Saturday of the Olympic Games, the two busiest days of the Olympic Games. Widely known as "Super Friday" and "Super Saturday", the total number of calls were equivalent to more than 30,000 hours of telephone conversation.

Immediately prior to the men's 1,500m freestyle final, around 3,000 calls were made from the International Aquatic Centre, dropping significantly during the race, before peaking again to more than

5,000 immediately after it. This use of mobile telephony is quite extraordinary when one considers that the venue seated only 17,000 spectators. Other individual events that increased mobile phone usage at Sydney Olympic Park were the women's and men's 100m Athletics sprint finals and the exciting gold medal-winning performance by the Australian women's water polo team.

Whilst the Olympic Games gives a useful insight into the increasing use of technology over time it is clear that all sports have been impacted on by telecommunications both at the elite and grassroots levels, in administration, in competition and in spectator services. The telephone is indeed a critical tool in any sporting organisation today but increasingly as sport has become more globalised there has also been a need for sporting organisations to make use of the Internet as a means of communication and as a means of disseminating and receiving information. With a telephone line and the internet sporting organisations now have an incredibly powerful tool to access and disseminate information on a world-wide scale.

Internet telephony will enable the development of more interactive training programs and will provide the next step in integrating voice and data for sporting organizations.

In major sporting events internet enabled wireless mobile phones are now being used to give fans real time access to results, news and changes to the play schedules. This technology was used recently at the Australian Open Tennis after successful use at Wimbledon and the French Open. In this situation IBM Think Pads gathered and transmitted the match statistics from 20 courts to the Australian Open website which is WAP enabled. Thus coaches, players and fans were able to access scores with a 15 second delay from mobile phones. Still images from the broadcast courtside cameras are delivered to the web along with audio commentary and SlamCam – 5 robotic cameras around the venue are available to be controlled by fans at home.

With the development of GPRS we will see a host of applications develop for sport based on telephony.

It is interesting to note that recently in Australia a competition was held for those interested in WAP application developments to bring forward their ideas for future applications and 4 out of 5 chosen, as the most innovative applications were sport related. In summary these proposed developments were:

1) INPulse TV, a system whereby a user registers an interest in a particular sport via the Internet then when special deals are available these users are alerted to the specials whilst watching TV. For example they may be watching the tennis and they would receive a message on their mobile phone regarding the availability of tickets to a forthcoming event in their area with the option to order tickets through their handset.

2) Real time information to car racing enthusiasts. This application takes telemetry from the car's engine management system and transmits it via an onboard modem to the handsets of registered fans. This technology was recently trailed at Australian V8 Supercars and can also use GPS to track the cars on the racetrack with users choosing to follow the progress of a particular car on their mobile phone screen.

3) Another interesting application is one being developed for mass sporting events. In this case participants who are spectators at the event register for quizzes via their WAP handsets. Questions are sent to the handsets of those registered from a WAP server and participants respond using their handset. Once the question is answered correctly the result is displayed on the large screen of the event – this technology involves the crowd and can be used for advertising with advertising messages being directed to the handsets of individuals during the event.

4) Another spectator-focussed application is one which allows people visiting a city for a sporting event to register their interests and then receive a tailored itinerary. This itinerary can be accessed through the spectator's WAP handset and provides directions to and from venues and provides information about other value added services such as the location of particular restaurants with the user actually being directed to venues through the interactive handset.

In a trial being conducted by Worldzap in cooperation with Finland's mobile operator Sonera near–live video clips of soccer matches, results, post-match interviews, chat games and advertising are being offered to fans over high speed mobile phones.

These applications are largely directed at fans and clearly this is where revenue can be gained particularly through tailored advertising. As Michael Lee (Lee, 2000) at Worldzap concludes: *"new technologies, which deliver through wireless devices sounds, text and video provide rights owners – sports federations, leagues and clubs significant commercial benefits including the ability to reach fans in a one to one environment"*. They will also most importantly deliver benefits to sports fans who will *"never have to suffer the anguish and frustration of being out of touch with the sports event that matters"*.

It should however be noted that not all developments in telecommunications are directed to fans and that there are also an increasing number of applications in telephony which can assist sports administrators and provide services to athletes, players and coaches at all levels of sport.

At the elite end of sport the ability to carry a mobile phone and access a training program whilst on the field provides opportunities for athletes to access information on training requirements and at the same time presents the ability to transmit results back to databases held by coaches.

At the participant level we are seeing sports like golf utilise mobile telephony and hand-held wireless devices for players to record their scores and transmit these back to the clubhouse for the colation of competition results so that these can be presented at the end of the day.

For sports administrators mobile telephony enables on the sport race entries, the checking of registrations, payment of fees and the recording of results with wireless connections back to club internet sites and backend databases.

Conclusion

In conclusion it should be noted that the telephone which was once only considered as a public utility, is in fact now a highly powerful personal device which has the ability to provide a new range of services specifically tailored to the needs of individuals and as such it, like the internet cannot be ignored by sporting organizations.

It is clear from the applications cited above that new developments in telephony have widespread application in sport and that the telephone in whatever form it takes in the future will be integral to the way that sport does business whether it is at the grass roots or elite level. In addition, it should be noted that the youth of today are entirely comfortable with mobile telephony and the internet and have an expectation that services will be delivered to them by this means. If sport is to capture the youth market and maintain their interest in sport then the "new age" telephony will be critical. For those of us who develop and wish to disseminate sport information we too need to embrace the world of mobile telephony and consider which services are best delivered through this medium.

As a global social phenomenon sport is about connections between players, administrators and fans and as such it cannot survive without the global interconnection provided by the world of telecommunications.

References

Broekhuyse P. (2000) - *Parallel internet taking off.* Australian IT Tuesday Sept 12th, p.24.

Chong F. (2000) - *Alarm grows at digital divide.* The Australian Exec Supplement 5 September 2000, p.14.

Cuthbertson I. (2000) - *Cutting the wire.* The Australian IT 22 August, p. 1, 8.

Ditzel P. (1984) - *Olympics Telecommunications.* California history V63 No.1 Winter, p.95-100

Gartner Group Internet Site: *www.gartner.com*

Glass S. (1997) - *Telecommunications Systems: an introductory guide*, *www.gtlaw.com.au*

Lee M. (2000) - *The Brave new wireless WAP world.* Sport Business no.51 supp Nov., pp 6, 10.

Lyberg W. (1996) - *Fabulous 100 years of the IOC.* Lausanne, IOC.

McKenzie A. (2000) - *Computer Games.* Travelling Life Ansett Aug/Sept, p.25-28.

Melbourne, The Organising Committee - (1956) *Official Report of the Organising Committee of the XIV Olympiad Melbourne.* p.164-178.

Outing S. (2000) - *On-fairway phones to be PC in both senses.* Canberra Times 17 July, p.17.

Spencer M. (2001) - *Lobbying the scores over the WAP net.* The Australian 16 January, p.39.

The Australian (2000) - *UN Tackles Digital Divide.* Tues Nov 21.

Sport and the Internet. The Impact and the Future

Mike Laflin
Chief Executive and Founder of
Sportcal Global Communications, Great Britain

1. Introduction

My first IASI conference was in 1993 in Rome just as the Internet was starting to take off and the first Internet browsers were beginning to reach the markets. Mosaic was the new phenomenon and Netscape had already become a Wall Street success. Sports information at the time was very much in its infancy and IASI, amongst others, were trying to raise awareness on all the key issues.

My own company Sportcal had just launched its first computerised international sports calendar and the IASI members were among the first to see how a centralised sports calendar could be of considerable benefit.

Four years later at the IASI conference in Paris in 1997 the Internet was beginning to establish itself in America and the rest of the world were beginning to wake up to its opportunities. Internet speed was one of the major hurdles and very few people had fast access to the Internet. Sports web sites were beginning to drive the growth of the Internet and many US sites had started to provide live news on sports events. Interest in sports information was growing and people were beginning to develop their own sports sites.

Sportcal like many other companies had just launched it's first, and with hindsight very average, web site but continued to provide the majority of its services on diskettes and CD's. Few people had access to the Internet and therefore the Internet was really no more than a good advertisement.

The transformation in the use of the Internet in the last four years has been quite incredible and now in 2001 the Internet is very much part of our daily lives. We are all without exception affected in some way by the Internet, whether it be through the simple use of e-mail, through the occasional use of a web browser, or like myself running a company where business has expanded significantly with the growth of the Internet.

Sports content is now king and drives huge audiences around the Internet all seeking the latest information on their favourite sport, team or player. Vast sums of money have been invested in the last few years in building huge sports internet portals with the belief that convergence between internet and television, will generate huge financial windfalls in four to five years time.

But reality has hit hard in the last few months and many sports Internet companies have gone into liquidation for one important reason; the Internet is simply not generating enough revenue to meet these inflated expectations. Some have been lucky and a few have made significant gains but most dotcom millionaires have seen their fortunes fall just as quickly as they grew with many now facing the prospect that their dreams just simply will not come true.

So where does that leave the Internet today and what is the future for sport on the Internet? Gone are the days of inflated values for dotcom's. Traditional profit and long term business plans will be the key to success for those organisations whose livelihood depends on the Internet.

The Internet today is used by a wide variety of organisations. There are the more traditional organisations that have developed their Internet presence to complement their existing businesses and there are the new media companies who have developed their whole business based on the Internet.

In my presentation today I would like to look at a number of companies who have developed sports information services through the Internet. I will briefly examine the philosophy behind their Internet strategy, the history of their development, their potential revenue streams and finally what the Internet offers them for the future.

The companies I have chosen for this presentation are:

- Two New Media Companies:
  - Sportal.com
  - Worldsport.com

- Two Traditional companies:
  - The International Sailing Federation
  - Reuters

And finally I would like to take a brief look at my own company and how our approach differs from the rest.

2. Sportal

Sportal, not to be confused with my own company Sportcal, is a new media company which was formed in 1998 and has grown very rapidly in the last two years to now have a major international presence in 10 countries world-wide. Their investors include *Europe@web*, Fininvest, BskyB and many other media groups who all bought into the concept that the Internet was the place to invest back in late 1999's. Sportal have raised over USD 50 million in various placements and rose to fame last year when they became the sponsors of the Official Web Site for the Euro 2000 Football Championships for which they paid in excess of USD 7 million.

Sportal's initial strategy was based on the acquisition of the Internet rights to some of the leading European Football clubs. Their portfolio includes some of the major clubs in Europe, including Juventus, Milan, Bayern Munich and Paris St. Germain. The initial figure of 50 clubs was cut back in July of last year when it was clear that revenues from these sources was well below predicted figures. The target was scaled back substantially and the philosophy of the company switched to aggregation of content and the development of one of the largest sports portals in the world.

Like many companies of its kind it has one main aim, to reach a critical mass of regular viewers and move to a flotation or sale as quickly as possible. The investment in Euro 2000 was carefully planned for a listing in September of last year when many of the investors would have re-couped their investment handsomely. Sportal, unlike many traditional companies, has no short-term plans to make a profit. It believes in the philosophy that building a strong sports Internet brand will reap huge rewards in four to five years time. The plan seemed to be on track last year, prior to Euro 2000. Sportal were in serious discussions with Canal Plus for a possible sale to the French Broadcaster for a reported USD 400 million. The talks failed over disagreements concerning price and strategy.

Euro 2000 was a resounding success for Sportal and by the end of Euro 2000 Sportal's PR department were in full swing. Rob Hersov, their chief executive, became the man of the moment and companies clamoured to be partnered by Sportal. The future looked very bright for a company less than two years

old. But then, as we all know, in August of last year the bubble burst and dotcom's went from being the flavour of the month to the flop of the year. The Internet gold rush that had sucked in investors from every walk of life dramatically collapsed almost overnight. The Nasdaq that had previously been breaking records every day suddenly dramatically went into depression and has never recovered since.

By the end of August Sportal were forced to announce significant shifts in strategy. No longer were they looking to spend millions in order to attract a critical mass audience. Content syndication suddenly became the theme. In September of last year they signed a major content deal with *Yahoo!*, another new media company with its own financial troubles. Using their presence in over 8 major European countries enabled Sportal to provide *Yahoo!* with sports content in 8 different languages which ideally suited Yahoo's own European requirements. Further deals were struck with major media companies including content delivered to mobile phones. But by November rumours were rife that Sportal were in trouble. With revenues of less than USD 1.5 million per quarter they were suffering from the new Internet disease, cash-burn. Their valuation dropped from the heady heights of USD 400 million to less than USD 50 million and money was fast running out.

Since then Sportal have continued to promote and market themselves successfully albeit on a smaller scale. In December they announced a new round of funding from their existing investors to see them through their continued growth in 2001. The funding was stated to be coming from existing and new private investors, although figures and amounts were for the first time not disclosed. Significantly at the time they also announced a company name change and switched from Sportal.com to Sportal International Limited. As with many new media groups the distancing process had started from the dotcom disasters.

The main problem for Sportal was that their original philosophy was wrong and they swiftly had to move from being a company that *"creates, manages, promotes and commercially develops websites"* to *"a leading global provider of interactive sports content"*. The main reason for this was very simple. Revenue from public web sites was just too small. Banner advertising rates were declining and many organisations were being forced to move away from online advertising. Merchandising provided minimal income and margins were very slim. Sportal had developed a huge research team and had gathered a wealth of data, which was well structured and could easily be provided to other web sites. Content syndication suddenly became king.

In March of this year Sportal were one of 15 companies granted a license by the IOC for Online Media Accreditation at the 2002 Winter Olympic Games. This was a tremendous boost for Sportal who, after Euro 2000, were desperately looking for the next major event where they could promote their global brand.

So what of the future for Sportal ? Well it is a simple case of survival. Last indications were that they had a war chest of around USD 20 million with a cash-burn of around USD 3 million a quarter. If the technology market picks up by the end of the year or they find a media buyer for their global brand they will survive and re-coup some of the investment made in them. If neither of these things happens they will either have to cut back significantly or risk the same fate as many other new media companies, like Worldsport.com.

3. Worldsport.com

For those of you who have not heard of Worldsport.com, they rose to fame last year by becoming the most aggressive and prominent new media players in the sports industry by securing the digital rights of the General Association of International Sports Federations (GAISF). They paid an undisclosed sum of

money to GAISF to acquire these rights and then proceeded to try to acquire the digital rights for all the international federations who were members of GAISF.

They had one main priority, to secure the rights to over 50 international federations by September 2000 and then float or sell the company. They offered each federation a minimum of USD 300,000 over a five-year period, providing they sold their digital rights to Worldsport and placed their web site within the Worldsport network. The company was in a major hurry and cash was the only sure way of securing these rights.

The company grew from 20 people in 1999 to over 300 in 2000 with plans to grow to 1,000 people by the end of 2001. Their plans were incredibly ambitious and were based on a similar belief to Sportal. The aggregation of content and information in one place would bring a major audience and financial success.

Worldsport identified 22 sources of income from this strategy. These included on-line advertising revenue, merchandising, content syndication and many others. One of their more ambitious plans was to charge people to view live webcasts over the Internet from events like the World Tug of War Championships. Over 56 federations signed up to be partners of Worldsport in less than one year. They sold their digital rights for five years and agreed to stop their own web site projects, placing their entire media content within the Worldsport network, on - and this is a very important point - an exclusive basis.

Such was the attraction of the Internet at this time that major media names decided to leave their comfortable positions in traditional organisations and join Worldsport. People like Mike Miller who at the time was head of BBC Television left to work for Worldsport. Over 200 people joined Worldsport in March of last year and lasted less than six months. By August 2000 the company was in receivership and nearly all the employees were made redundant.

The web site had been a complete flop. The data was badly presented, inaccurate and often out of date. There was no team spirit and the money motivation vanished overnight when the tech markets collapsed. Worldsport had spent over USD 30 million in the space of 2 years and had not earned a single penny during that time.

The International Federations were smiling however. They had received at least USD 50,000 each from Worldsport, recovered their Internet rights and had lost very little apart from their web presence. GAISF however had suffered a major embarrassment and although supported by the smaller federations had lost a great deal of support from the larger federations who had most to lose by signing with Worldsport.

In March of this year GAISF announced a new Digital Media partner backed by the original investors in Worldsport but the economy has changed a great deal in the last six months and the federations will certainly take a lot of convincing before they commit themselves to another Worldsport.com

4. The International Sailing Federation

The International Sailing Federation (ISAF) was one of the federations who fortunately did not sign with Worldsport. To them control of their digital rights and their web site was of paramount importance. To them the Internet offers a complete revolution in the way their sport is viewed and followed.

In the past organisations like the International Sailing Federation had to rely on traditional media coverage either through the press or television for people to find out what was happening in Sailing. They were too small to promote themselves to a global audience and their sport attracted little attention outside the Olympic Games. ISAF, like many international federations, had to rely on income from the Olympic Games and member federations to make a living. Without major sponsorship and television deals it was difficult to offer a comprehensive and effective service.

The Internet has changed all that. ISAF through their web site can now provide a fast and accurate service to the world of Sailing and provide essential services that previously were impossible for a small federation. Sailing is a sport that is hard to present on an international stage. Venues are often very spread out and spectators find it hard to follow. The Internet has transformed events like the Volvo Ocean Race. Satellite tracking systems enable web sites to be updated as the race develops, on-board computers allow conditions to be compared between boats and web cams provide live pictures of the skippers as they battle against the elements. Sailing has suddenly come alive on the web. But it is not just live event coverage that has changed for ISAF. Information provision has dramatically changed. I have worked as a consultant to ISAF since 1989 and have seen them move from the days of early wordprocessors and telexes through to today where all their information is updated on a daily basis through their website.

Their website provides information about the ISAF organisation, their members, minutes from their meetings, calendar of events, up-to-minute results, skipper biographies and detailed ranking lists. Their website is now very much the home of Sailing and anyone involved in the world of Sailing now uses their site to keep constantly up-to-date with all the latest news. The website is a natural extension of their work. It allows them to have a global presence without relying on traditional media. Currently it is a cost to them. It requires development and promotion. It is based on a philosophy of building a community for Sailors where all their needs and requirements are met by one web site. It has two financial purposes. The first is to help save on printing and distribution costs. The second is in due course to generate revenue from registration fees, advertising, merchandising and other sources. This will not currently make them rich but as the Internet matures and broadband technology arrives so their ability to provide web casting from events will provide them with potentially lucrative opportunities to broadcast events to a global audience.

As you can see from the screen displayed they currently provide a wide variety of information through their website. The site is updated everyday with the latest news and information from the world of Sailing.

One aspect that has significantly helped the federation is the distribution of their rankings through their website. These rankings are calculated on a regular basis and are dynamically updated through the website. By selecting the competitor in the ranking it is possible to see how the competitors points were calculated and where they scored the most points. For a competitor this is vital information as the ranking determines who is eligible to compete in the Olympic qualifying events. Before this information was posted to the web site the only way a competitor could find out if his ranking was correct was by telephoning the ISAF office. This placed a considerable strain on ISAF's resources. Now all a competitor needs to do is visit the website and click on his or hers ranking. If there is a mistake all they need to do is e-mail the office and the data can be updated immediately. It encourages race officials to ensure their results are posted immediately and ensures that everyone involved visits ISAF's site in the competitive world of Sailing.

The Internet offers many new and exciting challenges for ISAF which are limited by two factors, money and technical knowledge. They have taken the decision to invest a reasonable amount of money in improving their existing site and with the help of Sportcal are gradually moving all their results and

rankings systems online. By moving their internal databases online they are creating the potential of developing a large Intranet service for Sailing. This will allow race officials to place event entries online and from that produce full results from anywhere in the world. This system would then allow for the automatic updating of rankings and the site to be truly real time. The potential for developing online scoring systems is enormous and could revolutionise the way fans and competitors view an event. With the growth of hand-held devices and web-enabled mobile phones, people could potentially follow the developments of a race in real time from anywhere in the world.

The Internet provides choice. It allows the viewer to choose what he or she wants to watch, providing the web site delivers the correct information. Here lies the problem for many organisations. There are many people who talk the talk and walk the walk, but very few of them who really understand and appreciate the complexities of producing rich, media sports information systems that will cover for all eventualities.

Designing sports information systems is extremely complex and complicated. For the last four months I have been studying the state of sports information systems amongst the International Federations and almost without exception they are extremely poor. They show a real lack of investment and understanding of the value of this information. Few if any of them have historical databases and those that do are fundamentally flawed by the way they have designed their systems.

For these organisations to really produce interesting and informative information systems through their websites they need to sit down and seriously consider the way in which their data is stored. Having worked in this area for over twelve years now and having made most of the mistakes I know it is not easy. Coding and standards are the key and sadly there are no real guidelines established for the federations to follow. Many have looked to the IOC for guidance on this matter and I strongly believe the IOC has an important role to play in this area.

The IOC has worked closely with organisations like Reuters to establish ORIS for the Olympic Games, but the real problem lies with what the International Federations use of information on a daily basis, not with a system that is used every four years.

Investment in the federations, helping them to establish their own media information systems is vital. It would enable them to greatly enhance their own websites and would provide a valuable service for use at future Olympic Games, saving millions of pounds spent re-inventing the wheel every four years.

The Internet offers some exciting new opportunities for the International Federations, especially the International Sailing Federation, but if not carefully designed and implemented well the results will be expensive and disappointing.

5. Reuters

Reuters are an example of a traditional media company that has both benefited and suffered from the development of the Internet.

Back in 1998 Reuters approached Sportcal and asked us to help assist them in the development of a sports website. The website was called Sportsweb and its aim was to use Reuters unique sports content to create an international sports website that would lead the field in international sport. Sportcal assisted Reuters in planning and implementing this project and within eight months the site had developed into a content rich website which registered over 6 million page impressions during the Football World Cup in 1998.

The site however made very little money and Reuters realised very quickly that revenues from public websites were very hard to generate. In eight months the site had produced less than USD 20,000 and costs were in excess of USD 500,000. Reuters very soon realised that creating and developing their own web sites was not really their expertise and by the end of 1998 were in discussions to sell Sportsweb to a third party. Much to my surprise Reuters sold Sportsweb to CBS Sportsline in January 1999 for an undisclosed sum. That website is now known as Sports.com and has become the number one sports web site in Europe. It is partly owned by Reuters who feed sports news to the site every day. Sports.com is funded by CBS Sportsline who raised USD 250 million in 1999 to develop the strongest global sports Internet brand in the world.

In September of last year Sports.com set it's own Olympic record by registering 6.5 million page impressions in one day, higher than the IOC's official site, and recently in January of this year it became the most popular European Sports sites with 108 million page impressions in one month.

Sports.com has one philosophy, traffic. Page impressions means advertising revenue. It reported income of around USD 10 million for the last financial year but still made a considerable loss. Sports.com is also one of the 15 websites awarded official status for the next Winter Olympics, which means that Reuters will be wearing two hats during the Games, one as the official agency for the Olympics and the other as the partners of Sports.com.

Reuters have developed two strategies for the Internet. One is investment and ownership of Internet websites and the other as suppliers of sports content to websites.

Sport has become big business for Reuters and the Internet has solely driven this. Their sports feeds cost the average web site USD 5,000 per month. This is big business when you work out how many sports websites there are requiring content. They have created a new department of over 80 people solely for the task of developing their sports content market and they are widely recognised as the leading source of sports information on the Internet.

But not all is rosy in the Reuters garden and the crash of the tech stocks has greatly damaged their greenhouse fund. High flyers a year ago are now worth only 10% of their previous valuations. Reuters focused almost entirely on tech stocks and currently has seen millions wiped off its investment portfolio.

The sports content market also has taken a huge hit, with many sports websites disappearing overnight. But Reuters remain the dominant player in this market and many of their major accounts are with the large portals that need and survive largely on the feed they receive from Reuters.

Reuters has realised the value of sports information and are looking to consolidate their position in this sector either through investment or acquisition. Only last year they acquired a database that holds every single result from the Olympic Games since 1898. This has been painstakingly compiled by an Olympic statistician and was sold to Reuters for a modest sum, well below its true commercial value. Quite what Reuters intend to do with it I am not sure, but if you are looking to build a large sports information library, an Olympic database is a valuable addition.

Reuters Internet strategy is clearly based on the collation of the best sports archive and news and re-selling it to third parties either for cash or for stock.

6. Sportcal Global Communications Limited

So, how does my own company Sportcal differ from the other organisations discussed today ? Well, in one very significant difference, we believe people will pay for good quality, premium information, and whether that information is delivered by CD, diskette or the Internet really makes no difference. Subscription is the key to our success and has been so for over ten years.

Last month Sportcal celebrated its tenth year of supplying sports information to the sports industry. The service, as many of the IASI's members know very well, started life as a simple database provided on diskette. When the Australian National Sports Information centre subscribed in 1991 they paid the handsome figure of £ 99 for a calendar updated via diskette every month. Since then the service has continued to develop and expand and now is the most comprehensive sports events database in the world. Covering over 30,000 events a year, it includes both event details and commercial information from 140 sports in over 200 countries.

The Internet has dramatically changed Sportcal's product from being a monthly "magazine" to a daily "newspaper". Sportcal updates over 2,000 events each week and is used by organisations in over 200 countries every day. The service is now well supported by the International Federations who see the value of promoting their events to broadcasters and sponsors throughout the world. Unlike the public sites of Sportal and Sports.com, the service is only available to subscribers and therefore does not compete with the federations own websites; in fact it actually compliments their sites and encourages people to visit them.

Sportcal's philosophy is built on quality of traffic and not on quantity. Sportcal is used by the major organisations involved in broadcasting and sponsoring sport. It attracts media buyers, broadcast producers, sponsorship agencies and many others all looking to find out when events are taking place and who owns the rights to them.

Sportcal's product range has increased dramatically in the last two years when Sportcal decided to abandon its software service. Sportcal.com, Sportcal's website, offers a wide variety of products for the sports industry, including the most comprehensive sports business news service currently available.

All Sportcal's content is uniquely researched and produced in-house. Unlike other sites there is no Reuters feed or other wire services. News is provided from all sources and covers everything from rights, sponsorship, and legal issues through to federations news.

The big difference to other websites though is that it is a premium service and therefore only available through subscription. One leading analyst from Merrill Lynch recently said *"Only a few websites will be able to charge for content (…) We do expect some sites to begin charging for premium services"*.

Sportcal is a niche website, servicing a global industry of which we are all members. The industry of sport needs a centralised calendar and Sportcal has set out to produce the most comprehensive international calendar available. Everybody involved in sport needs a good calendar, as without a calendar there is no sport. It is the start of everything to do with sport.

But Sportcal as a company is far more than just a business-to-business website. It is a company that helps people develop their own calendar systems through an online software product. Many International Federations already use this product to produce their own calendars. Sport England recently adopted it for their own internal use and many other organisations use it to develop their electronic calendars. The beauty of the service is that as the information is updated internally it can

immediately be updated externally on a website. This is part of a suite of software applications that allow sports organisations to create their own sports results and media information systems. The International Sailing Federation is currently using the full suite of calendar, results and ranking applications through their own web site. These applications allow federations to create a more interesting and interactive website that encourages people to visit their website more often.

Sportcal is a unique company in that it is a both a service provider of information and of technology. It has ten years experience in working with every type of company in the sports industry and has developed a tremendous understanding of the needs of sports organisations. It has developed media information systems that have been used by some of the leading International Federations including the IAAF, ITF and of course ISAF.

As the sports industry continues to grow Sportcal's service will continue to expand and cover a wider range of products and services. The number of organisations involved in the sports industry is conservatively estimated at over 100,000 world-wide, offering Sportcal great potential for future expansion.

7. The future of sport on the Internet

So what of the future for sport on the Internet ?

Sport will continue to drive and encourage people to use the Internet.

But what will be the major developments that will affect people's usage of sport on the Internet ?

One of the most widely discussed and potentially exciting developments could be the universal adoption of broadband technology allowing effective video streaming of events over the Internet.

At the recent IOC conference held last year to discuss the Internet there were two definite camps. Those that believed broadband is nearly here and will revolutionise the way we deliver sports content. The other, more traditional camp, felt that broadband was a long way off and may never truly replace the traditional medium of television.

The problem, as the IOC quite rightly pointed out, is how do you control who watches what over the Internet ? That is in one statement what is great about the Internet and bad at the same time. The controls that can be exercised by traditional television allow the selling of television rights to be controlled on a territorial basis. Each television company that acquires the rights to broadcast the Olympics may only broadcast the event in their own region, for which they pay a fee.

This is not so easy on the Internet. The beauty of the Internet is that if you are Spanish but live in America you can log on to your favourite Spanish newspaper's website and read the daily news, even though you are thousands of miles away. The Internet offers real choice. This presents a huge dilemma for the Olympic Games. On the positive side, with broadband available to everyone, video streaming would allow every second of every event to be broadcast over the Internet, allowing people who live in Russia, to view the whole weightlifting competition even if their national television station had decided not to cover the weightlifting.

This would mean people would have real choice and could watch what they wanted to when they wanted to and not what the television stations decided they wanted to show them. For the vast number of sports at the Olympics this would be a tremendous development. The service could be delivered on a subscription or pay-per-view basis and would be available to anyone with an Internet connection.

But television companies like NBC, who have paid over USD 3.5 billion for the Olympic Games until 2008, do not want people to be able to view the Olympics in America on anything other than their TV channels. The money they pay the IOC for the Olympics is for exclusive coverage, and is based on the revenue they can receive from advertising and sponsorship during the Games. If people switched off their TV sets and watched the Olympics through the Internet this advertising revenue would disappear and the money that NBC could pay the IOC would dramatically reduce.

Whilst the economic model for video streaming has still not really developed yet and broadband is still along way off for most people, video streaming will remain a potential rather than a reality.

Other factors that are likely to affect the development of sport on the Internet are the growth rates for computers at home and at work and the emergence of new hand-held devices and mobile phones with Internet capability. WAP and 3G mobile phones were set to revolutionise the way we access the web but so far the take-up has been slow and the performance unimpressive.

Other revenue streams will also continue to be a major issue. Online advertising rates have been in decline for some time now. Whilst these rates continue to decline many public websites will struggle to make a living and will resort to merchandising and content syndication to try and stay alive. Others will adopt the Sportcal approach and charge for premium services that offer information to niche groups of individuals.

Ownership of Internet rights will also become a big issue, possibly bigger than broadcasting rights. Many broadcasters may demand Internet rights as well as broadcasting rights when negotiating with rights owners. The European Broadcasting Union already insists on Internet rights being bundled with broadcasting rights when negotiating with international federations. Like NBC with its Olympic coverage, the EBU is concerned that leaving Internet rights unaccounted-for could mean that the exclusivity of its broadcasters is undermined by Internet companies video-streaming the same events, perhaps even more fully than the broadcasters are able to do.

So who owns the information that Sportal, Sports.com and Reuters supply through the Internet ? Do Reuters have the right to sell Olympic results without paying the IOC a license ? There's an interesting question.

Can websites cover major international events without being an official media partner and how do you prevent them doing so ?

Many questions will be raised as to who can use sports information. What is public domain information and what is privately owned ?

The other burning question is if new media has to start paying for this information then does that mean traditional media will also have to pay to access this information? Traditionally media organisations have been given free access to events so that the event organisers can get world-wide exposure for their events. Now with the Internet they can do this themselves, without the need for reliance on traditional media.

Ownership of information is a total mind field from which only one real winner will emerge, the lawyers !

One key factor though, especially for the International Federations, will be how they implement their sports information strategies on the Internet. Guidance from the IOC, IASI and its members would be more than welcome by the federations and I would strongly advocate its discussion during the course of this congress.

Innovations in Sport Technology: Implications for the Future

Larry Katz
Director, Sport Technology Research Centre
Faculty of Kinesiology, University of Calgary, Canada

Abstract

Coaches and athletes are always striving to reach peak performance. Modern electronic technology, particularly the Internet and high speed, multi-way digital communication, makes it possible for coaches and athletes to efficiently and effectively gather, analyze and integrate information and resources in order to improve training, decision making, and collaboration. These resources can be accessed in real time and changes implemented immediately, if necessary. New developments in the research laboratory permit athletes to experience simulations through the use of virtual reality and video game analysis, which may also significantly improve their performances. This paper will look at these innovations, and discuss the implication of these new forces of change from various perspectives including coaches, athletes, spectators, fans, parents, officials, media, industry, and the individuals who must organize and maintain the resources. Discussion will include the issues related to the background and training which will be required to employ these new tools.

1. Introduction

This paper will discuss the role of innovations in sport and technology and the implications of these innovations for the future. According to the Webster's New World Dictionary sport is defined as:

1) *"Any activity or experience that gives enjoyment or recreation; pastime or diversion"*; or

2) *"Such an activity, especially when competitive, which requires more or less vigorous bodily exertion and carried on, sometimes as a profession, according to some traditional form or set of rules, whether outdoors (…) or indoors (…)".*

Webster's, definitions for technology include *"applied science"* or *"the system by which a society provides its members with those things needed or desired"*.

Given the broad context for the term technology, even as it applies to sport, the scope of the potential discussion is quite extensive. Therefore, this paper will focus on the use of technology in sport from the perspective of frequently asked questions (email requests for information received by the author); new innovations; and, the implications for these innovations for the future with reference to various target audiences (i.e., coaches, athletes, spectators, fans, parents, officials, media, industry, and support personnel).

The most frequently asked questions with regard to sport and technology include:

- Has science and technology improved sport ?
- How does the Internet impact sport ?
- How is technology used to aid decision making in sport ?

- Will technology replace human judgements in sport: will we no longer need human referees and judges ?
- What factors are influencing the development and use of technology in sport ?
- What new research is being undertaken in sport technology ?

2. Has science and technology improved sport and physical education ?

Martens (1997) has suggested that kinesiologists and physical educators have been profoundly effected by technology which he states is: (…) *"radically altering how we practice our professions and live our personal lives. This amazing world of technology is dramatically improving productivity and quality in the manufacturing of products and the delivery of goods and services. It reduces drudgery and, contrary to early concerns, often inspires greater creativity because of the elimination of tedious tasks."* (p. 251)

The question that Martens asks his colleagues to address is *"How do we avoid technology taking us for a wild ride in which we have no control or little influence, but instead determine how we may optimally put technology to use (...)."* (p. 252)

In his book *When Things Bite Back*, Tenner (1997) describes how the introduction of safety features such as boxing gloves for boxers and protective headwear for football players has led to a greater incidence of injury. For example, the adoption of boxing gloves to make bare knuckled boxing safer made it possible for fighters to throw punches to the head without breaking their hands, with the result that there were more incidents of brain injury and death after the introduction of boxing gloves than before.

Malone (2001) likewise outlines the unexpected and unpredicted consequences of computer and Internet use on individuals and society at large. For instance, some researchers thought that the microprocessor would be an answer to the world's energy problems, since they used less energy than mainframe computers. Of course, at the time no one expected that there would be billions of processors and controllers in the world so that the microchip would become one of the biggest users of energy. Sophisticated and advanced technology may have benefits for society, but the unintended side effects can be quite devastating.

In reference to improving sport, the question can be viewed from at least two perspectives: competitors (i.e., the athletes) and non-competitors (i.e., everyone else).

Competitors

Certainly, as Katz and Green (1989) noted, by using techniques incorporating technology, it is possible to stretch the imagination and the abilities of the athlete. The natural ability of an athlete is being enhanced beyond what was once thought possible - the limits only end with the imagination.

Just prior to the Olympic Games in Sydney in the summer of 2000, Sullivan (2000) asked the rhetorical question, *"Will technology take the gold?"*. In his article, Sullivan discusses the fact that: *"The Olympics create a world where a fraction of a second can be the difference between obscurity and world fame. The margins are so thin, it's not enough to train hard and give 100 percent on competition day. You've got to wear a uniform with the least water resistance, or run in shoes outfitted with the latest gadgetry, and you must train against both fellow athletes and machines."* (p. 1)

In speed skating, it is impossible to win, or even place, without using the newest "clap skate" technology (May, 2000; Greenwald & Thibault, 2000). Clearly, from the perspective of the elite athlete, if the goal is to strive for the ultimate performance, break records, and increase performance efficiency, then technology is improving sport. If, however, "enjoyment" is a factor in defining improvement, the answer may not be so simple. Athletes are pushing the limits from the physical perspective, so much so that there has been a major increase in the frequency and severity of injuries (Greenwald & Thibault 2000). Moreover, athletes in less advanced environments are less able to compete, so that many sports become exclusionary. The constant necessity to develop equipment, facilities, and training techniques, which can mitigate against injury while at the same time improve performance, increases the costs of preparing an athlete and hence, further excludes those without access to substantial resources. Root, Domonkos, Granek, and Hustler (1998) and Froes (1997) provide interesting discussions of these points. According to an article in the Sporting Goods Manfacturing Association (2001) in households with incomes of less than USD 40,000 only 49% of children are engaged in sports; in households of USD 40,000-80,000, 63% are, and in households with more than USD 80,000, 73% participate.

The November 2000 issue of *Scientific American Magazine* is dedicated to "Building the Elite Athlete" with many stories highlighting the impact of technology on sport and performance. For example, May (2000) suggests that the advancements in equipment design may improve performance so much that it could even destroy the challenge in some sports. Technology has changed the focus of sport to the extent that Stix and Fischetti (2000) now define athletic performance as *"a set of physical parameters (force vectors and acceleration), biological processes (pulse rate and maximum oxygen uptake), and mental states (psyched up or psyched out)"*. The physical and biological processes lend themselves to technological intervention, but now even the psychological training is becoming heavily influenced by technology (e.g., biofeedback, visualization and virtual reality training).

Non-Competitors

The discussion of non-competitors includes the diverse groups mentioned above (e.g., spectators, media personnel). From the viewpoint of the spectator or fan, the ability to see sports from many perspectives has great potential. Mester, Seifriz, Spitzenpfeil, and Spahr (2000) at the German Sport University in Cologne have worked with IBM and German Television ZDF to develop modern high-end visualization programs for the reproduction and display of complex models for alpine downhill skiing and tennis. The results of computer simulation and graphic reproduction are combined with video footage to offer the TV-viewer a familiar form of motion display while still providing scientific parameters and models of performance that help explain winning and losing.

The cost of producing these programs is passed on to the advertisers, and so the spectators have to deal with the increased number of commercial breaks in the sports coverage. Even spectators who frequent sporting events are required to wait while television commercials interrupt the ongoing action. This is especially true in North America where events as diverse as hockey, basketball, and figure skating, require extended breaks in action to facilitate commercial requirements.

Omega Networks has launched *www.ticket2sports.com* a broadband, online sports resource providing fans with a virtual ticket to video-on-demand for amateur sports. To quote the website *www.Ticket2Sports.com*: *"Your Arena for video-on-demand of elite amateur sports competitions, clinics, instructionals, and interviews. Sports you want - the way you want - when you want ?"*.

The English language not withstanding, it is still necessary to have quite sophisticated equipment in order to access the site.

Another interesting opportunity for sports fans to indulge in vicarious participation is the concept of the virtual spectator. With satellite, cell phone, and geographical positioning systems (GPS) technology, sports spectators can now log in and track races (boats, motor cars, cross country bike racing) using real time telemetry information. Technically, it is possible to look at a race from multiple positions and even participate through the addition of a computer-simulated boat/car/bike (Richardson, 2000).

Coaches are in a similar situation. It is now possible for a coach to access the latest training information, tools, and resources for their athletes. However, the coach must also have the technological background in order to make use of these technologically based assets, or at least a plethora of experts to collect, collate, and disseminate/provide access to these opportunities in a timely fashion. Since, both the equipment and expertise come at a substantial price, the specter of exclusion once again is omnipresent.

The currently available evidence would suggest that the use of technology makes it possible for coaches to provide their athletes with the best possible opportunities to achieve their maximal performances. However, the role of technology in coaching is still an emotionally charged issue. Liebermann, Katz and Morey Sorrentino (2000) looked at senior coaches' attitudes toward technology. Despite the fact that the coaches surveyed were generally highly experienced, those with higher education backgrounds viewed technology more favorably, but those for whom coaching was their primary livelihood, did not view technology as a significant contributor to their success.

3. How does the Internet impact sports ?

First of all, the Internet provides everyone with the opportunity for the proverbial 15 minutes of fame. No matter how obscure the notion, it is possible to publish an idea for worldwide consumption. The Internet allows individuals to communicate with others of like mind from around the world, where previously such individuals would be isolated because of the uniqueness/obscurity of their ideas. The technology and business of the Internet is so dynamic that a non-existent company 10 years ago, American Online (AOL) can buy Time Warner, one of the largest publisher/media companies in the world. At the same time, children as young as three years of age are accessing the Internet to look up the personnel details of their favorite athletes and sport teams. Intille (1996) provides a good overview of the use of the Internet in sports including implications and visions for the future.

During the Summer Olympic games in Sydney Australia in the fall of 2000, there were hundreds of Internet sites bringing sports fans, family members, reporters, and other interested individuals up to the minute details, including pictures, audio recordings and video clips of the action. Literally hundreds of millions of hits were recorded on these Internet sites over the course of the competitions. There are thousands of sport related sites on the Internet ranging from information sites (*www.sportquest.com*) and sport gambling (*www.SportsBetting.com*), to interactive sport games (*www.alphasim.com*). The Internet and the World Wide Web provide excellent opportunities to discover information that is timely and easy to access. There are two major problems. One problem is maintenance of the Websites (there are many links that are no longer valid, or are out of date). The second problem is determining the accuracy and reliability of the information provided, as there are currently no mechanisms for ensuring quality control of the content. Nevertheless, sites like Sports Technology Hotlist located at *www.white.media.mit.edu/~intille/sports-technology.html,* The Sports Information Resource Centre (SIRC) a virtual resource centre for sport information - *www.SPORTQuest.com,* and Scholarly sports sites for researchers, located at *www.ucalgary.ca/library/ssportsite* will provide interested surfers with copious amounts of information to sort through.

According to Sportsbusiness.net in its January 10, 2001 newsline, *www.SportsLine.com*, a Columbia Broadcasting Systems (CBS) website had page views in the fourth quarter of 2000, of approximately 2.8 billion, an average of 30.2 million daily page views. Sportsbusiness.net sends out a daily newsline to all its customers covering the business of sport and holds annual conferences on sports media, and sports business, including a recently held conference in December 2000 in conjunction with the International Olympic Committee (*www.sportbusiness.com*).

4. How is technology used to aid decision making in sport ?

With online communication, coaches and athletes can keep in constant contact. Data can be recorded on performance, instructions can be transmitted, and detailed performance modifications can be made. Video conferencing and audio conferencing provide the coaches and athletes with close contact even at extreme distances. With the latest technology, athletes' performance monitoring can include heart rate and blood pressure. It is even possible to analyze waste materials collected directly from source, and send the results automatically to the coach/team doctor for changes in diet and nutrition. With recent sport video analysis systems, coaches can collect and code action data during the event and then show the athlete(s) where problems have arisen for instant corrections. Such programs already exist for most team sports. During intermissions, between heats, and during time outs, teams can watch selected events from the recent action, which can be instantly accessed, and changes can be made that can have a major impact on the outcome of a game.

In North America, instant replay judging is now a common practice in hockey and football. The head referee on the field can be over-ruled, by the instant replay judges who sit and watch the replay of the action to determine the accuracy of the on-field decision.

5. Will technology replace human judgements in sport ?

Will we need human referees and judges ?

There are already technologies that assist umpires in sports like tennis with line calls (Miah, 2000), but it is not clear whether technology will evolve to eliminate referees altogether. As regards officiating in subjective sports such as gymnastics, figure skating, and diving, researchers are looking into new ways of training human judges to be more objective and consistent in their ratings. The idea is that computerized judging is not technically possible at the moment, nor is it necessarily desirable. What is probably more valuable, is the development of techniques which give judges opportunities to practice with the identification of relevant cues, to consider their physical view position and the ramifications of their location, and the ability to react and record their thoughts accurately and efficiently. This includes the development of simulations, which allow the judge to make and review their decisions, re-evaluate their decisions from different vantage points, and then evaluate their responses relative to other professionals. This could be accomplished through animation, three-dimensional modeling, and the use of actual competition footage using multiple camera angles. Also, there is a need to develop tools that judges can use to input their thoughts at the touch of a button or pen (e.g., using forms created for personal digital devices like a palm pilot) and be able to easily access their recorded thoughts as the competition unfolds.

6. What factors are influencing the development and use of technology in sport ?

The most sophisticated use of technology in the world to date is being organized by the National Aeronautical Space Association (NASA), the European Space Agency (ESA), the Russian Space Agency (RSA), the Japanese Space Agency (NASDA), and the Canadian Space Agency (CSA). These agencies are responsible for the largest civilian project in history, the creation of the International Space Station (Kopp, 2000).

Astronauts are the ultimate athletes. They are involved in intensive training for performing in environments that are impossible to accurately simulate on earth. In order to perfect the performances of the astronauts (even the slightest error could result in death), the space agencies provide the most sophisticated training environments. Computer-based learning, computer simulators, and virtual reality environments are created to ensure mastery of material and technique. Problem-based analysis is used to identify errors and correct them. Tertiary backup systems are put into place and if problems occur, these problems are simulated on earth using exact replicas of the equipment in space. Mission controllers and the astronauts are engaged in real-time decision making in high-risk situations accessing the latest technology over amazing distances. These same models and tools will eventually find their way into the sports arena.

Similarly, the militaries of most western countries are probably the largest users of technology for training. The sophisticated weaponry in the hands of mostly volunteer armies requires proper training to avoid serious injuries and possible deaths. The spin off research and development that results from military research and training is finding its way into sport technology research and ultimately to the athletes.

Sports equipment and clothing manufactures are competing intensely with each other for the opportunity to sell their products to athletes and coaches. These manufacturer fund development activities are looking for the elusive edge over their competitors. The biggest problem for research scientists is to ensure that research into the effectiveness of the newest fad drives the decision-making and not the advertising that surrounds the distribution of the equipment or clothing. Since the Sporting Goods Manufacturing Association estimates advertising at 4.46 billion dollars in 2000 *(www.sgma.com)*, there is a significant influence on the buying public.

Lastly, the multi-billion dollar video games industry has provided impetus for low-cost interfaces that can be used in sport research. The video games industry will have a significant influence on sport in many ways; firstly, because it provides low-cost, high quality processing power and, secondly, because children (athletes of the future) are much more willing to interact with technology.

"Players head into uncharted waters where perseverance, wit, luck, and interminable hours of practice count for everything (…) games are the great equalizer. The game gave kids the sort of power they couldn't get anywhere else. It was safe to make mistakes while playing, because there was always another chance (…) they found an environment that they could beat the pants off their parents (…)" (Sheff, 1993, p. 4). The athletes and coaches of the future will be much more willing to utilize technology because children of the last decade have grown up in technology rich environments.

7. What new research is being undertaken in Sport Technology ?

Katz (1992) predicted that coaches and athletes would be able to develop elaborate audiovisual databases of performances that would be instantly accessible and customizable for appropriate use. Katz also pointed out that: *"Artificial or virtual reality enables participants to become part of an abstract environment where no physical machinery is required, yet one experiences the essence of time, space, and equipment."*(p. 31)

Today, these visions are becoming the reality.

McKethan and Turner (1999) have developed a multimedia system that helps analyze sports skills in children. Their system is designed to allow students to compare mature and immature execution of skills. Students can also use the program to examine cues for correct performance.

Katz, Kilb, and Liebermann (2001) have developed an interactive volleyball multimedia program for volleyball coaches that provides educational lessons on planning a practice, an interactive database of 400 full motion volleyball drills, and an integrated practice-planning tool which allows the coach to select the appropriate drills, customize a practice, and then print out the practice plan. If desired, coaches can even demonstrate the drills using a video projection system directly connected to the computerized practice plan. The program is based on a needs model that looks at the factors that should be considered when developing interactive tools for coaching or teaching sports games (Liebermann & Katz, 2001).

At the University of Nice, Garbarino and Billi E. (2000) have developed a sophisticated computerized modeling system that analyzes team play. The system captures graphic representations of every player and tracks their on-field activities. This system is being used with professional European Football (Soccer) clubs to evaluate on field activity and player performance.

According to Adelson (2000), new technologies are being developed which use transmitters on hockey players' helmets. These transmitters provide sport fans with information on how fast a winger is skating, how hard a defenseman is checking, and even how long a shooter is actively participating. The transmitters, imbedded in players' helmets, will relay information to receiver antennae in the glass and then on to the fans television or computer screen. The technology will allow an instant animated recreation of games. Technically, fans would be able to put themselves in the helmet of any player they chose.

Jenkins (2000) reported that Olympic sprinter Michael Johnson was wired up for a recent relay. Small sensors were taped to Johnson's chest and leg to measure every stride and heartbeat during his portion of the 4 x 400 meter relay. Information about Johnson's heart rate, speed, distance, acceleration, cadence, stride length, and energy burn rate were displayed in real time during the race. Both coaches and sports fans can have access to the database of information.

Concha (2000) explains how the Los Angeles Lakers basketball team uses wireless digital scouting tools. These handheld digital devices use color touch screens, voice recording, and web-based interfaces to collect, track, chart, query, and integrate information on each athlete. With millions of dollars riding on selecting the best players, tools like these will be essential for every professional sports team.

Using a virtual reality sailing simulator, Walls, Bertrand, Gale, and Saunders (1998) were able to demonstrate a high correlation between performance on the simulator and performance in a competitive sailing event. The simulator used a laser dinghy deck and high quality graphical representation of helming, sheeting, tacking, and boat trim. Sailing technique, fitness, and judgment of

boat position on course were measured and used as a method of ranking performance. Participants, highly competitive helmsmen, gave the virtual reality environment high ratings for overall feel and simulation of physical movement.

As technology evolves and people explore novel ideas, new and more creative applications are being developed. Yeadon (2000) is looking at the practical use of pinpoint accuracy models so that coaches can help their athletes "know where to look" when performing aerial maneuvers. Coaches can use simulation models to test their latest theories and then athletes can first experiment with the new maneuvers in a virtual environment that will allow for error without risk of injury.

8. Conclusion

There is a widening gap between the human capacity to adapt to change and the drastic changes which technology brings to the environment. In order to help those involved in sport to cope with innovation, researchers will have to develop smart sport communities. The objective of these smart sport communities would be to integrate technology into the environment using new and innovative approaches that would address the needs of the constituents (e.g., athletes, coaches, trainers, etc.) and empower them to take control of the situation. The criteria for success should include applications and resources which:

- are currently being used and for which there is clear evidence of success;
- address clearly defined and measurable needs;
- are interactive and responsive, in real time, to client needs;
- are transferable across sporting environments;
- provide interactive, networked, collaborative, and simulated learning opportunities over distance;
- results in positive changes which may impact on attitudes, performance, and/or costs; and,
- integrate technology with easy-to-use interfaces that are reliable, effective, efficient, and transparent to the user.

The movement in sport technology research is toward identifying the needs of the various stakeholders and then addressing those needs. Many of the stakeholders themselves are unaware of what they really need or what is available to facilitate performance improvement whether for the competitor, the support personnel, or the spectator (live or virtual). Moreover, the level of training and support required to integrate these new tools into the sport environment must be addressed and factored into budgetary planning. Needs assessments must be carried out to define the proper allocation of resources. Technology is not a panacea for all the needs, but if applied appropriately and reliably, it can simplify and expedite the stakeholder's role. Ultimately, three major factors will influence the wide spread adoption of technological innovation: cost, ease of use, and reliability.

References

Adelson E. (2000, June 12) - *The Internet athlete. ESPN* [On-line]. Available: *www.ESPN.go.com*

Concha J. (2000, December 8) - *Technology gives Lakers a leg up. MSNBC* [On-line]. Available: *www.msnbc.com/news/500866*

Froes F.H. (1997) - *Is the use of advanced materials in sports equipment unethical?* Journal of Minerals, Metals & Materials Society, 49(2), 15-19.

Greenwald M. & Thibault J. (2000, June) - *Interactive New Technology for Coaches: Olympic Oval Technological Initiatives for High Performance Sport.* [Videotape]. In L. Katz (Chair), Technology and Sport. Symposium conducted at the Sport Technology Research Centre, University of Calgary, Calgary, Canada.

Garbarino J.M. & Billi E. (2000, June) - A video computerised tool for analysing the trajectories of players in team game. [Videotape]. In L. Katz (Chair), *Technology and Sport.* Symposium conducted at the Sport Technology Research Centre, University of Calgary, Calgary, Canada.

Intille S.S. (1996) - Sport Online. *Sport Technology Hotlist* [On-line]. Available: *www.white.media.mit.edu/~intille/st/sp.html*

Jenkins, C. (2000, May 4) - *Website gets right to heart during Johnson's relay run.* USA Today. Arlington, Va.

Katz L. (1992) - The Role of Interactive Video, Multimedia, and Teaching Technology in Physical Education: Toward the Year 2000. In G. Tenenbaum, T. Raz-Liebermann, and Z. Artzi (Eds.), *Proceedings of the International Conference on Computer Applications in Sport and Physical Education.* (pp. 22-31). Netanyi, Israel: Wingate Institute.

Katz L. & Green J. (1989) - *Computer Applications in Physical Education: A Guide to Technology in Sport and Recreation - Lab Manual.* Computest Research Ltd. Thornhill, Ontario.

Katz L., Kilb B., & Liebermann D. (2001) - *Interactive Volleyball* [CD-ROM]. Calgary, Canada: Savvy Knowledge Systems Corporation.

Kopp G. (2000) - *Key Factors in Layered Instruction.* Unpublished doctoral dissertation, University of Calgary, Calgary, Alberta.

Liebermann T. & Katz L. (2001) - *Developing Interactive Tools for Coaching or Teaching Sports Games: Critical Factor* (Tech. Rep.). Calgary, Canada: University of Calgary, Sport Technology Research Centre.

Liebermann D., Katz L., & Morey Sorrentino R. (2000) - *Preliminary Data on Attitudes of Coaches Toward Science and Technology* (Tech. Rep.). Calgary, Canada: University of Calgary, Sport Technology Research Centre.

Malone M.S. (2001, January) - *The Revenge Effect: The Internet's Unintended Consequences.* [On-line]. Available: *wysiwyg://211/http://abcnews.go.com/sections/sect…iness/SiliconInsider.htm*

Martens, R. (1997) - *Introduction to Technology in Kinesiology and Physical Education*, Quest. 49(3), 251-253.

May, M. (2000) - *The Athletic Arms Race.* Scientific American, 11(3), 74-79.

McKethan R. & Turner E.T., (1999) - Using Multimedia Programming to Teach Sport Skills, *The Journal of Physical Education, Recreation & Dance. 70*(4), 13-22.

Mester J., Seifriz F., Spitzenpfeil P., & Spahr M. (2000) - *Sport Science – Industry – TV-Stations: Technological Networking for Optimization of TV-Presentation in Sport.* Unpublished manuscript, German Sport University, Cologne: Institute for Theory and Practice of Training.

Miah A. (2000) - *"New Balls Please": Tennis, Technology, and the Changing Game*. In S. Haake & A.O. Coe (Eds.) Tennis, Science, and Technology. London: Blackwell Science. 285-292.

Richardson B. (2000, June) - *Technology for Coaching: Visions for the Future.* [Videotape]. In L. Katz (Chair), Technology and Sport. Symposium conducted at the Sport Technology Research Centre, University of Calgary, Calgary, Canada.

Root E., Domonkos A., Granck M., & Hustler M. (1998) - *Has Science Improved Sport ?* Sport Technology Hotlist [On-line]. Available: *http://www-white.media.mit.edu/~intille/sports-technology.html*

Sheff D. (1993) - *Game Over: How Nintendo Zapped an American Industry, Captured Your Dollars, and Enslaved Your Children.* Random House, New York.

Sporting Goods Manufacturing Association (2001). SGMA State of the Industry Report 2001 [On-line]. Available: *www.sgma.com*

Stix G. & Fischetti M. (2000) - Introduction: Game Theory. *Scientific American, 11*(3), 6-9.

Sullivan B. (2000, September 4) - *Will Technology Take the Gold?* MSNBC, [On-line]. Available: *www.msnbc.com/news/452330*

Tenner E. (1997) - *When Things Bite Back: Technology and the Revenge of Unintended Consequences*. Vintage, New York.

Walls J., Bertrand L., Gale T.J., & Saunders N.R. (1998, June) - *Assessment of upwind dinghy sailing performance using a virtual reality dinghy sailing simulator*. Journal of Science and Medicine in Sport. (Belconnen, A.C.T.) 1(2), 61-72.

Yeadon M.R. (2000, June) - *Computer Simulation in Sport: Tools for the New Millenium*. [Videotape]. In L. Katz (Chair), Technology and Sport. Symposium conducted at the Sport Technology Research Centre, University of Calgary, Calgary, Canada.

2nd Plenary Session
Sports Information Management

Wednesday, 25th April 2001

Moderator:

Sally Hall
Senior Manager of the
English Sports Council Information Service, United Kingdom

A Study of the Provision of Information for Students of Sport in Sheffield

Lesley Gunter
Senior Librarian of the
Sheffield Libraries, Archives and Information, United Kingdom

1. Introduction

This study was carried out in 1999. The aim of the research was to investigate the provision of information for those studying Sport, Recreation and Leisure in Sheffield, England. The study included an evaluation of the six key libraries and learning centres in the city, and how well they perform in terms of access, resources and organisational features. The study also considered the views of the students using the libraries and how far their needs are met by the services available to them in this particular geographical area.

2. Background and context of the study

Sheffield is a city in the north east of England with a population of around 500,000. Steel was the major industry until the late 1970's, and cutlery has been made in the city for over 700 years. In sporting terms, Sheffield's history is also impressive. Sheffield FC is the oldest football club in the world, and their local rivals Hallam FC have the oldest football ground in the world. Today Sheffield has two professional Football teams, and professional Ice Hockey and Basketball teams. At the amateur level, there are over 700 local sports clubs.

Following the industrial decline in the late 1970's and early 1980's, the key method for reconstruction and regeneration of the city, was the development of a world-class sporting infrastructure. The aim of this strategy was to attract inward investment, increased visitor numbers and included the development of an active sports events programme. By the early 1990's, Sheffield had invested £139 million in high quality; state of the art sports facilities, initially to stage the World Student Games in 1991.

The new facilities included, Ponds Forge, an Olympic standard swimming pool and leisure facility, DonValley Stadium, a world class athletics and multi-purpose stadia venue, and Sheffield Arena, a multi-purpose indoor facility, which regularly hosts ice hockey and basketball events.

These facilities have increased the status of Sheffield significantly in terms of sporting excellence, culminating in Sheffield being the first British City to be awarded the status of National City of Sport in 1995.

For the purposes of this study, a key spin-off from the prioritisation of sport for economic regeneration has been the increase in the number of courses available in sport and sport-related topics, and the corresponding increase in the number of students studying sport in the city. In 1999 there were 63 courses available at the various colleges and universities in Sheffield, including vocational, coaching and leadership awards and academic study.

3. The problem

Libraries, Information Centres and Learning Centres in Sheffield are linked professionally through a local information co-operation organisation called SINTO. Librarians and Information Officers within this group are therefore communicating and sharing information regularly. However, up until this time, there had been no evaluation of the services provided, and whether they were meeting the needs of users. Students were certainly observed to be using more that one service.

- Is this because some services had more or better resources ?
- Do they have better access arrangements ?
- Are the staff more knowledgeable ?
- Are some resources duplicated unnecessarily, or are some materials not available at all ?

The key questions that the study addressed were therefore:

- How do sports students use libraries ?
- What do they demand in terms of resources and access ?
- Do they ask the staff for help ?
- Are they getting the help they need ?

4. Aims

The study sought to investigate the provision of information for those taking sport or sport-related courses in Sheffield. The students taking part in the study were following designated courses, where aspects of sport, recreation and leisure are grouped depending on the intended outcome of the course. Their information needs were therefore determined, to a large extent by the structure of the course. Although each student has a certain amount of freedom in the topics they choose to investigate, they largely fall within pre-defined areas.

The investigation included interviews with students and interviews with Librarians, and then considered the findings from both in order to provide an analysis and evaluation of the services available. Three aspects were considered to be key to the research:

1) access
2) collections
3) organisational constraints

5. Methodology

The overall aim of the study was to investigate and evaluate provision. An adapted method of triangulation was used. Thus, more than one approach was taken in order to provide for a full evaluation of the problem. The following methods were used:

- observation
- knowledge and experience
- semi-stuctured interviews
  - with students
  - with Librarians
- SINTO co-operation group
- literature
- specialist databases

As the Senior Librarian responsible for the Sports Library in Sheffield Central Library, I was aware that some caution needed to be taken to eliminate bias as much as possible. This was mainly by careful design of the interview schedules, and honest transcription of the tapes following the interviews with students. Observation was a factor, though, which was implied from the outset. Observation is often used in combination with other methods, so unstructured observation provided an underlying characteristic.

Semi-structured interviews were used as the prime method of data collection from the students and Librarians. This allowed for some factual information to be obtained and for open-ended questions where appropriate. The information collected largely generated qualitative data, with a small amount of quantitative data such as the frequency that students use libraries. A qualitative study was felt to be the best method for this research as the aim of the interviews was to understand the behaviour of the users of the services from their perspective, and to obtain their opinions and observations, using their own descriptions.

Two interview schedules were designed to obtain the data from each of the groups to be studied.

6. Scope and description of the study

Six libraries were chosen for the study because they represent the key collections in Sheffield for sports information.

The following Libraries or Learning Centres were used for the research:

1) University of Sheffield Library
2) Sheffield Hallam University, Adsetts Learning Centre
3) Sheffield Hallam University, Collegiate Learning Centre
4) Sheffield College, Norton Learning Centre
5) Sheffield College, Parson Cross Learning Centre
6) Sheffield Libraries, Sports Library

Numbers 1,2 & 3 represent the Higher Education Sector. The courses available tend to be the most academic courses such as graduate and post-graduate courses in Sports Science and Sport and Recreation Management.

Numbers 4 & 5 represent the Further Education Sector, where studies tend to be more vocational in nature, such as Sport and Recreation Technician courses, although some students at these colleges are also taking "A" level academic courses which will most likely lead them into degree level studies at university.

Number 6 represents the Public Library. The Sports Library was developed as part of the regeneration initiative to boost sport in the city, and to complement the growth of the local infrastructure with information provision. Whereas the university and college libraries supply resources to support the courses offered at their institution, the public library is much more generalist in nature, and offers a wider subject coverage, but within the constraints of the public library's limited resource allocation.

Twenty-five students were interviewed. They were self-selected volunteers who were informed of the study by their tutors. They were chosen to represent a cross-section of courses taking place at each institution. The sample size from each library was variable. It is not felt that this affected the results of the research, as the interviews were intended to provide quality rather than quantity, and much of the

data was not specific to each library, but was intended to provide an overview of the use of libraries by sports students in the city in general.

Students studying at each of these institutions were interviewed. The following were the key questions that were asked:

- How often do they use the library ?
- Are they aware of other libraries and do they use them ?
- Are there enough books and other resources, and which resources do they find most useful ?
- Is the library easy to use, and do they find what they are looking for ?
- Do they find the staff helpful ?
- Are the opening hours adequate ?

Apart from those using the public library the schedule was designed to be completed at the institution at which they were studying. Some of the questions were factual, such as the name of the course they were taking. Some required only a YES or NO answer such as their use of libraries. A tape recorder was used, where their opinions were sought, and here care was taken to ask open-ended questions, to enable the student to talk freely about their experiences.

The study of libraries, involved a longer interview with the relevant Librarian for each of the participating libraries. The interview schedule was designed with the following aims:

- To gain factual information about the library including access and opening hours.
- To determine the range of resources available and the level of use of those resources.
- To gain an understanding about the way in which staff work with students, and how successful they feel that they are in meeting the needs of those students.
- To examine any organisational requirements or constraints which may impact on the delivery of the service.

The interview schedule was divided into three sections:

1) Section 1 was about opening hours and the level of use of the services.

2) Section 2 was about resources and materials, including stock size, range and depth of collections. Also electronic information sources and ephemeral materials.

3) Section 3 related to the management and staffing of the organisation, including staff skills and subject specialisms. Also referral to other organisations and information about any organisational constraints that may affect service delivery or collection development.

7. Main findings and analysis of results

7.1. Use of libraries

All the students interviewed had some positive things to say about the libraries that they used, and some also made favourable comments about the other libraries in the city that they had visited. Most students had used the library in the week preceding the interview, whilst only a small number of students made little or no use of the library.

Overall there was a high level of awareness of the range of alternative services available to those interviewed, and 20 of the 25 students interviewed had visited libraries other than their "own" in the weeks before the interview took place. One reason for this could be the availability of a leaflet, which is given to all students studying in Sheffield when they start their course. This is the *Learners Guide to Libraries in Sheffield*, produced by SINTO (Sheffield Information Organisation). SINTO is the local library co-operative organisation, and they have developed an agreement in Sheffield known as the ALL Agreement (Access to Libraries for Learners), which allows access to every participating library in the city. All libraries that took part in this study have signed up to the agreement.

Another factor was the high level of referral that was found to be taking place during the interviews with Librarians.

Half of those students interviewed had applied to organisations outside Sheffield for information. Most of these had contacted sports organisations such as the Football Association, for copies of their free literature.

7.2. Resources

It is estimated that there are over 25,000 books in the key libraries in the city. Across all libraries eight different CD ROM's are available for sports students, most of them available at more than one library, and two key databases, SPORTDiscus and Tour CD are available at four libraries. Newspaper CD ROM's are widely available, with each library holding at least one.

The Sports Library has the largest collection of journals with over ninety titles, but all libraries have significant collections to support their courses. The Sports Library also collects a large amount of current awareness and other ephemeral material, which is unique in the city.

Most students indicated that resources were adequate in all libraries, but there were some negative comments about the shortage of key texts. However, when asked about specific material they were seeking at the time of the interview, most students had found the information they required, either in their 'own' library, or in another in the city. Librarians, on the other hand said that in all cases they felt that the resources were adequate, indicating that Librarians should consider increasing the communication with their users about their resource needs.

The following subjects were being researched at the time of the interview, demonstrating that the needs of sports students are wide and varied: Customer Care; Performance Indicators; Partnerships Public/Private sector; Facility Management; Motor Control and Learning; Exercise Addiction; Muscle Contraction; History of Sport; Structures and Policies of Sports Organisations; Information Processing; Marketing; Exercise Physiology; Sports Injuries; Nutrition and Exercise; Sports Finance; Sports Hall

Operation; Football Coaching; Fund Raising; Health Screening; Women's Rugby; Swimming Motivation; Outdoor Education for Young People.

Although there were some negative comments about the range of resources, there were more comments about the way in which resources were provided. Split-site arrangements at both university libraries, caused problems for a number of students. This was confirmed in the interviews with Librarians.

The resource split at these libraries is only a problem for books and journals, because electronic resources are networked and therefore accessible at either site. However, the study shows that books are still the most important source of information for sports students, so there were more comments about books than other types of resource during the interviews.

Moving around the city to acquire sports journals was mentioned by some students.

As I have indicated, in 1999 books were still the most widely used resource for sports students. Use of journals and CD ROM's was also fairly high. At this time, use of the Internet was growing rapidly, but in 1999 was used by only half of the students interviewed. Although this will have changed somewhat, the main problem was that students, although familiar with the Internet, were often not sure how to find the information that they required. This finding supports some previous research by Jarvis (1998), in which she suggested that the Internet was a good source of information for sports students, but only if they have the right skills to search and evaluate the information well. Librarians should be aware that their skills in searching and evaluating Internet resources are very valuable.

7.3. Staff assistance

Interviews with Librarians revealed that there are six subject specialists working across the city, but only in four of the libraries surveyed. However, only in the Sports Library, do subject specialists deal with most of the enquiries. Most students said that they asked the staff for help, and in all cases staff were considered to be helpful. The negative comments that were expressed regarding staff help were entirely about a lack of subject knowledge in some cases. These comments were made by students using the libraries at which no subject specialists are usually available. Subject specialists share information through the local library co-operation group, SINTO. The study revealed a high level of referral between libraries in the city, which is obviously helped by the regular communication between subject specialists.

7.4. Access

Overall students were satisfied with the opening hours at "their" library. The exception to this was that students using the Sports Library in the Public Library, felt that opening hours were too restrictive. Interviews with Librarians demonstrated that the opening hours for the university libraries is highest, at 70 hours or more per week, whilst the Further Education College libraries are open between 40 and 45 hours. The Sports Library in the Public Library is open for 25 hours across 4 weekdays, which is clearly inadequate. Public Libraries in the UK have been under-resourced for the last ten years or more, with the consequence that opening hours have been gradually eroded and use has fallen. This is now being addressed, but it will take some time to reverse the downward trend.

8. Comparisons with previous research

Students taking part in this study demonstrated that they place a heavy demand on the libraries in Sheffield for their information needs. In a previous study on demand for those using sports information by Gurney (1992), overall he found that there was a low demand by the groups he studied, which were not students. Clearly the demand for sports information from students is much higher than from those working in the wider sport and leisure industries.

Globalisation is an important aspect for those engaged in providing sports information. Sport is a subject of global significance. It is a dynamic subject, which is affected on the one hand on developing knowledge in sports science and medicine, and on the other by Government policy and practices of sports organisations.

The study demonstrated that students are studying a very wide range of subjects, and that Librarians need to be aware of current developments in sport across the world. The use of databases such as SPORTDiscus indicate that Librarians providing services in Sheffield are aware of the global significance of the literature.

Another aspect of the study was the relationship between economic regeneration and sport in the city of Sheffield. The work by Steele (1990), supported the idea that information is an important element in the process of regeneration. In Sheffield, the increasing numbers of students studying sport indicates that in this case, economic regeneration through sport, and information are inter-related.

The work by Jarvis (1998) supported much of what was found in this study, regarding the poor research skills of many students. It is clear that Librarians still have a key role to play in providing sign posting and help with the best methods of research and evaluation of Internet sources particularly.

9. Conclusions

Sheffield has an excellent network of libraries for those studying sport, and this study demonstrated that students are generally satisfied with the provision, and that they often use more than one library in the city to find information. The six libraries that took part in the study have signed up to the local ALL (Access to Libraries in Sheffield) agreement, which allows students to visit a range of libraries for their studies.

Librarians in Sheffield communicate regularly through SINTO, the local library co-operative organisation, and all are members of SPRIG, the national co-ordinating group for sports information. Referral between the six participating libraries is high.

Sheffield is unique in the UK in having a specialist Sports Library based in the Central Public Library, which provides a range of current awareness material to supplement the books, journals and electronic resources. This extra dimension probably makes Sheffield one of the best places to study sport in the UK.

There are clearly significant benefits to users where libraries in a particular geographic area work co-operatively to provide comprehensive resources in sport and the related disciplines.

Bibliography

Gunter L.A. (1999) – *An Investigation into the provision of information for students of Sport and Leisure in Sheffield, City of Sport.* A study submitted in partial fulfilment of the requirements for the degree of MA in Library and Information Management, University of Sheffield.

Gurney J.H.A. (1992) - *The Demand for Sports Information Services amongst the Managers of private sector sports clubs, the Managers of Local Authority Leisure Centres, the Chief Leisure Officers of Local Authorities and the Administrators of Sports Governing Bodies.* Dissertation submitted in part requirement for MSc. in Sports and Recreation, University of Sheffield.

Jarvis N. (1998) - *An Investigation and Evaluation of Selected Resources for Sport Science on the Internet.* A study submitted in partial fulfilment of the requirements for the degree of Master of Arts in Librarianship, University of Sheffield.

Steele J. (1990) - *The Contribution of Library and information Services to Economic Regeneration.* In Cronin B. and Tudor-Silovic N. (eds) The Knowledge Industries, levers of Economic and Social Development in the 1990's, London, ASLIB.

Management of a Sport Information Centre
The Costs Calculation
The example of the Information and Documentation Department of INSEP

Alain PONCET
Head of the Information and Documentation Department,
National Institute of Sport and Physical Education (INSEP), France

An environment in perpetual change reinforces, within the information and documentation centres, the need to determine and control reality in order to be able to ensure the development of the activity. Even in case of strong growth, we often witness a will of stabilization even of cost-cutting. In any event, it is generally "to make best with the least" which constitutes the objective of management of our organizations. And the sport information and documentation centres do not avoid this rule.

The control of the figures has several significances for the management of the documentary unit:

- it allows to follow the activity in economic and financial terms and to rationalize its management style;
- it allows to extract indicators of decision-making aid for the person in charge of the centre or for his superiors.

To know its costs reduces the share of uncertainty at the time of the decision-makings and allows to arbitrate between several choices: wished and feasible.

The presented case relates to the study carried out in the information and documentation centre of INSEP. Analytical logic was applied to all the levels of the study. The conference presents the method and the tools which had allowed to develop an economic vision of the activity of the centre and led to the establishment of management indicators for the permanent activity monitoring and the decision-making.

1. The objectives and the framework of the study[1]

1.1. The implementation field

First we must specify the objective and the calculation framework which will be carried out. Actually, the range of possibilities is broad in this field; they can vary from the simple calculation of the global centre cost, until the identification of costs on a sharpest scale which can go to the task, the service, or the user and even the tool used, without speaking about all the possible combinations…

Among the possible implementation fields, we retained which refers to the total taking into account of the documentary activities of the service, on the one hand because it allows a concrete and overall vision of the service reality and, on the other hand, it allows to evaluate the level of balance between its various activities, for adjustments or correcting if necessary (Appendix 1).

[1] In order to respect the presentation standards, this text is limited to the presentation of the methodology with examples resulting from the general study carried out by the INSEP Information and Documentation Department. This general study will be exposed during the conference using a "Powerpoint" presentation.

1.2. The costs contents

Here also, among the possible choices, we chose the search of the total real cost of the centre. Despite the occasional difficulties of determining the distinction between direct costs and indirect costs, to clearly separate the fixed expenses and the variable expenses, it is really the calculation of the complete costs which we carried out.

Remember that the complete cost = (direct fixed expenses + indirect fixed expenses) + (direct variables expenses + indirect variables expenses).

1.3. The moment of the costs calculation

For the time being we based our calculation on the observation of the duly noted realities. We cannot of course avoid the gaps of time separating the moment of the expenditure from the moment of its taking into account, which can induce distortions (costs modified meanwhile), it is however the most reliable method in order to determine reality.

Thereafter we work on again these results by putting them in an estimated and dynamic way in order to integrate them into the budgetary process. But this is another story which does not enter within the framework of this talk.

2. The methodology[2]

2.1. The analysis table of existing

In the first place, we must establish the reality of the service by building the analysis tables of existing corresponding to all the expense items which will be taken into account in the calculation. It is not here the purpose to use the book-keeping nomenclature of the charges (generally stated in operating charges and investment charges), but to state the activities of the service with their expense items according to the analysis needs.

About that, there is not a pre-existent table because it depends from the specific context of the documentation centre and from the aims of the study. It exists as many analysis table than documentation centres which carry on costs studies.

This description of the centre activities can be carried out by an external person (for objectivity). The information collection method "at the basic level" by an inventory of the individual tasks (by interview or survey of the staff), gives the best results. The reality is better described, the links between the activities are better underlined, and sometimes some activities without relation with the missions of the service are revealed. Then the tasks are gathered by logical sets for an analytical presentation.

In the second place, we must put in correspondence these identified activities with the tools created or used by the centre. Whether these tools are internal (documentary funds, internal data base, etc) or external (external data bases consulting), material (computers, furniture, etc) or immaterial (data bases). In the third place, we must identify the services carried out by the documentation centre and put them in relation with the activities and with the tools used to provide them. Some services may correspond to one or more tools which are dedicated to them.

[2] It is very widely inspired by the excellent book of Emmanuel Moulin quoted in bibliography.

Finally the identified tasks are putted in relation with the activities, the tools and the services. Here it is the most important costs item allocation in the majority of the centres, that is to say the staff costs. It should be noted that these tasks can be specific to a tool or a service, like being common to all of them.

The results generally appear as several tables of analysis, according to the complexity of the context. Actually the frequent overlapping of the implementation fields makes difficult the overall presentation in two dimensions (two examples are presented in Appendix 2 and 3).

2.2. The costs calculation matrix

Once established the analysis tables of existing, then it is necessary to allocate and distribute the charges on the different items which make up the centre activities. Here it is the function of the costs calculation matrix which carries out the conversion of the charge (book-keeping concept) into costs (economic concept).

The logic of this conversion is quite simple: it entirely integrates for each item its proper charges amount, in full when the study relates to a unique tool or service, even a single task (direct charges); with a distribution key when the charge is distributed on several cost items (indirect charges). Let us note that these indirect charges can be of two natures:

1) specific to the documentation centre, for example the staff salary;
2) shared by the Institute services, for example the heating or the lighting.

As there is an infinity of analysis tables according to the specificity of the situations and the possible study choices variety, there is an infinite unit corresponding to the possible matrices for the costs calculation.

Two examples are given :

1) In Appendix 4, a matrix of distribution of the staff charges which falls into the costs calculation of each task making up the activity "readers reception" (see above Appendix 1).

   To carry out this matrix you should take the following process:

   - take down the salary of all the persons who take part in this activity (gross salary including all the employers' charges);
   - determine the tasks achieved by each person;
   - take down the working times in order to obtain a distribution key;
   - allocate the salaries on the tasks according to the elapsed times.

2) In Appendix 5, a costs calculation matrix of the tools making up the activity "readers reception" (see above Appendix 1).

   The principle remains the same. It is necessary to add the cost of each tool, itself evaluated using a distribution key in case of indirect charges.

About the **documentary funds:** the annual acquisitions represent 340KF [3]. It is necessary to add 65KF for maintenance (documents equipping, stocking, repairing, cleaning) = 405 KF.

[3] 1KF = 1,000FF.

The distribution key is determined by the ratio: time volume weekly devoted to the activity / total weekly time volume of the activities using the tool documentary funds, that is to say: 106h/400h = 26.5%.

Cost of the item: 405 KF X 26.5% = 107.33 KF.

About the **external resources**: the centre pays 15KF for annual subscriptions to external services. It shares the use in approximately equal parts between the information on the spot and the "question and answer" service by mail.

Cost of the item: 15 KF X 50% = 7.5KF.

About the **technological equipment**:. In the first place the data-processing tools: the annual depreciation of the hardware and the software used by the centre is 100 KF (depreciation on 5 years), to which it is necessary to add the annual contract of maintenance: 75 KF and supplies 5 KF. Total: 180 KF.

The distribution key is based on the number of workstations used for this activity (7) compared to the total computer park of the service (20), that is to say 35%.

Cost of the data-processing item: 180 KF X 35% = 63 KF

The item - photocopies on the spot - is completely dealt by an external society. Thus it is not a charge for the activity.

The depreciation of video hardware and microforms for the consultation needs represents an annual cost of 12 KF. It is a direct charge.

Cost of the technological equipment item: 63 + 12 = 75 KF.

About **furniture**, it is also a direct charge. The annual furniture depreciation of the reception and reading rooms (on 15 years) is 15 KF.

Finally, the hardware for protection against robbery, dedicated to the activity, thus a direct charge, is 15 KF as cost of annual depreciation, to which it must be added 0.3 KF with supplies. Total: 15.3 KF

In conclusion, the total annual costs of the tools used by the activity "readers reception" is 220.13KF.

It does not remain any more than to calculate the total costs by integrating in the same way the other charges corresponding to the common tasks carried out within the framework of the centre, like those which the centre shares with the other sectors of the establishment: overheads.

2.3. The distribution key

The definition of the used distribution key is a very important act for the precision and the realism of the calculation. There is no rule on the matter, nor pre-established keys because they depend on the reality which they reflect. It is however possible to emerge some logical bases to define them.

A first logical basis corresponds to distributions on quantitative criteria, based on a study of the reality, for example:

- distribution of the manpower charges in relation with the working times;
- distribution in relation with the occupied square meters;
- distribution in relation with the number of machines used;
- etc.

When it is not possible to use this first logical basis, we can use the distribution relative to the costs calculated in order to limit the distortions as much as possible. For example, we shall allocate a charge between two products in relation with their respective costs. Here it is the concept of the "insensitive key", that means that the distribution must be the "most insensitive" as possible and that the selected key should not charge the cost of a product more than that of an another.

3. Possible analysis

Which analysis and thus which tools for action can we extract from these calculations ?

In the first place, a realistic perspective of the activity. A global vision actually makes it possible to position the service among all the other establishment components. Here it will be a useful tool for the general manager of the Institute.

In the second place, this type of study allows the manager of the centre, to establish the panorama of the costs of his centre, and to evaluate the respective balances between them and thus to even amend or inflect some activities according to the missions of the centre, or by the complement of a value analysis.

In third place, it makes it possible to reveal the cost structure of a product or a service, and provides a serious argumentation basis for the maintenance, the cancellation or the amendment of this product or this service.

In fourth place, it makes it possible to put into perspective the costs of a service by underlining the "real costs" which undeniably correspond to the service to which they are allocated, and the "complementary costs" (overheads for example) which constitute only the framework of the activity.

Lastly, this type of study allows to prepare the following stage concerning the dynamic study of the economic factors of the centre. Actually, this calculation of the total costs of the documentation centre taking into account of fixed activities, provides only one photograph of existing (what already is a good reason), but is essentially static. The obtained figures do not give information on their possible evolutions. However, this information is very useful to practise an active documentation centre management and particularly to establish the economic evaluation of a new project, to prepare the budget, to carry out the costs follow-up, to build the management control data of the centre activities.

Bibliography

Chevalier B., Dore D., Sutter E. (1995) – *Guide pour la gestion d'un centre d'information* (Guide for the management of an information centre) – Paris: ADBS éditions, 270p.

Moulin E. (1995) – *Les coûts en documentation* (The documentary costs) – Paris: ADBS éditions, 360p.

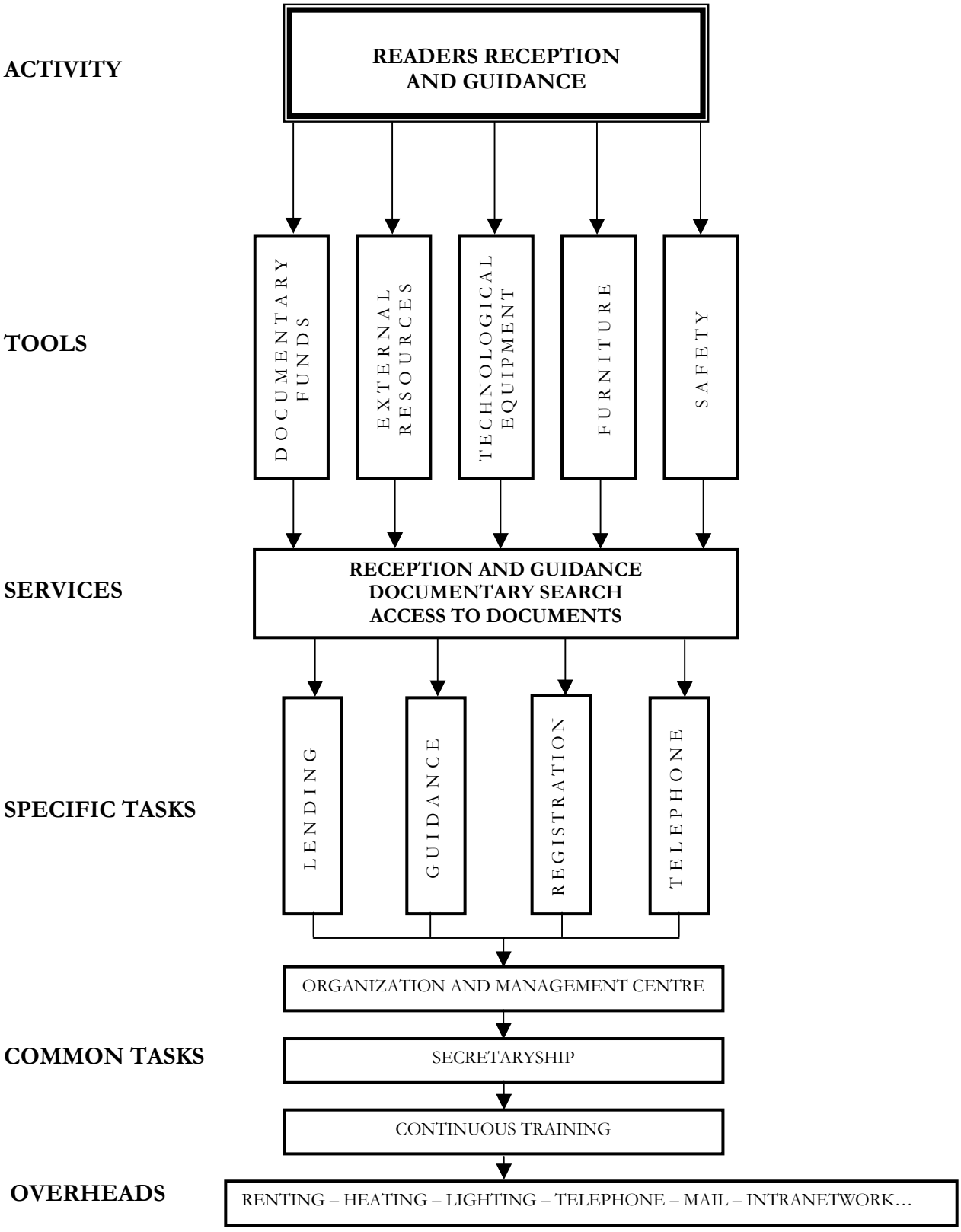
For further information:

Michel J., Sutter E. (1991) – *Valeur et compétitivité de l'information documentaire: l'analyse de la valeur en documentation* (Value and competitiveness of documentary information: the value analysis in documentation) – Paris: ADBS éditions, 128p.

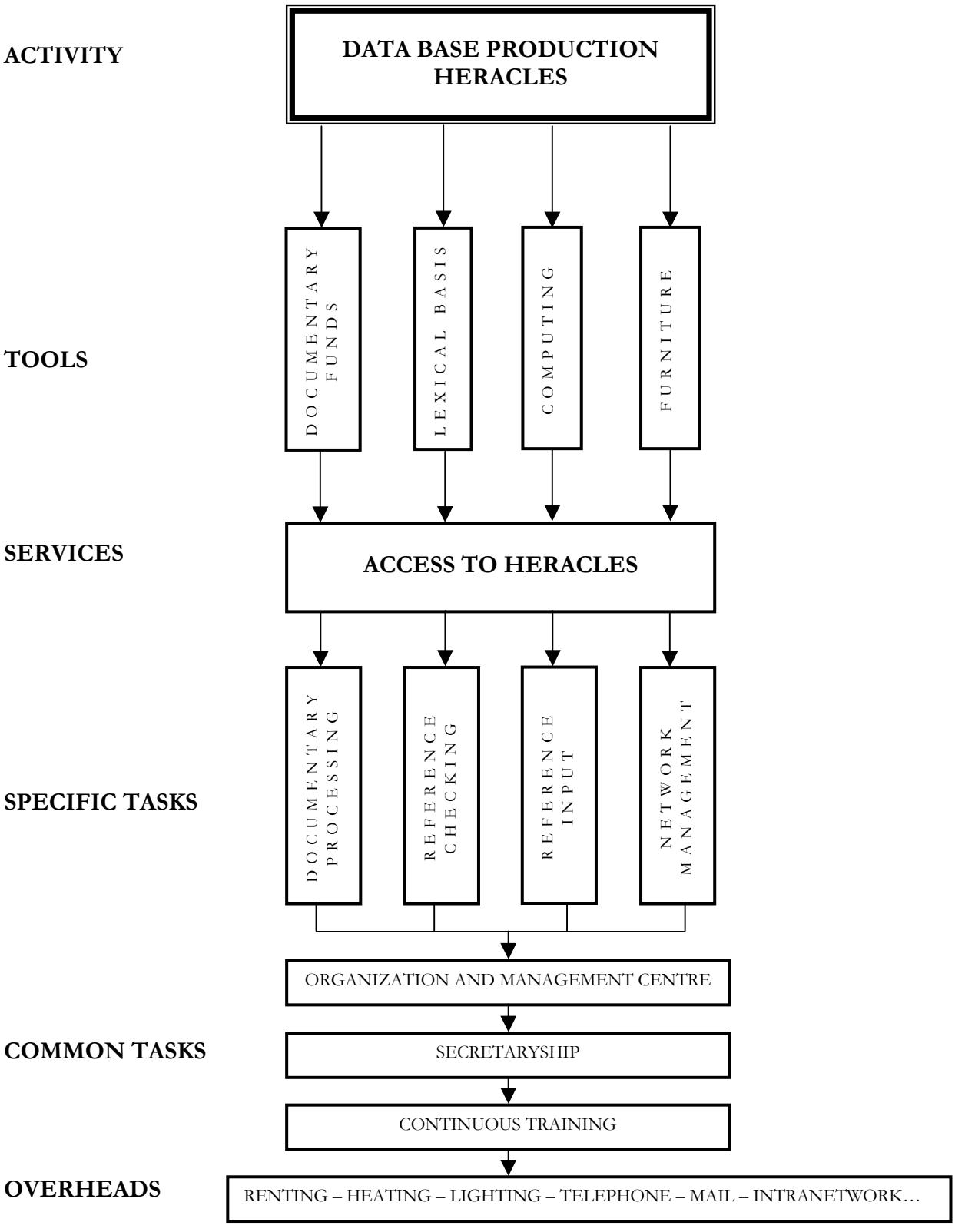
Appendix 1
Information and Documentation Department – Media Library
General table of activites

Activities	Readers Reception	Acquisition	Conservation	Processing	Dissemination	Heracles
Tools						
Documentary funds	x		x	x	x	x
External resources	x	x			x	
Lexical basis			x	x		x
Technological equipment	x	x	x	x	x	x
Furniture	x		x			x
Safety	x		x			
Services						
Reception and advices	x					
Documentary search	x				x	x
Access to documents	x				x	
Phoytocopying service					x	
Question-answer service					x	x
Selective dissemination of information					x	x
Engineering						x
Specific tasks						
Lending desk	x					
Guidance	x				x	
Readers registration	x					
Orders Manag.		x				
Cataloguing			x	x		
Doc. Analysis				x		x
Re.Checking			x	x		x
Ref. input			x	x		x
Storage			x			
Mail					x	
Telephone	x				x	
Photocopying					x	
Network Manag.						x
Common tasks						
Organization and management	x	x	x	x	x	x
Secretaryship	x	x	x	x	x	x
Continuous training	x	x	x	x	x	x

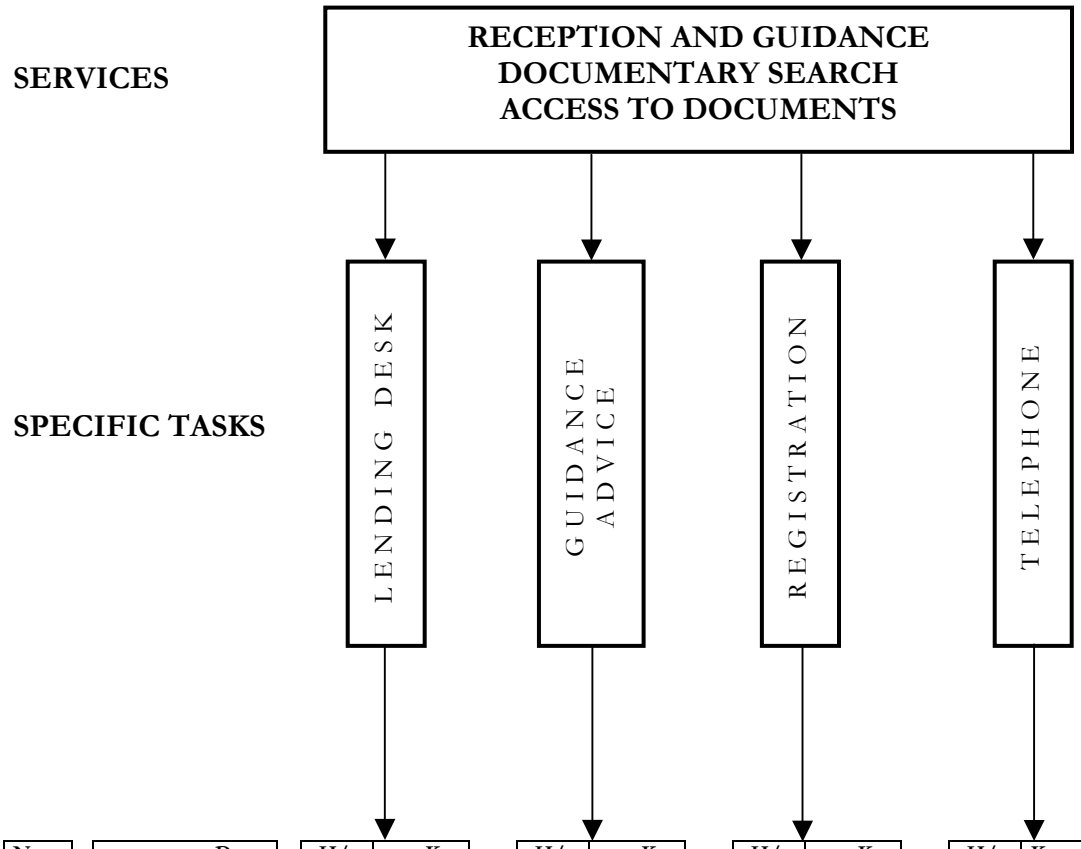
Appendix 2
Analysis table of exisisting (1)



Appendix 3
Analysis table of existing (2)

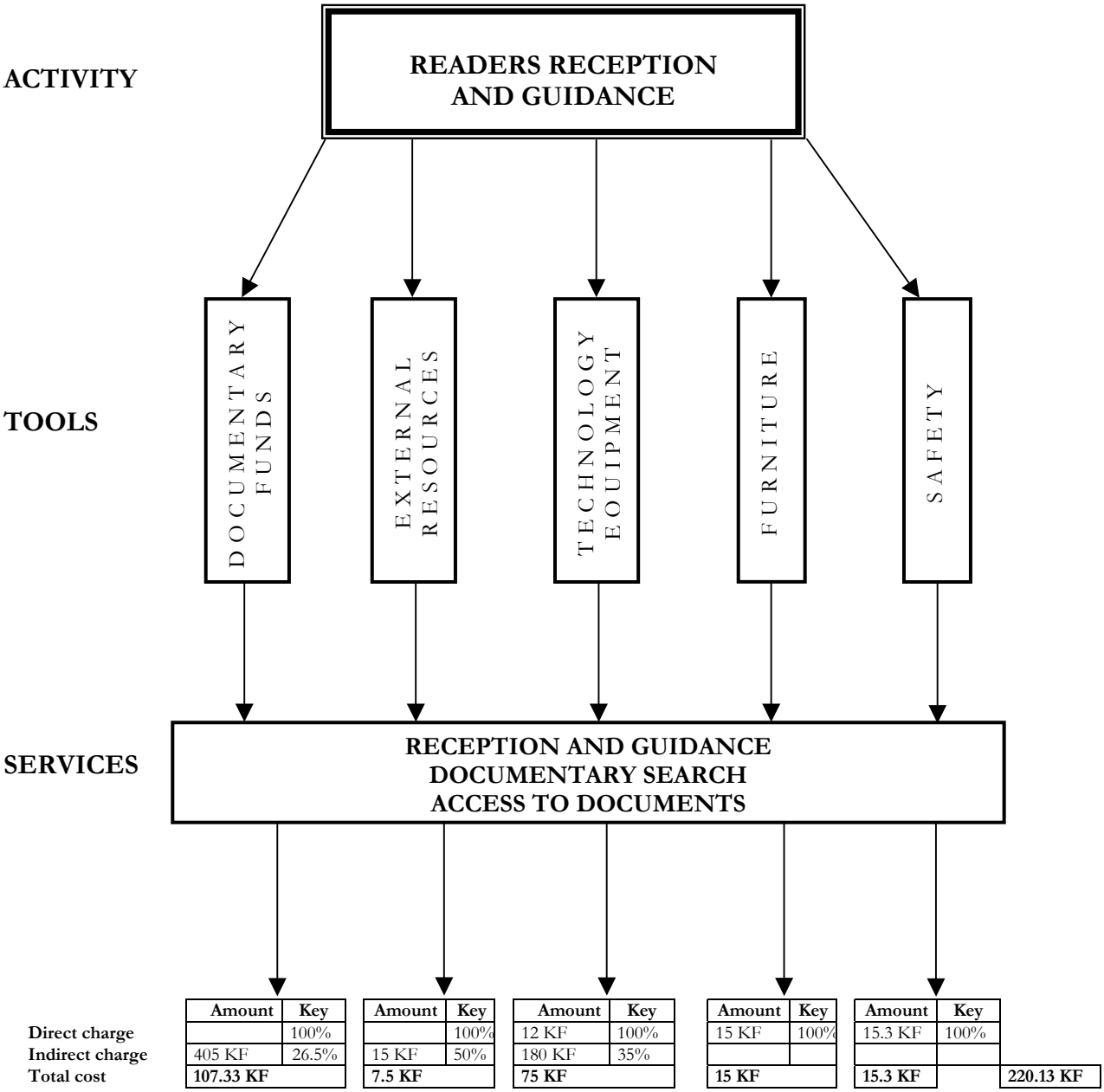


Appendix 4
Calculation matrix - Staff costs (1)



Name	Datas	H/w	Key	H/w	Key	H/w	Key	H/w	Key	
G.E.	Annual Salary 226 KF	1h	2.6%	6h	16%	15h	40%	5h	13.3%	
	H/W : 37h30	5,876 FF		36,160 FF		90,400 FF		30,058 FF		**162,494 FF**
F.M.	= 143 KF	14h	37.3%					4h	10.6%	
	H/W : 37h30	53,339 FF						15,158 FF		**68,497 FF**
A.S.	= 195 KF	5,5h	14.6%	3h	8%			4h	10.6%	
	H/W : 37h30	28,470 FF		15,600 FF				20,670 FF		**64,740 FF**
L.S.	= 282 KF	7.5h	20%	2h	5,4%			5h	13.3%	
	H/W : 37h30	56,400 FF		15,228 FF				37,506 FF		**109,134 FF**
	Total	**144,085 FF**		**66,988 FF**		**90,400 FF**		**103,392 FF**		**404,865 FF**

Appendix 5
Calculation matrix – Tools costs



	Amount	Key	Amount	Key	Amount	Key	Amount	Key	Amount	Key	
Direct charge		100%		100%	12 KF	100%	15 KF	100%	15.3 KF	100%	
Indirect charge	405 KF	26.5%	15 KF	50%	180 KF	35%					
Total cost	**107.33 KF**		**7.5 KF**		**75 KF**		**15 KF**		**15.3 KF**		**220.13 KF**

Beyond 2000 towards Knowledge: Information Management and the Sydney 2000 Olympic Games

Sue Halbwirth
Lecturer, Department of Communication and Information Studies,
University of Technology, Sydney
Formerly, Program Manager, Knowledge Management Services,
Sydney Organising Committee for the Oylmpic Games, Australia

1. Introduction

This paper outlines some examples of how effective management of information assisted in the planning and implementation of the Sydney 2000 Games. The characteristics of the information environment within an event driven project are defined.

Examples of information practice are drawn from research services, records management, Intranets, public information dissemination, games time information centres, archives and knowledge management. While the organisation of an Olympic Games provided many challenges for the information manager it also gave rise to the development of unique and creative solutions.

A case study of the development and implementation of a corporate information system using Lotus Notes is discussed. This system initially provided a mechanism for the creation, approval and delivery of key corporate and operational documentation and information. In the later stages of its design it was adapted to meet the information needs of a public call centre and the Transfer of Know-How program.

Evaluative comments are included, as are the lessons learnt and recommendations for future event organising committees. It is strongly argued that an information/knowledge management unit has much to contribute to successful event delivery.

2. Managing information from day one

The Sydney Olympic Bid Ltd. (SOBL) was the organisation responsible for acquiring the Games for Sydney. It included in its organisational structure a unit to research and collect information. In November 1993, SOBL transferred to the newly created Sydney Organising Committee for the Olympic Games (SOCOG) a corporate library collection, files, a records management system and; most importantly a philosophy that professional information management has much to contribute to an event organisation. This philosophy was put into practice with one of the early staff positions being that of an information professional.

In these early years the emphasis was on information gathering and acquisition largely from outside the organisation combined with the development of corporate library, research services and effective paper based record keeping systems. The information collection included documents, legal contracts, monographs and serials, photos/slides, film/video, ephemera and online data services.

Professional management of SOCOG's paper based records was achieved through centralising intellectual control of records and files via a records management database. The physical location of the files (information) remained largely within the relevant functional unit. The Records unit provided the services of file creation and retrieval and later, sentencing and archiving of records. The resultant information base provided valuable evidence of SOCOG decisions and transactions.

Also developed was a comprehensive electronic database that managed and controlled the language of the Sydney 2000 Games - the Games Codes System. This was an excellent foundation of professional information management from which to develop solutions to meet the future information and communication demands. The using consistent language and terminology within the organisation enhanced communications.

As planning for the Games progressed the information unit's functions and role changed to meet the new and increasing demands of the organising committee. The Information Management unit became the Research and Information Program and finally the Knowledge Management Services Program.

The roles and functions of the unit moved from the provision of "traditional" information services to the management of knowledge based systems and a diverse set of information related responsibilities.

Knowledge Management services (KMS) provided a range of information and knowledge coordination services to all parts of SOCOG. These services related to information management services and support for the delivery of the communications directives of SOCOG. The program was responsible via sub units for the provision of records and archives administration, corporate information service and systems, information management advice, public information and call centre management.

The table 1 outlines over time the changes in the priorities of information and knowledge tasks.

Table 1

Timeline	
Games minus 6 years to Games minus 4 years	Unit title: Information Management Unit Approx. staff numbers : 2 – 6 Priority: Information Gathering and Acquisition Record keeping Key activities: – Developed a fully integrated information system which acted as a centralised resource for all SOCOG staff – Provided an information research service via internal and external data services – Developed a corporate library collection, including the acquisition of planning files from the Atlanta Organising Committee – Expanded the centralised record keeping system – Developed processes for the effective control and management of all key records and documents – Developed of a system of language control/thesaurus Examples of research conducted during this period were: – Analysis of industry sectors for sponsorship – Composition of gases in previous Olympic torches – Corporate intelligence on companies – Investigation of Australian flower varieties for presentation bouquets.

Games minus 3 years to Games minus 18 months	Unit Title: Research and Information Program (R&I) Staff numbers: 5 – 10 Priority: Information Creation and Sharing. With three years to go the Games the OCOG began a heightened phase of information production and an internal focus on the need to effectively share information within the organisation. Key activities: – Identified major corporate and operational documents – Completed an information audit – Developed a corporate intranet, including a shared authoring environment – Developed an effective information sharing mechanism across the organisation – Trained the expanding staff to use information processes – Archives implementation began
Games minus 18 months	Unit Title: Knowledge Management Services (KMS) Staff numbers: 10 -14 Priority: Coordination of information processes both internally and externally. Development of knowledge systems. The need to effectively manage public information became crucial. Key activities: – Implemented a knowledge based system, to support a public call centre – Developed the corporate intranet as an information portal to link information sources – Facilitated the capture of knowledge on how the Games were organised – Developed plans for the delivery of Games time information services
Games and Post Games	Unit Title: Knowledge Management Services (KMS) Staff numbers: 10 -12 Priority: Provision of Games time information services Archiving and organisational wind up Key activities: – Public Information Coordination and dissemination via the corporate intranet – Provided Games time record keeping services – Delivered library facility and video viewing facility in the Olympic Village – Delivered a research service within the Main Press Centre – Managed call centre public information dissemination – Maintained an authoring platform for staff writing within the Transfer of Know-How and the Official Report – Archive implementation and support for Sydney 2000 Legacy planning

3. Understanding the information environment

Understanding the elements of the internal and external information environment of an organisation is fundamental to implementing an effective information and knowledge strategy.

While an Organising Committee for the Olympic Games (OCOG) shares much in common with any corporate entity there is specific pressures within the information environment of the OCOG that provide additional challenges, and indeed advantages for the effective management of information.

Table 2 outlines some of the elements of the SOCOG information environment and subsequent implications for the knowledge management team.

Table 2

SOCOG's information environment	**The implications for information and knowledge management**
Project based / transient in nature	– Build systems and processes for early obsolescence – Finite end
Exponential growth in staff / stakeholders	– Training and educating new staff – Ensuring compliance with established processes – Coordination across stakeholder groups such as sponsors, government agencies, IOC, etc
Quantity of information created/ multiplicity of information tasks	– Need to clearly define the scope of what information is being managed – Provide an internal consultancy service to scope information solutions
Potential for confusion in use of terminology, names and language	– Need to have a system to control and make consistent terms used in the planning process and therefore the information systems
The OCOG as a government entity	– Legislative requirements re record keeping, accountability and compliance to Acts of Parliament must be met
Requirement to pass knowledge back to the Olympic Movement	– Information to knowledge management – Legacy
Individuals value "their" information Individuals do not necessarily recognise the importance of their information to others	– Sharing information is about cultural change – Information mangers need to viewing the "big" picture and understanding the interrelationships between functional areas
Confidential vs. public information	– Information security
Disciplinary diversity Dynamic and changing information	– Build solutions which can handle a variety of formats, structures and subjects – Implications for thesaurus management – Flexibility and configurability in systems
Budgetary and technology limitations	– Cost benefit analysis required for all decisions – Limitations on headcount, space and technology

4. Beyond retrieval – building an information solution - the Sydney 2000 Games information system

With three years to go the Games SOCOG began a phase of information production and an internal focus on the need to effectively share information within the organisation. The experience in Atlanta was that during the planning processes staff needed to continually check with colleagues for the accuracy and currency of information.

It was recognised that the SOCOG's existing information structures were not going to cope with the exponential growth of the organisation. Already the lack of consistency and hence accuracy of information was having a detrimental effect on the efficient planning for such a large event.

Senior executive approval was given to allocate resources for the development of an organisational wide system for the sharing of information and knowledge creation. This solution would be largely technologically provided and would complement the already existing information and record management systems and processes.

It was proposed that the new system would provide a common platform for the creation and dissemination of information and knowledge, promote sharing and link existing data. Increases in productivity and security of data and a decreased in the duplication of data collection were also envisaged. The concept of the "one stop information shop" continued to be promoted

An information professional was appointed to consult on the design of the system and manage the project through to implementation. The project team included a team from the onsite Lotus Notes Consulting team. Lotus Notes was the preferred application due to pre-existing contractual arrangements, between IBM and the IOC / SOCOG. The advantage of this arrangement was that there was a dedicated team of developers and consultants on site to support the project.

The project team included information management professionals, business analysts, performance support specialists and technical systems developers. The combination of skill sets gave strength to the finished product but at times created conflicts in the development process. A feature of the development process was the high degree of input from the information specialist.

The first stage of the project was an information audit to determine the information needs, information seeking behaviours and knowledge structures of SOCOG staff.

Focus groups sessions investigated the following questions:

- what information do you have to seek out to do your work;
- how do you get the information you need;
- what information do you have to give out to others;
- list some information types - what links and relationships exist between the information types.

As a result of the audit it was proposed that the new system should provide:

- a secure environment for shared authoring of key documents;
- control for the approval process of operational documents - workflow functions;
- document version control and document histories;
- effective retrieval and search functions;

- alert mechanisms via email for changes to key information - "push and pull" functionality;
- links between topics for easy access;
- a corporate portal to other data systems;
- a store for superseded or archived documents;
- one stop shop for information to ensure accuracy and currency ;
- a reduction in the duplication of effort and an increase in productivity.

Development began on a customised Lotus Notes solution. Beyond the technical challenges of ensuring the simplicity of the system for the user was the information management challenge to codify and organise the structure into which the information and knowledge would be authored and stored. The system consisted of ten Notes databases of content with search and navigation databases available on the Desktop network, available to all staff.

The system – the Sydney 2000 Information System was given the in-house name ATHENA (Greek goddess of wisdom and knowledge). Organisationally it was determined that content ownership should be the responsibility of the generators of the information with system management and the integrity of the information structure the responsibility of the system manager (an information professional). Staff across the organisation gained an increased sense of ownership of the shared system and this decreased the requests for the development of individual information solutions.

While staff response was positive, the integration of system into such a diverse and growing organisation was a challenge. Extensive group and individual training sessions were held and information staff provided a telephone help service. Middle managers were coached in how the Athena system could be manipulated to solve their departmental information issues.

For some staff Athena challenged the way they worked and thus the implementation stage was also about managing change. The keys to successful implementation were to secure executive mandate, and to ensure that all major documents of operational importance such as venue operational plans were only created and retrieved via Athena.

The objectives, on implementation, of Athena were:

- to provide easy access for Sydney 2000 staff to consistent, up to date and accurate Sydney 2000 Olympic and Paralympic information;
- to streamline the authoring, collation and approval of information for inclusion in venue and event operating plans, reports and other key strategic and operational documents;
- to minimise duplication of information production and storage;
- to link to other internal data systems.

5. Information management to knowledge management

The ready adoption of Athena as the centralised information retrieval and creation source meant that, over time it underwent many enhancements to cater for additional needs. Designed with a generic structure built around the retrieval of textual data, increasingly new enhancements required information be displayed in custom designed pages e.g. calendar and event data. Also it was recognised that not **all** information could be placed within the Athena structure. Athena took on the role of a corporate portal or gateway providing linkages to other sources of data and information.

Post implementation clients of Athena such as, the SOCOG call centre, the Transfer of Know-How (TOK) program and the Official Report resulted in Athena being modified for use as a tool to facilitate

the capture of knowledge. There was a need to facilitate the process of capturing knowledge and either feed it back into SOCOG communications strategy (call centre) or into the processes of future event organisation (TOK and Official report).

Athena' s early success in managing internal corporate information was utilised as SOCOG scoped its needs for an outsourced call centre. The call centre operation required an information solution that provided current, relevant and consistent public information to call centre operators – 420 operators during peak operating conditions. It was decided that Athena would be the information backbone for the call centre. While this characterises the dynamic environment of SOCOG it presented a challenge for the development team.

A fast track development cycle was undertaken to create a parallel system which extracted all information from the mother system (Athena) that was designated as "public" and replicated this every 10 minutes onto call centre operator's screens. Additional functionality to capture public opinion and issues was developed. This feedback was processed via a workflow and directed by email to either SOCOG public information staff or to other appropriate staff throughout SOCOG for resolution. In this way the content of Athena was expanded and modified because of feedback from the clients of the system.

Analysis of this public feedback provided a ready knowledge base and was highly relevant input for the public communications and issue management strategies.

As a legacy to the Olympic Movement, SOCOG had two programs for capturing the history and the know-how about "how we did it here". The first the Official Report is an obligation of the Host City contract and is delivered to the IOC as a legacy and reference source about the Sydney 2000 Olympic Games.

The other program the Transfer of Know-How (TOK) program is a result of a formal arrangement between SOCOG and the IOC to capture knowledge, both explicit and tacit. Previous host cities have had to reinvent the wheel for organising their Games. The knowledge provided by the TOK program forms a valuable tool, which will provide assistance, and direction for future Games organising committees.

The Official Report and the TOK have both used the Sydney 2000 Games Information System (Athena) to create, store and edit information. The demands of these projects meant that the system was utilised to capture the tacit knowledge of staff as they wrote the story of their program and their contribution to the Games. These activities also confirmed the importance of the transfer of knowledge and information as a corporate asset.

The ability of SOCOG to move efficiently towards managing knowledge confirmed that the early development of a corporate document and information base was a wise strategic decision. Athena grew from merely a "warehouse" of information to a corporate portal and knowledge base.

6. Let the Games begin

Athena went through a metamorphosis of sorts: it started out as a corporate information management tool, and served SOCOG's needs well in the planning phases. As the Games approached, planning became secondary and Athena's importance was primarily in the management of public information to the call centre and external agencies; and the capturing of intelligence from call centre.

During the Games period Knowledge Management Services operated the following:

- records management processes and a centralised retrieval system (TRIM database);
- a technology solution for managing key corporate, operational and public information;
- an authoring platform for the Official Report and the Transfer of Know-How;
- an information infrastructure and management of call centre operations ;
- an information solution to manage "Lost and Found" items;
- a reading room (library), music listening and video viewing service for athletes and official's within the Olympic Village;
- a research collection and services for journalists within the Main Press Centre.

7. After the Games

Following the successful delivery of the Olympic and Paralympic Games the KMS team directed all their energies into the sentencing of SOCOG records for future archival processes. Approximately 8,000 archive boxes of records were processed in the two months following the Games. In future the records will be culled, with some sentenced for destruction within a specified timeframe. Those with permanent retention will be transferred to the State Records Authority of New South Wales.

The library collection was weeded and transferred to the State Library of New South Wales (the major library in Sydney) and the memorabilia was transferred to the Powerhouse Museum Sydney for conservation and storage on behalf of the State Government of New South Wales. The photographic image collection will be transferred to the State Library of New South Wales once the Official report is completed.

All intellectual assets that remain from SOCOG and electronic data, including Athena are currently under the custodianship of the State Government.

The IOC has custodianship of the output from the Transfer of Know-How program, including a copy of Athena. The Official report will be published in 2001.

8. Lessons learnt

- Information within an event driven organisation is vast and must be defined.
- Effective knowledge management requires a foundation of established records, document and information management.
- Knowledge is a corporate asset.
- Maximisation of the asset can only be achieved via the leadership of professionally qualified staff.
- Distributed "ownership" of content is crucial to ensure currency and accuracy of information.
- Analysis of the information environment is essential in the design of information structures - infrastructure requirements such as technology should not determine the information strategy.
- There is no definitive solution in knowledge management. Any solution or processes initiated must be flexible and ready for change. The patterns of knowledge are always changing.
- The information continuum through creation, approval, storage, retrieval, disposal and retention must be coordinated across all functional areas of the organisation.
- Knowledge capture and the planning for legacy are crucial if "reinventing the wheel" for each event is to be avoided.

9. Conclusion

At Games time SOCOG had numerous information systems that contributed to the success of the event – Games Result system, Official Web Site, INFO system of real time Games information for the media, broadcasting feeds and publications.

The systems and processes developed by the KMS program, in particular the Athena system contributed much to the planning of the Sydney 2000 Olympic and Paralympic Games:

- efficient retrieval of information within the totality of the data available;
- information is secure and tracked;
- minimisation of duplication of effort;
- version control on key documents;
- evidence of authorisation and approval;
- evidence of activities and actions;
- integration of information management solutions;
- identification of critically important corporate information;
- provision of corporate decision making resources;
- efficiency / financial gains via time/cost savings;
- capture of knowledge for use by future Games organisers.

Understanding SOCOG as an organisation, its knowledge culture and information environment, were essential in developing the organisation's knowledge management solution. If a similar enabler was developed in other sporting or event organisations the following suggestions should be noted:

- It is essential to have a team of information professionals to lead the development of information solutions and guide a knowledge strategy.
- Success must be measured not merely in the "cleverness" of the technology solution but the usefulness of the repository, the authoring environment and its integration to other information structures.
- The resources required for effective training and implementation support must not be under-estimated.
- Successful knowledge management includes change management.

Specific Sessions
Sports Information Management
New Technology in Sports Information
(S11,S12, S13, S14)

Wednesday, 25th April 2001

Moderators:

S11:
Gretchen Ghent
Vice President for North America of IASI and Chair of NASLIN, Canada

S12:
Ayala Maharik
The Library at the Wingate Institute of Physical Education and Sport, Israel

S13:
Erika Schwarz
Head of the Sport Documentation and Information Service, Higher Sport Council, Spain

S14:
Anitta Pälvimäki
LIKES Information Service for Sport and Health Sciences, Finland

SportNet, a National Sport and Recreation Online Network

S11

Jill Haynes
Manager, National Sport Information Centre
Australian Sports Commission, Australia

1. Background

SportNet is an online network for Australian sport developed in consultation with sport by the Australian Sports Commission (ASC) and Telstra, a major Australian telecommunications company. SportNet consists of a suite of business tools in an online environment designed to assist Australian sporting organisations in their day to day functions and main administrative tasks, and to allow sport to provide more customer focussed services.

2. History

In July 1994 the Australian Federal government announced the Olympic Athlete Program (OAP), a AUD135 million program designed to develop Australia's elite athletes to their highest potential to enable them to represent Australia with distinction in the year 2000 Olympic Games.

The objectives of the OAP were:

- **Involvement** - to facilitate the preparation of the largest possible Australian team, comprising over 600 athletes, so that they may compete to the best of their ability in Sydney in 2000.
- **Achievement** - for Australia to finish in the top five nations at the Sydney Olympics.
- **Legacy** - to provide lasting benefits to sport in Australia.

To assist with the operation of the OAP, and to provide a legacy to Australian sport, a decision was made to set up a National Sport Information Network.

Initially, this National Sport Information Network, which later became known as SportNet was set up to link via ISDN lines National Sporting Organisations with the Australian Sports Commission (the body responsible for administering and funding sport in Australia on behalf of the Federal Government). Web creation and hosting facilities were provided, in addition to Internet access.

It soon became apparent, through consultation with sporting bodies, that for the network to be the most effective sports needed to communicate with all their constituents from the grass roots club through local and State level to the national body. A whole of sport network would allow communication with members, in addition to aggregation of services such as a database of members. Given the dimensions of the new look SportNet, and the requirements for considerable capital investment the ASC decided it required a partner to assist in the provision of the technical infrastructure. Telstra, Australia's largest telecommunications carrier, was selected as the partner for this project.

3. Whole of Sport SportNet

In mid 1998 the model for the whole of sport SportNet was created. The vision was to develop a self-supporting, co-ordinated online environment for Australian sport which would:

- Facilitate administrative efficiencies in Australian sport through the implementation of a whole of sport network with varying levels of security to promote communication and give access to appropriate data bases within and between sports.
- Result in greater self sufficiency in Australian sport through the generation of revenue from transactions, sponsorship and advertising.
- Facilitate greater community involvement in sport through an electronic environment which provides greater access to information, facilitates communication and provides "can't do without" software applications.

A trial of SportNet involving 70 sport organisations was completed, and a business case analysis of SportNet was conducted during this trial which indicated that sport would gain substantial efficiencies and cost savings through SportNet.

4. SportNet phase 2

In November 1999 SportNet Phase 2 commenced. SportNet phase 2 offered the following key features:

- Web hosting
- Web page creation wizard
- Help Desk
- IMIS registration databases
- Online training
- SportNet email accounts
- SportNet public website

The key element to phase 2 was the iMIS database. The membership database allows the development of online national databases enabling aggregation of membership details nationally. Each sport develops their own customised database, records are entered locally using an internet browser based application (or desktop software) and are immediately available to State and National bodies. This database will deliver many of the major administrative efficiencies for sporting organisations and is the vehicle through which enhanced reporting to the Australian Sports Commission can be delivered. This reporting will include acquittal of grants provided to national sporting organisations from the Australian Sports Commission and reporting on numbers of participants.

An independent analysis by the international accounting firm Ernst and Young estimated that sporting organisations could save over 60% of their cost and effort of registration by utilising the SportNet online database.

SportNet is a community sport product. It allows a sport to set up an Internet site specific to their local requirements, and to take advantage of other tools to facilitate communication. Tools such as forums and chats in both private and public networks allow communication between existing participants, and to the wider community. It is not trying to compete with the numerous websites offering up to the minute international sport results and play by play reporting. In addition to the tools intended to aid

with sports administration, it is attempting to build a community of interest for the Australian participant in sport, athletes, coaches, officials and administrators. The SportNet portal website has content relating to training, coaching and best practice administration. This is a very large market in Australia with 32.4% of Australians aged fifteen and older involved in sport in some capacity. [1]

It was during the period 1999 - 2000 that many competing products began to appear on the market in Australia. These competitors generally sought a partnership with SportNet, realising the strength of the brand names of both the Australian Sports Commission and Telstra in the Australian market. These competitors although relatively small, did segment the market and offered different options to sporting organisations. One of the major advantages of SportNet when it came on the market was the opportunity to create a "whole of sport" network within individual sports.

In some cases the introduction of the competitors into the market has meant that State or local bodies within individual sports may have signed with as many as 4 different companies, making administrative efficiencies such as whole of sport databases very difficult to achieve for those sports. Several of the competitors were offering products that did not appear to be sustainable. The shake-up of the dot com industry, and the drying up of venture capital has led to the demise of some of the competition, and the industry will continue to settle down over the next few years.

The ASC, as the peak federal body for sport in Australia was concerned that sports may be burnt by some of the SportNet competitors. Some of the contracts sports were signing gave away their intellectual property for 10 years, a very long time in the Internet environment. There was also the danger of loss of data if the company went under. The demise of Worldsport.com is an example of what can happen in the industry. A recent survey in SporTVision[2] shows 20 International Federations, mostly smaller organisations, were still without websites at the time the article was written, following the collapse of Worldsport.

Some of the competitors were offering a range of free products that SportNet was charging for, such as web hosting. To counter this and continue SportNet's development, in consultation with sport, a suite of new services was suggested, and SportNet phase 3 was born.

5. SportNet phase 3

Work is underway on SportNet phase 3, due for launch in April 2001. The main components of SportNet phase 3 are:

- Scoreboard - a web/software solution for fixtures, results and statistics for sporting bodies and clubs.
- SportNet Active - an entry level free product aimed at attracting new members to SportNet. This would provide some of the functionality such as web hosting, but not the iMIS database.
- iMIS additional functionality allowing players to see their own records, register and pay online for membership and events.

Other enhancements to the SportNet product include:

- A content management system and community manager to ensure community content will be applicable and updated on the SportNet web site.

[1] *Involvement in Sport*. Australia. Canberra: Australian Bureau of Statistics, 1997

[2] Heald, T. (2001) - *Federations and the web*. SporTVision Winter 2001; pp. 25-35

- Additional staff are being employed for a one year period, on a regional basis to assist in the training of new users, and marketing the product.
- SportNet website is undergoing a redesign to highlight the benefits of becoming a SportNet subscriber and to provide easier access to valuable content.

6. Current situation

SportNet currently has 56% of Australian National Sporting Organisations connected. The challenge now is to sign up initially the State bodies, and ultimately all the clubs within the sport to gain the most benefit from the product.

An example of what a sport can do with the SportNet product is RugbyNet. The Australian Rugby Union have implemented SportNet across their whole network, and purchased SportNet for all their 900 clubs. This provides tremendous advantages for this sport in terms of communication, data sharing and a feeling of community for the rugby fraternity.

7. Future

SportNet Phase 3 is the immediate future of the product. This is another stage in a developing product.

SportNet is closely aligned with another Australian Sports Commission initiative: Active Australia. Active Australia targets schools, clubs and local government to improve their business practices. There is a natural affinity between Active Australia and SportNet. Bracketing the two products together, provides a package that can provide major benefits to Australian sport.

The major advantages SportNet has are the product was created in consultation with sport. A great deal of time and money has been spent on creating a robust infrastructure. This and the commitment by the Australian Sports Commission and Telstra will ensure a continually evolving applicable product for all Australian sport organisations.

8. Conclusion

When the Australian Sports Commission first floated the SportNet concept it was a world leader. The concept was ahead of the perceived need in Australian sport.

The SportNet product is a world leading product in the use of the Internet to enhance administrative efficiency of sporting organisations. Since SportNet was first mooted a number of other products have come on the market focusing on club based internet content and in some cases claiming to offer similar administrative tools.

In some cases competitors have been able to convince sports to take up their product through the use of so-called free offers, including free web hosting. SportNet has in some cases been slow to respond to these challenges, however it is now producing a product which will retain its strong market leadership.

Developing the SportNet product with Australia's largest telecommunications company, Telstra, provides the advantages of solid backing, reliability and security. However a minor disadvantage has been that some smaller companies have been able to develop product faster forcing SportNet to appear to have to catch-up to match some of the offers made by competitors and surpass them.

SportNet Phase 3 addresses the perceived advantage of free offerings by some parties while retaining the rights and critical features of SportNet.

The influx of competitors has raised the bar, and heightened the awareness of how the Internet can assist sport with their administration.

The investment in the technology is only part of the solution. Investment in training and education is also required to make the best use of the new technologies.

The implementation of SportNet combined with corresponding relevant training and education will ensure Australian sport will be the winner as they implement the new technologies and take advantage of the improvements in communication and savings they realise.

Extranet for Internet
Content Creation for the FIBA Website
S11

Jacques Ohannessian,
IT Manager
Florian Wanninger
Head of Communications
International Federation of Basketball (FIBA), Germany

1. Summary

The intent is to present, on the basis of a concrete example, the opportunities and challenges resulting from the development of the Internet for a sports governing body. On one hand, the greater possibility to collect and disseminate information offers FIBA an invaluable tool for its communication services; on the other hand, with the increasing expectations of the media and the public in terms of the speed and quality of the information, new business processes and structures have to be developed.

The extranet set up at FIBA for collecting content for its official website, *www.fiba.com*, will serve as the support for illustrating the above.

2. Demonstration

The presentation starts with a short demonstration of the tools introduced at FIBA over the last few years:

- Show the FIBA website to present where the collected information is being used.
- Show the Extranet tool *Remote Input* (RI):
  - Security (login, SSL encryption)
  - Information gathered:
    1) Competition: game results and players statistics
    2) General information: club information, team rosters, player and coach biographies, arena details, TV coverage, spectators, coach and player quotes, etc.
- Explain the operation and validation process

3. Objectives

As FIBA redesigned its Internet presence in 1998, the following objectives were set for the new website:

1) To be an extensive information source for basketball professionals, especially the press. The information of interest for this target group are competitions calendar, results, player statistics, press releases, etc.
2) To prepare for evolving towards a promotion platform for the general public.

It was soon clear that the required content could not be created at the headquarters:

- Firstly, the scope presented by the number of FIBA competitions (30), the national federations - NF (211) and clubs (350 for Europe only) involved would have required an entire department for Internet content creation alone.
- Secondly, the information necessary for the 2nd Internet objective mentioned above (promotion) reach far beyond the traditional information managed by FIBA. Player biographies, pictures and coach quotes are content which have typically been the domain of the media.

Therefore, the possibility of collecting the content directly from its source (the clubs, NF and other actors within FIBA's structure) with an Extranet was investigated, with the following objectives:

- simplify and speed up the gathering of game results and player statistics by allowing entry to the Website for the receiving club directly from the arena;
- reduce the entry workload at FIBA;
- gather additional content such as pictures and biographies directly from the NF and the clubs;
- receive information from the most reliable source, i.e. the NF or clubs.

The Extranet *Remote Input* (RI) was made available to those clubs participating in the top European club competition for the start of the 98/99 season. The acceptance and usage for the first season reached 50%. Today, in the third year of operation, the figure for this competition is around 95%.

The reason for acceptance was mainly the rapid development of the Internet in the late 90s, which made it a commodity in almost all the professional clubs. Once an Internet connection is available, RI is ready for entry. Interestingly, a similar project was initiated in 1994 but with different technology (AS/400 emulation over leased line), which failed exactly for the opposite reason: the complexity of the set-up, the need for specific hardware, and finally the unfriendliness of the character-orientated user interface.

The clubs also understand that this is a tool for their own promotion: they benefit from a dedicated space on *fiba.com*; it is in their own interest to make sure that their pages are filled with accurate information and attractive pictures.

4. Challenges

The Extranet is shifting the entry of information to the national federations and the clubs. When this information was previously entered at the headquarters, as is the case for all competition information of an official nature, this calls for an adaptation of the business processes in place.

A striking example is that of the team rosters. FIBA manages the eligibility of the players and delivers the licenses for participation in the various competitions. This is a complex and sensitive process, which involves a dedicated department in order to check nationality, participation in previous competitions, etc. Traditionally, FIBA issues a list of eligible players for use by the game commissioners only a few days before the competition starts. In addition, the media and the public also want to know as soon as possible who is playing plus a little history or previous games facts, without forgetting information on the coaching staff. Therefore, we decided to give the club the possibility of entering their "tentative" roster with the RI. Herewith, the info is available on *fiba.com* about one month before the official rosters are validated by FIBA. Because of the sensitive nature of the license issue, these two processes run independently from one another.

The tentative rosters are managed by the Communications Department, the official one by the Eligibility Department. Until the official roster is validated, the tentative rosters are shown on *fiba.com* with a warning notice mentioning the non-official nature of the information.

This shows how the two objectives of providing official information and public-oriented information can be conflicting. Similarly, this illustrates the challenges of a website which aims to be both the information source of an official sports body, as well as a promotional tool for reaching a wider public . Another challenge to the concept is the growing commercial interest for sports information on the Internet. As websites and sport contents are becoming valuable assets, the members of the FIBA family such as the clubs, leagues and national federations seek to maximize revenue from the Internet and may become reluctant to produce and deliver content to the International Federation.

Finally, even if the skills necessary are limited to the minimum, the RI concept still requires a basic understanding of the Internet. There are great discrepancies between the clubs, depending on the economical situation of the countries and the level of professionalism of the club.

5. Next steps

The RI tool was first introduced in Europe for the major club competition, then for all club competitions, and finally for national team competitions.

The next step is to expand to the non-European zones in order to increase the coverage over all the globe. This global Extranet will bring to a new scale all the benefits discussed previously, in particular an increase in the quantity and quality of the information available at FIBA (and in turn via *fiba.com*), a greater exchange of information between the members of the FIBA family; a stronger and more consistent presence of FIBA throughout the 211 member NF.

Last but not least, the economic value of the information gathered and the extended reach must be capitalized. Official websites of competitions and events, mailing lists, and new content are all assets which allow FIBA to develop further business activities.

6. Conclusion

The Extranet gives the International Federation the possibility to actually leverage its huge network of federations and clubs in an unprecedented way. To build successfully on this potential requires:

- Identifying the needs. These can be organizational (such as an increase in efficiency, share of internal information), or promotional (such as communication, image building).
- Understanding the development of the economic aspects of sports information in order to maximize its value for all members of the FIBA family.
- Providing easy–to-use tools in order to ensure acceptance and use.

IOC–NOC Extranet: Facts and Figures

S11

Michel Filliau
Manager Administration Services, IOC-NOC Relations Department, Switzerland

1. What is the NOC Extranet ?

The NOC Extranet was launched by the International Olympic Committee in December 1999 to link - virtually and instantly - the whole NOC Community, including the different IOC departments, Olympic Solidarity, the 199 National Olympic Committees, the five Continental Associations and the Games Organizing Committees.

It is aimed to be a permanent meeting point and an e-administration center where the NOC community can exchange information, send and import documents, follow-up programmes, find reference documents, consult guidelines or agendas, participate in a Forum and be informed about the latest news related to the NOCs. Different levels of communication are possible and the privacy is granted by several access controls.

This private site is managed by the IOC-NOC Relations Department and has been technically developed by Marvel Communications. In fact, the NOC Extranet is a tool which fulfils three basic NOC needs:

1) instant, direct and private communication;
2) e-administration (e-service/e-exchange);
3) NOC shared database.

It has been conceived to be "light" (accessible from every country, regardless of the machine, the software or the quality of the IP and the connection) and "interactive".

2. Facts & Figures

- 61 % NOCs are currently subscribed
- 68% of the users (almost 400) are NOC Presidents (13%), Secretaries General (18%) and office bearers (37%)
- It covers the five continents
- Subscription is free of charge

Theoretical and Logical Strategies for Knowledge Management in Sports Science

S12

Herbert Haag
Director of the Institute of Sport and Sport Sciences
University of Kiel, Germany

Introductory comments

- Sports information - a burden or a chance?
- Presentation of basic concepts (sports science; knowledge management; philosophy of science)
- Philosophy of science
- Theory/practice relationship as a quest for the future

The so called information age, which the present time is often referred to as, has an ambivalent character.

On the one hand, people are suffering more and more from over-information and have problems dealing with all the information, storing the important parts of this information, and using appropriate retrieval techniques so that the necessary information is available when needed. This is true for daily life, but also for the world of science. Where ancient times are concerned, it is difficult to do research, for example, on the swimming techniques used in Ancient Greece, since only part of one vase is still available where art can be seen representing a swimming movement; today the opposite is true: since there is too much information available, it is difficult to make the right choice.

On the other hand, the information available today can also offer a chance for something that can be called emancipation through information. This means that being informed gives the human being more power, more independence and more sovereignty. Possessing information is, alongside speaking, thinking, feeling and moving, another means of emancipation, and as such represents an opportunity.

Where the present analysis is concerned, this positive view - of sports information as an opportunity - is the basic assumption on which basic concepts are explained in part one, *sports science*, *knowledge management*, and *philosophy of science*. With these basic concepts in mind, eight *theoretical-logical strategies* are explained in chapter 2 in order to be used for knowledge management in sports science. The *concluding comments* will pick up the *theory-practice relationship as a quest for the future* in order to point to necessary consequences from this analysis.

1. Basic concepts

Three basic concepts have to be explained in order to understand *theoretical-logical strategies* for knowledge management in sports science. This relates to the logic of sport science as an academic field which has to be seen using a dual approach. Knowledge management seems to be a key concept, which has to be understood in the information age. Finally, dealing with information has a lot to do with the construct of philosophy of science.

1.1. Sports science

Like work-, health-, nutrition- and information science, sports science is a relatively new academic discipline. The specific characteristic of it is that:

- it is a central social phenomenon in the body of knowledge of this academic discipline;
- it needs a holistic approach in terms of research methodology from hermeneutical to empirical;
- it requires a dual approach with theory fields and theme fields.

1.1.1. Theory fields of sport science

"A theory field refers to an applied sub-discipline of a more-or-less established academic discipline with a relatively old history. The so-called intra-relationship between the applied sub-discipline and the academic 'mother' or 'relation' science is of importance within the concept of theory fields." (Haag, 1994, p. 50)

The following figure gives an overview on the 12 theory fields which are conceptualised in order to make up the body of knowledge of sports science if described by the parameter "theory field".

Figure 1
Theory fields of sports science

Sports Medicine	Sports Psychology	Sports Economy
Sports Biomechanics	Sports Pedagogy	Sports Politics
Sports Technology	Sports Sociology	Sports Law
	Sports History	
	Sports Information	
	Sports Philosophy	

In this figure, four blocks can be distinguished, each representing three theory fields. They can be characterised by the following headings:

- Medical and natural science
- Social-behavioural science
- Economic-political science
- Sciences representing action competencies

It is important to note that information science (computer science of sport) is positioned within this last group of theory fields, since it is the theoretical framework for an action competency, which everybody has to master today.

1.1.2. Theme fields of sports science

"A theme field is considered a scientific unit which is composed of interrelationships between different theory fields related to a certain theme, which might come very directly from the field of movement, play, and sport or which might be a theme with dimensions that are not only sport-specific. Themes are considered from an interdisciplinary point of view, where a certain number of theory fields, depending on the given theme, integrate their scientific results in regard to this specific theme". (Haag, 1994, p. 50)

The following figure gives an overview for specific and six general themes which are conceptualised in order to make up the body of knowledge of sport science if described by the parameter "theme field".

Figure 2
Theme fields of sports science

Specific (e.g.)	**General** (e.g.)
Movement	Performance
Play	Health
Instruction	Recreation
Training	Music and Movement
	Environment
	Management

It is important to note that the indicated themes are examples. This relates especially to the general theme fields, since there are many theme fields. It has, however, to be considered on which level of abstraction the theme fields are formulated. The specific theme fields are without doubt the central issues related to movement, play, and sport.

1.2. Knowledge management

It can be assumed without any doubt that knowledge management has to be mastered if the challenges of the information age can be met. Certain axiomatic assumptions have to be considered, and these are presented below.

1.2.1. Past (knowing) - present (understanding) - future (anticipating)

Figure 3 explains a first axiomatic assumption representing the relationship of past - present - future.

Figure 3
Past - present - future paradigm

Past (Knowing)
– Origin of IASI (Prof. Dr. J. Recla)

Present (Understanding)
– Network of Data Bases for Literature Search

Future (Anticipating)
– Strategies to Handle Information Overflow

Where sports information is concerned, one can assume that it is important to know about the pioneer work of Prof. Dr. J. Recla (Graz, Austria) in developing the field of sports information, especially also by founding the International Association of Sports Information (IASI). Over the years, this organization has been very instrumental in developing all aspects related to information and sport. It is furthermore important to have related to the present a good understanding of the available network of databases for literature searching. Only by understanding this knowledge management is the present possible.

For the future, an anticipating competence is necessary, since certain developments - like a constantly increasing overflow of information - have to be foreseen and counteracted by certain provisions.

Past - Present - Future therefore is an axiomatic assumption which holds true, especially in a time where change seems to be the dominant force.

1.2.2. Historical, informational, philosophical action competence

Sports history, sports information and sports philosophy can be regarded as conceptual theory fields of sports science. They are conceptual, since they represent, besides a certain body of knowledge, dimensions of consciousness of the human being which represent in the form of axiomatic assumptions important abilities for dealing with knowledge management. The following figure explains these axiomatic assumptions.

Figure 4
Conceptual theory fields of sports science - Derived action competence

History (Development Understanding)
Information Science (Information Collecting – Storing – Retrieving)
Philosophy (Normative Decision Making)

For history in general and sports history in particular, it is important that one learns to develop a genetic understanding, this means that things can be judged correctly only if their development is known and thus understood.

In regard to information in general and sports information in particular, it is important that one learns how to collect, store and retrieve information. This is the key concept of knowledge management and has to be performed in this triad.

As for philosophy in general and sports philosophy in particular, it is important that one learns to make normative decisions in a responsible way. This is constantly required today; therefore a solid philosophical training is necessary to fulfil this responsibility of making normative decisions in a proper way.

In summary, it can be said that these three action competencies are clearly necessary in order to perform knowledge management in an adequate way.

1.3. Philosophy of science

The philosophy of science is composed of epistemological and scientific theories. Both sets of theories can help to develop strategies, attitudes and action competencies which in the long run lead to a reasonable handling of the amount of information available today.

1.3.1. Epistemological theories

There are many such theories available. However, the most important ones are represented in figure 5.

Figure 5
Epistemological theories (examples)

- Hermeneutics
  (Texts, Objects, Actions)
- Empiricism
  (Quantitative Data Collected by Senses)
- Phenomenological
  (Empirical Data Collection and Hermeneutical Analysis)

Hermeneutics related to texts, objects and actions represents one end of a continuum of theories which explain how scientific knowledge can be gained. It basically means "understanding", and is mostly based on words if texts are the database. In addition, the understanding of objects and actions is formulated in words. Empiricism represents the other end of a continuum of theories which explain how scientific knowledge can be gained. The basis here is quantitative data collection performed by the human senses, mostly by seeing.

Somewhere in the middle of the continuum phenomenology can be located, since in this case empirical data collection takes place and at the same time understanding. This means that a hermeneutical analysis is performed.

It is thus important for correct knowledge management that the different ways of originating scientific knowledge are known and judged properly.

1.3.2. Scientific theories

The scientific theories deal mainly with issues like function, task, aim and affective of science as a human endeavour. Furthermore, the consequences of science are considered. The following figure contains a sequential listing of examples of such scientific theories.

Figure 6
Scientific theories (examples)

1. – Subjective Idealism
2. – Dialectic Materialism
3. – Critical Theory
4. – Critical Rationalism
5. – Logical Empiricism
6. – Positivism

The sequence of these six positions can again be seen as a continuum in which subjective idealism and positivism are the two opposite ends of the continuum. The other positions are scattered in this continuum relatively freely. Within this context, it is not possible to describe these positions in great detail. A short label for each scientific theory may be sufficient for the purpose of indicating that these scientific theories have to be considered as a theoretical framework for the understanding of knowledge management.

- Subjective idealism: science for science's sake. The researcher is responsible only for him-/herself.
- Dialectic materialism: reductionistic in regard to the material world as a baseline for thinking.
- Critical theory: strong responsibility of science towards society.
- Critical rationalism: principle of falsification in order to arrive at proven knowledge.
- Logical empiricism: admits logical sentences and empirical evidence as bases for knowledge generation.
- Positivism: admits only empirical data collection and does not deal with the finding of research questions or with the consequences of research results.

In summary, these scientific theories are closely linked to the origination and use of the immense amount of scientifically proven knowledge that is available today and which needs knowledge management.

2. Theoretical-logical strategies

In order to deal adequately with knowledge management, certain theoretical-logical strategies are available which may help to deal with the information overflow today. These theoretical-logical strategies are organised below according to the degree of complexity which is involved in the different strategies. It is not proposed that they should be used according to the specific situation which requires proper actions concerning information collecting, storing and retrieving.

The presentation of the eight theoretical-logical strategies can only be short in this context. Further details are described in the book *"Datenanalyse in der Sportwissenschaft. Hermeneutische und statistische Verfahren"* (Data Analysis in Sports Science. Hermeneutical and Statistical Procedures), Strauß, Haag & Kolb, 1999.

2.1. Information collecting

This is an important step in knowledge management since a selection of useful information from the information net needed requires this strategy. Today there are data banks (mainly literature) available. Furthermore, the development of information technology (mainly the internet) is opening many avenues for the collection of information. (Perl, Lames & Miethling, 1996)

2.2. Systematising

It is quite obvious that a certain order and system have to be created in the information available. In this context, it is important to develop categories which help in this systematising process.

2.3. Summarising

It is essential to reduce information to the important issues of the available information. This means a constant reduction process is necessary in order to arrive at key statements. Often the reading of summaries is sufficient in a first approach to knowledge management.

2.4. Comparing

Comparing can be regarded as a basic way of thinking. A relative and absolute dimension has to be distinguished. The result of comparing can be different, similar or equal. The International Society for Comparative Physical Education and Sport (ISCPES) is a very helpful partner in this area, especially for dealing with cross-cultural comparisons in a scientific way.

2.5. Interpreting

The information treated with strategies as described in 2.1.-2.4. then can be interpreted with hermeneutical approaches. Information without interpretation has a very technical character. Knowledge management needs this interpretation step which must be performed with a high degree of inter-subjective probability.

2.6. Explaining

A still stronger and more extensive interpretation can be called explanation. This relates to the cause-effect discussion. In contrast to the usual opinion that explaining is possible only by using results of experimental studies, in this context a wide interpretation of explaining is used, since this is the purpose of dealing with information on a more sophisticated level.

2.7. Justifying

The power of the result of an information reduction process can be to justify certain actions and developments with logical arguments (plausibility) and empirical evidence. In order to arrive at justification, a very exact and diligent means of dealing with information is necessary.

2.8. Proving

This theoretical-logical strategy can be seen in a narrow sense, meaning proving in a mathematics-based procedure. Here again a wide understanding of the term proving is proposed in order to define a final step in the process of dealing with information. This relates to the fact that numbers and/or words are used as a database.

3. Concluding comments

The following five aspects may serve as concluding comments in order to give an overview of the important issue of knowledge management in light of the present situation called the "information" age.

1) **The Tendency of the Development of Quantity as a Dead-End Road**
The tendency to produce constantly larger quantities of information is a dead-end road. *"Less is more"* is certainly true in this regard. Very often, over-information, tiredness of being informed and feeling overwhelmed by information is the result of the information avalanche. Rethinking has to take place in this context.

2) **Knowledge Management Requires Theoretical-Logical Strategies (Understanding)**
Knowledge management requires theoretical-logical strategies, for which eight examples have been given. It is important that we deal intelligently with information in order to use the great advantages to be found in more enlightenment and scientifically proven knowledge today.

3) **Knowledge of the Past as a Key to Understanding (History)**
Information should not be thrown away constantly. There has to be a solid amount of knowledge which must be handed down from generation to generation. Without knowing about the past, the complex world of today cannot be understood. The sometimes very hectic process of reform and renewal has to be handled with history as a parameter in mind.

4) **Managing the Available Knowledge in the Present (Information Science)**
Today, it is absolutely necessary to use information technology (IT) to manage the available knowledge. However, it would be dangerous if this were seen only in a technological dimension. Theoretical-logical strategies (especially 2.4-2.8) are necessary, since it is appropriate for human beings to use their cognitive abilities in this difficult knowledge management process.

5) **Anticipating and Shaping the Future as a Consequence of Understanding (Philosophy)**
Where the consequences for future developments also related to dealing with constantly increasing information philosophical considerations are concerned, it will be increasingly necessary to make normative decisions in order to apply the right knowledge management.

References

Haag H. (1994) - *Theoretical foundation of Sport Science as a Scientific Discipline. Contribution to a Philosophy of (Meta-Theory) of Sport Science.* Schorndorf: Hofmann.

Perl J., Lames M. & Miethling W.-D. (Eds.) (1996) – *Informatik in der Sportwissenschaft* (Computer in sports science). Schorndorf: Hofmann.

Straub B., Haag H. & Kolb M. (1999) – *Datenanalyse in der Sportwissenschaft. Hermeneutische und statistische Verfahren* (Data Analysis in Sports Science. Hermeneutical and Statistical Procedures), Schorndorf: Hofmann.

Information Technologies in European Sport and Sports Science
The European Pilot Project ITES [1]

S12

Christoph Igel, Reinhard Daugs
Institute of Sport Science of the Saarland University, Germany

1. Introduction

The integration of new information and communications technologies into tertiary-level education and research is a special challenge for all institutions of higher education throughout Europe. Whether in the traditional fields of activity and responsibility of academic education, in the context of scientific congresses or publications – the conception, realisation and evaluation of innovative internet-based learning environments is gaining cross-border momentum with the effect that in a few years time virtual universities and colleges are likely to be a global reality.

Apart from the technological development of specific hardware and software applications, concepts of teaching methods and communication systems based on findings of psychology of learning and proven by information science will be ever more at the centre of interdisciplinary research in this field. The interaction of low-cost practicality, reasonable technological investment and user-friendliness will be of great importance, not least in view of acceptance, application and future developments within the scientific community.

Against this background, the Institute of Sport Science of the Saarland University has realised the European pilot project ITES (Information Technologies in European Sport and Sport Science) scheduled for the period of 1998-2002. This interdisciplinary research and development project aims at the integration of innovative information and communications technologies into the traditional university fields of activity and responsibility.

On the basis of internet-based learning environments using topics of sport and sport science in Europe as an example, the pilot project realises and monitors systematically and evaluates the opportunities and restrictions of implementing interactive and multi-media concepts and their integration in the established forms of scientific seminars (*Web-based Teaching*), scientific congresses (*Web-based Congressing*) as well as scientific publications (*Web-based Publishing*).

2. Multi-media and learning programmes in Europe

In 1995, the European Commission arranged for the research project *Multi-media and learning programmes* to be started. This project aimed at assessing the current situation in the field of multi-media learning programmes in Europe and developing an action plan to activate and co-ordinate European research initiatives in this field and make them more efficient. Subject of investigation was the range of products and services offered in the field of education and training in Europe which applied new information and communications technologies and were thus implemented as an interactive and multi-media component into education processes (European Commission 1996).

[1] The project is co-financed by the European Commission for the contract period 1998 - 2002 in the framework of the *Socrates* programme (contract no. 98-01-COD-0631-00; contract no. 71178-CP-1-1999-1-DE-ODL-ODL; contract no. 71178-CP-2-2000-1-DE-MINERVA-ODL).

Within that same year, producers of multi-media learning programmes, software companies, operators of telecommunications establishments (and thus "producers") as well as schools, institutions of higher education and vocational training (and thus "users") were heard and interviewed. The survey disclosed the following situation in the area of application "colleges and universities in Europe" (European Commission 1996):

- The majority of European institutions of higher education have access to the internet and ISDN connections; a number of countries in Europe plan to connect their universities to high-speed networks.
- The application of new information and communications technologies in university teaching and research is still used at a model and exemplary level, mainly to support academic training and communication within or between work groups at one or more universities.
- Opportunities in the field of simulation or virtual reality are the centre of research in disciplines as diverse as physics, biology, medicine or mathematics; other, mainly interdisciplinary projects focus more on the development of teaching modules.
- In higher education, the enormous diversity of needs and requirements slows down the development of a selection of multi-media programmes. Therefore, many universities engineer their own non-commercial programmes and applications.
- Universities increasingly become service providers in the WorldWideWeb, however, there is a considerable regional differential within Europe. This can be verified when comparing the situation to that of North American universities, especially when it comes to medical training and education.

In short, the European Commission comes to the conclusion that in Europe "*Universitäten intern und nichtkommerziell multimediale Lernprogramme für die berufliche Bildung auf hohem Niveau (erstellen). Sie gehen immer mehr zur Anwendung von Hochgeschwindigkeits-Telekommunikationsnetzen über, um Kurse zu verbreiten und gemeinsam Forschung zu betreiben*" (European Commission 1996).

Starting out from the current degree of networking with 24 million computers world wide and extrapolating the annual development rate of currently 70%, by 2008 – that is in a period of only 10 years – there will be a complete global network (Schieb 1997). Particularly in the field of university teaching, we can assume that more than 10% of all university courses will also or exclusively be offered as web-based courses in only two years time (Schieb 1997). The "virtual university" with "virtual courses", "virtual congresses" and "virtual forms of publications" has stopped to be an utopia long since. Its realisation, however, still requires further development work and, in particular, transfer to and testing in the different areas of application.

3. Online discussion in the field of sport science via Internet

3.1. Presentation from the point of view of sport science

Sport science as well has to face this technological challenge and contribute to the development of a virtual university to be established in the future. As a consequence, the Institute of Sport Science at the Saarland University held a web-based seminar for third and fourth year students on the issue of *Sport Talent* in the winter term 1997/98 for the first time. Apart from the dominant content-wise discussion on aspects of sport talent, the seminar aimed at imparting knowledge in the new information and communications technologies and their significance for different areas of application.

After a general introductory orientation phase on new information and communications technologies, the students were instructed to gather course materials as well as organisational and bibliographic

information on the seminar during the course of the semester from the WorldWideWeb pages, which were programmed for this purpose. At the same time they were supposed to upload their hand-outs and essays to Internet. Questions, thematic discussions and considerations on references with the lecturers were supported by the integration of asynchronous communications applications.

Additionally, the seminar was enriched by an audio-visual online discussion via Internet held on 26 January 1998 in cooperation with the Department of Computer Science of the University of Applied Science (*HTW* – "Hochschule für Technik und Wirtschaft des Saarlandes") where students of the seminar – for the first time in German sport science – were able to debate interactively with politicians and experts for sport and sport science, which was transmitted and available world-wide. Apart from aspects of sport talents, the discussion also elucidated the field of implementing virtual communications technologies in sport, sport science and education systems.

Twelve experts in this field debated with the students audio-visually and in real time via Internet. Due to the nationally oriented topic of the online discussion (*On the significance of talent promotion groups for the promotion of young athletes in high-peak performance*) and the particular interest of the participants in the prospects for communications technologies in sport and sport science and in general university education in Germany, the discussion was dominated by representatives of national institutions in the two fields.

Despite a short run-up period and short-term announcement, there was surprisingly great interest in the discussion, which reflected in a lively virtual participation. That day a total of 1,334 requests from five European nations were counted on the specific Internet pages. After filtering the logfiles, the number of online requests amounted to 250 participants from Europe. This clearly shows the great interest in thematic discussions on the issue of sport talent in Europe as well as the available facilities and preparedness to use the new communications technologies.

3.2. Presentation from the technological point of view

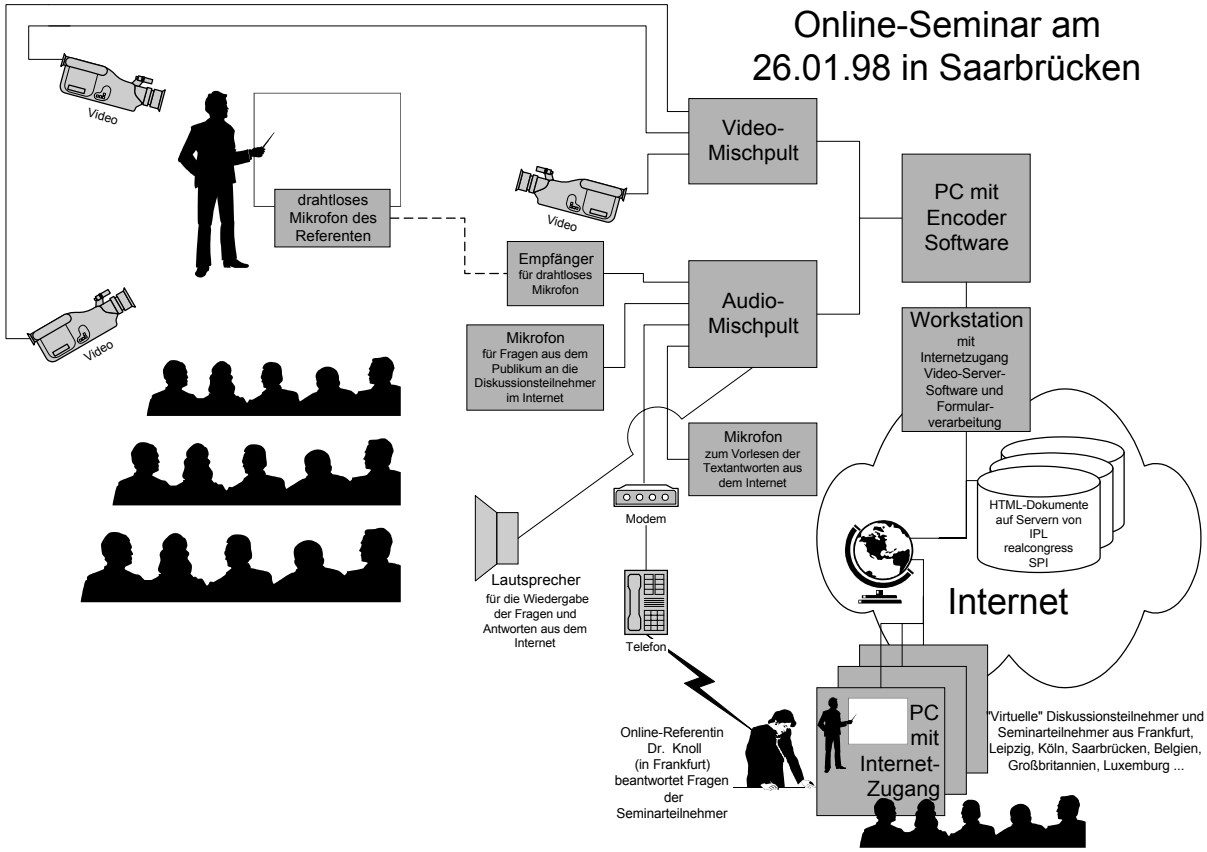
The conception and realisation of the technological aspects of the online discussion was carried through under the guidance of the Institute for Production Economics and Computer Science, an independent institute affiliated to the University of Applied Science (HTW). Since 1996, the institute focuses on the development of a seminar, conference and lecture system for the live participation in congresses via Internet (see Figure 1).

Altogether the following functions could be used:

- real-time transmission of live expert lectures with audio and video data;
- the possibility of interactive communication;
- parallel integration of course and lecture materials (slides, panels, etc);
- availability of videos of the expert lectures for asynchronous participation at a later time;
- usage independent of whereabouts of the participant (transmit and receive alike);
- user-friendly interface;
- simple technology for access and usage;
- low costs and expenses for provider and user.

On the one hand, the online discussion *Sport Talent* which was carried through at the Institute of Sport Science at the Saarland University, required the exemplary transfer of the outlined conference system for the live participation in congresses via the Internet; on the other hand, its realisation demanded the integration of different information, audio and video technologies.

Figure 1
Use of different information technologies during the online discussion

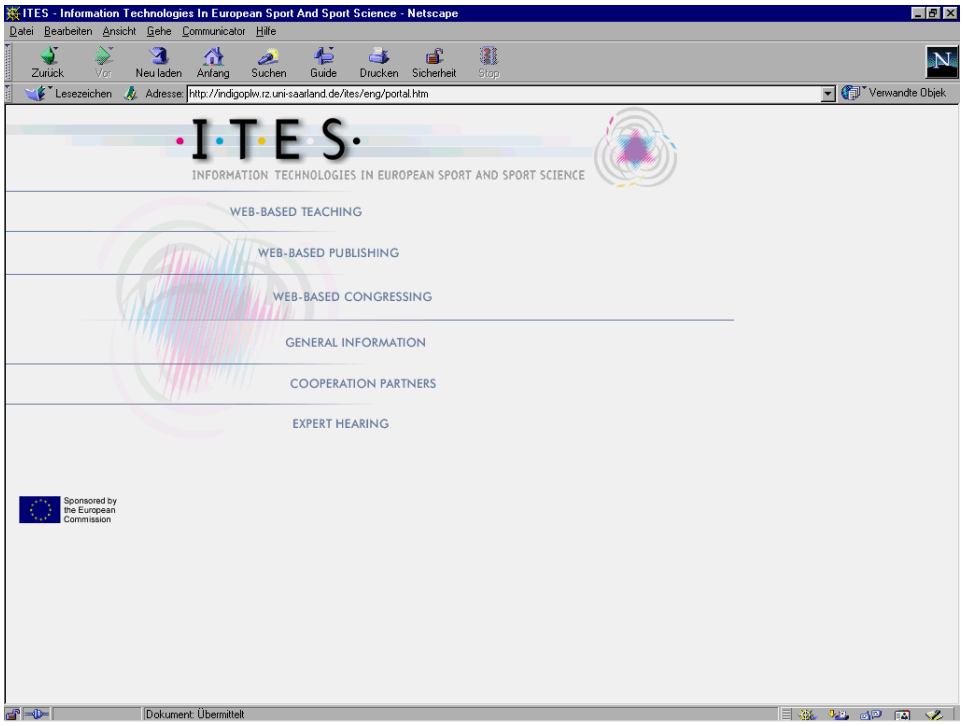


4. The European pilot project Information Technologies in European Sport and Sport Science[2]

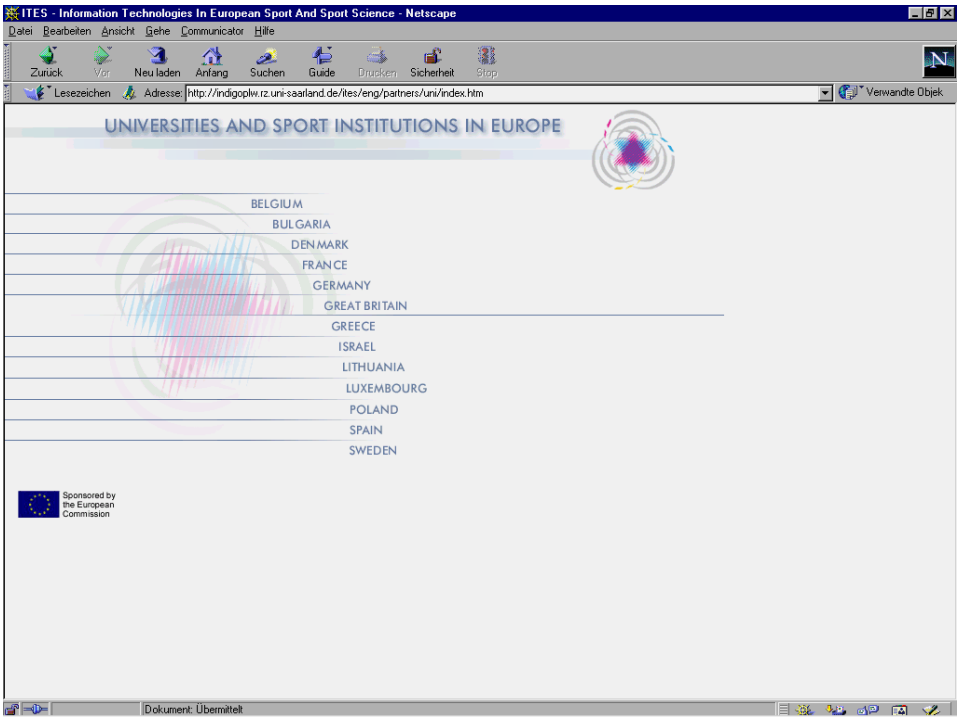
The realisation of the outlined online seminar at the Institute of Sport Science at the Saarland University led to the idea of scrutinising the opportunities of an unrestricted communication and its integration into the field of teaching sport science. These considerations aimed at the development and analysis of a European model concept on the integration of multi-media and interactive information and communications technologies in university teaching; it was agreed to choose the issue of talent in sport and sport science in Europe as the content of a first trial phase. The thematic networks of the European Union ENSSHE (European Network for Sport Science in Higher Education), EUCEN (European Universities Continuing Education Network), EDEN (European Distance Education Network) and EGREPA (European Group for Research into Elderly and Physical Activity) as well as 19 universities, colleges and sport institutions from 13 European countries have supported this pilot project.

Such an educational conception can be judged exemplary as there have not been any comparable conceptions on the integration of new information and communications technologies into sport and sport science so far and as important results transferable to other scientific disciplines and areas of application can be expected, independent of the specific content of sport science in this project. The close cooperation with the European Universities Continuing Education Network and the European Distance Education Network, two thematic networks of the EU in the field of education and further education, open and distance learning at European colleges and universities, clearly shows the importance of this project also beyond the borders of sport science.

Figure 2
Screenshots of the homepage of the European pilot project ITES



[2] See homepage of the EU project at *http://www.uni-saarland.de/ites*



First considerations on how to realise the project brought to light the large number of linguistic, technological and thematic problems arising in the conception and realisation of the pilot project. Just take the problem of technological compatibility as an example. A Europe-wide participation in the project requires the availability of the necessary infrastructure in communication technologies for all participants. If you look at the large range of different hardware and software applications, this clearly shows why the technological orientation towards "the weakest link in the chain" is necessary. Furthermore, practical possibilities, lowest technical requirements and low costs must be well considered.

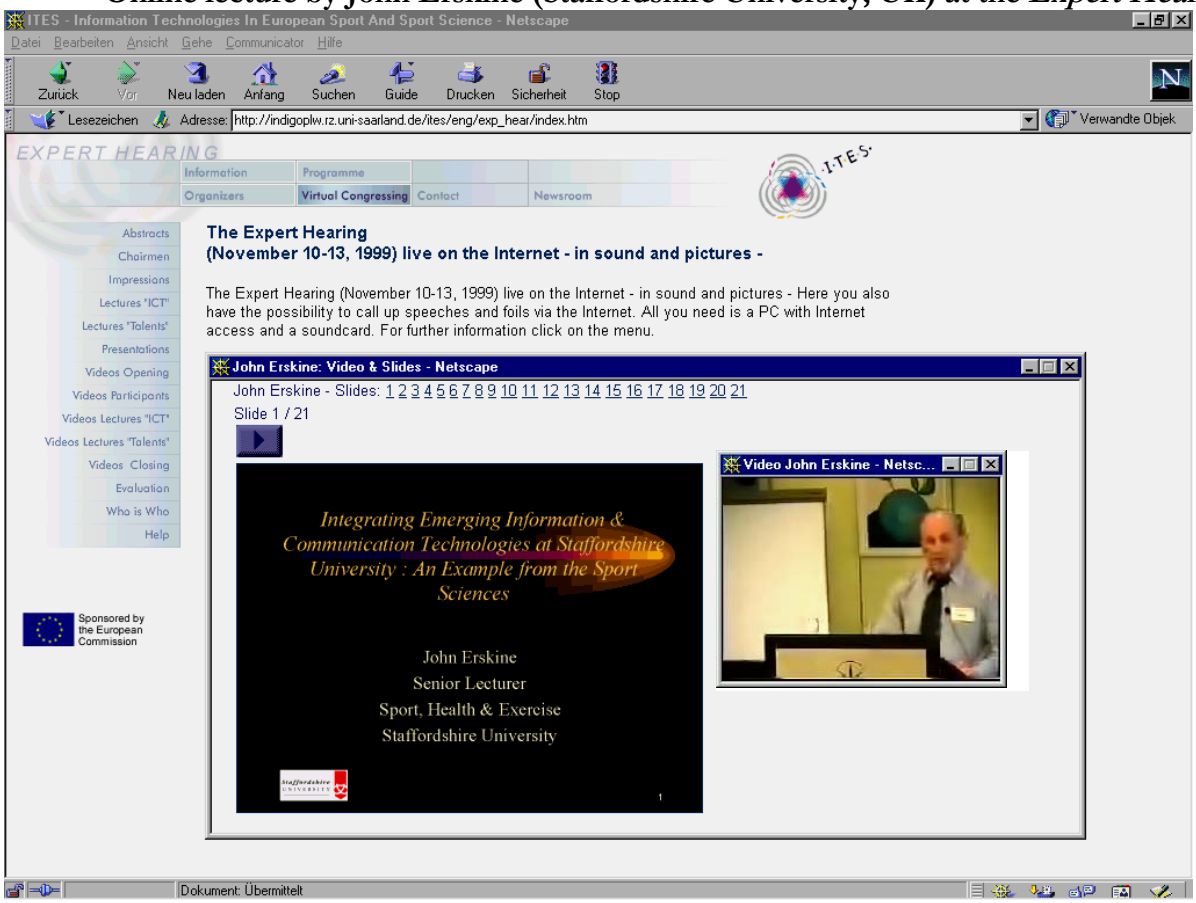
The conception of the pilot project plans four intertwined modules which are realised in different time frames and with different contents:

- Organisation of an European interdisciplinary expert hearing on the integration of new information and communications technologies into areas of activity and responsibility of teaching and research in sport science (*European Expert Hearing*).
- Realisation of an European pilot seminar on the issue of *Sport Talent* via the Internet (*Web-based Teaching*).
- Implementation of the sub-project *Web-based Congressing* in the framework of the international congress *Activity and Aging*.
- Generation of an Electronic Journal on the issue of *Motor Control and Learning* (*Web-based Publishing*).

4.1. Module *European Expert Hearing*

There is no doubt that the integration of new information and communications technologies into teaching and research in sport science is an interdisciplinary project. It requires the knowledge of technical conditions of hardware and software applications used, knowledge of teaching and learning processes dealt with in the pedagogical psychology, combined with experience in interface design and communication, let alone the knowledge of sport science as the exemplary project content.

Figure 3
Online lecture by John Erskine (Staffordshire University, UK) at the *Expert Hearing*



Representatives of sport science can only partially contribute their knowledge and experience to solutions in the outlined disciplines. Therefore, the realisation of such a project has to rely on the co-operation with and the interest of competent partners. This led the Institute of Sport Science at the Saarland University to organise a European Expert Hearing, which was held on 10-13 November 1999, on the integration of new information and communications technologies into areas of activity and responsibility in the field of teaching and research in sport science, being one of the modules of the pilot project *Information Technologies in European Sport and Sport Science*.

Content-wise, the Expert Hearing was divided into two phases. In the first phase, the participants presented and discussed models and concepts of the integration of new information and communications technologies and its significance for the sport and sport science in Europe. Here participants were anxious to include latest international tendencies and approaches in educational theory and psychology, such as media didactics or learning and behavioural research, as well as latest insights on open and distance learning and adult education. Furthermore, they considered aspects regarding interface design of software applications or human-computer interaction as well as technical conditions for the development of hardware and software.

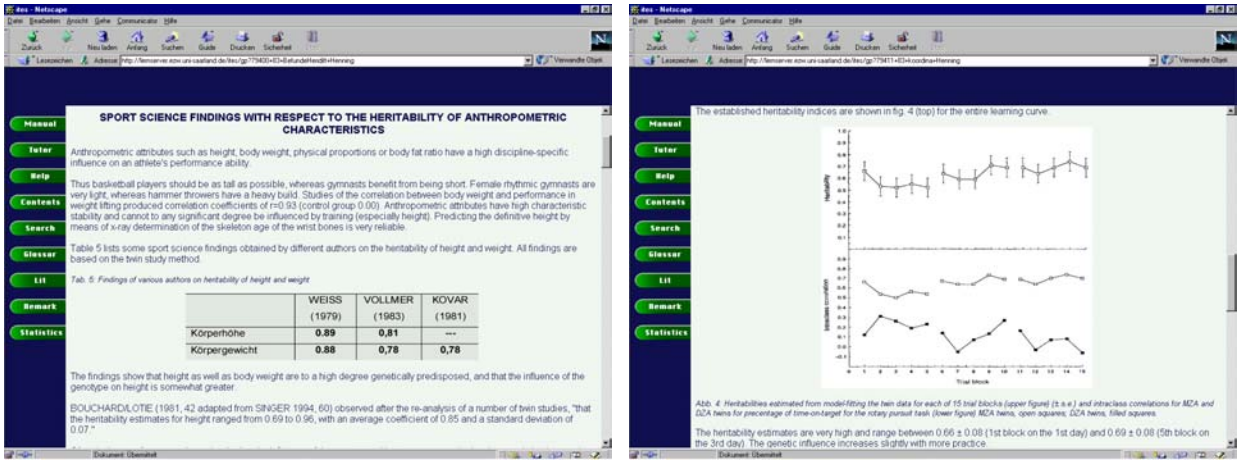
In a second phase, the Expert Hearing presented a first test for the realisation of virtual, internet-based events in university teaching as internationally recognised experts had prepared different aspects on the issue of sport talent as an exemplary topic to be presented and discussed by the present participants as well as via the Internet. The individual methodological strategies and procedures for the internet-based presentation of the lectures were just as much at the focus of attention as the thematic discussion on

the issue of sport talent, an issue which is of great importance for all European nations oriented towards high-peak performance from the point of view of sport science, sport practice and sport political decisions.

4.2. Module *Web-based Teaching*

Since the beginning of the winter term 2000/2001, the Institute of Sport Science at the Saarland University has been developing the module *Web-based Teaching*. The subject matter of this sub-project of the European pilot project *Information Technologies in European Sport and Sport Science* is the realisation of an European pilot seminar on the issue of *Sport Talent* structured in seven modules in a thematically consistent order. This seminar intends to impart and discuss theoretical models and empirical findings from the field of sport science and sport medicine on the one hand and practice-relevant findings from high-peak performance on procedures to select and promote talents in the international context on the other hand.

Figure 4
Dynamically generated pages of the adaptive author system Art-Web



The exceptional quality of this European seminar, which mainly addresses third and fourth year students, lies in the integration of new media. The implementation of the internet-based author system Art-Web (*http://ites.swi.uni-saarland.de/ites*) facilitates the preparation and follow-up of all seminar classes, no matter where and when. Additionally, the integrated audio-visual online discussions with experts from sport science and sport practice hold the possibility of thematic discussions. The pilot seminar is planned to be carried through synchronously or asynchronously at different European universities and colleges as well as sport institutions. Thematic cooperation partners are among others the University of Athens, the Institute for Applied Training Science ("Institut für Angewandte Trainingswissenschaft") as well as Leipzig University and Potsdam University.

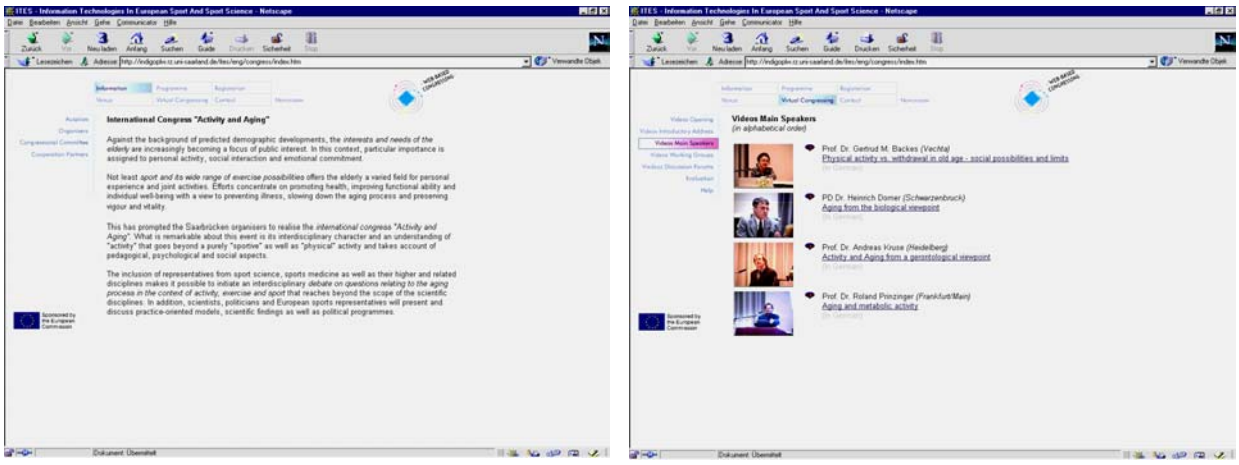
4.3. Module *Web-based Congressing*

From 28-30 October 1999, the Institute for Sport and Preventive Medicine at the Saarland University, the Saarland State Sports Association and the Institute of Sport Science at the Saarland University jointly organised the international pilot congress *Activity and Aging* in the framework of the sub-project *Web-based Congressing*. Its interdisciplinarity as well as the interpretation of "activity" going beyond the

pure definition as bodily activity in sport and considering also pedagogical, psychological and social aspects reflected the exceptional quality of this event, which took place in the Saarbrücken Congress Centre in the course of the International Year of Older Persons 1999.

Through the inclusion of representatives from sport science, sports medicine as well as their higher and related disciplines, the organisers realised a interdisciplinary debate in the five working groups Movement and Training Science, Pedagogy/Psychology, Sociology, Orthopaedic Sports Medicine and Internal Sports Medicine focusing on questions relating to the aging process in the context of activity, exercise and sport that reached beyond the scope of the scientific disciplines. It was complemented by a political keynote address, two thematic introductory lectures, five main lectures and 26 thematic lectures in the above-mentioned working groups.

Figure 5
Screenshots of "virtual congress participation" in the sub-project *Web-based Congressing*



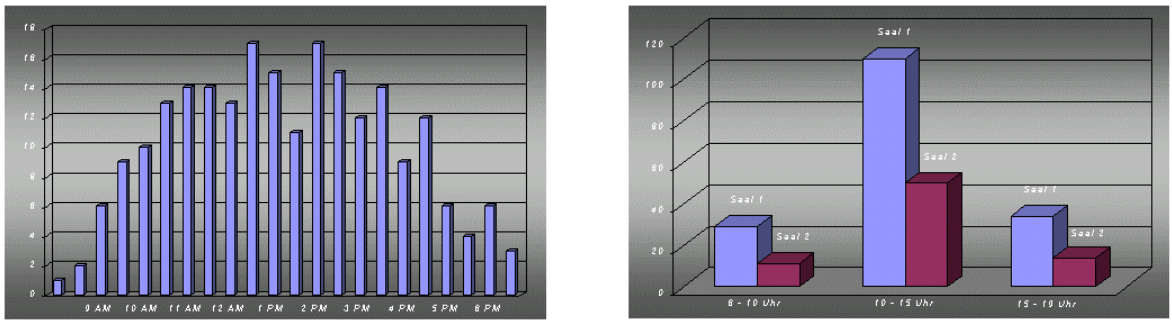
In addition, scientists, politicians and sports representatives for the European Union presented and discussed practice-oriented models, scientific findings as well as political programmes in an international forum (representatives of the WHO, the International Council for Sport Science and Physical Education, two thematic networks of the European Commission, the German Federal Ministry for Family, Senior Citizens, Women and Youth, the French Ministry for Youth and Sports, and others) as well as in a national forum (representatives of the Federal Institute for Sport Science, the German Sports Association, the German Association for Gerontology and Geriatrics and the German Centre for Research on Aging). A total of 248 participants from nine countries participated in the international congress *Activity and Aging*.

The main focus of the module *Web-based Congressing* lay in the realisation of a multi-media and interactive "virtual congress participation" with an emphasis on audio-visual applications. For the first time in the field of European sport science and sports medicine, these facilitated a comprehensive online participation in a scientific event, live and in real time. Additionally, the working groups and panel discussions offered the possibility to participate via live-chat. After the conclusion of the event, the lectures and panel discussions of the congress *Activity and Aging* are available as a hybrid product, for a CD-ROM has been generated and disseminated parallel to the publication of the same name so that the audio-visual applications which are available online can also be used offline.

An analysis of the filtered logfiles of the used servers shows that:

- 72% of the congress participants registered on the WWW congress pages via specifically programmed CGI-scripts;
- 240 "virtual congress participants" took part from all over Europe;
- 34 hours of audio-visual online transmission including live-chat discussions could be realised;
- the real-time transmission in the working group *Movement and Training Science* was the most frequented section with up to 130 requests at a time;
- 12 requests in the live-chat providing thematic as well as technical questions were reported to be made mainly at the beginning of the live transmission;
- a total of 0.2% of the requests for real-time transmissions of the congress were denied due to network failures.

Figure 6
Presentation of online requests and their distribution from 28 - 30 October 1999 according to time of day (left) and number of "virtual participants" ordered according to rooms (right)



4.4. Module *Web-based Publishing*

The sub-project *Web-based Publishing* aims to demonstrate new possibilities for internet-based publishing. Since the winter term 1999/2000, the sub-project focuses on the elaboration of a technologically founded and at the same time application-oriented concept of the pilot E-Journal *Motor Control and Learning*, the development of a suitable strategy for evaluation and monitoring as well as its integration and sustainable transfer into the Scientific Community. The conception and implementation (programming of necessary databases, e-mail-supported distribution method, full text search, interactive feedback strategies, open commentary room, etc.) was made in cooperation with Prof. Dr. Rockmann from the Institute of Sport Science at the Oldenburg Carl-von-Ossietzky University.

At this point in time, it can be reported about the developments in this sub-project that a web-based prototype has been programmed which covers the communication interests of a Scientific Community in an exemplary way and is an appropriate instrument for just-in-time publication. Considering the unsettled legal situation (author's perspective) on the one hand and little acceptance and preparedness within the Scientific Community to use the E-Journal (user's perspective) on the other hand, we should not expect to much from the international Scientific Community. If we do not succeed in adjusting the formal status of technical scientific E-Journals (e.g. by establishing of review procedures and impact factors on the one hand or by achieving the recognition of publications in E-Journals in formal qualification procedures on the other hand) to the status of traditional (international) Journals of the

print medium, then the existing possibilities of multi-media and interactive communication offered by the new information technologies will be wasted and at best be of little, probably of no use for the strategic development of technical scientific communication and publication.

5. Conclusion

Web-based applications are making dynamic inroads into university fields of activity, particularly in the areas of teaching and research, congressing and publishing. Cross-border, virtual universities are likely to be a global reality just a few years from now. All scientific disciplines in the tertiary sector throughout Europe must adapt to and participate in this development. This is the only way to make specific technical use of this development and become aware of possible risks early on.

In the future, the further development of scientific disciplines will partly depend on the participation, design and use of new information and communications technologies. Sport Science, with its many links to almost all social spheres of sport and its organisations, has to take up this challenge. The virtual pilot seminar on the issue of *Sport Talent* at the Institute of Sport Science at the Saarland University, and particularly the audio-visual online discussions realised therein, has been a modest, exemplary contribution.

The thus developed idea for a European project on the issue of *Information Technologies in European Sport and Sport Science* focusing on *Web-based Teaching*, *Web-based Congressing* and *Web-based Publishing* seems to be ideally positioned to integrate sport and sport science into this communications technology development within an international context in a model and exemplary way.

References

Bertelsmann Stiftung/Heinz Nixdorf Stiftung (Ed.) (1997) - *Bildungsinnovation durch Medien.* Gütersloh.

Bertelsmann Stiftung/Heinz Nixdorf Stiftung (Ed.) (2000) - *Studium online.* Gütersloh.

Bertelsmann Stiftung/Heinz Nixdorf Stiftung (Ed.) (1997) - *Virtuelles Lehren und Lernen an deutschen Universitäten.* Gütersloh.

Braun L./Bielefeldt T. (1995) - *Celebrating Success.* Kentucky.

Bundesministerium für Bildung, Wissenschaft, Forschung und Technologie (1996) - *Das lebenslange Lernen.* Bonn.

Bundesministerium für Bildung, Wissenschaft, Forschung und Technologie (1998) - *Innovationen für die Wissensgesellschaft.* Bonn.

Bundesministerium für Bildung und Forschung (1999) - *Weiterbildungsinstitutionen, Medien, Lernumwelten.* Bonn.

Bundesministerium für Bildung und Forschung (1998) - *Zur Zukunft der Weiterbildung in Europa.* Bonn.

Daugs R. (1999) - *The Future of Education: Distance Learning and New Technologies.* (Unpublished). Jyväskylä (Finland).

Daugs R./Igel C. (1998) - *Virtual Communication in Sport and Sport Science - An European Pilot Project.* (Unpublished). Örebro (Sweden).

Daugs R./Schmidt K.-J./Igel C./Bernarding J. (1999) - *Virtuelle internet-basierte Kommunikationskonzepte in sportwissenschaftlicher Lehre und Forschung.* In. Miethling, W.-D./Perl, J. (Eds.). Sport und Informatik VI. Köln. p. 11-21.

Dörr, G./Jüngst, K.L. (1998) - *Lernen mit Medien.* Weinheim/München.

Elpel, K.-P. (2000) - *Sportwissenschaft und vernetzte digitale Fachinformation.* Hamburg.

Europäische Kommission (1996) - *Multimedia und Lernprogramme.* Brüssel.

European Round Table (1994) - *Education for Europeans.* Brüssel.

European Round Table (1997) - *Investing in Knowledge.* Brüssel.

Meadows J./Böcker H.-D. (Eds.) (1999) - *Electronic Communication and Research in Europe.* Luxemburg.

Forsyth I. (1998) - *Teaching and Learning Materials and the Internet.* London. 2nd Edition.

Gapski H. (1998) - *Lernen in der Informationsgesellschaft.* In Spektrum der Wissenschaft (Ed.). Die Welt im Internet. Heidelberg. p. 44-51.

Hamm I./Müller-Böling D. (1997) - *Hochschulentwicklung durch neue Medien.* Gütersloh.

Igel C./Daugs R. (1998) - *Virtual Communication in Sport and Sport Science.* (Unpublished). Luxembourg.

Igel C./Daugs R. (1999) - *Information Technologies in European Sport and Sport Science - An European Pilot Project.* (Unpublished). Jyväskylä (Finland).

Igel C./Daugs R. (2000) - *European Expert Hearing Information Technologies in European Sport and Sport Science".* Saarbrücken.

Igel C./Daugs R. (2001) - *Electronic Journals - neuere Formen des elektronischen Publizierens in Sport und Sportwissenschaft.* In. Baca, A. (Ed.). Computer Science in Sport. Wien. p. 55-62.

Igel C./Daugs R. (2001) - *Internationaler Kongress "Activity and Aging".* Saarbrücken.

Igel C./Müller M./Daugs R. (2001) - *Zum Einsatz internet-basierter Technologien in universitärer Lehre und Forschung.* In. Baca, A. (Ed.). Computer Science in Sport. Wien. p. 277-283.

Jessen E./Quandel G. (1998) - *Wissenschaftskommunikation ohne Grenzen.* In. Spektrum der Wissenschaft (Ed.). Die Welt im Internet. Heidelberg. p. 12-15.

Müller-Böling D. (2000) - *Die entfesselte Hochschule.* Gütersloh.

Klein B. (2000) - *Didaktisches Design hypermedialer Lernumgebungen.* Marburg.

National Council for Educational Technology (1994) - *Stimulate to Educate.* London.

Porter L.R. (1997) - *Creating the Virtual Classroom.* New York.

Schieb J. (1997) – *Internet.* Braunschweig.

Suurla R./Markkula M./Finnish Leonardo Centre (1999) - *Methods and Tools for Effective Dissemination.* Jyväskylä.

Stix G. (1998) - *Publizieren mit Lichtgeschwindigkeit.* In. Spektrum der Wissenschaft (Ed.). Die Welt im Internet. Heidelberg. p. 16-21.

The Quality Assurance Agency for Higher Education (1999) - *Guidelines on the Quality Assurance of Distance Learning.* Gloucester.

Four Years of Communication in the 66 Discussion Lists of the Virtual Sports Center

S12

Laércio Elias Pereira
Catholic University of Brasilia, Brazil

The present study has as objective an analysis of the evolution of the discussion lists of the Virtual Sports Center - VSC (*www.cev.org.br*), during the period July 1996 to July 2000.

Created as part of a system - webpages, e-mail and gatekeepers - the discussion lists began, on 31 July 1996, as part of the theme Sports Science (efesport-l) with graduate students specializing in sports journalism in the Laboratory of Advanced Studies in Journalism at Unicamp, State University of Campinas (São Paulo), with 30 participants.

Initially, a Listserv freeware program was used, as well as other software created for the storage of messages with retrieval by author, subject and date. Various strategies of dissemination were used, such as the creation of a list of professors' children, publicity in technical and scientific events, and partnerships with learned societies, in addition to joint projects with universities and other institutions. With the increase of interest from multiple-disciplinary sectors, new discussion lists were created and new software programs for managing them (Listproc, Petidomo, Mailman).

The initial search for discussion list moderators among the country's highest producers of scientific information in the field (taking as a reference Klobas and McGill's 1996 suggestion of the phenomenon 80 x 20), was not successful and gave rise to the invitation of specialists who had familiarity with and easy access to the Internet. In July 2000 there were 70 list administrators of the 66 discussion lists. In that period, the lists had as many as 7,900 participants at one time, and 39,200 messages stored. Multiplying the number of messages by the average number of participants in the lists, we arrive at the figure of 8 million messages distributed in the period studied.

The MACS Project: Multilingual Access to Subjects in the Area of Sports

S13

Patrice Landry
Swiss National Library, Switzerland

Multilingual access is presently one of the major issues confronting national libraries. Access to their catalogues has improved significantly in the last decade through advances in network technology. Expert searches can now be conducted through the internet and the WEB using search protocols such as Z39.50. Research needs have also evolved as trends towards international co-operation have made researchers gradually more dependent on international information resources. The publishing world has also diversified and expanded to the point that documents published in a particular language can be found in numerous national libraries. These libraries have responded to these trends and challenges and are more than ever committed to improving access to their collections both nationally and internationally.

National libraries now acknowledge the fact that the typical library user accessing their library catalogue is not necessarily a local user with knowledge of the national language. For them, what is now at stake is the possibility for users to conduct a subject search in catalogues in their preferred language. Most libraries will index documents using a subject heading language and users have to gain a practical knowledge of that language in order to successfully conduct a search. In each of the national libraries involved in the MACS project, each document, independently of the language in which it has been written, is indexed using a particular subject heading language. Using my own library as an example, a researcher from abroad must not only master the German language but also the intricacies of the SWD/RSWK subject heading language in order to access material by subject. This issue is of particular importance to specialists needing to conduct subject searches in numerous databases, often in foreign languages. Using sports disciplines as a case in point, researchers must not only conduct searches in specialised sports databases but also have to consult general library catalogues for interdisciplinary works on issues relating to sport.

In Europe, where national libraries are particularly concerned with the multilingual issue, four national libraries have taken up the task of improving subject access to their library catalogues. In 1997, the Conference of European National Librarians (CENL) asked CoBRA+ (a programme funded by the European Commission) to try to find a solution to the problem of multilingual subject access to bibliographic databases. A working group under the CoBRA+ Task Group A was organised to discuss that issue with regard to national libraries. Four national libraries accepted the challenge – the Swiss National Library, "La Bibliothèque Nationale de France", "Die Deutsche Bibliothek" and the British Library. These libraries are either partly or fully responsible for the creation and maintenance of three major subject heading languages (SHL), the German language SWD, the French language RAMEAU and the English language LCSH. The group produced a concept that would permit users to search library catalogues in the language of their choice and a pilot study was conducted up to the beginning of 1999. Since 1999, MACS is a CENL Project, financed by the four national libraries.[1]

In the pilot study phase of the project, the group investigated the possibility of offering multilingual subject access using the three SHLs in use in their own institution (RAMEAU, SWD and LCSH) by establishing links between the headings in each language. In this study, the areas of sport and theatre were selected to test the feasibility of mapping subject terms used by the correspondent subject

[1] For reports of the working group see *http://www.bl.uk/gabriel/*

headings. In adopting this approach, which is based partly on the ISO5964 multilingual thesauri guidelines, the group took in account the following points :

- Libraries have already invested considerable time and effort in the creation and maintenance of the SHLs.
- Current SHLs offer subject access to millions of documents.
- Translation would be costly and would require that some SHLs be abandoned.

On the basis of this study, the directors of the four national libraries involved in the project signed a convention to fund the creation of a prototype : MACS (Multilingual Access to Subjects), via the CENL. In the Fall of 1999, a targeted call for tender was sent out. After reviewing the proposals received, the partner libraries selected a consortium composed of Index Data Aps (Denmark) and Tilburg University (Netherlands). The prototype was officially approved by the members at the end of February of this year.[2]

The basic requirement of the MACS prototype is that it should exist independently of the partners' own library systems. It is a WWW application meant to be used by users searching the different catalogues and by the partners to add and maintain the links between the different SHLs. When drafting the specifications for the prototype, we were particularly interested in having mechanisms for the establishment and maintenance of links between SHLs, including updating of the system. The link management should have a file management and a maintenance structure that allows data to be easily added and amended. Access to the terms should be provided through terms (SHLs) and authority ids with browse and Boolean search capabilities. And finally, the link management should address the problem of "one-to-one" and "one to many" links.

From the user's perspective, the prototype should provide for any user the possibility to choose a "source language" and one or more target catalogues. He should have the possibility to choose and select subject headings in one SHL and find equivalent(s) to the selected headings. The search results should be clearly displayed and bibliographic records easily retrieved. The access to each partner's library through Z39.50 should be transparent to the users and the results set clearly presented to the users.

To test if the prototype could measure up to these requirements, about 15,000 bibliographic records from each database and 1,000 headings (linked to the bibliographic records) and their equivalents were loaded in the prototype. The headings were in the fields of Sports and Theatre, plus an additional set of links derived from the 500 RAMEAU headings most used often to index documents.

The following demonstration will give a few examples of the prototype using sport headings.

1. The link management interface

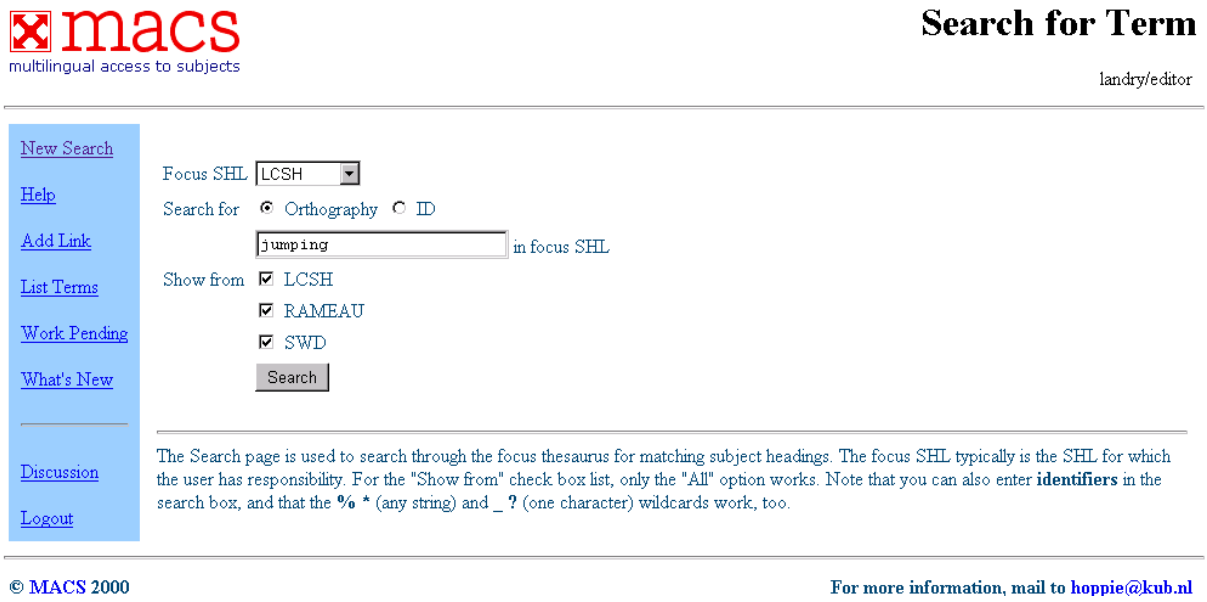
This interface should only be accessed by the partner libraries to add and to manage the links between the different SHLs. This interface is protected and access is only possible through a logon and password. Different levels of access are planned so that, for example, a designated editor of a particular SHL could have specific access to the link database.

To find out if a particular term is already in the link database, the interface has a **Search for Term** screen from which we can do two types of search: search by entering a search term (i.e. Actors) or an

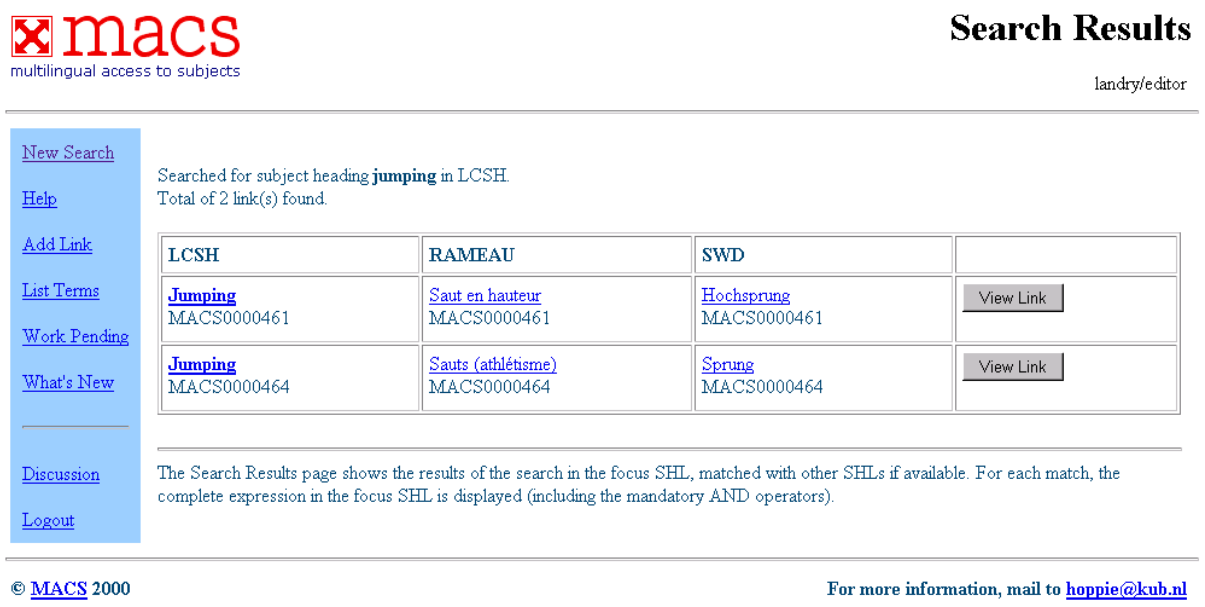
[2] Further details and results from the prototype will be available at : *http://www.infolab.kub.nl/prj/macs*

authority number . The user can also access the database by browsing the SHL through the "List Terms" function.

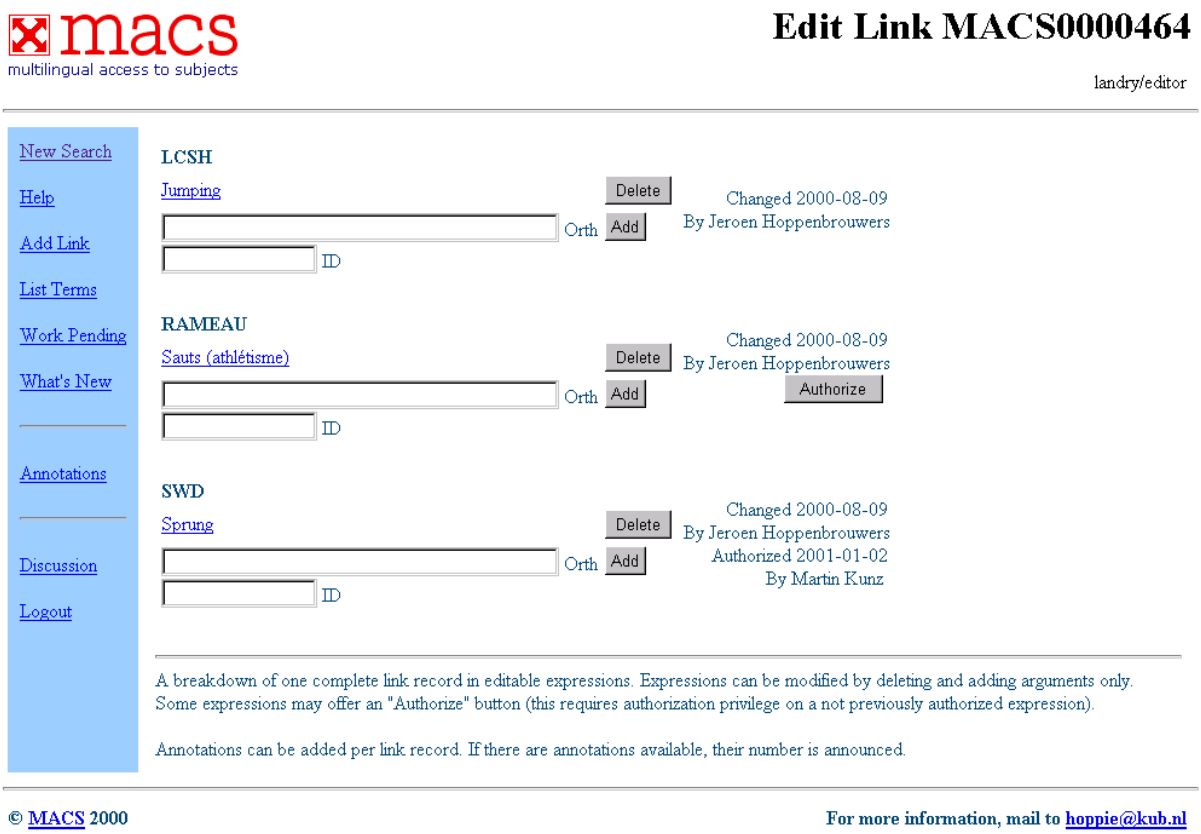
In addition to the **List Terms** button, additional functions are available (see left side of the screen). We can navigate using different buttons, such as **New search** to go back to the Search screen, **Add Link** which is the blank worksheet to add a new link, and **Discussion** which is a discussion forum that would permit the different partner libraries to discuss particular problems in the establishing or modifying of a particular link.



The **Search results** screen shows which links have been made to a particular subject heading in the focus SHL. In the case of "Jumping" (LCSH), two links were established. One is made to "Saut en hauteur" (RAMEAU) and "Hochspring" (SWD), and another, more general, to "Sauts (athlétisme)" (RAMEAU) and "Sprung" (SWD). In general, LCSH headings tend to be more general in scope than headings from RAMEAU and SWD.



The **View Link** function is primarily an editorial function. From this screen, a term (authority) or the link can be modified. It is possible, by clicking on the term (i.e. Jumping) to view the details of the subject heading (i.e. Authority number, when it was changed, and by whom.).

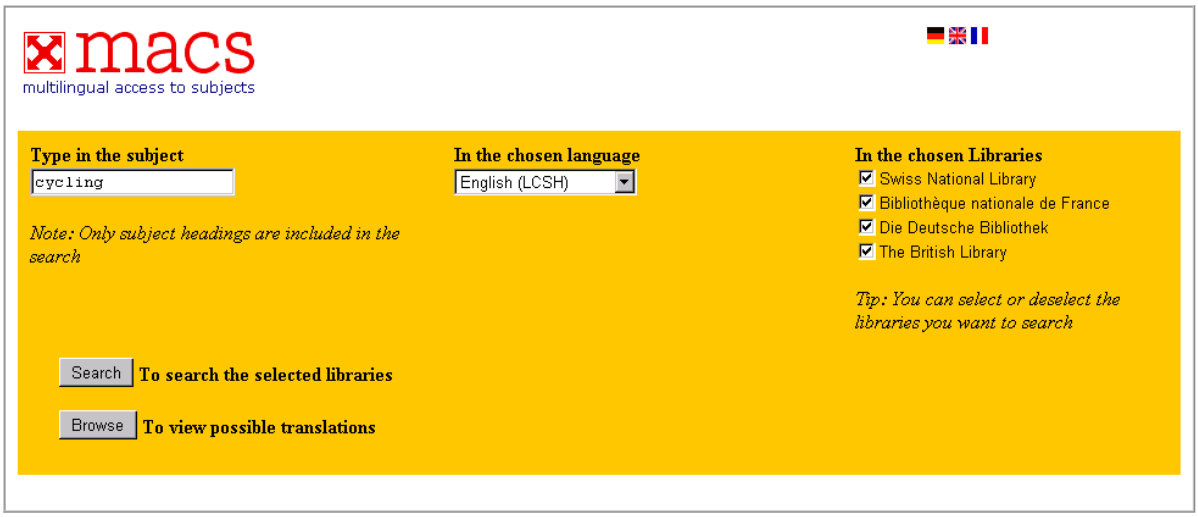


2. The search interface

The search interface was designed to give the library users the possibility of using their preferred SHL and doing their search in the catalogues of one or many libraries. As this will be a WEB interface, the library user of a particular national library can decide to do a multilingual search only in the catalogue of his national library and using a different SHL from the one used by that national library. To proceed with a search, the library user enters the search term(s) in a particular SHL and selects the library catalogues in which the search will be done.

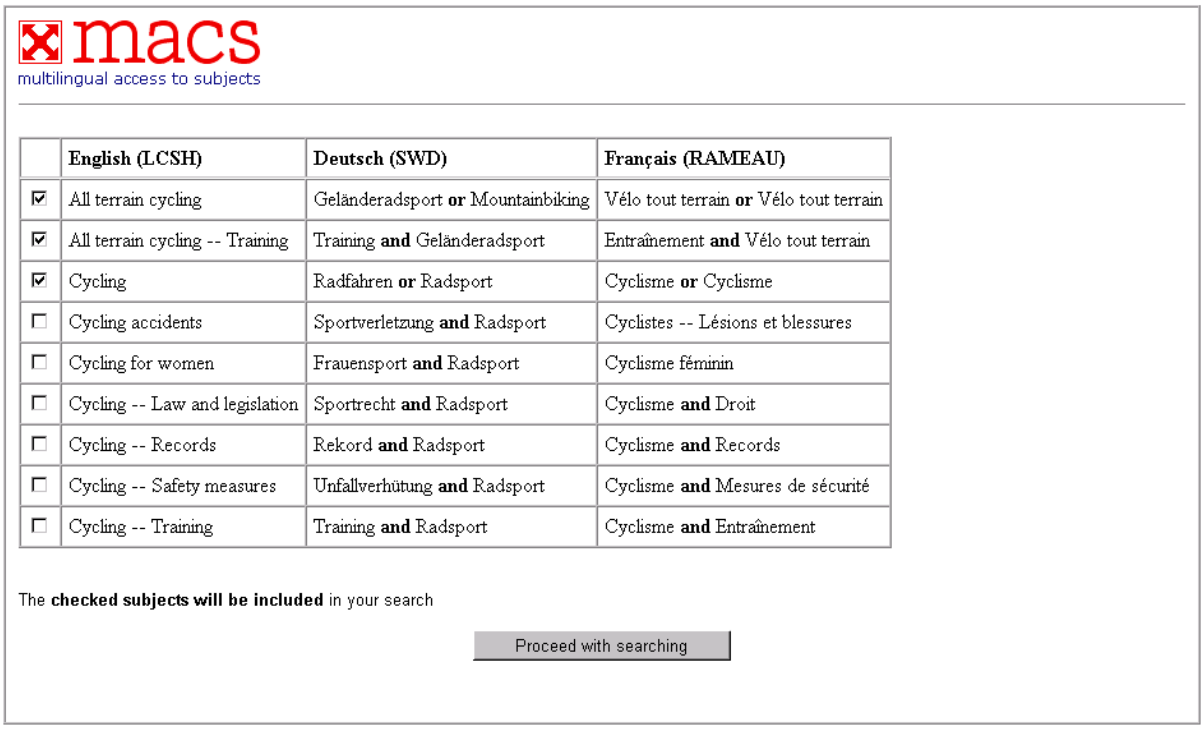
The library user can select the **Search** button which will automatically do a search in the catalogues selected and show the results (see below **Search results** screen).

The **Browse** button (which we will demonstrate) will show all the headings where a particular heading or term is used and the links to these headings.



In the example "cycling", we see that that term is used in 11 LCSH subject headings for which we have established links. Please note that the term "cycling" is displayed regardless of its position in the subject heading.

From this screen, the library user can select the subject headings for the search. For our demonstration, we have selected the first three subject headings. The LCSH headings "All terrain cycling" and "Cycling" are both linked to two different SWD headings.



The **Search results** screen will indicate how many hits are in each of the libraries and will list the titles in a brief format. (In the following screen, the list was abbreviated in order to show a maximum of 3 titles).

macs
multilingual access to subjects

Your search results in the libraries...

British Library: 33 hits.

1. The complete book of mountain biking; Brant Richards and Steve Worland;
2. The mountain bike book; David Leslie; photographs by Tim Woodcock;
3. Mountain bike racing; Tim Gould and Simon Burney;

Bibliothèque nationale de France: 31 hits.

1. Il était une fois le cyclisme à Corbeil-Essonnes; un siècle d'histoire; Guy Caput, Roland Oberle;
2. Guide du cyclisme; manuel pratique et conseils de santé; docteur Gérard Porte;
3. Le livre d'or du cyclisme; 1995; Jean-Luc Gatellier; préf. de Laurent Jalabert;

Swiss National Library: One hit.

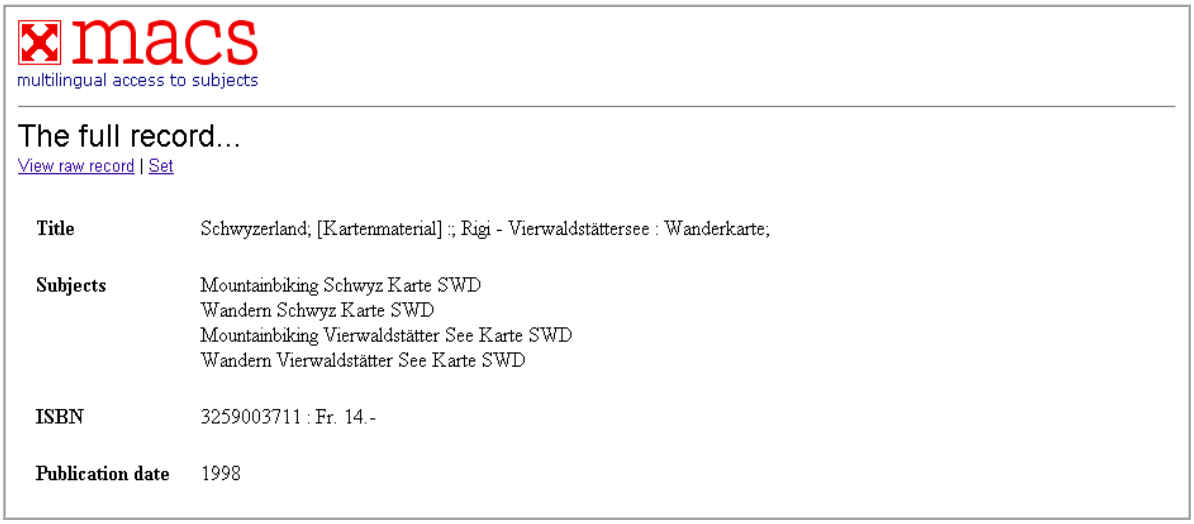
1. Schwyzerland; [Kartenmaterial] :; Rigi - Vierwaldstättersee : Wanderkarte;

Die Deutsche Bibliothek: 62 hits.

1. Bike-Events ... : die Höhepunkte der Saison ; Bike plus
2. Trainingsplaner
3. Franken : [40 Spitzen-Touren, präzise Wegbeschreibungen, übersichtliche Tourendaten, Streckenskizzen + Höhenprofile] / Frank Klose

The library user can access the bibliographic record by clicking on the title. The interface will retrieve the bibliographic record in the selected library and will display the record in a user friendly format. The tagged bibliographic record may also be displayed.

We will select the record from the Swiss National Library. The SWD heading equivalent to "cycling" and "All terrain cycling" used by the Swiss National Library to index the document is "Mountainbiking" (which is a true German term).



It is hoped that this first glimpse of the prototype have given you a positive view of the potential of the MACS project. In conclusion, I would like to give a short overview of the current work status of the project. Since the validation of the prototype in February, the work has focussed on drawing up an organisation/co-operation model that would ensure that the inputting and validation of links in the Link Management Interface would be managed efficiently. This study will look at issues such as the role and responsibilities of participants, the use of a classification system to structure the data and the establishment of a work flow model. With the view of integrating new partners and SHLs in the MACS project, selection criteria will be defined in order to ensure a smooth transition and the evolution of the work process of adding links.

By the end of this year, the group should also have defined specifications for a production model scaled up from the prototype. These specifications should be based on the co-operative model and from the experience gained in working with the prototype. It is expected that the two prototype developers will work on these modifications in the first part of 2002. Throughout 2001, the members of MACS will continue inputting links in the prototype database. The goal is to create 5,000 equivalent terms based on a list of 50,000 RAMEAU/LCSH equivalents. And finally, during this summer, the Search/User Interface should be integrated by a Z39.50 access in the local system of at least one partner library. This would permit to test the Interface under live conditions.

The ultimate goal of the project is to start production by the middle of 2002. By that time we would have a scaled up production system that would permit members to integrate the linking process in their daily work flow. It is then that we will truly see a concerted action toward a major multilingual subject access database.

The Finnish Virtual Library Project and the European Renardus Project: Creating Multidisciplinary Subject Indexes in Collaboration with Libraries

S13

Mirja Laitinen
Information Specialist, Sports Sciences
Jyväskylä University Library, Finland

1. Overview

The main purpose of the Finnish Virtual Library Project is to help university students and staff to find relevant information on the Internet. Nowadays, the Finnish Virtual Library (FVL - *http://www.jyu.fi/library/virtuaalikirjasto/engvirli.htm*) is a free and open subject gateway service, which offers descriptions of Internet resources on various subject fields. The total number of virtual libraries is over 50, and they provide access to about 13,000 references describing Internet material. One of them is the Virtual Library of Sport Science which is produced by Jyväskylä University Library (*http://www.jyu.fi/library/),* the National Resource Library for Education, Sport Sciences and Psychology in Finland. At present, the FVL is maintained by 18 Finnish research libraries. The work of the FVL is co-ordinated by Jyväskylä University Library. Funding for the development projects and co-ordination has been obtained under the Finnish Ministry of Education's Information Society Programme. The actual maintenance of the service is carried out by the participating organisations and their librarians as part of their official work.

In the year 2000, the Finnish Virtual Library joined an EU-funded Renardus project (*http://www.renardus.org/index.html*), the aim of which is to construct an integrated search service for European academic subject gateways.

2. Virtual libraries and subject indexes vs. search engines: a review

A virtual library is a collection of links to high-quality information of all types. It has similar material types as a "real" library: books, databases, newspapers, journals and the like[1]. Virtual libraries are also known as subject gateways, subject-based gateways, subject trees and other variations thereof[2]. There are a few well-known subject gateways in the field of sports sciences:

- Scholarly Sport Sites (*http://www.ucalgary.ca/library/ssportsite/);*
- Sponet (*http://www.iat.uni-leipzig.de/iat/sponet/default.htm);* and
- Sportquest (*http://www.sportquest.com/resources/index.html*).

When searching information on the Internet it is important to notice the differences between searchngines, e.g. AltaVista, and virtual libraries or subject gateways. The search engines gather information on the Internet automatically, mechanically. It is very usual that the number of search results is too big and contains a lot of irrelevant, broken or duplicate links. The search results pages are

[1] Bradley P. (1999) - *Virtual libraries and Internet searching* - in Online & CD-ROM Review vol. 23 no 6, p. 353-355.

[2] Kirriemuir J. [& al.] (1998) - *Cross-Searching Subject Gateways: The Query Routing and Forward Knowledge Approach* – in D-Lib Magazine. January 1998. Available from: *http://www.dlib.org/dlib/january98/01kirriemuir.html*

not very user-friendly, either. The descriptions are often quite incomprehensible depending on the texts of the head-lines or metadata of the actual web page.

The virtual libraries or subject gateways do not want to compete with the search engines in the amount of links; on the contrary, the quality goes before the quantity. The virtual libraries or subject indexes are "hand-made". There is human intelligence always present. The subject indexes are maintained with a particular audience in mind. The selection of links included in a subject index and their evaluation, description, and hierarchical arrangement have been carried out by a human being. The scholarly subject indexes are often maintained by librarians or subject specialists working in the field of that specific subject. They are experts of both that subject and of gathering, ordering and describing information as well as of information retrieval. The cataloguing of links to a subject index is done "by hand". Thus the information retrieval produces more relevant results, and the link descriptions are "human readable" containing an essential summary and/or keywords of the resource. The end-user can be sure that the material found in a subject gateway service is quality-controlled.

Actually, subject gateways appeared on the Internet before search engines; just after the invention of the World Wide Web. Beside Yahoo, one of the biggest of these early gateways is WWW Virtual Library (*http://cui.unige.ch/vl/Home.html*). When the Internet continues to grow apace, the significance of subject indexes becomes more and more essential compared with the search engines which, after all, cover only a small part of the whole contents of the Internet, and they have no human intelligence in the selection and description of the resources.

3. The Finnish Virtual Library Project

The Finnish Virtual Library Project started in 1996. At that time some Finnish librarians became worried about the chaos prevailing on the Internet and the difficulties of finding valid information there.

At first the Finnish Virtual Library consisted of lists of links for various subject fields. At the beginning of the Project the criteria for the selection of the links were jointly determined[3]. Each link was provided with a short description and an assessment of its contents. The links include:

- electronic documents
- organisations
- congresses and other events
- newsgroups and mailing lists and other services
- software
- indexes and databases

The Finnish Virtual Library Project has also carried out many surveys relating to net information retrieval: user feedback evaluation, search engines, user-friendly interfaces, and co-operation with other national or international subject gateways[4].

[3] Drawn up in spring 1996 in the Kuopio University Library working group, *http://www.jyu.fi/library/virtuaalikirjasto/help/criteria.htm).*

[4] Laitinen M. (1997) - *The Finnish Virtual Library Project as a tool for acquisition of information in sports sciences via the Internet* - in Actes: 10e Congres Scientifique Paris 10-12 juin 1997. Association Internationale pour l'Information Sportive. Paris: INSEP Publications, p. 390-395. ISBN 2-86580-093-8

3.1. ROADS software

From 1999, the Finnish Virtual Library has been a database service based on ROADS software (*http://www.ilrt.bris.ac.uk/roads/)*, which has been planned for building up and maintaining subject-based information gateways on the Internet. ROADS is a product of the Electronic Libraries Programme of the United Kingdom. (Nowadays: RDN, Resource Discovery Network, *http://www.rdn.ac.uk/)*.

There are many subject gateways in the UK produced by ROADS software in various fields: e.g. SOSIG - *http://www.sosig.ac.uk/* (social sciences, law), OMNI - *http://www.omni.ac.uk/* (pharmaceutical sciences, medicine, nursing, dentistry), and Biz/ed - *http://www.bized.ac.uk/* (business).

ROADS is a public-domain software. It follows WHOIS++ as well as Z39.50 search and retrieval protocols, Dublin Core metadata and USMARC cataloguing formats. ROADS metadata format is based on ROADS/IAFA templates. It is a web cataloguing format consisting of mandatory and recommended fields. The mandatory fields of the metadata format of the Finnish Virtual Library Project are:

- title
- publisher
- description
- category (i.e. type of Internet resource e.g. document, event, etc)
- URI
- main subject
- subject descriptor
- subject descriptor scheme

The recommended fields are:

- keywords
- format
- author
- language

The implementation of ROADS software meant that the description of the documents resembles the cataloguing of traditional printed material in the libraries. A group of librarians participating in the Finnish Virtual Library Project has compiled the ROADS cataloguing rules for the project. They are available together with the ROADS template form on the Intranet of the FVL.

ROADS enables both browsing of the hierarchical link lists and word-searching with Boolean operators in a subject-specific virtual library. It is also possible to do cross-searching between the various subject fields on the Finnish Virtual Library front page.

3.2. Evaluation of the links

It is important to keep the virtual libraries as up-to-date as possible. A good tool for checking the validity of the links is a software called AlertLinkRunner (*http://www.alertbookmarks.com/lr*). It gives information on link addresses that are invalid. Of course it is also very important to monitor the contents of the documents included and described in the virtual libraries.

A convenient way to find out what new sites appear on the Internet is to utilise the various current awareness search agents: Informant (*http://informant.dartmouth.edu/index.cgi*), Copernic (*http://www.copernic.com/*), Bull'sEye (*http://info.intelliseek.com/prod/products.htm*), etc. As a part of the Finnish Virtual Library Project a group of information science students together with the Library of Finnish Parliament have made an investigation and evaluation of search robots and especially of their use for current awareness. They have concluded that Bull'sEye is by far the most recommendable service[5].

3.3. Evaluation of the Finnish Virtual Library Project

The Finnish Virtual Library was evaluated together with some other European subject gateways at the workshop *Evaluation of Social Science Gateways* during the last IFLA Congress in Jerusalem, Israel in 2000[6]. Though the evaluation concerned only gateways of social sciences, the Finnish Virtual Library Project got valuable feedback as a whole. Its interface: graphics and colours were seen as light and user-friendly, and cross-searching as very useful. The Finnish Virtual Library gateway is originally targeted to Finnish audience, but it has been provided with English interfaces and document descriptions. The evaluation showed that foreigners have some difficulties in proceeding on the FVL pages because some link descriptions are only in Finnish[7].

The Finnish Virtual Library Project is a good recent example of successful co-operation between Finnish libraries. Finland is a small country - only five million inhabitants with a very peculiar language. During the past decades the Finnish libraries - municipal, public, university and other research libraries which represent various fields of sciences - have been co-operating very actively within e.g.: union catalogues, interlibrary lending, library automation, national bibliographic reference databases, national consortias for accessing of electronic publications and databases, etc[8]. The FVL has also shown how important the co-operation and networking are. It is very natural and easy to co-operate with net material. When the project started, Internet was not yet an everyday tool for librarians and their customers. The librarians working with the project could easily benefit from each others' know-how and experiences.

4. The Virtual Library of Sport Science

The Virtual Library of Sport Science (*http://www.jyu.fi/library/virtuaalikirjasto/roads/liikueng.htm*) consists of about 200 link descriptions. It covers all sub-areas of the discipline. The links have been divided into the following 15 sections:

[5] Karhula P. (2000) – *Uuden verkkotiedon jäljille agentin avulla* – in Tietopalvelu vol. 15 no 3, p. 24-26.

[6] International Federation of Library Associations, *http://www.ifla.org/IV/ifla66/66intro.htm*

[7] Alhainen T. (2000) - [Internal report] IFLA workshop. *Evaluation of Social Science Gateways*. Email: 24 August 2000.

[8] Kytömäki P. (2000) - *Tieteellisten kirjastojen verkottuminen.* – in Verkostoituvat kirjastot. Helsinki: BTJ Kirjastopalvelu, p. 55-74. ISBN 951-692-478-6

- sports sciences, general
- physical education
- sports psychology
- social sciences of sports, sports sociology
- sports and economy, sports and communication
- sports administration, sports planning, sports facilities
- sports tourism, leisure time
- history of sport
- philosophy of sport
- aesthetics of sport, sport and art
- sports medicine, biomechanics, exercise physiology
- sports and health, fitness training
- coaching
- sports in different population groups
- sports general

Links to sports events have not been included, except for the most important resources. Every document catalogued into the Virtual Library of Sport Science has a description consisting of a free natural-language commentary (in Finnish and/or in English) and evaluation of the usefulness and usability of the document. Most of the resources selected are English. The documents have also been indexed with both Finnish and English keywords. The Finnish keywords have been selected from the Finnish Sports Thesaurus[9] complemented with the General Finnish Thesaurus[10].

The number of resources in the Virtual Library of Sport Sciences will be kept below 300. It will not compete with other excellent broad subject gateways in sports sciences (e.g. Scholarly Sport Site, Sponet, Sportquest). The new resources included are mainly Finnish or very relevant high-quality foreign material.

5. EU-Project Renardus: Academic Subject Gateway Europe

There are nowadays also many internationally constructed Internet-based subject gateways. The Finnish Virtual Library Project was invited to take part in the Renardus Project funded by the European Union. The Renardus Project started at the beginning of the year 2000. It will construct an academic subject gateway service for the use of the European scientific community combining several already existing and functioning subject gateways in European countries. The project will design a single interface to quality controlled subject information gateways produced by Renardus partners, and it will provide cross-searching and cross-browsing facilities.

The duration of the Renardus-project is two and a half years, and it will last till June 30th, 2002. Its total funding is 2.3 million Euros. Renardus is funded through the European Union's Information Society Technologies Programme (IST) "Promoting a User-friendly Information Society". This is a major theme in the European Union's 5th Framework Programme (*http://www.cordis.lu/fp5/home.html*).

[9] O. Meriläinen. (1997) - *Liikunnan ja urheilun asiasanasto* (Finnish Sports Thesaurus, only in Finnish), Jyväskylä: LIKES. ISBN 951-790-132-1

[10] *YSA, Yleinen suomalainen asiasanasto* - only in Finnish and Swedish: *http://vesa.lib.helsinki.fi/*). English sports-specific keywords have been selected from the SIRC Thesaurus (*http://www.sportquest.com/products/sircthesaurus/*

5.1. Renardus partners and co-operation

The Renardus-project involves 12 organisations from seven countries. The project's main co-ordinator is the National Library of the Netherlands. The participants in the Renardus project are:

- "Koninklijke Bibliotheek" (National Library of the Netherlands) - (Co-ordinator)
- "Bibliothèque Nationale de France" (National Library of France)
- Center for Scientific Computing, Finland
- "Die Deutsche Bibliothek" (National Library of Germany)
- Finnish Virtual Library Project, Jyväskylä University Library, Finland
- Institute for Learning and Research Technology, University of Bristol, UK
- NetLab, Lund University, Sweden
- "Niedersächsische Staats- und Universitätsbibliothek", Göttingen, Germany
- Technical Knowledge Centre and Library of Denmark
- UK Office for Library and Information Networking, University of Bath, UK
- Viikki Science Library, University of Helsinki, Finland
- "Zentralstelle für Agrardokumentation und –information", Germany

The first step is to construct a pilot service which closely resembles the planned final service. The pilot service will be evaluated and improved on the basis of feedback obtained from users. According to plans, the pilot service will be in operation in June 2001. After that, it will be evaluated and amended based on feedback. The aim is to have a functioning service in spring 2002. At the same time, the project will have created a service model to which new subject gateways can easily be linked.

The project work is divided into 10 Work Packages:

- WP1 - Functional model
- WP2 - Design and implementation
- WP3 - Organisational infrastructure
- WP4 - Service provision
- WP5 - Verification and evaluation
- WP6 - Data model and data flow
- WP7 - Data interoperability
- WP8 - Business issues
- WP9 - Dissemination and support
- WP10 - Project management

Jyväskylä University Library and Viikki Science Library represent the Finnish Virtual Library Project in Renardus. Jyväskylä University Library is in charge of the evaluation of the pilot service (WP5). Viikki Science Library is interested in issues related to the multilingualism of the service. The third Finnish partner is CSC (Center for Scientific Computing), which focuses on the functional and technical definition of the pilot system to be constructed in the project.

5.2. The metadata format of the Renardus service

The Work Package 6 is responsible for the preparation of the metadata format (data model) and data flow of the Renardus service. The architecture of the Renardus system is decentral following Z39.50 and XML/RDF protocols. The project participants have chosen the Dublin Core (DC) standard for the

metadata format (*http://purl.oclc.org/dc/index.htm*). The formats of various subject indexes of the participants can easily be converted to DC (e.g. ROADS-based formats used by the British and Finnish participants). The Renardus Project has agreed that the mandatory DC fields of the metadata format are:

- title
- description (an English account of the content of the resource)
- subject (English keywords)
- subject (Dewey Decimal Classification for browsing)
- identifier (URI, URL)
- SBIG ID (acronym of the subject gateway)

The recommendable fields of the metadata format are:

- creator
- language
- type of resource
- country of publisher

The optional fields of the metadata format are (e.g.):

- alternative title
- identifier, mirror

5.3. Renardus subject fields coverage

The Renardus service will represent all fields of sciences. The resources included come from the participating libraries' subject indexes (*http://www.renardus.org/gateway/participants.html*). To mention some of the best known subject indexes joining Renardus are:

- DutchESS - Dutch Electronic Subject Service (*http://www.kb.nl/dutchess/*)
- SSG-FI - Special Subject Guides, SSG Fachinformation, Germany (*http://www.SUB.Uni-Goettingen.de/ssgfi/*)
- Biz/ed (*http://www.bized.ac.uk/*)
- OMNI (*http://www.omni.ac.uk/*)
- SOSIG (*http://www.sosig.ac.uk/*)
- EELS, Engineering Electronic Library, Sweden (*http://eels.lub.lu.se/*)
- NOVAGate - Nordic Gateway to Information in Forestry, Veterinary and Agricultural Sciences *(http://novagate.nova-university.org/)*
- The Finnish Virtual Library Project

The Finnish Virtual Library Project will join the Renardus service with nearly all its 50 subject indexes. At the moment, the FVL partners are selecting the resource descriptions that will be converted to the Renardus database. The main emphasis is on national material, but resources only in Finnish can be omitted; exclusively material understandable for international audience is included (only with a few exceptions). The FVL partners have to check that the resource descriptions in the FVL database are in English. International links can be selected to Renardus as well, but their number has been estimated rather small - about 10-20% of the whole number of FVL references.

It is very difficult to estimate now how much material dealing with sports sciences will be available through the Renardus service. A rough number of resources converted from the Virtual Library of Sport Science to Renardus is about 50. The links are both Finnish (containing also English pages) and international. I'm sure that Renardus will also get material dealing with sports sciences from the other subject indexes joining Renardus (e.g. SOSIG, OMNI).

The aim of the Renardus-project is to build up a so-called "one-access-point service" which will considerably improve and increase access to evaluated and high-quality Internet material by the European university and researcher community[11]. It is an excellent evidence of the strength of co-operation and networking between European university libraries

[11] Alhainen T. & Heikkinen R. (2000) - *The Finnish Virtual Library Project: Soaring to new heights through co-operation* – in Signum vol. 33 no 4, p. 91-94.

Outdoor – Without "Trees"…
The Citizen as the Consumer of Sport and the Needs of Information
S13

Péter Cziráki
Editor in Chief, Zöldpont Information
and Press Association for Sport, Hungary

Although the process itself began much earlier, it is during the last 15 years that the sport world's society has been rearranged.

Owing to the dominant role played by the media, sport completed a natural selection process. As a result, certain fields of sport have strengthened economically, moving their activities into the category of show services and showbusiness (e.g. tennis, golf, basketball, football), whilst others have become dull or did not have any more time to develop. The inclusion of certain sports in the Olympic Games proved to be crucial, although the situation is far from clear-cut in this regard, since it is rather at a national level that the Olympic sports can expect a wide audience and interest.

On the other hand, especially in the developed countries with economic stability, the need for doing sports has increased more than ever, and a brand new structure has born in the field of leisure sport (with strong national features). As the commonly-preferred sports, like tennis, skiing, swimming and running had practically reached their growth limits, the real explosion took place in new fields. Green sports and water sports have achieved unexpected development, providing more safety and comfort. The need for adventure and romance became clear and was satisfied by these sports. Some years later the wide range of street sports and the popularity of fitness completed this trend and a unique development has taken place in traditional sports such as skiing (i.e. snowboard, carving). The practice of sport has become a natural part of everyday life, and its social significance has thus exceeded that of competitive sports.

While the sports business not only successfully followed, but also generated the spreading of leisure sports, the social and organisational structures did not seem to be prepared for the changes, especially since the high need basically meant a need for "information" a number of questions such as "who ?", "where ?", "when ?", "for how much ?" and "why ?" emerged. Even more answers were found and the amount of information has suddenly increased and accumulated. One should follow the dynamic changes of this world among the data of more than 150 sports.

The situation becomes more complex with the fact that a citizen who practised only one sport in the past has added other ones to his/her activities and also that the majority of these sports cross geographic borders (outdoor sports, ski, adventure sports). The connected information, however, can be available only on a local level or at sports clubs or organisations, thus making orientation quite complicated and long. Competent databases and related service systems managing and transmitting the information of the leisure sport world in a unified order do not exist in Europe even at national levels. Appropriate systems designed to fill this gap are missing at a regional or even continental level (despite the existence of the European Union).

A specific exception in this regard is Hungary where a consistent database, including the field of leisure sport and its service system was created in 1996 by Greenpoint (Zöldpont) Association. IT experts created a database management system, based on the Lotus Notes basic software, that is particularly

suitable for efficiently serving the general public and in which the majority of the important types of questions can be found:

- Events: competitions, training, courses, sports services, other programmes.
- Organisations: sports organisations, sports ambulance, experts.
- Equipment: producers, specialised shops, servicing, rental shops, constructors.
- Conditions: snow-, ice- and avalanche-reports, quality of natural waters, weather report;
- Sport scenes: built establishments, natural environment, ski resorts.
- Accommodation: accommodation facilities concerning sports.
- Travel information: the easiest way to approach a sports place.
- Law: instructions, rules concerning different sports activities.
- Bibliography: journals, maps, books, guides, videos, CD-ROMs, websites, applications.

The basic requirements for the system were the following:

- The information body should be able to **transmit** this complex mass of information in the most efficient and most simple way possible.
- Its activity should have charity characteristics.
- It should ensure simultaneous availability to a great number of users without any technological or material discrimination.

The principal value of the system is a creation of a database managing structure that does not apply the traditional "library-tree" but provides answers for a variety questions. This makes it fast and user-friendly.

The last half-decade was enough to prove the viability of and need for a theoretical system to show disorders, to correct the mistakes, and also to show the emergence of the need for further international development.

The planning of the international extension started two years ago in the framework of the European Sport Health Confederation (CESS). During this period it was thought that a single database could:

- handle uniformly local, regional, national and international data;
- operate a huge mass of data in a clear and treatable way;
- be the basis for a diverse service;
- be operated in a surprisingly cheap and economical way;
- destroy barriers of language differences;
- be flexible to being expanded and restructured and to adapting to local characteristics.

Information Technology for Sport Management
S14

Thomas J. Rosandich
Vice President for Academic Affairs, United States Sports Academy, USA

1. Introduction

I will attempt to provide an overview of how information technology (called IT) is changing the nature of management practices in sport. The discussion of IT applications in the profession can be done in a few broad areas:

1) How the tools of today's "technological revolution" can be applied to the administration of sport.

2) How developments such as the Internet and world-wide web help in specific management functions such as training and marketing.

3) How e-commerce can make participation in sports more available through lower priced equipment.

4) The digital divide: and underlying condition that keeps some from participating fully in the benefits in the IT revolution.

2. The technological revolution

We are living in the midst of one of those very unusual occurrences that come along once every few generations: a society wide paradigm shift. The close of the last millennium has seen a fundamental change that is moving society from the age of industry to the age of information. The currency in this new society that is being formed is information and the medium of exchange is called IT (and sometimes computer technology - CT). IT is simply the tools and methods used for the identification, organization and manipulation of facts that we call data. IT has become the engine that is driving all sectors of today's economy be it industry, government, education or indeed, sports.

The most important piece of equipment that lies at the heart of the whole IT process is the computer. The computer and the software that it runs is an essential element in the new societal paradigm and it is a key to success for the modern sports manager. It is **the** piece of equipment that allows the sports administrator to maximize the return on scarce resources whether these are people, facilities and equipment or finances. In turn, it is also perhaps the single most important tool to the sports administrator to extend the reach of sport and recreational programming to as many potential participants as possible.

Just as money has been the currency and a source of power in the old paradigm, information is the currency and a source of power in the new paradigm. Nowhere is the old saying *"that knowledge is power"* more true than in a society where information or data is the force that drives the new economy. The secret to managing knowledge and information is in the development and maintenance of computer databases.

A database is nothing more than an organized collection of common records that can be searched, accessed and modified. Database software is very widespread as most standard office computer software packages will typically have a simple database program in addition to word processing, spreadsheet and presentation applications.

There is, however, a far more powerful and useful kind of database for sport managers than the one that comes in the standard software suite: the relational database. A relational database is a data management system that stores information in a series of tables consisting of rows and columns of data. When the operator conducts a search, a relational database allows the individual to match data from one table with data from a second to produce a third table or a report.

An illustrative example is that of an individual charged with overseeing a complex sports competition, the details of which have been entered into a relational database. The time for a scheduled event can be pulled from one table, a roster that has the names of qualified referees who can officiate the event from another table, their availability from a third table resulting in a report that lists all of the personnel who can undertake the officiating task at the appointed place at the appointed time. This task which could take hours of manual manipulation from paper records can be done in a fraction of the time from digital records. Similar event management software can assist the sports manager with a myriad of other tasks associated with the competition ranging from facility scheduling, equipment set up and knock-down, or even ordering soft drinks for the concession stand.

From the foregoing the value of using IT tools can be readily seen for the organization of a competition. These tools are even more important for the day-to-day operation of the sport organization as can be seen by the kinds of sport program information that can be contained within these databases.

First are athlete specific information such as team rosters that include biographic information including name, sex, age, contact information and even clothing sizes for team uniforms. The same database may also contain details on medical conditions, performance history, or other participation characteristics of the athletes.

Another common use is the development of rosters of program support personnel such as officials, timekeepers, drivers, or medical staff. Aside from details such as their addresses, a database of this type might also contain information about availability and reliability. For example, do they actually show up when they volunteer?

Money is always an issue for today's sport management professional. Databases are particularly useful for tracking donors or potential donors whether and they contribute money or in-kind services. In addition to the expected biographic information will be other keys to successful fund rasing such as the source of their motivation or affiliation and the frequency with which they give.

Databases are also essential for other types of administrative information. Examples include accounting and business records, employee files, equipment inventories or facility maintenance records. The organizational marketing information system (MIS) is also typically a database program in which are tracked information such as season ticket sales, gate receipts or merchandising sales. It is particularly useful if different software applications interface with each other seamlessly which is to say*, "do the programs talk to each other ?"* Can, for example, the data entered in the MIS resulting from ticket sales be imported directly to the accounting program ?

To be effective, databases can and should be regularly updated to record changes. Bear in mind that the passage of time presents a more comprehensive picture of most activities and the ability to record

change and make sense of it is essential for long term survival. Further, there is nothing so constant as change, particularly in sports organizations, and a well thought out and maintained database is a great way to develop and maintain an "institutional memory"; a record of those changes and the impact they have had on the organization.

As great as databases are for effective sport program management, the real power of information technology comes when individual computers are tied together through the medium of a network. This is truly a case where there are synergies created as in 2 + 2 = 6. A computer network simply is the hardware and software required to connect two or more machines together so to allow the sharing of data and other resources. Most larger enterprises, use computer networks to link together their operatives in a common computing environment. All of the permeations and configurations available to the sports administrator are clearly beyond the scope of this presentation except to note that the most common configuration of these kinds of networks are of the client - server variety. This type of network is has a main server that houses most of the information and database files. The individual operatives access the server through their desktop terminals or workstations which are called clients.

Aside from sharing data, a network can share other resources as well. For example, a network can have any number of computers sharing a very good quality printer instead of a using a number of mediocre workstation printers. A powerful server can substantially increase computing speed and effectiveness throughout an organization. So what are the key issues to be addressed when considering the acquisition and implementation of an organizational IT system ?

First and foremost, once the decision is made to introduce IT systems to the organization, the table of organization and staffing patterns will need to change. The new IT system cannot simply be "layered on" to the existing structure; it must be imbedded into the organizational processes. The adoption of a IT strategy and associated changes in procedures usually means extensive training for the staff.

The next consideration is that of hardware. What is the computer system configuration and computing capacity that the organization will need ? Capacity should not be underestimated as a relational database can consume huge amounts of memory. So do other strategies that enhance organizational effectiveness such as moving data files off the hard drives of individual work stations and onto a file server on a computer network.

Another crucial decision revolves around operating software. Standard vendor prepared software packages are usually developed on the basis of the lowest common denominator for a group of potential clients. It is not uncommon that only about 80% of an organization's needs are met by an off-the-shelf product. So the sport administrator is left with the choice of writing their own software programs or adapting organizational operating procedures to some degree around the software package. The former can be hugely time consuming, very expensive and the end result is not always assured. Generally, the more extensive the modification required for a software product, the more expensive the product becomes and the more difficult it will be to accommodate software upgrades from the vendor.

3. The Internet

It is important to note that computer networks need not be limited to a single site or facility. Wide Area Networks (WANs) can link together sports administrators located throughout a country. For example, all of the regional offices of a national sports governing body such as the National Football Association can be linked together regardless of their geographic location. All of the operatives so linked can share administrative and programming information and communicate with each other cheaply and efficiently through the medium of e-mail.

The computer network with which the public is most familiar is the Internet and the World Wide Web, known simply as the Web, is what most people think of when we say the "the Internet". While the Internet has been around for decades going all the way back to ARPAnet in the 1960s, the Web is a comparatively new innovation first introduced in the mid 1990s. It is a digital medium which presents information in text, audio and graphics in a simple hyper-text computer language readable by a browser. This medium has simply exploded and today there are more than 15 million web addresses called Uniform Resource Locators (URLs), many with hundreds of individual pages on their sites. Thousands or applications for new URLs are received every week.

The ways that the Web has changed society are almost too numerous to mention. Suffice to say it has become an extremely important medium of communication, education and commerce and its importance in these areas will only continue to grow in the future. In terms of communication, for example, USA Today which is the closest thing a national newspaper in America, gets more than three million visits per day. Some 60% of these visits are to its sports pages. In terms of education, the concept of "distributed learning" or "distance education" gains more adherents with every passing day. Through the U.S. Sports Academy, for example, one can do the entire course of study for an accredited Master of Sport Science degree through the Web without leaving their home. The same possibilities exist at the undergraduate level through the International Sports Academy.

But most significant at this juncture is the marketing and commerce applications of the web. There are virtually no professional sports teams in the United States that do not have a website and most are linked together through networks of Websites coordinated through the various league offices. Just how tight these linkages are is driven in part by agreements between the league teams on activities such as revenue sharing for media broadcasting rights and merchandise sales.

The Web is currently used by professional sports teams in ways that the developers of this technology never envisioned. For example, there are no English language radio broadcasts in Montreal for the Montreal Expos professional baseball team. Fans wanting hear the play-by-play in English can only do so by calling up the team's website and listen to it coming across as an audio feed. Another example of how deeply the Internet has penetrated professional sports is how some pro hockey teams now require their players to have e-mail addresses as a means to interact with both the team administration and their fans.

These examples lie at the heart of how the Internet will affect sports in the future: through the changing of the way that the sports fan will consume the sport product. Where in its infancy sport marketing did not extend much beyond putting out a sign on the side walk saying "Game Today", now sports teams have well developed and extensive Websites to more effectively market to their customers. The trend in this regard is also clear. What will emerge is networks of teams and users bound together by a common interest and driven in part by advances in information technology.

These developments are not limited to the upper end of the sports hierarchy. Compared to the extremely high cost of traditional television broadcast, the comparatively low cost of "webcasting" will bring to sports fans events that could never before be seen on traditional broadcast media. A simple example of how this can occur is an annual sailboat race from Mobile to Tampico across the Gulf of Mexico. Last summer the skipper of a local boat participating in the event took photos every four hours with a digital camera of the race activities and uplinked them by a satellite phone to his own website. Thus his friends in the community, or anyone else in the world who stumbled onto the website, could participate in this event as they never could before. Sports events of a distinctly local flavor without the mass appeal that make them economical for television broadcast can so be distributed through the web to anyone with an interest. The web is not constrained by the limited

availability of broadcast channels and high production costs. And while bandwidth is currently an issue for the web, this will resolve itself in the near future with the introduction of broadband technologies.

4. E-commerce

It is also appropriate to briefly examine how the web will change the sale and distribution of sporting goods which central to running sport programs. The relative cost for sports equipment can be an issue for the profession, particularly in terms of trying to broaden the appeal of sport to the greatest number of participants. E-commerce through the Internet holds the potential for containing costs for sports equipment as illustrated by the following example.

In the traditional model of manufacture and distribution through a sporting goods store, it is not uncommon for a tennis racquet which cost USD 40 to manufacture to be marked up as much as 300% to 400% to as much as USD 160 as it moves through various wholesalers and retailers in the distribution chain to a tennis player. With an e-commerce arrangement whereby the manufacturer can reach the player directly without going through middlemen, the mark-up in distribution can be reduced to as little as 50% of the traditional retail price resulting in a sale price to the end user of about USD 80. Very simply, the more middle men in a distribution chain, the greater the benefit derived to the end user from using e-commerce distribution.

E-commerce is well on its way to becoming a force in the world economy as it serves to remove barriers both natural and artificial. The barriers that will vanish include those of time and space as well as national borders both physical and ideological. That this will occur is underscored by the fact that this year e-commerce will employ more than 2 million people and create a turnover in excess of USD 500 billion. By next year, the turn over is expected to pass USD 1 trillion.

5. The Digital Divide

In closing I would be remiss if I didn't call attention to one important problem: technological tools can be expensive which has resulted in what we call in the United States the "Digital Divide". In the US, approximately 60% of American adults are connected to the Internet and are on-line. These users are largely from the upper and middle class and have the financial wherewithal to purchase computers and Internet services. It is a matter of great concern that the very people who stand to benefit the most from economies to be realized through information technology as outlined earlier in my discussion on e-commerce are the ones least able to afford it. It is the economically disadvantaged that are currently being left out of the IT revolution.

This Digital Divide also transcends national borders. While 60% of American adults are connected to the Internet, only about 5% of the global population can make that claim. Some areas, Africa for example, are almost totally disconnected and can only be considered disadvantaged as a result. Herein lies the challenge for the future.

In conclusion, IT applications in sports management is dramatically changing the way that we do business. Thinking through how we can use this kind of equipment and these tools greatly enhances outcomes. The bottom line is that these IT tools are rapidly becoming a necessity for the sports administrator at whatever level in the sports hierarchy they are working.

Web-based Learning for Sport Administrators
The Example of the SOMIT Project

S14

Jean-Loup Chappelet
Professor, IDHEAP
(Swiss Graduate School of Public Administration), Switzerland

It goes without saying that since the fifties, sport has become a major political, economic and social phenomenon. It is also nearly as obvious to point out that the professionalism of those who manage it is not always at the same level as the issues at stake therein. The consequences of this lack of professionalism are rather serious for sport and particularly for top-level sport. Means of alleviating this lack of managerial skills must therefore be developed by using all means available, including the most modern among them such as the Internet and the new media.

For some thirty years now, elite athletes are no longer amateurs in the sense meant by Avery Brundage and his predecessors who held office as President of the IOC (International Olympic Committee). They are now professionals, meaning that they perfectly master their (sport) technique. This should also be true of the political and administrative sport officials who manage the ever-increasing infrastructures behind them, i.e. the human, financial and material resources and the information systems. As in other sectors, the general management and daily running of sport requires more and more specific knowledge. Sport administrators must become familiar with management techniques and adapt these to the phenomenon of sport while being fully aware of its particular characteristics.

Since the seventies, sport management developed little by little as an autonomous discipline: first in the United States, then in Europe and the rest of the world. Today, numerous countries offer training in this field at various levels (Chappelet 1996). In Switzerland for example, the author has been providing a sport management course at the Graduate School of Public Administration, associated with the University of Lausanne, since 1995. This course is reserved for students with a bachelor's degree (4 years of university studies) and specializes in the problematics of sport in Switzerland (*http://www.unil.ch/idheap/formation_master_14.htm*). It was the first course taught in French in this country. A similar course, taught in German, is available at the University of Fribourg's Institute for Association and Non-Profit Management (VMI), *www.vmi.ch*). Several courses also exist on a European level, e.g. MEMOS (European Masters in Sport Organization Management). This diploma was developed in 1995 by several universities and sport schools in the following countries: Spain, France, Great Britain, Italy, Luxembourg, Portugal and Switzerland. It was initially headed by Jean Camy (University of Lyons 1), and then by the author since 1999. Thirty participants from sixteen countries take part in the MEMOS 2000 program. (*www.unil.ch/idheap/MEMOS.htm).*

The large number of university courses in sport management in North America, Europe and Australia is the reflection of a strong demand on the part of students who enter university aiming for a career in sport administration (see *www.unb.ca/sportmanagement/programs.htm* for a list of the many programs available). There is also a considerable need for further training for those already employed within in sport organizations. These latter must remain abreast of the latest developments in the discipline or, more simply, need to gain a better understanding of the specific characteristics of managing sport. Volunteers, who still constitute the vast majority of sport officials (in any case as far as Europe is concerned), are also ideal candidates for training in sport management. In fact, this demand for training in sport management is closely linked with that for management in general (Nohria & Berkeley, 1994:130).

In parallel to these developments, the Internet has undergone a boom since the beginning of the nineties. Today, sport is one of the most popular and the most lucrative subjects on the Web (Church 2000). This is hardly surprising since on the one hand, sport is a favorite leisure pursuit for the population in general and on the other, sport activity and competition produces a great deal of information that can be easily diffused via the Internet (see other contributions to this IASI Congress).

The Internet boom has also made it possible to completely renew teaching based on computer technology (CAT Computer Assisted Training/Education or CBT Computer Based Training) whose origins lie in the Plato system by Control Data during the seventies. The arrival of multi-media technology (CD-ROM and CD-I) and of hypertext introduced the notion of interactive and open learning (Barker & Tucker, 1990). Today, the terms more widely used are web-based learning/training/instruction, cyber-courses or e-courses, or online classrooms/courses (Kahn, 1997). Although the Internet is a technology that is becoming more and more accessible almost everywhere, courses that can be offered in this way automatically create a physical distance between those taking part in them and those providing the teaching. A cyber-course cannot, therefore, simply be a case of providing normal course material on the Internet but must also offer an interactive factor capable of facilitating the learning process (Beer, 2000:7). In more general terms, it must take into consideration analysis and reflection on the field of research concerning distance education, an issue that already began with simple correspondence courses introduced well before the Internet was born[1]. The expression "distance learning" is used for courses where information is transmitted via audio, video or computer technology to off-campus sites. According to a study published in 1999, this type of course was already offered by over 44% of American colleges and universities (Blair, 2000).

The aim of this article is to explore the various possibilities offered by the Internet for providing training in the management of sport organizations. First, it presents the extremely few existing university level courses for sport management on the Internet. Secondly, it describes the SOMIT project (Sport Organizations Management Interactive Teaching & Learning) from the Swiss Virtual Campus. As its name indicates, this is a genuinely interactive course for better managing sport organizations. In conclusion, the advantages and shortcomings of distance learning via the Internet for sport administrators are summarized in the light of current experiences and the challenges for management and sport information in the XXIst century.

1. Distance learning in sport management

Numerous types of management training on the Internet have been in existence for several years. Among these, for example, are several courses taught in English under the label of Harvard University Business School in the United States: Harvard ManageMentor™, High Performance Management, Managing for Performance Series, The On-Line Negotiator, FastTeams (Euromanagement 2001). The Harvard ManageMentor™ course permits managers to refresh their knowledge on twenty practical key subjects: Assessing Performance, Capitalizing on Change, Coaching, Delegating, Finance Essentials, Giving and receiving feedback, Hiring, Keeping teams on target, Leading a team, Motivating, Making a presentation, Managing difficult interactions, Managing upward, Managing your time Negotiating, Project management, Running a meeting, Setting goals, Solving business problems, Writing for business. Each subject is presented via eight points: Core concepts; What would you do?; Steps (to follow in order to accomplish a related task); Tips; (practical and ready-to-use computer supported) Tools; Test yourself; Key words; To learn more.

[1] For several years, the University of Leicester in Great Britain has been offering distance courses in sociology and sport management (*www.leicester.ac.uk/crss/teach/msc.html*) and without doubt possesses one of the best-developed programmes in the sector.

The High Performance Management course is more ambitious. It is based on case studies presented with the help of videos and incorporates interactive self-assessment tools. Demonstrations of these cyber-courses are available at the site *www.harvard.nl*.

Training in sport sciences is also starting to become widely available on the Internet. The company Human Kinetics, for example, the leading American publisher in this area, is proposing its Online Learning Center as of 2001 at the address *www.hklearningcenter.com*. About a dozen courses are already proposed in two areas: Sport Medicine and Health & Fitness. The goal of this publisher is to offer courses for all professions related to the field of physical activity and to prepare for professional certification, post-certification continuing education, or college and university academic credits with participating institutions. Human Kinetics courses consist of an online study guide, which directs the student through a series of learning experiences to help them understand and use the course content, and a variety of supplemental student resource materials including printed texts, videocassettes and CD-ROMs (these vary according to course, and not all courses include supplemental resource materials). The online study guide is not just printed material transferred into digital form. It is designed to give the students a meaningful opportunity to interact with the course subject matter in a way that will facilitate their learning. This center is an addition to a distance training program developed several years ago, and that notably includes the PASS (Professional Achievement Self-Study) Program intended for coaches and physiotherapists in partnership with the NATA (National Athletic Trainers' Association). To grasp the diversity of the material on sport science now available on the Internet, the following site is also useful: *http://sponet.de.*

Although it is clear that numerous cyber-courses in management and in sport science now exist, there are still very few types of Internet training in sport management. The world's largest distance university, for example, the Open University of Great Britain, is absent here despite a wide variety of management courses available (see the site *http://oubs.open.ac.uk*). We shall examine three existing sport management courses on the Internet which are offered at the University of Lyons 1, France (in French), Complutense University in Madrid, Spain (in Spanish) and the University of Dallas, Texas (in English):

1) The University of Lyons 1 (Faculty of sport sciences) has been offering a course leading to the DUGOS (University Diploma for the Management of Sport Organizations) since 1996, in co-operation with the University of Limoges Center for Law and Sport Economics and the French National Sport and Olympic Committee.

   This is a professional training course of a level equivalent to the "Baccalauréat" (higher school certificate) + 2 years, and includes theoretical training that is systematically linked to practical applications, a practical professional training period and a personalized follow-up (by a tutor). This course is mainly intended for persons working in the associative sport movement (an intake of around 190 for the 2000 cycle), who follow the course from a distance, i.e. by receiving course material and practical exercises by post to be completed for correction every two months.

   The DUGOS course consists of seven modules: Sport organization and Administration, Strategy and Planning of Sport Clubs, Marketing, Information Technology for Management, Financial and Fiscal Management, Human Resources Management, Organization of a Sport Event. These modules are divided over two years and each requires approximately thirty hours of work. To this is added an unpaid practical training period in a sport organization, divided over the duration of the studies (around 10 hours per month). Evaluation is carried out via work handed in at the end of each module and marked by the tutors. A meeting is organized in Lyons and in Paris at the beginning of the course in order to permit students to meet each other in person. Since 2000, part of the DUGOS teaching material is available via an Internet portal (*http://nte-serveur.univ-lyon1.fr/nte/dugos*). This portal also makes it possible to contact the course teachers by e-mail and to take part in a forum (chat) open to both students and teachers. This program costs 839 French francs.

2) Complutense University in Madrid (University Olympic Institute of Sport Science) has been offering a cyber-course by the name of GESDEPOR (*http://gesdepor.sed.es*) since 1998, in co-operation with the University Oberta de Catalunya. This is particularly intended for Spanish and South American university students and as such received financial support from Olympic Solidarity, the institution that manages funds from the National Olympic Committees that are obtained following the celebration of the Olympic Games.

   This course consists of nine modules: The Sport System, Sport Management, Managing Sport Activities, Economic and Financial Management, Methods of Communication, Sport Marketing, Sport Facilities, Human Resources and Olympism. The modules are divided over a three-month intensive course requiring a minimum of three hours study per day and are concluded by an evaluation in the form of a one-day examination where the candidates are physically present. A certificate plus twelve credits towards a university degree can be obtained.

   Unlike DUGOS, none of the content is available on the Internet. The teaching material is distributed by the post. However, students registered for the course receive a CD-ROM that permits them to install a communications interface between each other and with the course teachers in the form of an Extranet (closed Internet group for a limited circle of users). The pedagogy of this course is focused on non-planned yet facilitated interaction between teachers and students. Around fifteen teachers / consultants interact via discussion topics they propose to students, a multilateral forum and a bilateral e-mail system. The cost of this program is USD 100.

3) The University of Dallas, Texas (Graduate School of Management) has been offering an IMBA (Internet Master in Business Administration) in Sport Management since 1999 in parallel with other distance learning programs leading to an MBA in Information Technology, Telecommunications and Electronic Commerce (*http://imba.udallas.edu*).

   The program is designed for individuals who are involved in team, association, or facility management, as well as coaching, sport education, sport marketing and other career positions. It comprises seven MBA core courses, five specialized courses, four electives, and a standard series of lectures. It is offered in affiliation with the United States Sport Academy whose faculty teaches the following sport-specific classes: Sport Marketing, Sport Administration and Finance, Sport Law and Risk Management, Sport Public Relations and Fund Raising, Sport Business and Personnel Management, Sport Facilities, and Sport Management Capstone (research project to integrate all previous course work). Program delivery is primarily web-based, but also includes study guide materials and a textbook.

   Although the courses are offered in an asynchronous distance learning mode, classes are scheduled to occur during a 13-week traditional trimester, where each week is considered a major learning module with assignments due approximately seven days after being mailed. All course work, including projects and examinations, takes place online, and all communication (student-to-student and student-to-teacher) may take place via e-mail. The interactive syllabus includes the following key features: Assignment, Frequently Asked Questions, Quizzes, Reading, Threaded Discussion, Video Slide Show. Students may apply for admission online as well as register online for the courses they choose. This program is also available on campus. The price of the program is between USD 15,000 and 20,000 depending on possible transfer credits already obtained.

Table 1
Summary of main features of three existing sport management cyber-courses

e-course name	DUGOS	GESDEPOR	IMBA in Sport Management
Academic institution	University of Lyons, France	Complutense University, Madrid	University of Dallas, Texas
On the web since	2000	1998	1999
Course material	Yes, some	No	Yes, most
Language	French	Spanish	English
Intended public	Sport volunteers	University students	Young professionals
Length	24 months	3 months	12 months (minimum)
Cost (in 2001)	Approx. USD 300	USD 100	USD 20,000 (maximum)

From this brief overview of the few cyber-courses that exist in sport management, we note that the level of interaction therein is at present basically limited to the exchange of e-mails or to participation in forums. The Internet is basically used to encourage communication between participants and teachers and to facilitate the electronic diffusion of course material, and sometimes for multiple choice lists (quizzes). Very rarely, students are required to handle questions or problems set by the authors of the course online with corrections/solutions proposed by the system. However, we know that solving problems linked to the subject taught is one factor contributing towards improving the learning process (Beer 2000:153). Such possibilities already exist within online management courses such as those by the Harvard Business School. We should also note the case studies on sport issues that are sometimes used in cyber-courses (see for example the case of Pentastar Motorsports, which can be found on *www.personal.psu.edu/faculty/r/s/rso3/ba422/ARCA/index.html* within the framework of the Contemporary Business Seminar from Penn State University). It is therefore not only possible, but also desirable, to create courses in sport management that are more interactive.

2. The SOMIT project

In October 1999, and in response to a Governmental motion, the Swiss Parliament voted in favor of providing thirty million Swiss francs to set up a "Virtual Campus". This is a series of university cyber-courses that can be followed via the Internet by students registered at Swiss universities (CUS 1999). The courses must be led by teams of teachers / researchers from at least three Swiss university institutions in order to favor their adoption within the various academic programs. Having received 140 proposals, the Swiss Virtual Campus retained around twenty projects for the period 2000-2003 in 2000. Other projects will be selected in 2001. A list of these projects and other information can be found at *www.virtualcampus.ch*.

The SOMIT project (Sport Organizations Management Interactive Teaching & Learning) was among the first series of projects selected. It involves the University of Lausanne (INFORGE - Institute of Computer Science and Organization), the University of Fribourg (VMI - Institute for Association and Non-Profit Management), the Swiss Federal Sport School in Macolin attached to the University of Applied Sciences, Bern (HESSM), plus the Conference of the five Swiss Institutes of Sport Science (CDISS) and the Swiss Olympic Association (AOS). The leader of this project is IDHEAP (Swiss Graduate School of Public Administration). The five partners unite sport management experts in Switzerland (IDHEAP and VMI), specialists in teaching via the Internet (INFORGE and IDHEAP) and most of potential users of such a course (HESSM, CDISS and AOS). The AOS, which is the confederation of sport federations in Switzerland, already offers a classical training program (physically attended by students) for the country's sport administrators (*www.swiss-sport.ch/sov/e/eausbild.htm*). It will use the e-course and its derivatives in order to complete the program.

The SOMIT project is intended to develop an interactive course on the management of sport organizations that can be followed, via the Internet, by students preparing a bachelor's degree (at the level of a 3rd or 4th year university course). There is a considerable demand for such courses, which do not exist at this level in Switzerland today, whether in the form of classical courses or forms of distance teaching (IDHEAP and VMI only offer graduate courses). The SOMIT undergraduate course will be available in French and German as of 2001, and in English as of 2002 in order to be offered to international students.

The course corresponds to approximately sixty hours of a normal university course over one semester. It is genuinely interactive, and developed in order to promote exchange between learners and teachers. The course is split in four modules, each corresponding to about 15 hours of regular courses:

1) Sport and Management.
2) Management Model for Sport Organizations[2].
3) Resource Management for Sport Organizations.
4) Sport Marketing.

Each module is divided into three or four parts and comprises a total of twelve chapters plus a pre-test and a post-test. The pre-test is intended to reveal whether the student needs to follow the module in question and the post-test reveals whether he has now grasped the subject and may move on to the following module. A final examination, with the candidate physically present, is organized in order to acquire the credits associated with the course.

The pedagogical objective is a broad coverage of the management of sport organizations, which is a new discipline combining knowledge in management, economics, marketing, law and in political and social sciences. After this course, students will be able to understand and face up to the management problems inherent to most (associative) sport organizations: non-profit making bodies, the mission of public service, professionalization approach, volunteer work, two-level governance, fund raising, etc.

From a didactical point of view, the course is conceived to promote autonomy among the students during their learning process. We adopt a "service" approach rather than a "product" one. As such, we are not only developing an e-course, but also anchoring our efforts both on a self-training concept and on individually tracking the student in order to follow his progress and provide adequate support. This concept can be adapted while in progress, if necessary, for certain participants (personalization, teaching tailored to needs).

The overall pedagogical approach is a constructivist one: it is the student who builds up what he learns via activities aimed at facilitating his personal progress while constructing his knowledge base (rather than reproducing facts). The role of the teacher is to facilitate the student's progress by helping him build up his own grasp of the subject. A certain number of practical pedagogical solutions are adopted for this purpose.

The modular structure of the course makes it possible to personalize the training to some extent and to break it down into small units (chapters) that are easily mastered while maintaining a logical structure perceptible to students. A pedagogy by objective permits the student to know what he should have learned by any given phase of the training and consequently to develop learning strategies in line with requirements right from the outset. Activities such as problem solving, simulations and case studies allow the student to build up his own knowledge. Each chapter of the course is structured around an

[2] Based on the "Fribourg model", see Cf. Bumbacher U. (1999) – *Nonprofit Management Theory and Practice in Switzerland: The Fribourg Management model for Nonprofit Organizations*. ISTR Conference Papers Series, vol. III, John Hopkins University, Baltimore, MD.

activity to be carried out and not simply an input of information. To carry out the task in question, the student must refer to a series of resources or course material (copied documents, articles, slides, summaries of works, etc) made available by the system.

The learning process is thus one of problem solving that is built up throughout the various sessions. To achieve this, remote resources in the form of reference documents, links to relevant sites, methods and persons to consult are provided as needed. Written papers required are returned via e-mail by students at the end of each module, and are taken into account to a significant degree for the final evaluation. The tutors then forward the necessary comments to their students in order to develop their knowledge and skills further. As work progresses, the best contributions are made available to all participants, on the Internet, by using the concept of the Learners' Knowledge Pool (a repository of all documents produced by the learners and organized by modules). Support and remote follow-up for the students are planned throughout the training by e-mail, telephone and forum.

Groups are constituted by language (German, French, and English). All participants within one and the same course and speaking the same language form a group that takes part in the same forum and attends the same physical meetings (if any are organized). Groups are split if necessary.

The SOMIT project relies on the ARIADNE open Internet platform (*www.ariadne-eu.org*), which provides both authoring and core tools such as the Knowledge Pool, the Curriculum Editor, the Pedagogic Indexation Tool, the Auto-evaluation Tool, the Pedagogical Hypertext Generator, a Manager and a Learner Interface, etc., plus further tools if necessary: mailbox, HTML documents, PDF, forums, ICQ, white boards, etc (Wentland Forte et *al* 2000).

We are aiming at a "lightweight" approach that does not require the installation of costly specific software that demands considerable computer space and resources, or that requires a high level of training and support for users. We use:

- Standard Internet browsers (*Netscape Communicator* or *Internet Explorer*) and e-mail software.
- Free software (of the type *Acrobat Reader*).
- A single interface, known as AMI *(ARIADNE Manager Interface),* destined for the pedagogical engineer in order to structure the course, to transfer material from the Knowledge Pool and to register the students.
- The students, on the other hand, access both the course and the pedagogical material via ALI *(ARIADNE Learner Interface),* which gives access to the calendar, the list of sessions with instructions and reference books or links, the e-mail addresses of the supervising pedagogical team, the exchange forum, and the pedagogical documents to be read or downloaded, etc. They access the course using their personal password (the creation of course programs and the management of access rights for students are standard functions within ARIADNE).

IDHEAP and the University of Lausanne already possess joint experience in using this platform. INFORGE of the University of Lausanne is in charge of the technical hotline for pedagogues and students and for the administration required of the ALI / AMI server and Local Knowledge Pool.

High quality teaching materials and exercises are developed by IDHEAP and VMI using the most adequate standard software (DreamWeaver, Fireworks, PowerPoint, etc). Relevant material within the existing ARIADNE Local Knowledge Pool is either reused or adapted to fit the needs of the SOMIT course.

The SOMIT project began in September 2000. After a start-up phase, the course material is now in preparation and will be tested by a team of correspondents from the five Swiss Sport Science Institutes (CDISS) as of October 2001. From March to June 2002, the course will be used, in French and German, by around one hundred voluntary students registered at Swiss universities. A final French and German version will be commercialized as of 2003, together with an English version.

To summarize, we can affirm that the SOMIT project makes it possible to respond to a strong demand on the part of Swiss students and universities. It can also be used by Swiss sport administrators in partnership with the AOS training programs. The project also makes it possible to develop teaching and research into sport management in Switzerland at a university level. It will provide experience that can be used to develop other cyber-courses in sport science and in other areas within the framework of the Swiss Virtual Campus. Finally, the SOMIT project reinforces the role of Switzerland as a sport center from an academic point of view; this country unites a number of sport organizations and specialists and in particular around the Lake Geneva region. Moreover, it is thanks to grouping these academic dynamics together that the SOMIT course can be maintained and developed after the end of the SOMIT project in 2003.

3. Conclusion

It is still too early to draw conclusions from a practical experience that is still in its initial phases (that of the SOMIT project) or from other cyber-courses in sport management mentioned earlier in this article that are still in their early stages. We can simply reiterate the opportunities offered by the Internet for this type of teaching and the conditions for it to be successful.

The Internet is not, of course, appropriate for teaching motor co-ordination skills (such as striking a golf ball) or attitude skills (such as respecting the etiquette for a golf course) that are so important for the practice of sport (Driscoll 1998:3) and that no doubt will continue to be taught in the traditional manner - unless one day cyber-sport replaces sport as we know it today. On the other hand, however, the Internet appears highly appropriate for teaching cognitive skills such as applying rules, distinguishing between categories or solving problems. These skills are increasingly necessary for managing the practice of both golf and all other sports, given the economic, political and social issues at stake therein today. We must move from the management of practicing sport to managing sport (Loret 1993), and this requires specific skills.

The Internet can represent an incomparable tool for accessing the sport information necessary in the daily lives of sport administrators. However, and in addition to the traditional forms of training that have been developed over the last twenty years, the Internet can also be used for the basic and above all the further training that these (future) administrators will require in order to better fulfil their mission. The usual advantages of web-based education (facility and rapid access, reduced cost, time saving, regularly updated information, regularly renewed and reinforced collaboration between participants and teachers) are in fact particularly important for sport managers. For the most part, these are volunteers who focus on practical tasks and have little time to waste. Moreover, they constitute natural student communities capable of exchanging managerial experience from a given sport (i.e. the one they manage) or from a particular level of management (local club, regional league, national governing body or international federation). Teaching sport management to these administrators via the Internet therefore has a successful future ahead of it, if it is based on highly interactive cyber-courses. This aspect alone can guarantee a genuine learning process and incite communication among the natural managerial communities present within sport.

References

Barker J. & Tuckler R. N. (1990) – *The Interactive Learning Revolution, Multimedia in Education and Training*. Kogan Page, London.

Beer V. (2000) – *Web Learning Fieldbook, Using the World Wide Web to Build Workplace Learning Environments*. Jossey-Bass Pfeiffer, San Francisco.

Blair J. (2000) – Distance-Learning Explosion. *Education Week*, January 19, 2000.

Bumbacher U. (1999) – *Nonprofit Management Theory and Practice in Switzerland: The Fribourg Management model for Nonprofit Organizations*. ISTR Conference Papers Series, vol. III, John Hopkins University, Baltimore, MD.

Chappelet J.-L. (1996) – *Sport Management: An International Approach*. Documents of the Olympic Museum, IOC, Lausanne.

Church R. (2000) – *Sport on the Internet*. Report by Screen Digest, London, June 2000.

Cus (1999) – *Appel aux propositions Campus Virtuel Suisse 2000-2003*. Swiss University Conference, Bern, October.

Driscoli M. (1998) – *Web-Based Training, Using Technology to Design Adult Learning Experiences*. Jossey-Bass Pfeiffer, San Francisco.

Euromanagement (2001) – *Multi Media for Managers*. Courses catalogue with products from Harvard Business School Publishing.

Kahn B. (1997) – *Web-based instruction*. Educational Technology Publications, Englewood Cliffs, NJ.

Loret A. (1993) – *Sport et Management, de l'éthique à la pratique*. Dunod, Paris.

Nohria N. & Berkley J. D. (1994) – *Whatever Happened to the Take-Charge Manager?* Harvard Business Review, January-February, p. 128-137.

Schwarz P., Purtschrert R. & Giroud C. (1996) – *Das Freiburger Management-Modell für Nonprofit-Organisationen*. Haupt, Bern.

Wentland Forte et al (2000) - *Managing Digital Educational Resources with the ARIADNE Metadata System.* Journal of Internet Cataloging.

All the Internet links were checked on January 31, 2001.
Any reference to the male gender automatically applies equally to the female gender.

Information System and Document Management for Intranet (SIGED)

S14

Esperanza Bobes Ruiz
Director of the Research and Sports Information Technology Centre
National Sports Institute of Physical Education and Recreation, Cuba

SIGED is a document management system fully designed with WWW interface, which enables information experts to **immedately** publish documents throughout the entire corporate Intranet.

It incorporates an information recovery language addressed to sports and applied sciences, created by terminology experts of the Information Evaluation and Analysis Division (DAEI), attached to the Sports Information and Research Center of the National Institute of Sports, Cuba (INDER), with a huge experience in the sports information activity and with a device for searching according to the different characteristics of the information sources that allows, through successive searches, easy access to the desired source.

SIGED offers the following functions:

- **Publishing** - establishes the document's features and makes them available for the Intranet users through the database created by SIGED for the management of the document processes; among them the possibility of recovery and search of the information resources. SIGED identifies the different document sources that are handled at an organizational level, such as reports, articles, books, standards and warrants for each of them and with their corresponding bibliographical features.

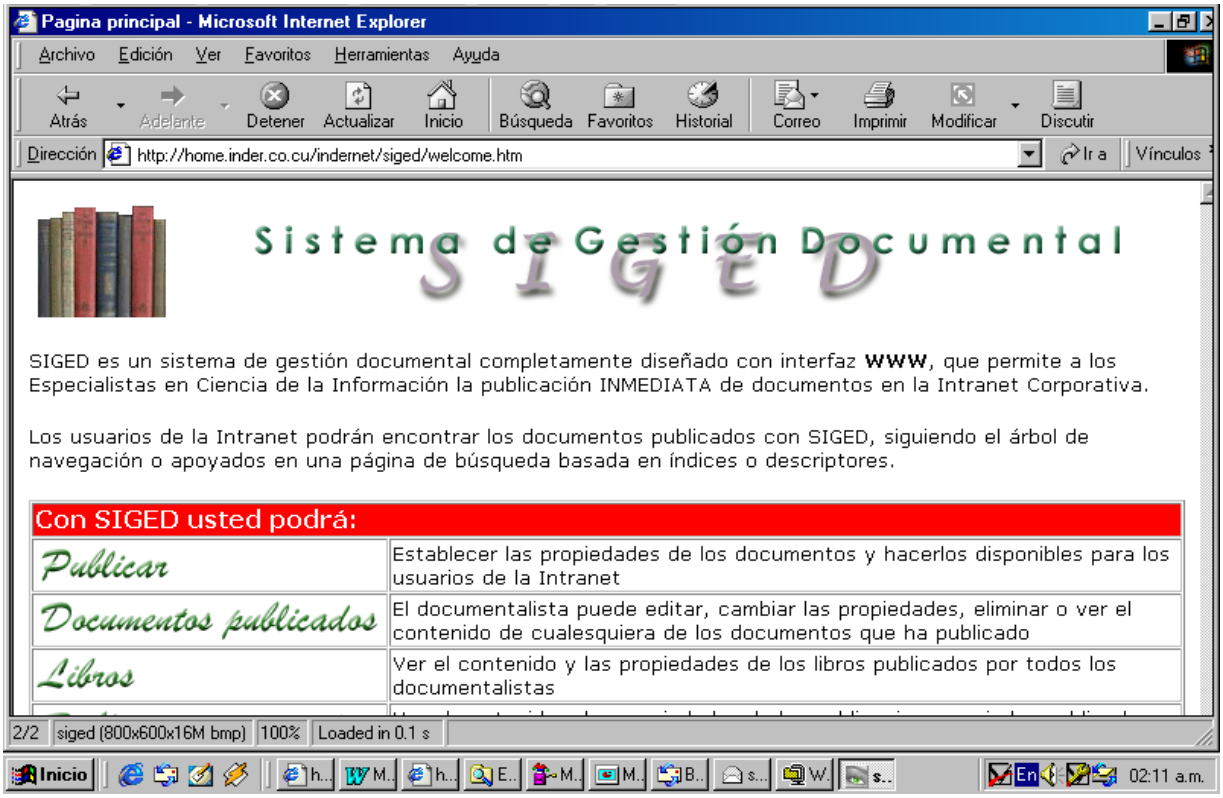
- **Documents published** - allows SIGED database maintenance and updating by means of the following operations: editing, changing features, eliminating or viewing the content of any of the documents published by each document maker. This is a personalized function.

- **Books** - makes it possible to see the content and the features of the books published by all SIGED document makers, without having the possibility of making any changes as in the "documents published" function; this SIGED feature protects all the information introduced against any attempt to alter the database without due authorization by the system Administrator or the document maker responsible for the corresponding information.

- **Serial publications** - allow all SIGED document makers to see the content and features of the serial publication articles, electronically published; as in the "Books" function, the information introduced must not be altered.

- **To administer SIGED** – SIGED can handle (add, delete, edit) key words, participating centers, information sources, languages, descriptive information and document makers. (This function is only available if the system user has SIGED administrating privileges.)

Figure 1
SIGED main page



In essence SIGED is characterized by:

- full web interface;
- being friendly in system interaction;
- document expedition and automatic indexing;
- availability of an information recovery language on sports and related sciences;
- recovery based on different criteria related to documents (author, theme content, countries, etc) ;
- places at user's disposal a bibliographical database with summaries and the full texts of documents;
- information automated selective dissemination as per user's profiles with interface for e-mail .

Another feature SIGED has is its double functionality to provide the promotion of information at portal level as well as in Intranet, without needing to create a new automated form since it already is in html format.

Furthermore, it is characterized by allowing the immediate presentation of information in this resource, and preserves the publication standards of each of the sources dealt with according to ISO standards.

SIGED can be accessed through the Intranet main page, as shown in figure 2.

Figure 2
Intranet main page

SIGED can, at the same time, provide the members of an organization, previous coordination with the Administration of this system, introduce (to publish) those documents of its division which they wish all the organization members to know; i.e. from its intelligent terminal it can directly provide the Intranet with contents through the SIGED system; by means of this function you can contribute to sharing information on a horizontal basis at the level of the entire organization.