# An Investigation and Evaluation of Three Integrated Library Systems for the Human Sciences Research Council Information Services

## Cecilia Maria Sani
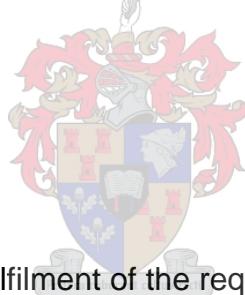
Assignment submitted in partial fulfilment of the requirements for the degree of Master of Philosophy (Information and Knowledge Management) at the University of Stellenbosch

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# Declaration

I, the undersigned, hereby declare that the work contained in this assignment is my own original work and that I have not previously in its entirety or in part submitted it at any university for a degree.

**Signature: …………………………………….. Date: …………………………..**
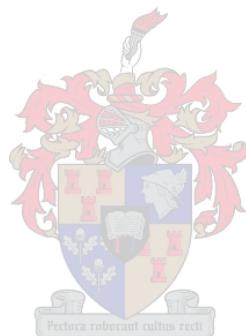
# Abstract

The Human Sciences Research Council (HSRC) is South Africa's statutory research agency dedicated to the social sciences. Information Services (IS) plays a significant role in advancing social science research through the provision of its proactive desk research and its library service. HSRC IS is looking at implementing a library solution that will better serve its users. The existing library system no longer meets the needs of the HSRC Library staff or the research staff. The functionality and efficiency of an ILS is critical to the smooth operation of IS in fulfilling its mandate within the HSRC, i.e. to provide access to information, in an efficient, useful, and timely manner, the focus being on ease of accessibility to a whole range of library and other online resources. The ILS must be able to handle many formats, accommodate searching on the Internet, provide a variety of functions including manipulating electronic data, working with graphics and expediting resource sharing. IS identified the following three ILS solutions, together with their add-on components 1) Innovative Interfaces' Millennium solution, 2) SIRSI's Unicorn solution and 3) Ex Libris's ALEPH solution. The user and system requirements for ILS at the HSRC are sketched. The unique requirements, as well as the requirements the HSRC shares with other research organisations, are pointed out. The three ILS are evaluated against the criteria established. All three the ILS suppliers specialise exclusively in library automation software and have many years of experience in the provision and support of ILS, Innovative Interfaces Inc and Ex Libris for 25 years each and SIRSI for 15 years. Innovative Interfaces Inc has the largest customer base in South Africa. Ex Libris has one academic consortium as a client (CALICO) and some smaller utilisers, while SIRSI is just breaking into the South African market. All three systems comply fully with all the Cataloguing, Serials and Acquisitions modules requirements, that is, the more traditional library functionalities. When it comes to the more 'non-traditional' functionalities, such as full-text searching and discussion forum functionality, these systems still fall short. It is either not supported at all, or additional modules or add-ons are required. The various systems requirements are aligned to the current information technology environment at the HSRC. The conclusion is that the actual differences between the systems are few and far between, but that there are some specific requirements and add-on possibilities which makes Millennium the most attractive choice.

# Opsomming

Die Raad vir Geesteswetenskaplike Navorsing (RGN) is die statutere navorsingsagentskap in Suid-Afrika wat toegewy is aan die sosiale wetenskappe.  Inligtingsdienste (ID) speel 'n belangrike rol in die bevordering van sosiaalwetenskaplike navorsing deur die voorsiening van 'n pro-aktiewe vak-spesifieke navorsingsdiens en biblioteekdiens.  Die RGN ID ondersoek die implementering van 'n biblioteekoplossing wat gebruikers beter sal bedien.  Die bestaande biblioteeksisteem voorsien nie langer in die behoeftes van die RGN se biblioteekpersoneel of navorsers nie.  Die funksionering en doeltreffendheid van 'n geïntegreerde biblioteeksisteem is uiters belangrik vir die gladde werking van ID ter vervulling van sy mandaat binne die RGN.  Dit is om toegang tot inligting te verseker op 'n doelgerigte, bruikbare, en tydige manier, met die klem op maklike toegang tot 'n hele reeks biblioteek- en ander hulpbronne.  Die geïntegreerde biblioteekdiens moet baie formate kan hanteer, soektogte op die Internet akkommodeer, voorsiening maak vir 'n verskeidenheid funksies, insluitende verwerking van elektroniese data, werk met grafieke, en moet hulpbrondeling vergemaklik.  ID het drie geïntegreerde biblioteeksisteme geïdentifiseer saam met hulle meegaande komponente:  1) Innovative Interfaces se Millennium sisteem, 2) SIRSI se Unicorn sisteem  en 3) Ex Libris se ALEPH sisteem.  Die gebruiker- en sisteembehoeftes van 'n geïntegreerde biblioteeksisteem by die RGN word geskets.  Die unieke behoeftes, sowel as die behoeftes wat die RGN deel met ander navorsingsorganisasies, word uitgewys.  Die drie geïntegreerde biblioteeksisteme word vervolgens geëvalueer ten opsigte van die belangrikste behoeftes.  Al drie die voorsieners spesialiseer eksklusief in geoutomatiseerde biblioteekprogrammatuur en het baie jare ondervinding in die voorsiening en onderhoud van geïntegreerde biblioteeksisteme, Innovative Interfaces en Ex Libris vir 25 jaar elk, en SIRSI vir 15 jaar.  Innovative Interfaces het die grootste kliëntebasis in Suid-Afrika.  Ex Libris het een akademiese konsortium as kliënt (CALICO), terwyl 'n paar kleiner organisasies dit ook gebruik.  SIRSI het pas begin met bemarking in die Suid-Afrikaanse mark.  Al die sisteme beantwoord volledig aan al die behoeftes vir katalogisering, vervolgpublikasies en aankope, d.w.s die meer tradisionele biblioteekfunksies.  Ten opsigte van die meer nie-tradisionele funksies, soos voltekssoektogte en die aanbied van gespreksforums, het al die sisteme tekortkominge.  Dit word of glad nie voorsien nie, of addisionele modules word benodig.  Die onderskeie sisteembehoeftes word gemeet aan die huidige inligtingtegnologie-omgewing by die RGN.  Die gevolgtrekking is dat werklike verskille tussen die sisteme eintlik min is, maar dat daar spesifieke redes is waarom Millennium die mees aantreklike keuse is.

# Dedication

To my parents, Willem and Cecilia Saayman, for their unconditional love and support.

To my husband, Eddie Sani, for always believing in me.

# Contents

# List of Tables

# List of Figures

# List of Abbreviations

| | |
|---|---|
| ALA | American Library Association |
| API | application processing interfaces |
| ARL | Association of Research Libraries |
| CALICO | Cape Library Consortium |
| CRM | customer relations management |
| GAELIC | Gauteng and Environs Library Consortium |
| GUI | graphical user interface |
| HSRC | Human Sciences Research Council |
| HTTP | Hyper-Text Transfer Protocol, |
| ILL | inter-library loans |
| ILS | integrated library systems |
| IOLS | integrated online library systems |
| IS | Information Services |
| ISO | International Standards Organization |
| IT | Information Technology |
| LDAP | Lightweight Directory Access Protocol |
| LIASA | Library and Information Association of South Africa |
| LMS | library management systems |
| NIPR | National Institute for Personnel Research |
| NISO | National Information Standards Organization |
| NLSA | National Library of South Africa |
| OAI | Open Archives Initiative |
| ODBC | open database connectivity |
| OPAC | online public access catalogue |
| R&D | research and development |
| RDBMS | relational database management systems |
| RFID | radio frequency identification |
| RMS | research management system |

| | |
|---|---|
| SABINET | South African Bibliographic Network |
| SADC | Southern African Development Community |
| SAOUG | South African Online User Group |
| SAP | South African Party |
| SLIG | Special Libraries Interest Group |
| SLIS | Special Libraries Information Services |
| TCP/IP | Transmission Control Protocol/Internet Protocol |
| UKS | Universal Knowledge Systems |
| UNISA | University of South Africa |
| XML | Extensive Mark-up Language |
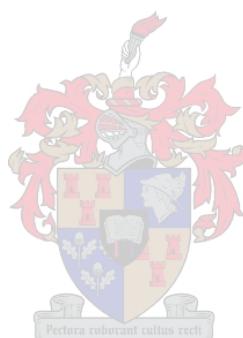
# INTRODUCTION

The Human Sciences Research Council (HSRC) is South Africa's statutory research agency dedicated to the social sciences.  It is the largest social science research organisation in Africa and plays a leading role in the fourteen Southern African Development Community (SADC) countries, and elsewhere in Africa.

 Information Services (IS) plays a significant role in advancing social science research through the provision of its proactive desk research and its library service. IS supports research and scholarship and has had to adapt as research and learning behaviours change. The HSRC Information Services is looking at implementing a library solution that will better serve its users.

The existing library system no longer meets the needs of the HSRC Library staff or the research staff.  There is no integration between the various modules within the current HSRC Library System; it cannot manage the HSRC's internal or external database resources; and it provides no customer relations management (CRM) functionalities, e.g. enabling users to maintain their own profiles. The functionality and efficiency of an integrated library system (ILS) is critical to the smooth operation of IS in fulfilling its mandate within the HSRC, i.e. to provide access to information, in an efficient, useful, and timely manner, the focus being on ease of accessibility to a whole range of library and other online resources.

Over the years, the face of the integrated online library systems (ILS) industry has dramatically changed.  Once used primarily as a bibliographic storage and retrieval system for catalogue, circulation, serials and acquisitions records, integrated online library systems today are considered part of the "knowledge" or "information" software network that manages an institution's internal and external database resources. (Dzurinko, 1998) The purpose of an integrated library system is to process, share and provide access to information in an efficient, useful, and timely manner.

The purpose of this research paper is to analyse the needs for the HSRC and Information Services, and to evaluate three integrated library solutions to establish which one best suit the needs of the HSRC.

The research methodology and approaches used for this research paper included a review of existing literature, Internet researching, demonstrations by ILS providers, interviews, and mini-workshops with HSRC staff.

No academic analysis of ILS needs and availability are freely accessible at present. The analysis of the HSRC ILS needs and evaluation of three ILS systems would therefore assist other libraries that are investigating converting to or upgrading existing ILS. More and more libraries are becoming aware of the need for and existence of more sophisticated ILS and this paper will provide a starting point for those libraries in analysing and determining their own needs
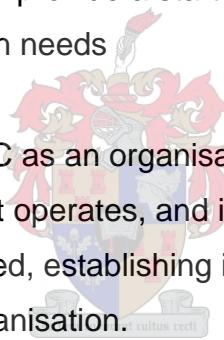
The first chapter explores the HSRC as an organisation, looking at issues such as what it does, its core business and how it operates, and its vision for the future. The issue of IS within the organisation is analysed, establishing its mandate within the HSRC and the role they should play within the organisation.

The second chapter defines integrated library systems and describes the need for an ILS within the HSRC.

The third chapter focuses on establishing the user requirements and the system requirements of the IS staff and the HSRC researchers. A complete list of user and system requirements is presented.

Chapter four focuses on the investigation into three existing integrated library systems. Where chapter three focuses on ILS in general, this chapter will investigate three specific ILS:
   1. Innovative Interface's Millennium solution,

2. SIRSI's Unicorn solution, and

3. Ex Libris's Aleph solution

Chapter five evaluates the three ILS against the criteria established in Chapter 3. A recommendation is made as to which system should be chosen.
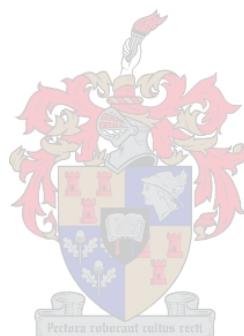
# CHAPTER 1

# HUMAN SCIENCES RESEARCH COUNCIL (HSRC)

## 1.1. Background to the HSRC

The Human Sciences Research Council (HSRC) was established in 1968 as a research institution broadly supportive of government projects of that time. The Human Sciences Research Act of 1968 sets out the purpose of the HSRC, namely to "provide for the promotion of research and the extension of knowledge in the field of the human sciences" (HSRC, 1984:1). During the same time period the National Institute for Personnel Research (NIPR) also came into being. The HSRC was predominantly Afrikaans and in political terms Nationalist, while the NIPR was English and in political terms inclined to the then SAP (South African Party). According to Orkin (1986:35) the two research institutes existed side by side with very little love lost between them and little or no collaboration occurring, "pretty much like the rest of the English and Afrikaans speaking population at the time". This co-existence was altered with the implementation of the National Plan during the early eighties. One of the main recommendations of this Plan was that the HSRC would "obtain the co-operation of the universities, research institutes and government departments" (HSRC, 1984:1). Positive co-operation was "to be based on the principle of partnership and total autonomy of the participating parties" (HSRC, 1984:1). What this turned out to mean in practice was that in July 1985 the NIPR was officially incorporated into the HSRC. The HSRC still very much supported the ideologies of the government of that time and all research conducted during that time was done to support those (Orkin, 1986:39).

The radical political changes, which occurred since the early 1990s, obviously impacted on this reality. The HSRC could no longer play the role of supporting the outdated policy of apartheid. With the appointment of a new council in 1999, and a new CEO in

2000, the HSRC has radically accelerated its transformation in response to the changing needs of major government users for policy-relevant social research.  A rationalization of the staffing structure of the organization was undertaken.  New priority areas of research were identified.

In his 2002 State of the Nation address President Mbeki identified poverty alleviation as the focus of national priorities such as employment, health, and education, in turn requiring a democratic culture, sound values, efficient government, and the use of modern technology.  These priorities in turn generate needs for large-scale applied social research and monitoring.

## 1.2 Present Situation

Today the HSRC has become South Africa's statutory research agency dedicated to the social sciences. It is the largest social science research organisation in Africa and plays a leading role in the fourteen South African Development Community (SADC) countries, and elsewhere in Africa. The HSRC also seeks to contribute to the research and development strategy of the HSRC's parent Department of Science and Technology, especially through its mission to focus on the contribution of science and technology in addressing poverty. (HSRC, 2005a)

The research undertaken by the HSRC is concerned with all aspects of transformation, development and poverty alleviation in South Africa, the SADC region and in Africa.  It undertakes policy-relevant and often large-scale research for government departments at national, regional and local levels, public entities and, local and international development agencies. The outputs of its research projects include reports for users, occasional papers, and scholarly articles in peer-reviewed journals or books. These are disseminated in print through an online bookshop and electronically (that is, for free download).  (HSRC, 2005a)

The HSRC has been transforming its existing disciplinary strength into a more relevant, modern and comprehensive service function:

- from social databases to social-scientific knowledge management

- from social research to national socio-economic research programmes

- from educational assessment to policy impact evaluation

The HSRC has a strong corporate support structure incorporating research and administrative support functions such as finances, human resources, a computer centre providing data management services for research and operational management, a modern library with dedicated information services, and a section supporting publications and product sales.

The organisation has a presence in Pretoria, Cape Town and Durban. Through its different offices, the HSRC is able to forge excellent links with local institutions of higher learning, government and non-government organisations and international donor organisations active in all the provinces of South Africa.

## 1.3 The future vision of the HSRC

As of August 2005 with the appointment of a new CEO, the HSRC entered a next phase of strategic realignment to support its role as "knowledge hub", intended to help bridge the gap between research, policy and action; thus increasing the impact of research. According to Dr Olive Shisana, the new CEO of the HSRC, the Human Sciences Research Council (HSRC) intends to become a "knowledge hub" of research networks that researches, analyses, informs public policy debate, and proposes solutions. (HSRC, 2005b)  This will be achieved through collaboration with key constituencies, including government, other research organisations, multinational agencies, universities, non-government organisations and donor organisations. Research programmes in the organisation have been consolidated and strengthened to achieve greater levels of synergy, efficiency, and collaboration. A Policy Unit has been established to create the infrastructure for the best minds in the country to collectively address research issues of national importance. (HSRC, 2005b)

Another vision for the HSRC is to engage with the rest of the African continent, not as colonisers or imperialists, but to gain knowledge from other countries;

- as a catalyst to encourage researchers in other countries to undertake research themselves;

- to do collaborative research;

- and to assist in capacity building initiatives in countries where there is such a need.

The HSRC supports Africa-wide networks with the intent to encourage Africans to jointly explore their history, and to understand how they as a people have historically dealt with their challenges and successes within their own political, social, economic and cultural milieu.  The HSRC hopes to eventually become a hub of analysis and for exchanging of ideas, through the establishment of a programme of African visiting scholars, fellows and scientists. (HSRC, 2005b)

## 1.4 Information Services (IS)

Information Services (IS) plays a significant role in advancing social science research through the provision of its proactive desk research and its library service. IS supports research and scholarship and has had to adapt as research and learning behaviours change. The HSRC IS Unit has therefore recently re-engineered itself into a modern knowledge centre that combines the traditional roles of academic library with the increasing importance of electronic information technologies and knowledge management practices.  Comprising four components, viz. Library, Desk Research, Knowledge Sharing and Information Literacy (see Table 1 below), the unit values service, responsiveness to user information needs and accountability to its user community.  IS is also responsible for the preservation of the HSRC's intellectual capital and the management of its research outputs.  IS evolve and continue to evolve to the changing needs of the HSRC and its user community

**Table 1**: Four Components of Information Services

| | Component | Objective |
|---|---|---|
| **1.** | **Library** | Included in this component is the maintenance of a hybrid information collection as well as other activities traditionally associated with libraries. Examples of some of these activities are inter-library loans, circulations, as well as book purchasing, journal subscriptions and cataloguing. |
| **2.** | **Desk Research** | This is the 'frontline' service rendered to research staff through the dissemination of information and research services on request and/or in anticipation. Included in this component are the Information Consultants who add value by providing an ongoing and pro-active information service to staff of the HSRC that forms an integral part of the research process. They identify, analyse, package and deliver research information and solutions by conducting literature searches, compiling information packages, alerting researchers to new information and trends in their research areas, engage in collection building and train staff to access information sources through the Virtual Library. |
| **3.** | **Knowledge Sharing** | Included in this component are knowledge management activities that create, capture, exchange, use and communicate the organisation's intellectual capital. Added to this is the maintenance of the Virtual Library which serves as an important vehicle to access a variety of information and knowledge resources and services. |
| **4.** | **Information Literacy** | The Information Literacy programme ensures that every newcomer to the HSRC is trained fully in all the information products and resources. A trouble-shooting service is provided for researchers who are struggling to use the Virtual Library. |

The mission of Information Services is to get to the essence of customers' needs and bring them the highest qualitative, actionable and value-added strategic information and knowledge in a format customised to their particular requirements. Since the HSRC is increasingly seeing itself as a knowledge intensive organisation, rich in knowledge creation, it becomes important that there are systems and structures in place to support the organisation. The existing library system no longer meets the needs of the Library staff or the HSRC research staff. The functionality and efficiency of an integrated library system (ILS) is critical to the smooth operation of IS in fulfilling its mandate within the HSRC, i.e.

> *to provide access to information, [for the HSRC researchers], in an efficient, useful, and timely manner, the focus being on ease of accessibility to a whole range of library and other online resources.*

The library contains 65 000 Monograph titles, 1800 Journal titles, 15 Newspaper titles, and subscribes to over 50 online databases. The HSRC IS is a member of the South Africa National Inter Library Loan Network, the British Library, Library of Congress, the Library and Information Association of South Africa (LIASA), Special Libraries Interest Group (SLIG), Special Libraries Information Services (SLIS) and South African Online User Group (SAOUG). Through an internet-supported virtual library service, staff from different campuses can make use of the library.

# CHAPTER 2.

## INTEGRATED LIBRARY SYSTEMS (ILS)

### 2.1 What is an ILS?

The Online Dictionary for Library and Information Sciences (Reitz, 2004) defines an *ILS* as:

> "an integrated set of applications designed to perform the business and technical functions of a library, such as acquisitions, cataloguing, circulation, and the provision of public access."

The dictionary continues to state that *integrated access* is

> "an information retrieval system that allows users to search for books, periodical articles, and electronic resources such as computer files and Web sites, in one operation using a single interface, instead of searching online catalogues, bibliographic databases, and Web search engines separately. Seamless access is a goal that remains to be realized in most libraries".

Early automated library systems usually consisted of a number of functional modules, such as acquisitions, circulation, cataloguing, serials and an online public access catalogue (OPAC). They basically aimed to provide an electronic version of the card catalogue and to automate the functions of the library concerning physical materials. These systems came quite close to delivering comprehensive automation for libraries. They centred on print media, established the basic model for a computerized bibliographic system, and made great efforts at creating standards. During this era, the

functional requirements for library automation and the business logic to meet these requirements began to take shape. (Breeding, 2005a:28).

According to Marcia Deddens (2002:1) the one exceptional change in ILS systems that emerged during the 1990's is the linkage between bibliographic citations and the content they represent.  This content at first came as 'Table of Contents' records linked to citations.  It has now become linkage to full content with that content going beyond text to sound, images, and full motion video.  ILS systems provide indexing at the bibliographic unit level but also allow indexing within and across full content.  Through common cross database indexing and inquiry structures, a single query can retrieve citations and content from multiple databases on variant software platforms.  Deddens (2002:1) believes that what makes the multi-database searching ILS vital to efficient information retrieval is the combination of structured results sets, elimination of duplicate responses, and retrieval from indexing interior to content files.  ILS continues to do what has always been the critical value of libraries. They provide access to vast amounts of information and enhance access through drill-down organised indexing.

Over the last decade, as library collections have steadily grown to include non-print content, the face of the integrated online library systems industry has had to dramatically change.  Integrated online library systems today are considered part of the "knowledge" or "information" software network that manages an institution's internal and external database resources.  (Mary K. Dzurinko, 1998)

According to the ALA Library Technology Report (May – June 2003:11) the definition of an ILS is shifting as the changing face of technology develops the next-generation systems. Integrated Online Library Systems (IOLS) and Library Management Systems (LMS) are other terms often used to describe an ILS. The report continues to state that regardless of definition, an ILS must be able to handle many formats, accommodate searching on the Internet, provide a variety of functions including manipulating electronic data, working with graphics, and expediting resource sharing.

## 2.2. Why the need for an Integrated Library System?

The library systems environment is becoming more densely interconnected. According to the OCLC (2003) this is the result of four main areas of pressure. The first area of pressure is the diversity and number of systems that information organisations have. The second pressure is the growing trend toward group resource sharing arrangements at various levels. The third pressure is relatively new, but will become more important over time. This is the need to interact with other systems' environments. Finally, library applications increasingly need to interact with "common services"—services that are delivered enterprise wide. All of these complex systems need to be interoperable.

According to the ALA Library Technology Report (May – June 2003:11) an ILS:

- expedites current manual practices by streamlining them into an automated function;
- provides access to a variety of information in a variety of formats;
- provides connectivity to the Internet and local data;
- provides quick and powerful search options;
- allows for creation of databases; and
- connects users to a variety of shared resources.

Nicole Lindsay (2004:16) believes that the key benefit of automation has to be that, at any one time, information professionals can see how their stock is being used and refine it to meet the needs and interests of borrowers. The most innovative systems enable information managers to monitor, track and refine the use of data sources they control far more effectively.

Crucially, an ILS would be able to integrate with other key systems used by the HSRC, i.e. human resources, finance, the HSRC project management information system, email, etc. This means that information searches can be conducted across all data made available by the HSRC across the network. This includes information held outside the HSRC and published on the web. ILS can also integrate externally with suppliers

because data can be more easily and cheaply exchanged electronically. ILS systems have also become vital in the provision of information that is licensed by libraries but does not exist in their physical collections. For the HSRC researchers an ILS very importantly means that they can access services from their work or home desktops. Remote access via a virtual private network is of particular benefit.

Marcia Deddens (2002:6) states that the 'information value added provided by libraries has been the collection of reliable content and the organisation of that content on shelves for browsing and in card catalogues for locating and retrieving like and related materials'. This is the same value added by ILS but with a vastly expanded universe of information. Within the research environment, the additional value added is a system that can inter-relate the content to the unique research strengths of the organisation.

According to the OCLC (2003:8), searching has become and international pastime. Finding information, however, can be daunting task. An ILS will assist with superior information discovery.

Most importantly, as the HSRC IS staff view themselves as knowledge navigators and not just as custodians of books, an ILS would enable IS to make essential knowledge more accessible to all and enable the provision of real-time information.

# CHAPTER 3

# REQUIREMENTS FOR AN INTEGRATED LIBRARY SYSTEM

Literature indicates that based on the growing capabilities of today's technological advances into the use of the Web, digital components, and electronic resources, the expectations of ILS requirements have expanded to include a system that offers:

- full support for traditional library functions;
- seamless movement between functional modules;
- graphical user interfaces (GUI);
- ability to acquire, provide access to, manage, and control local, national and global resources in many formats;
- web servers with seamless connectivity;
- full support for national standards and industry-standard system components;
- powerful and flexible search engines; and
- technology that is adaptable to future technological innovation.
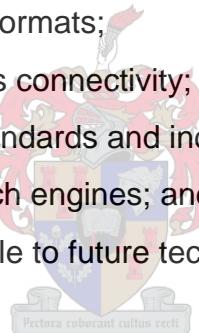
According to the ALA Library Technology Report (May – June 2003:14) finding the right system for a library must be based on a thoroughly researched profile of that library and its needs. The profile should include:

- number of staff who will use the system;
- skill level of the staff training needs;
- number of staff not in the department that needs access to the system;
- the size of the collection;
- the types of materials in the collection;
- the level of cataloguing anticipated – MARC records and so on;
- need to visual and digital components;
- access and connectivity needs – internet searching;
- system architecture – LAN;

- resource sharing – available on Internet, local only, and so on.

## 3.1 HSRC user needs and requirements

In order to establish the needs and requirements of the HSRC IS staff, a one-day workshop was conducted with all the staff within this component.  The workshop was broadly divided into three sessions. In the first session, the IS staff had to compile a wish-list of what they expect from a world-class ILS.  The second session concentrated on what they felt they needed to assist them with their jobs, i.e. what would make their working lives easier. Lastly they where asked to put themselves in their users shoes, and reflect on what the researchers would want from this system.

The main points raised in the sessions are summarised below.  All the points raised at the session have been included in the full *List of User Requirements*, Table 2 (see below).
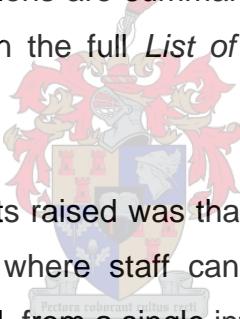
1. One of the most important points raised was that the system should be built around a single workstation concept, where staff can use all appropriate systems and services, both local and external, from a single intelligent workstation.
2. The system should also be able to handle sophisticated full-search capabilities, including Boolean searching, full-text document searching etc.
3. CRM functionalities through push and pull technologies should be available including
   a. profiling;
   b. enable users to maintain own profile;
   c. personalisation;
   d. current awareness.
4. Closely linked to the CRM functionality are the need for subject portals which include:
   a. discussion forums;
   b. pushing of current awareness e.g. contents pages, latest books, alerts.

5. The OPAC must be fully customisable, and library managed.  It should be graphical and easy to use.  It must be accessible via standard Web browsers from the office, home and via wireless devices.  It must be personalised, integrating with the user's desktop.

6. One must be able to use push technology to enable the server and the network to automatically update the client software on the user's workstation.

7. Circulation, Acquisitions, Serials and Cataloguing modules:
   a.  should be fully integrated with the Web OPAC;
   b.  streamlined workflow with point-and click functionality;
   c.  be simple and intuitive to use;
   d.  with effortless navigation; and
   e.  seamless integration,

These requirements are  represented in the model below.


**Figure 1**:  Integration of all ILS modules
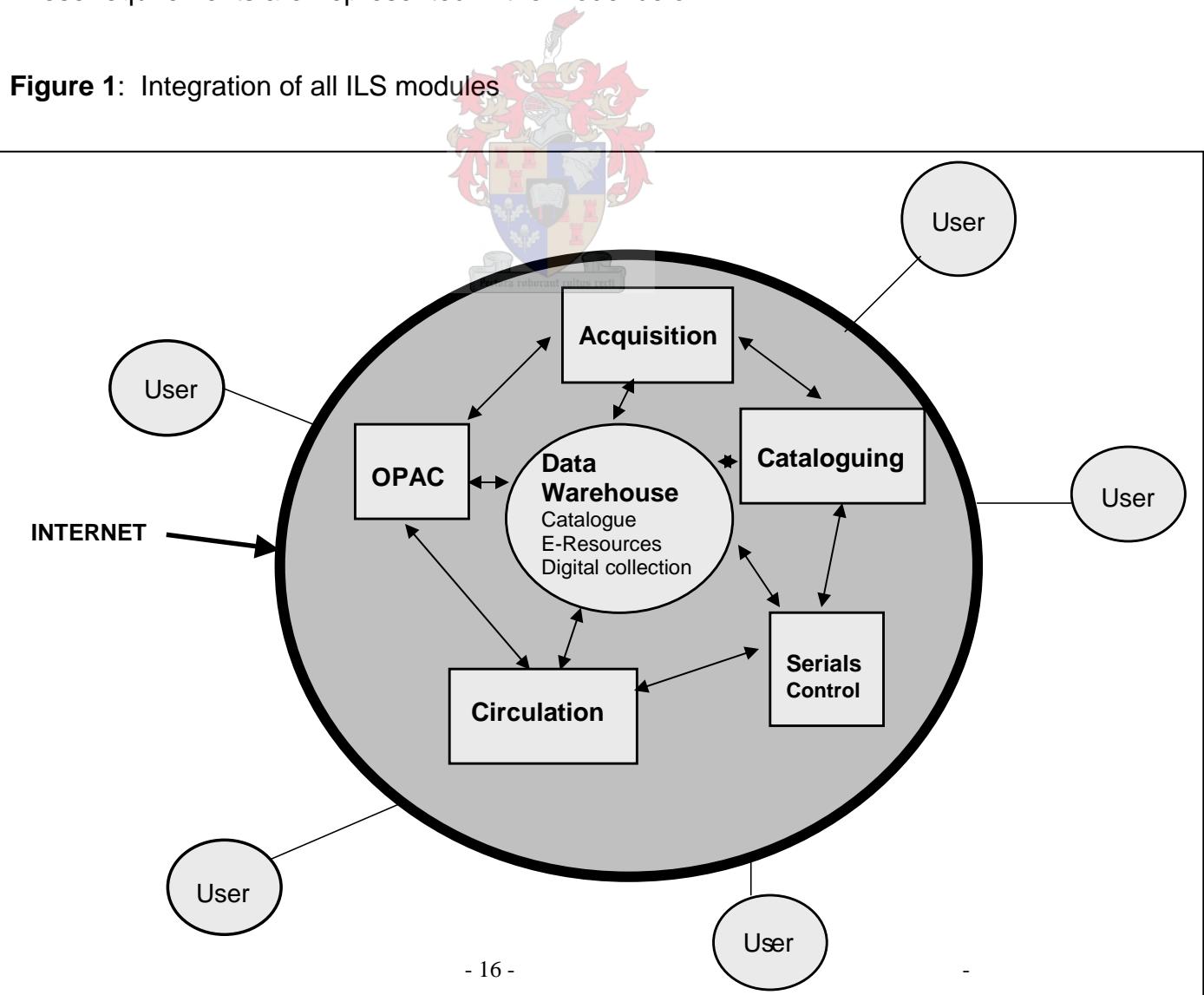
**Table 2:** List of User Requirements

| List of User Requirements ||
|---|---|
| **1. Online Public Access Catalogue (OPAC)** ||
| 1.1 | The system should be built around a single workstation concept, where staff can use all appropriate systems and services, both local and external, from a single intelligent workstation. |
| 1.2 | The system should support sophisticated full-search capabilities, particularly: |
| | • support Boolean searching (e.g. Sabinet Online), phrase searching, truncations, wild cards,etc. |
| | • be able to search full-text documents. |
| | • be able to search by subject, or by other authority files e.g. author, subject, etc. |
| | • limit by fields, e.g. ISBN, Author, Title, and Publishers etc. |
| | • support different formats, e.g. pdf, images, etc. |
| | • allow users to search the local catalogue, other institutions' catalogues as well as web search engines simultaneously. |
| 1.3 | The OPAC should be fully integrated with all other modules. |
| 1.4 | The OPAC should enable reservation facilities, including: |
| | • ability to reserve a book/journal with an "out on loan" status, |
| | • ability to request a book/journal that is on the shelf, from the shelf, |
| | • ability to request a book/journal for inter-library loan. |
| 1.5 | Display options: |
| | • the OPAC should allow for a variety of display options, e.g. citations only, summaries, full-record, |
| | • be able to link directly to the full-text or online document, |
| | • loan status and the due date should be displayed, |
| | • results to be sortable by relevance or in chronological order, |
| | • ability to print, email, save or export results. |

| | |
|---|---|
| 1.6 | Borrowers / Users |
| | • renew their own books and journals online (with certain limitations), |
| | • change their personal details. |
| 1.7 | CRM functionalities through push and pull technologies and including: |
| | • profiling, |
| | • enable user to maintain own profile, |
| | • change personal details, |
| | • view loan status, |
| | • personalisation, |
| | • current awareness, |
| | • customisable display options e.g. amount of results displayed and in what order.. |
| 1.8 | Closely linked to the CRM functionality are the Subject Portals which include: |
| | • discussion forums (ability to upload documents, usability), |
| | • pushing of current awareness (contents pages, latest books, alerts, legilink information, websites), |
| | • users to submit comments and content to the portal, |
| | • classification system. |
| 1.9 | Feedback via a feedback form. |
| 1.10 | The OPAC must be fully customisable, and library-managed. It should be graphical and easy to use. It must be accessible via standard Web browsers from the office, home, and via wireless devices.  It must be personalised, integrating with the user's desktop. One must be able to use push technology to enable the server and the network to automatically update the client software on the user's workstation. |
| **2. Circulation** | |
| 2.1 | This module should be simple and intuitive to use. |
| 2.2 | Should enable staff to access all functions with a single click or equivalent keyboard command. |

| 2.3 | Streamline the workflow. |
|------|--------------------------|
| 2.4 | Facilitate precision and efficiency. |
| 2.5 | Full support of all circulation functions such as: |
| | • issues, renewals, returns, reservations, requests, overdue items, recalls, etc. |
| | • *Reservations vs. requests*. The functionality should allow the user to *reserve* a book/journal that is out on loan, or *request* a book/journal that is on the shelf, from the shelf, |
| | • option for overdue items to be sent via email, SMS or to a PDA, |
| | • Override facility – to allow for the issue of Reference shelf book, etc. |
| 2.6 | Single-click access to all patron-related functions. |
| 2.7 | Comprehensive statistics. |
| 2.8 | Full integration with the Web OPAC. |
| 2.9 | The system should include software making it possible to schedule batch activities such as report generation, file loads, and file backups to occur at specified times. |
| 2.10 | On-the-fly cataloguing facility. |

| **3. Acquisitions** | |
|------|--------------------------|
| 3.1 | This module should streamline workflow with point-and-click functionality. |
| 3.2 | Effortless navigation. |
| 3.3 | Seamless integration. |
| 3.4 | Perform all the functions associated with acquiring all types of materials (books, serials, supplies, etc.) via purchase, gift, and exchange. |
| 3.5 | Full financial accounting / budget management including: |
| | • currency converter, |
| | • allow for different account numbers, |
| | • be flexible about the number of account numbers used. |
| 3.6 | Full integration with other modules. |
| 3.7 | Authority list of preferred vendors. |

| 3.8 | Function that alerts the acquisitions librarian if a book on order has not arrived after a certain amount of time. |
|------|---|
| 3.9 | Comprehensive statistics and reporting functionality. |
| 3.10 | Web-content integration. |
| 3.11 | The application must provide facilities to integrate the acquisitions module with the HSRC's financial system Accpac (by means of APIs, for example), and the vendor must have access to these skills, even though this integration will NOT form part of this project. |

## 4. Serials control

| 4.1 | Fully automated cardex system. |
|------|---|
| 4.2 | Integrate with the entire system, i.e. Acquisitions, Cataloguing, Circulation, and Web OPAC. |
| 4.3 | Enable library to process unlimited serials, purchasing, subscribing, check-ins, cancellations and holdings records with single-click navigation among functions, and with a forms-based records setup. |
| 4.4 | Allow for multiple copies with multiple ownership. |
| 4.5 | The display on the OPAC should include the following: <br> • title and publisher, <br> • latest issue received, <br> • date of first acquisition, <br> • is it print or electronic, (with a link to the electronic), <br> • how often is it published, <br> • a link to the publishers website, <br> • is it out on loan or has it gone for binding, etc. |
| 4.6 | Support Current Awareness.  It must allow for the linking of contents pages (this will include scanning functionality of linking electronically) |
| 4.7 | Link with CRM with regards to profiling, alerts, etc |

## 5. Cataloguing

| 5.1 | Should be able to integrate with all the other modules. |
|------|------|
| 5.2 | Be simple and intuitive to use. |
| 5.3 | Provide free as well as controlled indexing. |
| 5.4 | Import subject / authority lists e.g. LC Subject List. |
| 5.5 | Allow for the storage, indexing and searching of records in MARC and Dublin Core standards and the Z39.50 communication protocol. |
| 5.6 | One inputting screen, which is simple and intuitive. |
| 5.7 | Display screens should include a MARC text screen and a full-record screen. |
| 5.8 | It should allow for abstracts / descriptions, website linking, etc. |
| 5.9 | Records importable from other sources, e.g. Sabinet, Library of Congress etc. |
| 5.10 | Analytics, i.e. chapters in books, articles, etc. |
| 5.11 | Cataloguing of various collections with the option of hiding, or showing the collections to various staff. |
| 5.12 | Support weeding and stock-taking activities. |

## 6. Security

| 6.1 | The system should identify each major identifiable function throughout the system in such a way that a particular user can either<br>(1) not have access to the function at all or see any displays related to the function,<br>(2) the user may look at displays, but not alter any records or perform any processing or reporting functions, or<br>(3) the user may look at displays and may alter records and perform processing and reporting functions as allowed by his or her security profile for that function. |
|------|------|
| 6.2 | Within each major identifiable function within the system, there should be a list of specific processes and actions, each with its own security.  In other words, all circulation staff may use the circulation module, but not all may perform all activities. |
| 6.3 | Management of security profiles must be done online by authorized staff. |

# 3.2 System requirements

In order to develop a list of system requirements, a detailed understanding of the information technology environment at the HSRC needs to be developed. More technical aspects of an ILS also need to be investigated. These include:

- integration with other databases within the HSRC,
- hardware and software,
- server requirements,
- maintenance and support issues,
- reporting and statistics,
- security concerns.

## 3.2.1 The information technology environment at the HSRC

The main campus of the HSRC is in Pretoria with offices in Cape Town and Durban. Web-based access to services is important as researchers may work from home, be located in other research organisations or tertiary institutions, or be travelling abroad. The information technology environment at the HSRC therefore has some unique features.
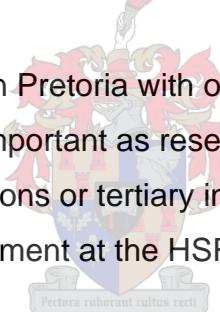
The information technology environment at the HSRC consists of the following:

- Operating systems
    - SUSE Linux
    - Windows 2000 Advanced Server
    - Netware
- Databases
    - Oracle
    - SQL Server
- Web services
    - Apache web server
- Desk top

- o Zenworks
- o Lotus Notes
- o MS Office
- Applications
  - o Accpac
  - o RMS (Research Management System)

The HSRC uses open source software where possible.

### 3.2.2 General system requirements

A second workshop dedicated specifically to develop a comprehensive list of general systems requirements for the ILS, was conducted with relevant HSRC IS and Information Technology (IT) staff  The following issues were discussed:

- general system requirements,
- services and support expected,
- reporting and statistics functionalities,
- responsiveness / R&D,
- corporate profiles, and
- further development of modules.

The main points raised in the workshop are summarised below.  All the points raised at the session have been included in the full *List of System Requirements*, Table 3 (see below).

**General system requirements**

1. The system must support client platform independence for all staff and OPAC functions.  All staff and OPAC modules must be capable of running on Windows 2000 / XP, Linux and Mac OS X workstations.

2. All updates and indexing transactions must be performed in real-time without the need for any batch jobs to be run.

3. The system should be stable and self-maintaining to the extent that it requires minimal ongoing administration and maintenance.

4. The system should be designed to run 24 hour a day, 7 days a week and should not require the system to be brought down or taken offline for routine functions such as backups, database updates or record loads. The system must be available for staff and patron use while backup procedures are being performed.

## Services and support

1. Support and maintenance proposals must include service plan upgrades, after-hours emergency support, and specialist ad hoc support on a time-and-materials basis.

2. The vendor must provide a web-based customer support facility.  The web-based customer support service must permit authorised staff to open and view active Help Desk calls, view training agendas and tutorials, and download software.

3. The vendor must not restrict the library regarding the specific library-authorised staff who may call for assistance.

4. The installation of software upgrades shall be library-initiated via a vendor supported upgrade Web site, and the new software shall be self-installing once downloaded.

## Reports and Statistics

1. The system must provide standard statistical reports which are generated automatically.

2. The system must not require the installation of any proprietary software to view statistical reports.

3. It is strongly desired that statistical reports be exportable in formats usable by third-party spreadsheet software, e.g. Excel, for manipulation and formatting.

4. Custom reports should be dynamic, able to act as inputs to database maintenance routines or access points to records, not just be read-only lists.

**Responsiveness / R&D**

1. The library strongly desires that upgrades to purchased modules are covered under maintenance and neither include fees or increment maintenance.
2. A description is needed of the vendor's approach to implementing "next generation" products in the past and plans for the future of their product lines, and the impact of product "end of life" on the library.

**Corporate Profile**

1. A description is needed of the vendor's history and experience in automating special libraries of similar size and scope to the HSRC library.
2. The proposed vendor must have strong black empowerment credentials. A description of the demographics of the company ownership and management structures, as well as an Empowerdex rating needs to be supplied.
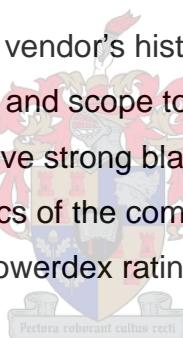
**Modules**

1. The vendor will need to describe ongoing development of core modules and demonstrate a continuing focus on library processed and traditional modules as well as new technologies and opportunities.
2. The system must update a single integrated database from all staff modules in real time. A description is required as to how changes to the database and to the indexes from all modules are reflected immediately in the OPAC interface.
3. It is strongly desired that staff modules as well as the OPAC be able to link to online resources.

**Table 3:** List of System Requirements

| List of System Requirements | |
|---|---|
| **1. General System** | |
| 1.1 | The system must support client platform independence for all staff and OPAC functions. All staff and OPAC modules must be capable of running on Windows 2000 / XP, Linux and Mac OS X workstations. |
| 1.2 | All staff client commands shall be capable of being performed by keyboard equivalents as well as mouse. |
| 1.3 | Logins<br><br>a. All staff client software should allow for customisation of screen displays, fonts, colours, icons, etc. at the operator level.<br><br>b. The client and user-chosen preferences shall be tied to the user and not to the workstation; specifically, user preferences and privileges will be based upon user identity and shall follow that user from workstation to workstation. |
| 1.4 | All updates and indexing transactions must be performed in real-time, without the need for any batch or "cron" jobs to be run. |
| 1.5 | The system should employ an integrated database shared by all modules. Common functions such as record editing, viewing patron records, maintaining holds, or generating statistical reports should be accessible from all modules to prevent the need for multiple clients to be opened by a single staff member. |
| 1.6 | The system should be designed to run 24 hours a day, 7 days a week and should not require the system to be brought down or taken offline for routine functions such as backups, database updates or record loads. The system must be available for staff <u>and</u> patron use while backup procedures are being performed. |
| 1.7 | The proposed system should include unlimited public catalogue access, both from within the library buildings and from home. Statistical tracking of in-house |

| | |
|---|---|
| | users is required. |
| 1.8 | The system should be stable and self-maintaining to the extent that it requires minimal ongoing administration and maintenance.  All regular system administration functions must be performed from within the application, and should not require access to the underlying operating system.  The vendor shall detail any and all functions that <u>must</u> be performed at the operating system level. |
| 1.9 | The system should not require database administration knowledge such as SQL expertise to generate custom reports or usage statistics. The application should allow library staff to generate statistical reports without the need for advanced query languages. |
| 1.10 | The system must be able to provide an SQL option if so desired by the library. |
| | |
| **2.  Service and support** | |
| 2.1 | Ongoing maintenance must be proposed and offered at the best possible level. Support and maintenance proposals must include service plan upgrades, after-hours emergency support, and specialist ad hoc support on a time-and-materials basis. Pricing proposals must include the best service plan available from the vendor and subcontractors. |
| 2.2 | It is preferred that the vendor support includes OS upgrades and patches as required. |
| 2.3 | The vendor must provide support service 24 hours a day, 365 days a year via a toll-free telephone number.  The Help Desk called by the library must be staffed by vendor personnel at all times.  The vendor must not rely on answering services, voice mail, or pagers to provide extended hours support. |
| 2.4 | The vendor must provide a Web-based customer support facility.  The Web-based customer support service must permit authorized staff to open and view active Help Desk calls, view training agendas and tutorials, and download software. |
| 2.5 | The vendor must not restrict the library regarding the specific library-authorized staff who may call for assistance. |

| 2.6 | The vendor must describe its maintenance services, detailing how both hardware and software service will be provided. |
|-----|---|
| 2.7 | The installation of software upgrades shall be library-initiated via a vendor-supported upgrade Web site, and the new software shall be self-installing once downloaded. |
| | |
| **3. Reports and statistics** | |
| 3.1 | The system must provide standard statistical reports which are generated automatically. Please describe what standard statistical reports are available on the system. |
| 3.2 | The system must not require the installation of any proprietary software to view statistical reports. |
| 3.3 | The system must not require a staff user license to view statistical reports. |
| 3.4 | It is strongly desired that statistical reports be exportable in formats usable by third-party spreadsheet software, e.g. Excel, for manipulation and formatting. |
| 3.5 | It is strongly desired that reports can be easily emailed, transmitted, and accessed to facilitate quick communication among staff of this information of required. |
| 3.6 | The system must provide a custom report writer. The custom report writer must be self-contained within the application and must be able to be run by librarians in each specialty area. The report writer must not require a dedicated specialist and must not require DBMS or technical expertise to use. |
| 3.7 | Custom reports should be dynamic, able to act as inputs to database maintenance routines or access points to records, not just be read-only lists |
| **4. Responsiveness / R&D** | |
| 4.1 | Describe upgrade procedures for the system. The Library strongly desires that upgrades to purchased modules are covered under maintenance and neither include fees nor increment maintenance. |
| 4.2 | It is strongly desired that the Library be able to choose when to implement an upgrade to the software, and can do so without scheduling with the vendor or |

| | |
|---|---|
| | requiring intervention by vendor. |
| 4.3 | Describe your company's approach to implementing "next generation" products in the past and plans for the future of your product lines, and the impact of product "end of life" on the library. Please address the following concerns based on previous implementation of next generation products:<br><br>a) Is it the option of the library to implement next-generation products? Does the vendor impose an "end of life" date in which development or support for products is imposed?<br><br>b) Are next generation products approached as an upgrade to the existing software, or is a full data migration required? Do next generation products require a change in database and/or server hardware?<br><br>c) Does the library have the option to implement next-generation products on a module-by-module basis?<br><br>d) Describe the software development roadmap of the various system components. |

## 5. Corporate profile

| | |
|---|---|
| 5.1 | Describe your company's history and experience in automating special libraries of similar size and scope to our Library. |
| 5.2 | Please include a brief corporate overview, including company history and financial information. The Library is particularly interested in corporate stability, including consistency of leadership and ownership, sustained growth of the company and customer base, customer retention, and profitability. Please describe any acquisitions or mergers. The Library strongly prefers a vendor who is focused exclusively on the library market. |
| 5.3 | Please describe staff. The library strongly desires a vendor with a service and support focus and emphasis on and for librarians. |
| 5.4 | Proposed vendors must have an established customer base of libraries in |

| | |
|---|---|
| | South Africa. |
| 5.5 | The proposed vendor (or consortium of vendors) must have strong black empowerment credentials. Please describe demographics of company ownership and management structures and supply an Empowerdex rating. |

**6. Modules**

| | |
|---|---|
| 6.1 | Describe ongoing development of core modules, demonstrate a continuing focus on library processes and traditional modules as well as new technologies and opportunities. Also describe the extent to which maintenance charges cover the addition of new features into the system. |
| 6.2 | Please specifically describe enhancements designed to streamline staff processes using the system, particularly to facilitate high-volume operations. It is strongly desired that the system employ optional wizards, user-specific templates for new records, macros for common functions, and a minimum of extraneous mouse clicks, keystrokes, and pop-up windows for staff functions. |
| 6.3 | Describe support for storage, display and indexing of Unicode characters in both the OPAC and staff modules. Please include description of capabilities to index and retrieve non-Roman records. |
| 6.4 | The system must update a single integrated database from all staff modules in real time. Describe how changes to the database and to the indexes from all modules are reflected immediately in the OPAC interface. |
| 6.5 | It is strongly desired that staff modules as well as the OPAC be able to link to online resources. Describe the capability for each of the modules on the system to offer its own list of resource links to the user. |

# 3.3 Some issues to be decided

During the process of compiling the *List of User Requirements* and the *List of System Requirements* the following issues and questions to be decided at a later date were highlighted.

## 3.3.1 Overall suite of features

The possibility that a given ILS, taken as a whole, can alter decidedly for the better the users' experience in working with information resources, should be an opportunity to seize.  Such a transformation might be apparent in a system that was significantly more intuitive to use, that enhanced the users' mastery of complex information resources and that simplified operations or increased productivity, etc.

*Questions*
- Are the product's modules integrated to ease processing routines?  Do they link functions in ways that are easily understood by staff and patrons?
- Does the user interface amalgamate the presentation of different information resources?
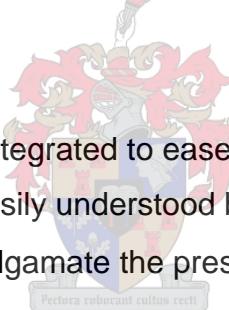
## 3.3.2 Software support

The HSRC's ability to ensure high productivity among staff and to deliver stable and reliable services to its users is jeopardised if there is no timely and engaged customer support from the vendor.  Vendor support should also include efforts to smooth the migration path to a new system, according to agreed upon deadlines, and ongoing assistance in problem resolution and upgrading transition support.

*Questions*
- What is the customer support infrastructure?
- What is the dedicated support during implementation?

- What is the relationship of user groups to product support?
- What support and maintenance contracts are available?

### 3.3.3 Data migration

A vendor conversion protocol that cannot migrate critical data elements represents a liability to the HSRC.  Data elements and data relationships that the library defines as critical must be converted in ways that reflect both appropriate bibliographic standards and that facilitate continuity in data structures.

*Questions*
- What is the experience of the vendor in migrating data from URICA, the HSRC's current catalogue?
- What are the specific data conversion services, protocols and routines provided by the vendor?

### 3.3.4 Standards-based interoperability of systems

The HSRC seeks a system able to function as a gateway to all library materials in all formats, to all other campus information resources, and to the rich information resources available beyond the walls of the HSRC.  Capabilities to handle a wide variety of formats (text, image, audio, mathematical expressions, geospatial information, etc) are required, as are sophisticated linking and telecommunications capabilities.

*Questions*
- Do product enhancements (e.g. digital library tools) interoperate with HSRC enterprise systems, particularly the Oracle-based data warehouse?
- What are the mechanisms or technology standards that create linkages between the library system and other local library systems e.g. inter-library loans?
- Can the system interface with the Lotus Domino.Doc electronic document management system used by the HSRC?

- Is the system sufficiently web-enabled to be easily integrated into a web-portal running on an Apache web server?

### 3.3.5 Potential for local customisation

In a fast changing information environment, where users are aware of opportunities for significantly improved service and demand it, it is essential that the ILS vendor develop its product in an agile manner. It is highly desirable that the ILS functionality lends itself to varied local implementation, so that the HSRC can tailor optimal services for their users to meet new evolving needs. Access by library system staff to applications programming interfaces (APIs) at an appropriate level of the data structure is a very strong indicator of the potential for customization of the user interface, for the creation of specially tailored reports, and for the integration of the ILS with other HSRC systems and with important library management systems.

*Questions*

- Does the vendor provide access to product APIs? If so, at what level and what is the nature of the documentation of the APIs?
- What is the predicted upgrade schedule for the product and the track record of the vendor for delivering upgrades on schedule with promised capabilities?

### 3.3.6 Software architecture

Software of the same architecture style can be reused easier than those of different architecture styles. Systems architecture both creates and limits possibilities for product development. For systems involving long term, controlled access to large quantities of continuously updated data, multi-tier function distribution and relational data modelling are particularly effective. As the complexity of information resources increases, as we try to integrate more and more disparate information resources for seamless delivery to users, and as users become more sophisticated and demanding in their use of information, systems architecture must accommodate long term development of the system.

*Questions*

- What is the specific system architecture of the product?
- Is the data model compliant with Oracle relational database structures?
- Will the vendor assist the HSRC's IT staff with the requirements for the hardware specification, installation, configuration and disaster recovery?

### 3.3.7  Staff training

All of the ILS products under review allow for some level of customisation of the patron access screens, and public access staff will have the opportunity to design and modify these displays, thus it is possible to reduce the learning curve for patrons as they master the new system.  The situation is quite different for library staff, whose work with the ILS is often much more complex and subject to significant productivity pressures. Any failure to train staff adequately for the new ILS has long lasting impact on morale and the willingness of staff to embrace technological change.

*Questions*

- What training is provided for staff (including manuals and online help) in the standard implementation package?
- What additional training can be provided at what additional cost?

### 3.3.8  Indexing and display capabilities

The indexing and display of complex records (for instance, multi-volume and multi-part works with holdings) is particularly difficult.  The more sophisticated the ILS is in handling these difficulties, the greater the likelihood that the reader will be able to master the bibliographic records and fully exploit the resources they represent.

*Questions*

- How flexible is the display of complex holdings data to the user?
- What is the nature of local control over field indexing, linking and display?

### 3.3.9  Searching capabilities

The searching and retrieval of information is critical to the success and usefulness of the system, particularly if the search engine is able to access a variety of data sources in addition to those in the catalogue.

*Questions*
- What searching facilities are available?
- Can the search engine search multiple data sources, including structured data held in an Oracle-based data warehouse?

### 3.3.10  Hardware and software

Vendors are requested to provide, install and maintain the hardware platform to run the proposed solution.  The HSRC is standardising on the rack-mountable HP Proliant range of servers which are backed up to a central back-up unit and would prefer a hardware solution which is in line with this objective.

The server will not require its own built-in back-up unit or software as it will be backed up by the centralised back-up unit across a switch, and a 1 Gb/s network interface card is a pre-requisite for the solution.  The server specification should be capable of supporting:

| | |
|---|---|
| 1 | System administrator |
| 10 | Library staff members with full update access to all modules |
| 500 | End-users with read-only access to the catalogue |
| 300,000 | Catalogue entries, doubling in the first year and doubling again in the second. |

The HSRC supports the South African Government's e-policy to use open-source software wherever possible and would prefer a Linux-based solution to the server.

*Questions*

- Can the system run on the Linux operating system?  If so, please list the Linux distributions and kernel versions on which the system is certified to run?  The HSRC would prefer using SUSE Linux 9.0.

- What is the minimum server specification needed to run the solution given the estimated number of users and catalogue entries listed above (CPU, RAM, hard-drive capacity)?

- How scaleable is the solution?

- What hardware redundancy is proposed (dual power-supplies, RAID)?

- What warranties and service level agreements are available in the event of hardware or software failures? Please give options.

## 3.4 Change management

The proposed ILS will be a significant advance for the management of the HSRC's intellectual property.  Researchers will have better and wider access to the materials they need to produce research outputs, so the project will have high visibility and high impact.
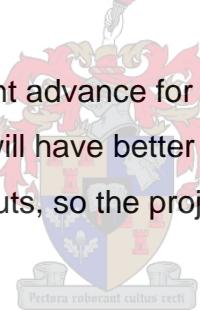
A thorough change management process is critical to the success of the project and must:

- heighten awareness amongst researchers and library staff of the proposed new facilities by means of a communication campaign;

- prepare end-users and library staff for the transition from the old system to the new and assist with the migration;

- assist the library staff with workshops for end-users to encourage swift take-up of the new system.

# CHAPTER 4

# INVESTIGATING THREE POSSIBLE INTEGRATED LIBRARY SYSTEMS


Andrew Pace (2005:25) compares choosing an ILS to choosing a car from a rental lot. That is, getting to your destination is the important part, and few technical features distinguishing one model from another are actually of decisive value.  He uses this comparison to demonstrate how the commodity-like nature of basic ILS functionality has shifted both the endeavours of library automation companies and the ways in which libraries evaluate new systems.  ILS suppliers are now offering various new product lines to expand their markets.  Metasearch, link resolvers, electronic resource management, and digital repositories are just a few of the add-ons that vendors are creating and integrating with ILS.  According to Pace (2005:27) this shows that ILS suppliers are becoming increasingly responsive to the shifting technological needs of libraries and that the ILS is no longer the centre of the Library automation universe.

Breeding (2005b:39) notes that today's top of the line systems offer great functionality for managing print materials, but they don't offer the same degree of sophistication for handling electronic content. Libraries must buy and implement whole suites of add-ons in order to provide the back-end management functions and front-end delivery systems for their electronic collections.

The HSRC IS has therefore identified the following three ILS solutions, together with their add-on components, for further investigation:

     1     Innovative Interfaces' Millennium solution,

     2     SIRSI's Unicorn solution, and

     3     ExLibris's ALEPH solution.

In his discussion on shifts in the ILS industry, Breeding (2005c:42) notes that migrations to new integrated library systems increased by 12% during 2004. This is an important trend to follow, since to succeed, ILS providers must both attract new accounts and

retain current customers.  Defections from the current flagship systems impact market share and most importantly reputation.  While few libraries switch to competing systems, at least ten moved from SIRSI's flagship, Unicorn to other systems.  With the largest market share gain in 2004, Innovative Interfaces had only two defections from Millennium. Breeding (2005c: 42) provides a comparison of the  various ILS by 'total sales' and 'new customers' over a period of four years from 2001 and 2004.

The following figures are drawn from Breeding's comparison

| System | Total Sales | | | | New customers | | | | Total installed |
|---|---|---|---|---|---|---|---|---|---|
| | **2001** | **2002** | **2003** | **2004** | **2001** | **2002** | **2003** | **2004** | |
| Millennium | 157 | 136 | 144 | 119 | 66 | 71 | 96 | 76 | 1160 |
| Unicorn | 117 | 207 | 124 | 134 | 110 | 72 | 46 | 76 | 1719 |
| ALEPH 500 | 80 | 58 | 51 | 53 | 70 | 48 | 42 | 53 | 923 |

## 4.1 Innovative Interfaces:  Millennium

### 4.1.1  Innovative Interfaces Inc[1]

Innovative Interfaces Inc is a private company that has been profitable every quarter and every year throughout its 25 year history.  The company currently has annual revenues in excess of $70 million, and is continuing to grow both in the US and world-wide, unlike most other library automation suppliers of comparable size.

Millennium is one of the world's leading library automation systems, with over 1000 customers, and serving well over 2500 libraries world-wide.  In 2004 Innovative installed some 80 Millennium systems, and of these, over 70% were installed in academic

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[1] The corporate profile of Innovative Interfaces Inc has been compiled through personal correspondence with Innovative as well as from The Library Journal (vol 130, 2005)

libraries.  In Africa, recent library installations have included the University of Ghana, the University of Lesotho and the Parliament Library in South Africa.  Older customers in South Africa include UNISA, the GAELIC consortium, SABINET and NLSA. Innovative has over 1,100 customers, including many libraries of a similar size and structure to the HSRC Library.  Millennium customers are spread throughout the world, (not just in English-speaking regions) ensuring that Innovative can be a truly global company, rather than a US-dominated corporation with a few local outposts.

In its 25th year, Innovative led the industry in new-name sales, with 76 contracts signed to new clients, representing 568 individual libraries. Forty-three INNOPAC sites comprising 73 individual libraries migrated to Millennium. The total of sales is 119. Though Innovative tied with SIRSI for new-name contracts, the number of libraries was larger. Innovative realised a larger gain in market share owing to its strong performance in new-name clients and its high retention of its INNOPAC product sites. Sales to public libraries increased from 16% in 2002 to 27% in 2004. In the United States, Innovative increased its rank in the prestigious ARL market as well. Wayne State University withdrew from the DALNET consortium's implementation of Horizon to install Millennium, and the major academic libraries in South Carolina, including the University of South Carolina, replaced their NOTIS system with Millennium. In a rare loss, the Five College consortium in Massachusetts, including UMass-Amherst, defected to ALEPH 500.

Innovative continues to develop technologies within and surrounding its Millennium library automation system. The company launched Millennium Silver, laden with a wide range of new features. In addition to the core modules, Millennium Silver includes optional components for electronic resource management, an XML Harvester for obtaining metadata records from external systems, an XML Server for external systems to derive records from Millennium formatted in XML, and support for e-commerce transactions.

Innovative partnered with Boston's Northeastern University to develop software for institutional repositories. Despite the availability of open source alternatives, Innovative plans to create a system that won't require a large investment of staff time.  A WebBridge link within the academic reserves module of Millennium to the Copyright Clearance Center streamlines placing permissions requests. Web Works, a web browser interface for selected components of the staff modules of Millennium, provides simpler access than loading the full Java client. Innovative Interfaces is wholly owned by its cofounder Jerry Klein, chair and CEO. It is one of the few companies that operates without support of venture capital. The company employs 285, unchanged from the previous year, with a customer support ratio of one FTE per 7.2 accounts. Revenues are reported in the $60-$70 million range.

### 4.1.2 Millennium

Innovative Interface's Millennium System claims to provide a total solution for the library's information technology needs. It is a Web- and Java$^{TM}$-based automated library system that integrates future-forward technologies-from a company with 25 years of successful library experience. (http://www.iii.com/mill/index.shtml)
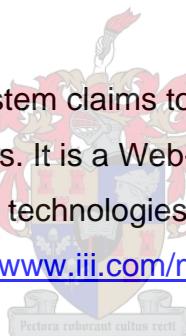
HSRC IS identified Millennium as a possible solution because of Millennium's ability to link the collection with enhanced content on the Web, its ability to integrate and control access to third-party databases and Web-based resources, and because it establishes an information portal for users and provides the necessary tools for librarians to customise and maintain that portal.

According to Innovative Interfaces *Millennium Product Overview* (http://www.iii.com/pdf/lit/eng_millennium.pdf) Millennium offers the following components in addition to its core modules.[2]

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[2] Core modules include Circulation, Cataloguing, Acquisitions, Serials.

- **Web OPAC**. The OPAC fully integrates with all the other Millennium modules.  It provides sophisticated full-search capabilities as well as integrated inter-library loan support.
- **Millennium Access Plus (MAP):**  MAP offers three independent components.
    - **WebBridge** offers a smart linking capability, which enables libraries to link together information resources when appropriate, e.g. book-jacket images and can also include linking to full-text journal articles.
    - **MetaFind**:  This search engines offers a meta-search capability against the sources to which a library subscribes.
    - **Web Access Management**:  This solution provides remote-patron verification to licensed databases.
- **MetaSource -  Digital Collections Management:**  MetaSource is a suite of tools that allows libraries to effectively manage their digital collections.
    - **Millennium Media Management** supports the creation of a local media collection, e.g.. archival material, photographs, newspaper clippings, etc.
    - **SML Harvester** leverages SML technology to provide an automated cataloguing tool which can create library records from metadata records stored on servers anywhere in the world.
    - **Metadata Building** allows libraries to effectively and efficiently describe and store digital collections using a variety of metadata schemes such as Dublin Core or EAD.
- **Report writing**: Fully integrated with all modules, this module provides an intuitive, yet powerful, interface, allowing library staff to create and retrieve reports as needed.

Millennium also offers numerous other products and services designed to further enhance and meet the specific needs of each individual library.  These include:
- Internationalisation and localisation
- Z39.50 Server
- Z39.50 Client
- INN-View (Web content hosting service)

- INN-Keeper (Millennium Application Service Provider)
- VIPs (Innovative valued information providers)

Millennium is based on library- and computer-industry standards. The system's support for standards such as MARC 21, Unicode, Z39.50, and commitment to extension of ISO 10160/10161 and NCIP, ensures the library's ability to interact with other libraries and partners. The system is also able to accept and output data in XML format. Millennium uses the UNIX operating system, which allows the system to be run on computers manufactured by Sun Microsystems, IBM, Compaq, and Hewlett Packard. Communication between the client and server uses the standard networking protocols TCP/IP and HTTP.  (http://www.iii.com/pdf/lit/eng_millennium.pdf)

## 4.2 SIRSI: Unicorn Library Management System

### 4.2.1  SIRSI Limited[3]

SIRSI Limited was formed in 1990 to promote, distribute and support the software products of SIRSI Corporation throughout Europe.  By this time SIRSI Corporation had already established itself as one of the foremost suppliers of library automation systems in the USA.

SIRSI has grown dramatically to be a truly international company with distribution and support centres in Australia, China, Colombia, Denmark, France, Mexico, The Netherlands, Saudi Arabia, Singapore and Spain, as well as in the UK, USA and Canada.

In its 25th year, SIRSI completed 134 sales, the second highest in the industry. Seventy-six sales went to new clients, also a second place showing. The company did especially well in international sales. From the perspective of market share, SIRSI won

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[3] The corporate profile of SIRSI Limited has been compiled through personal correspondence with SIRSI as well as from The Library Journal (vol 130, 2005).

76 new accounts, showed a net loss of 39 accounts from legacy accounts, and lost ten Unicorn accounts. This is a net gain of 45 accounts. When counting the number of libraries represented, the same formula yields a loss of 103, owing primarily to the loss of several large DRA accounts. SIRSI reported that at least 180 libraries joined consortia using Unicorn, resulting in a net market share gain of 79 libraries. By now, most SIRSI legacy sites have made their migration decisions. Among the ARL members, SIRSI stayed even. From 2002 to 2004, the percentage of sales to public libraries grew from 33% to 47%.

SIRSI's Normative Data Project, launched in early 2005, brings together geographic, demographic, and usage data to provide librarians with an important tool for analysis. Major development work in Unicorn was undertaken, slated for release in 2005. The WorkFlows clients are being entirely rewritten in Java. The Java-based clients saw beta-testing, with general release slated for 2005. SIRSI created Collection Exchange, which streamlines the process of selecting materials to be transferred among libraries that share the system. PocketCirc is a new handheld device for performing circulation tasks away from regular service desks. In the wireless arena, SIRSI partnered with Bluesocket, Inc. to offer a product for authenticated access to Wi-Fi hotspots. Using SIP2, libraries can establish an environment that secures wireless connections through the patron's library card number and PIN. SIRSI extended the number of partners supported by its 9xx Loader, which transfers bibliographic, item, and order data from a supplier into Unicorn. SIRSI focused much of its development efforts on its new Rooms products. The new Digital Heritage Room blends SIRSI's Hyperion Digital Media Archive into the Rooms framework in an ASP-hosted service, allowing a library to create digital collections easily. SIRSI is the largest company in the industry in terms of personnel, with 394 employed worldwide. The company slimmed down 11% since last year, with a customer service ratio of one FTE per 7.8 accounts.

## 4.2.2 Unicorn Library Management System

SIRSI's Unicorn Library Management System claims to provide a powerful technology infrastructure for libraries, offering scalable relational database management systems such as Oracle; support for key industry standards; well-defined application programming interfaces; a single intuitive staff GUI for all modules; and a strong platform for evolving the system to meet a library's ever-changing needs. (http://www.sirsi.com/Pdfs/Products/Unicorn.pdf)

HSRC IS identified Unicorn as a possible library management system because it enables access to all resources, both on the shelves and electronically through its federated search and linking solutions.  From a single interface, users can simultaneously search the library catalogue, databases and specified websites.

Unicorn software was developed for both the UNIX and Windows operating systems, the industry standards for applications on micro-, mini-, and large-scale computer systems.
SIRSI offers the following modules in addition to Unicorn:

- **iBistro E-Library** provides access to the rich abundance of electronic information from library holdings, the web and other library e-services.
- **Sirsi Rooms** collects high-quality content in context via virtual Rooms on specific subject areas, for easy, efficient information discovery.
- **Sirsi Resolver**, an openURL reference linker.
- **Sirsi Single Search**, a federated searching tool.
- **Sirsi Hyperion Digital Media Archive** is an innovative tool for easy organizing, storing, maintaining, and accessing of non-book holdings in a digital format.

Customers in South Africa include the Constitutional Court. Sirsi has recently partnered with Universal Knowledge Systems (UKS), a South African ILS provider.  UKS is now the formal distributor for SIRSI products in South Africa.

# 4.3 Ex Libris : ALEPH 500

## 4.3.1 Ex Libris[4]

The Ex Libris Group is a worldwide supplier of software solutions and related services for libraries and information centers.  The Company's product line has been customised to serve users' functional and linguistic needs in more than 20 languages.

The development of the Ex Libris ALEPH system commenced in 1980, when a team of librarians, systems analysts, and programmers took on the challenge of creating an automated library system that was efficient, user friendly, and multilingual.  The result was the first generation of ALEPH.

Ex Libris, specialising in automation systems for large academic libraries and consortia, continues to see steady sales of its ALEPH 500 system worldwide. Ex Libris entered the U.S. market in 1999 and made a remarkable sweep of sales to large U.S. academic libraries. By 2004, U.S. sales of ALEPH slowed to six of 53 worldwide. Its largest U.S sale went to the Five Colleges consortium in Massachusetts, including ARL member University of Massachusetts, Amherst. At year end, Ex Libris reported 923 installations of ALEPH 500 worldwide. Headquartered in Israel, Ex Libris maintains offices and distributors throughout the world.

The company focused effort on the development and marketing of its ALEPH 500 library automation system. Last year saw the release of ALEPH version 16.02. In the largest ALEPH implementation to date, the British Library went live with a system that manages over 30 million volumes and merges 12 previously separate catalogues.

In 2004, the company completed version 3 of the SFX OpenURL link resolver and made 220 sales, finishing the year with 685 installations to date, the highest in the industry.

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[4] The corporate profile of Ex Libris has been compiled through personal correspondence with Ex Libris as well as from The Library Journal (vol 130, 2005).

MetaLib, the company's metasearch and library portal product, attracted 153 sales for a total of 438 installations. The third major version of MetaLib was delivered in late 2004. Many ALEPH 500 sites add SFX and MetaLib but so, too, do libraries with other automation systems. The company also launched a new service called MARCit that keeps the e-journal holdings data in the library's ILS in sync with SFX. Ex Libris reports 233 employees worldwide (up 8%), a customer service ratio of one FTE per 11.3 accounts, and revenue in the $30-$35 million range.

## 4.3.2 ALEPH 500

Ex Libris markets ALEPH as an effective knowledge management tool that deliver the most up-to-date, relevant information to end users in a quick, efficient, and user-friendly manner. (http://www.exlibrisgroup.com/aleph.htm) HSRC IS identified ALEPH as a possible solution because it also offers resource-sharing capabilities and seamless interaction with other systems and other databases.

Additional ALEPH modules include:
- The **Web OPAC** serves as the user's gateway to the ALEPH 500 system and provides access to library information at any time and from any location.
- The **ALEPH Digital Management Module (ADAM)** enables the management and subsequent discovery and delivery of digital assets such as audio, video, image and sound, and their associated metadata within the ALEPH 500 environment.
- **ALEPH Reporting Center (ARC**):  A web-based reporting, querying and statistical generation environment that provides libraries with ad-hoc statistics regarding virtually any aspect of the library derived from information contained within the ALEPH 500 system.
- **ALEPH Monitor:** Specially designed for non-IT experts, ALEPH Monitor enables administrators or helpdesk personnel with limited technical background to effectively analyse and troubleshoot problems in ALEPH 500, the Oracle database, or the operating system.

Based on industry standards such as OpenURL, XML, OAI, LDAP, ISO ILL, and RFID, Ex Libris products offer the ultimate in resource-sharing capabilities, full connectivity, and seamless interaction with other systems and databases. Built on an Oracle® database, ALEPH 500 offers full Unicode support, employs system-wide XML technology, and offers third-party integration through an XML gateway as well as standard protocols such as Z39.50 and ODBC.
(http://www.exlibrisgroup.com/aleph.htm)

South African customers include the CALICO consortium, i.e. University of Cape Town Libraries, University of Stellenbosch Libraries, University of the Western Cape Libraries, Cape Peninsula University of Technology Libraries.

## 4.4 Conclusion

In Chapter 5 I will attempt to bring together the context of user requirements and system requirements for a proper ILS regiment at the HSRC and the relative advantages and disadvantages of the three systems considered.

# CHAPTER 5

# EVALUATING THE THREE POSSIBLE INTEGRATED LIBRARY SYSTEMS

All three the ILS suppliers specialise exclusively in library automation software and have many years of experience in the provision and support of ILS, Innovative Interfaces Inc and Ex Libris for 25 years each and SIRSI for 15 years. Innovative Interfaces Inc has the largest customer base in South Africa, and seems keen to extend their customer base in Africa. Ex Libris has one academic consortium as client (CALICO) and some smaller utilisers, while SIRSI is just breaking into the South African market with their first client (the Constitutional Court).[5]

## 5.1 User requirements

The ALEPH, Unicorn and Millennium systems all comply quite favourably with most of the requirements as listed in the *List of User Requirements*. All three systems comply fully with all the Cataloguing, Serials and Acquisitions modules requirements, that is, the more traditional library functionalities. When it comes to the more 'non-traditional' functionalities, such as full-text searching and discussion forum functionality, these systems still fall short. It is either not supported at all, or additional modules or add-ons are required.

The following table (Table 4) shows where the systems do not comply with the specified requirements.

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[5] I have had personal discussions with colleagues at various academic institutions and research organisations about the performance of the three programs and their suppliers. The more or less five colleagues I talked to expressed satisfaction with all three programs, except for some reservations expressed about ALEPH 500

**Table 4:** Non-compliance with user requirements

| Online Public Access Catalogue (OPAC) | | | |
|---|---|---|---|
| **Description** | **Comply (yes/no) or comments** | | |
| | **Ex Libris / Aleph** | **Sirsi / Unicorn** | **Milennium** |
| Sophisticated full-search capabilities, particularly: | | | |
| • Ability to search full-text documents | **No**. Additional module, the Digital Collection Management (ADAM) module, required | **No** | **No**. Additional module, the MetaFind search engine, required |
| • support different formats, e.g. pdf, images, etc. | **No** Only in ADAM | **Yes** | **Yes** |
| Closely linked to the CRM functionality are the Subject Portals which include: | | | |
| • discussion forums (ability to upload documents, usability) | **No** | No | **No** |
| • users to submit comments and content to the portal | **No** | **No** | **No** |
| **Circulation** | | | |
| **Description** | **Comply (yes/no) or comments** | | |
| | **Avioniss / Aleph** | **Sirsi / Unicorn** | **Milennium** |
| Full support of all circulation functions such as: | | | |
| • option for overdue items to be sent via email, SMS or to a PDA | **Yes** print or email **No** SMS or PDA | **Yes** | **Yes** |
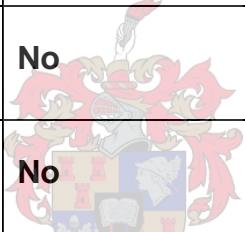
As is clear from the above, there are very few important differences in terms of the requirements between the various systems. The core modules of all three systems fully comply with HSRC requirements. A decision on which system to acquire can therefore not be taken on the basis of a comparison between the core modules. Significant differences only arise in the need for and availability of add-on systems which will make the system more attractive and useful for HSRC purposes. See the list of requirements in the table above.

# 5.2 System requirements

## 5.2.1 General system design

According to an ALA report (2004), all the flagship library automation systems run under either some version of Unix or the Windows server environments. Many of the systems use only Unix for the server, including ALEPH 500 and Millennium. Operating systems providing support for the server include:

- ALEPH 500: IBM AIX, Sun Solaris and Linux
- Millennium: IBM AIX, Sun Solaris, Linux, HP Unix and Window Server (NT, W2K, Win2003)
- Unicorn: IBM AIX, Sun Solaris, HP Unix and Window Server (NT, W2K, Win2003)

The HSRC requires that all staff and OPAC modules be capable of running on Windows 2000 / XP, Linux and Mac OS X workstations.

- ALEPH 500 runs only on Windows 2000 / XP and Linux (it therefore falls short of an important in-house requirement)
- Millennium runs on Windows 2000 / XP, Linux and Mac workstations
- Unicorn runs on Windows 2000 / XP, Linux and Mac workstations

The way the ILS stores its data significantly affects the way the library can use the system beyond the functionality delivered by the vendor. The trend of the last decade or more has been towards reliance on relational database management systems (RDBMS). Among library automation systems, Oracle has grown to be the preferred RDBMS. (ALA, 2004:50)    The HSRC makes use of Oracle as its preferred RDBMS, which makes the utilisation of Oracle non-negotiable.  ALEPH 500, Millennium and Unicorn make use of Oracle as their RDBMS.  Innovative and SIRSI also offer versions of their software that does not make use of an RDBMS.

Adherences to standards are very important as standards ensure interoperability.  In today's environment of expanding information resources and increased needs for resource sharing, an ILS would be severely constrained if it were not able to interact with other services and systems. Standards for protocols in several different aspects of the ILS have emerged to allow systems to communicate with each other even if they are produced by different companies and perform different functions. (ALA, 2004:53) ALEPH 500, Millennium and Unicorn all support the Z39.50 protocol, Unicode, the MARC 21 family of standards, ISO, and open URL.

### 5.2.2 Services and support

None of the three systems place restrictions as to which Library staff may place a call when a Library experiences any trouble with hardware or software, although they all recommend that the library appoint a staff person as System Coordinator or Administrator.
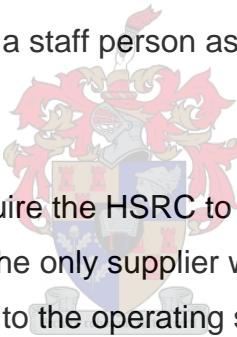
As expected all three suppliers require the HSRC to sign a Service Level Agreement. Innovative Interfaces seems to be the only supplier willing to provide 24/7 support 365 days of the year, which is essential to the operating style and functions of the HSRC. Both SIRSI and Ex Libris specifies support hours.  SIRSI does provide an 'out of hours' support service, but at an additional cost.

### 5.2.3  Reports and statistics

Extensive circulation statistics and reports are part of the standard ALEPH 500 offering and include in-house use statistics.  Report writing is only available through an add-on module called ARC (ALEPH Reporting Center) which has to be acquired separately. This is a clear disadvantage in comparison with Millennium.
Millennium comes with three robust and complementary report generators.
- Web Management Reports

- o provides a complete and comprehensive set of reports that tracks and reports on selected transactions and activities.
- Create Lists
  - o this report generator lets authorised Library staff create lists of records based on user-specified criteria that is used to create a list to make a global update, export, check in, or use with Millennium's statistical report function.
- Millennium Statistics
  - o enables staff to generate powerful statistical reports which analyse the relationship between every fixed field contained within each particular record type and a summation of all the countable field values included within those records.

Unicorn includes over 600 prepared reports for all modules.  The Unicorn reporting utility is extremely easy to use, with a full graphical interface and incorporating Windows help.

## 5.2.4  Responsiveness / R & D

ALEPH 500:  All upgrades are covered by the annual maintenance contract fee.  Major version upgrades are done by the vendor.  Scheduling of such upgrades is discussed and planned with the customer.  Regular Service Packs can be installed by the customer.

Millennium:  Software enhancements are issued on an annual schedule and do not require hardware modification of any kind.  Libraries may self-install software upgrades by simply selecting a menu option from the Millennium System Administration menu. Technical help is available 24 hours a day should assistance with self-installation be necessary.  Software enhancements and unlimited access to help desk services are provided at no additional charge as part of the Library's ongoing maintenance program.

Unicorn: Software upgrades are now available for self-installation from the software delivery service ftp site. The majority of SIRSI's customers tend to ask for help with upgrades and schedules a date for the upgrade. The cost of the upgrades is covered by the Software Service.

All three systems are therefore similar in that upgrades are provided free of charge. Millennium has the advantage, though, that it provides the easiest possibility for a library to self-install, as well as 24 hour a day support service should it be required. Millennium therefore seems to be the most attractive possibility.
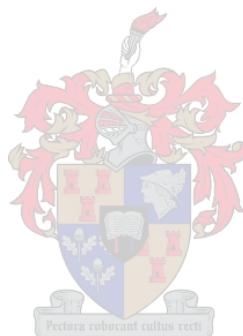
# CHAPTER 6

# CONCLUSION

In this research paper I sketched the user and system requirements for ILS at the HSRC in South Africa. I pointed out the unique requirements, as well as the requirements the HSRC shares with any other research organisation. I have analysed three systems which appear at first sight to provide best in the specific requirements of the HSRC. I conclude that actual differences are few and far between, but that there are some specific requirements and add-on possibilities which makes Millennium the most attractive choice.

In my introduction, I identified two main problems with the present system which necessitate the acquisition of a new system. The first of these is the fact that there is no integration between the various modules within the current HSRC Library system; it cannot manage the HSRC's internal or external database resources. I consider Millennium the appropriate system which will enable IS to fulfil its mandate within the HSRC. This is so because the HSRC and Millennium both make use of Oracle as their preferred RDBMS. This will enable Millennium to integrate with other key systems used by the HSRC. It will therefore enable users to conduct information searches quite easily across all the various data made available by the HSRC across its network. As Innovate Interfaces also provides the MetaFind module, in conjunction with Millennium, this will expand the ability to include information held outside the HSRC and published on the web. MetaFind will also facilitate the provision of information that is licensed by IS but does not exist in the HSRC's physical collection. Millennium will therefore enable IS to make essential knowledge more accessible to all and enable the provision of real-time information. Millennium will consequently assist the HSRC researchers with superior information discovery ability.

The second main problem is that the HSRC's current library system does not provide any customer relations management (CRM) functionalities, e.g. enable users to

maintain their own profiles.  Millennium will allow the HSRC to set up its Web OPAC so that the researchers can log into the system and maintain their own profiles.  HSRC researchers will also be able to view or renew items out on loan, place holds on items, choose how circulation notices are sent (e.g. email, voice mail, telephone) and change their own personal details (i.e. address, telephone number, etc.) without having to come into the library.  The researchers will be able to save their favourite searches, including advanced searching, for easy reference and searching in future research.  Millennium has the ability to automatically email users when the Library acquires items matching saved preferred searches.  The researchers will also be able to retain and view their own reading history.  This is a very useful feature in the research organisation where researchers constantly want to refer back to books previously utilised.

An important requirement on our list which will not at this stage be met is the idea of IS establishing subject portals using an ILS.  Millennium does not provide the ability for users to upload documents, or submit comments and content to a portal environment.  It also does not provide any discussion forum functionality.  This does not present problems in the immediate future, as this is more an item on a feature wish list.  The HSRC will therefore follow developments of modules which can enable this capability closely, in order to see whether anything satisfactory comes on the market.

Another requirement which I identified is that IS also wants to streamline its current awareness process through the pushing of contents pages, latest books, and various alerts.  We have established that the Millennium Web OPAC will enable us to alert researchers about new books added to our collection, but that this capability does not go beyond the physical collection itself.   The same proviso I mentioned in relation to the previous point, also applies here.  It does not present us with serious problem in the immediate future, but is definitely a capability which we find both useful and necessary in future.  We will therefore also in this regard have to follow developments in the technical field to see what becomes available.

It is therefore clear that Millennium best fulfils the requirements the HSRC has identified.  In respect of those requirements not yet fully satisfied, it can only be hoped that future developments will make it possible to add on to the Millennium system the capabilities which are still lacking at this stage.  When all things are considered, the most sensible suggestion remains the acquisition of Innovative Interfaces' Millennium system.
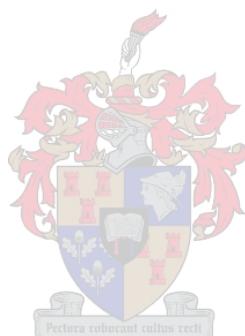
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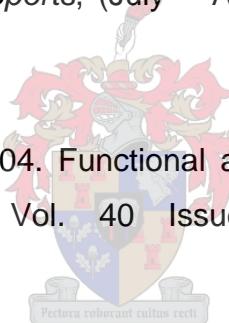
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