D. L. Man and Lettie Erasmus,
Regional vs. National Union Database Development:
The GAELIC Perspective

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Chapter 20
Regional vs. National Union Database Development: The GAELIC Perspective

D. L. Man and Lettie Erasmus

1 Union Database History in South Africa

South Africa has a long history of union catalog development for interlending and resource sharing purposes, beginning in 1912 with the compilation by A. C. G. Lloyd, Chief Librarian of the South African Public Library, of the Catalog of Serial Publications Possessed by the Geological Commission of the Cape Colony, the Royal Observatory, South African Association for the Advancement of Science, South African Museum and South African Public Library. The list consisted of some 1,030 periodical titles with a scientific bias, and was gradually supplemented in later revisions by the holdings of further libraries and scientific institutions throughout South Africa. By 1927, the number of contributing libraries had increased to 44 and the number of titles to 3,117.

It was clear by this time that there was a need to include humanities periodicals, leading to the publication of the Catalog of Union Periodicals in two volumes, edited by Percy Freer. Volume 1, Science and Technology, was issued in 1943 and again in 1949 and 1953, while Volume 2, The Humanities, was published in 1952. Two aims of this publication were to encourage libraries to amalgamate fragmentary holdings, and to eliminate unnecessary duplication. This was followed by a printed union list of periodicals in the whole of South Africa for the

period 1943–1952 which continued as Periodicals in South African Libraries (PISAL) from 1961–1972.[1]

The change of format to microfiche made it possible to produce a union list of monograph holdings. The State Library began producing the South African UNICAT in June 1972, which was a list of all monograph acquisitions of Southern African libraries with International Standard Book Numbers (ISBN). This was supplemented in 1975 with the publication of the Joint Catalog of Monographs 1941–1971, consisting of 2,139 microfiches in four boxes. These two sets of microfiches were combined in 1978 as the South African Joint Catalog of Monographs 1971– and published quarterly in author, title and UNICAT sequence. An interesting fact is that with the publication of the UNICAT in 1972, South Africa became the first country in the world to have a national union catalog of monographs based on ISBN and appearing on microfiche.

The periodicals catalog PISAL was also converted to microfiche format from 1974 onwards and published annually. Simultaneously with all these union catalogs, many subject and national bibliographies were being produced, making South Africa the most thoroughly documented African country south of the Sahara.[2]

The number of microfiches that had to be produced was cumbersome, and made it imperative that these catalogs be automated. Discussions concerning the establishment of a computerized national union catalog began in 1979 under the leadership of the National Library Advisory Council and the MARC Working Group. The use of SAMARC as an input and communications format in the South African Bibliographical and Information Network (SABINET) was seen as a prerequisite for coordinated computerized resource sharing.[3]

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[1] Elizabeth Hartmann, in conjunction with J.I.Snyman, *The History of PISAL and its Forerunners* (Pretoria: CSIR, 1980) (CSIR Special Report CSTI 28).

[2] Reuben Musiker, *South African Bibliography*, 2nd ed. (Cape Town: David Philip, 1980).

[3] *SAMARC: South African National Format for the Exchange of Machine-Readable Bibliographic Description*, ed. Ilse van Niekerk (Pretoria: Working Group for Bibliographic

The founding of SABINET in 1983 and the development of the South African Union Catalog in SAMARC format are discussed in detail by Pierre Malan.[4] The many problems encountered during the creation of this national union catalog not only affected developments at SABINET, but also developments at user libraries.

2 Union Database Expectations and Disappointments in the 1980s and 1990s

There were high expectations among libraries, particularly academic libraries, for the development of a national union database. Not only would inter-library loans and resource sharing be made easier through the elimination of hundreds of out-of-date microfiches, but libraries could catalog centrally and download records into their own (often in-house) systems. Initial participating libraries had to sign an agreement to support SABINET for 10 years, and many of these libraries did so willingly.

The new union database was also seen as a way of keeping up with library automation in the rest of the world and reversing the impact of sanctions, because apartheid had profoundly influenced the development of the higher education sector in South Africa. Before the changeover of government in 1994, higher education institutions were divided along racial, language and political lines. They did, however, cooperate in the form of inter-library loans, as sanctions restricted the flow of information into South Africa. Sanctions also limited the choice of library systems available to libraries and to SABINET for developing the national union database, since system vendors were not able to do, or interested in doing, business in South Africa.

In 1985, SABINET embarked on an ambitious project to develop its own union database system. Libraries waited patiently for this new system, named Pythia, and in the interim used a system based on the Washington

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Standards, Committee for a Computerised Cataloging Network [and] National Library Advisory Council, 1982). (National Library Advisory Council Report Series no. 24)

[4] P. Malan, "A National Union Catalogue for Shared Cataloging and Resource Sharing for Southern African Libraries," this volume.

Library Network (WLN) software. It was expected that Pythia would be available within three years, but as time went by there was deafening silence about progress on the part of SABINET. Prototype screens for the searching function were only made public around 1989, and were cumbersome and difficult to use. SABINET users were not happy, and suspected the presence of deeper problems when consultants were sent to some libraries to solicit their views on Pythia's response times, usability, etc. It came as little surprise when the development of Pythia was stopped in late 1990.

After this eight-year wait, individual libraries and SABINET had to start all over again. Academic libraries were forced to buy new library systems or keep developing their own in-house systems. Because of sanctions, the choice of available systems was limited to locally developed, affordable ones. Instead of centralized cataloging though a national union database, libraries went their own way and continued with original cataloging. It is difficult to speculate with hindsight how far South Africa's national union database development would have developed by now if Pythia had been successful, or if there had been no sanctions to limit SABINET's choice to a locally developed system.

3 Background to the Development of GAELIC

The Gauteng and Environs Library Consortium (GAELIC) was formed in April 1996 under the umbrella of its parent body, the Foundation of Tertiary Institutions of the Northern Metropolis (FOTIM). By that time, South Africa was post-apartheid and sanctions had been lifted. Technology had also changed substantially, and a number of academic libraries were investigating the possibility of purchasing new library systems locally, or overseas if they could afford them. The offer by The Andrew W. Mellon Foundation to fund common library systems within legally constituted academic library consortia was seen as a golden opportunity to leapfrog to technologically advanced library systems. Five library consortia availed themselves of this opportunity, namely GAELIC, CALICO, FRELICO, SEALS and eSAL.

GAELIC consists of 16 academic libraries (ten universities and six technikons) from the three northern provinces of South Africa, namely Gauteng Province, Limpopo Province and North West Province. These institutions, which had little contact during the apartheid years except at the

university librarian level and through inter-library loans, were now prepared to put aside political, racial and language differences and work together to share resources and staff expertise, as well as to reap the benefits of a common library system. There was great disparity among the institutions in terms of size, resources, and expertise, leading to the terms Historically Advantaged Institutions (HAIs) and Historically Disadvantaged Institutions (HDIs). The HDIs were Black institutions set up by the apartheid regime and were mostly situated in outlying regions, and the creation of a consortium provided the opportunity to lessen these disparities and to extend the collaboration among the members.

An important issue for the implementation of a common library system was the system architecture to be used within GAELIC. The architecture chosen could influence the choice of a library system, and vice versa. Factors to be taken into account included the size of GAELIC, the autonomy of the institutions, the lack of network stability, and the high cost of Internet connectivity on and between campuses.[5] Discussions revolved around several models, because each model had cost implications in terms of the size and quantity of servers and the number of software licenses. The following were some of the models discussed.

4 System Choice

After extensive negotiations, the vendor of choice offered favorable pricing for Model 2 to be implemented. These separate systems allowed for a faster rate of implementation, since less consensus was needed for system setups. No databases needed to be merged nor duplicates sorted out, thus leaving institutions free to implement on their own when they were ready.[6]

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[5] H. M. Edwards, "South Africa's GAELIC: the Gauteng and Environs Library Consortium", *Information Technology and Libraries*, 18 (3): 123–129. Special Issue: *Library Consortia around the World*, guest ed. John F. Helmer.

[6] D. L. Man and L. Erasmus, "Implementing a Library System in a Consortium: the GAELIC Experience", *Proceedings of the Conference on the Provision of Information in Southern Africa,* University of Pretoria, 20–21 August 1998: 134–136.

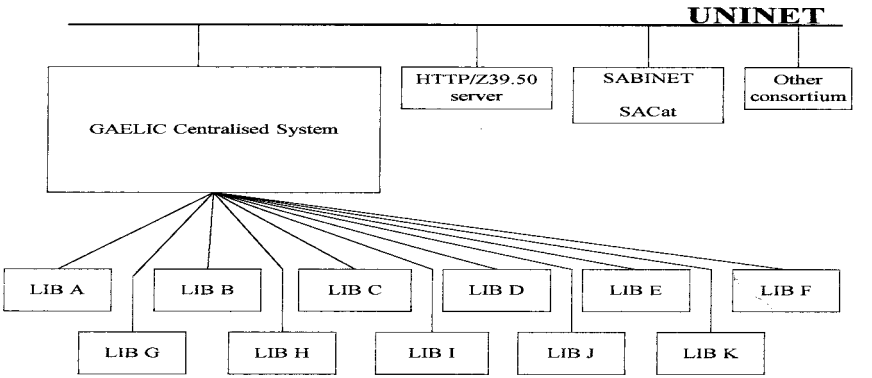

Figure 1. Model 1: Centralized System*

* One copy of the software package is loaded onto one large central server, to which all separate libraries are linked via Uninet (now called TENET). This lowers software costs, but requires a strong and robust network with high bandwidth and adequate redundancy. Hardware platform costs are high because of the very large scalable server required. This model would automatically result in a union database.

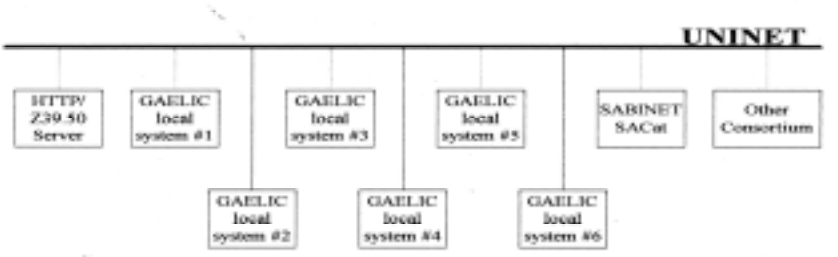

Figure 2. Model 2: Distributed System*

* Each of the 16 libraries would operate completely independently on its own separate server with its own version of the software package. High software and server costs, but less dependency on network stability and sufficient bandwidth. No union database is provided for.

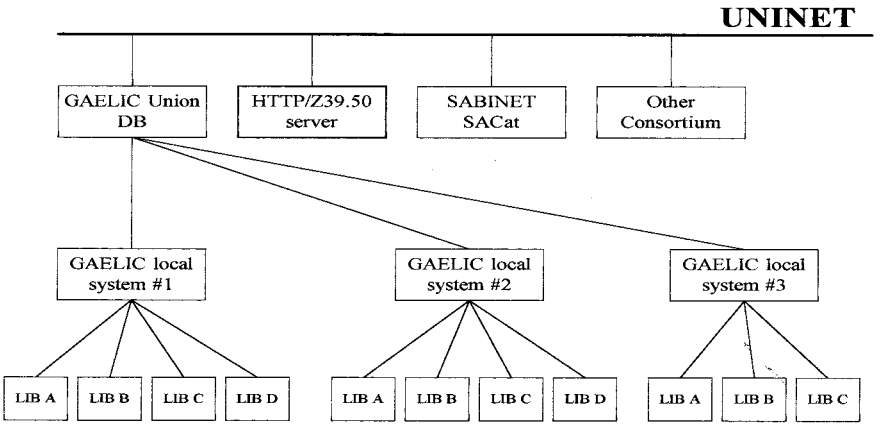

Figure 3. Model 3: Regionally Distributed Clusters with a Union Database*

* A compromise between Model 1 and Model 2, as some servers and software are shared, thereby reducing the cost of the software package and hardware platforms. Additional cost for union database.

The INNOPAC library system[7] was chosen, and implementation began in mid-1997 with Phase 1, comprising six libraries. Phase 2 followed in mid-1998 with eight libraries, including two libraries from the adjacent consortium FRELICO, the Free State Library Cooperative. Phase 3 began in mid-1999 with four libraries in outlying areas. Members of the phases (and the estimated number of titles in their collections at time of implementation) were as follows (Tables 1–3):

[7] The INNOPAC system is now called Millennium, and is developed by Innovative Interfaces Inc., Emeryville, California, USA.

Table 1. Phase 1 Libraries

Institution	Titles
Technikon Northern Gauteng	31,000
Technikon Pretoria	70,000
Technikon South Africa	50,000
Technikon Witwatersrand	50,000
University of South Africa (UNISA)	980,000
University of Witwatersrand	500,000

Table 2. Phase 2 Libraries

Institution	Titles
Medical University of South Africa (MEDUNSA)	33,000
Potchefstroom University for CHE	350,000
Rand Afrikaans University	338,000
University of Pretoria	356,000
Vista University	85,000
Vaal Triangle Technikon	38,000
Technikon Free State (FRELICO)	N/A
University of Free State (FRELICO)	350,000

Table 3. Phase 3 Libraries

Institution	Titles
Technikon North West	12,000
University of North West	80,000
University of the North	200,000
University of Venda	46,000

The speed of implementation was a considerable achievement, but GAELIC was still left with the problem of the union database.

5 The Need for a GAELIC Union Database

As could be seen from the models discussed in the preceding section, the incorporation of a union database had been part of GAELIC's planning from the outset, since it fulfilled its vision of creating a virtual library with local service interfaces, forming part of a global information community, for clients in Gauteng and its environs.[8] The union database would facilitate resource sharing and shared cataloging among the 16 members. An early decision by GAELIC was to provide free inter-library loans among its members, the justification being the need to assist smaller libraries, to render a cost-effective service and to ensure the free flow of information to researchers and students for the benefit of the consortium and the country as a whole. It was recognized that there would be net lenders who supplied more documents that they received, and that transactions should be monitored so that imbalances could be addressed.[9]

[8] Gauteng and Environs Library Consortium. http://www.gaelic.ac.za/backg.html.

[9] H. Visser, "The Free of Charge Document Supply Agreement within the GAELIC Consortium," Paper presented at the 7th International Interlending and Document Supply Conference, Ljubljana, Slovenia, October 2001.

It was hoped that a union database would reverse the amount of effort put into duplicate original cataloging by the institutions, which did 80% original cataloging and 20% copy cataloging in Phase 1 and Phase 2 libraries. Before a union database could be implemented, however, there were still many issues to be resolved within GAELIC.

6 GAELIC's Options for a Regional Union Database

With the completion of implementation of the INNOPAC library system in the six Phase 1 libraries in 1998, the need to amalgamate their bibliographic records and holdings together in one centralized database became urgent. Discussions revolved around the availability and choice of software, cost and sustainability, specifications, and integration with the databases of other consortia in addition to the SACat. INNOPAC offered two products for union databases:

1. The INN-Reach system, developed originally for OhioLink, which was excellent for resource sharing, inter-library loan transactions and automatic upgrading of bibliographic records on local systems, but did not allow for centralized cataloging because this was done on OCLC WorldCat. The consortium would need to purchase the INN-Reach software as well as a special module for loading onto local INNOPAC systems to enable them to integrate fully; and
2. The new software being developed for the National Library of Taiwan ("Taiwan version"), which would allow for centralized cataloging but was not yet ready. This system could integrate with all library systems that accommodated electronic data interchange.

At the same time, Sabinet Online, the newly formed for-profit arm of SABINET, was seeking a replacement for the SACat, which was by then technologically and functionally out of date and unable to keep up with the advanced systems being implemented by the consortia. Furthermore, the SACat was costly to maintain and had poor-quality records with many duplicates as a result of the lack of authority files and lack of quality control, as well as the decision to choose completeness of holdings over quality of bibliographic records.

The symbiotic relationship between SABINET and the consortia was recognized by the Mellon Foundation, which felt that it was important that a workshop be convened between these parties to gauge the level of support for a national, rather than regionally based, union database. A unified approach would realize the Mellon Foundation's objectives for national library collaboration in South Africa.[10] At that time, it was estimated that GAELIC as a regional consortium held 40% of South Africa's information resources, while CALICO held 30%.

At a joint workshop held on September 7, 1998, the following requirements for a national infrastructure to support shared cataloging and interlending were defined:

- The need for a shared, cost-effective document delivery system in South Africa;
- The importance of an affordable national information system;
- Less original cataloging. Shared cataloging on a high-quality, cost-effective system should be encouraged;
- The functionality of the system is more important than the platform on which it is housed;
- There should be end-user benefits and end-user access; and
- South Africa should have a joint collection development strategy based on a distributed national collection.

As a result of this workshop, the Mellon Foundation supported a proposal for funding for the redevelopment of the SACat and an interlending system, both of which currently resided on an ERUDITE system.

GAELIC and Sabinet Online were both faced with the problem of not being able to find union database software that was able to fulfill the requirements for both resource sharing and shared cataloging. Various options were investigated, and Sabinet Online finally decided to choose INNOPAC's 'Taiwan version' for shared cataloging and OCLC's Document Retrieval and Supply System (DRSS), locally named ReQuest, for interlending. It was also decided to use OCLC WorldCat as a cataloging utility for original and copy

[10] GAELIC National Union Database. See http://www.gaelic.ac.za/national_union_database.html.

cataloging, and that no original cataloging would be done on the new SACat in order to maintain it as a database of high quality. GAELIC dropped its search for union database software and adopted the Sabinet Online strategy outlined above. As GAELIC could not afford its own union database, it had to utilize the scoping functionality on SACat as well as MagNET, SABINET's search and retrieval system for end-users, to limit searches to GAELIC holdings only.

While these decisions were being made and the new SACat was being implemented in 1999, GAELIC's phased implementation was continuing unabated, and institutions were getting used to doing original cataloging on their local INNOPAC systems—and probably getting back to their old bad habits. They also started using other options, eg the Z39.50 option in the cataloging module, to the detriment of shared cataloging and complete holdings on SACat.

7 The GAELIC Scope on SACat: Pros and Cons

The scoping product in INNOPAC allows users to confine their searches at the outset to a subset of the database, such as location. Sabinet Online decided to have five location scopes on SACat:

- GAELIC/FRELICO together;
- CALICO ;
- SEALS;
- ESAL;
- South African National Bibliography (SANB).

There were many benefits to GAELIC for using the SACat as its union database, including:

- Not having to pay for its own software, thereby removing the problems of affordability and sustainability;
- Automatically being part of a national collaborative effort for shared cataloging and resource sharing;
- The ability to limit searches to GAELIC libraries only; and
- The ability to identify GAELIC holdings for inter-library loan purposes.

However, there were also a number of disadvantages in giving up the idea of a GAELIC union database, including:

- Lack of control over the union database, because it is administered solely by Sabinet Online. GAELIC has no access to its own headings reports, cannot draw consortium-level or institutional-level statistics, cannot create its own lists for error detection or checking of holdings, etc. A key question is whether Sabinet Online will be able to render a statistical and reporting service, and at what cost;
- Lack of control over the quality of bibliographic records in the GAELIC scope, particularly because this could affect the success rate of searches. GAELIC libraries would like to do their own quality control within the GAELIC scope;
- End-user access to SACat through MagNET in order to see the GAELIC scope will have cost implications for libraries, since not all libraries allow their users access to MagNET;
- Inter-library loans are done on the ReQuest system via MagNET, yet each GAELIC library has an inter-library loan module for pre-requests by end-users. To make full use of the latter, some libraries would like to have an interface built between the two systems;
- End-user access to electronic resources within a union database is a complex issue. Not only does each institution have its own URL and/or IP restrictions, but each consortium or institution has its own access agreements with the vendors. The SACat still needs to address these issues;
- The Z39.50 option on MagNET is not properly utilized because of firewall restrictions and/or network problems at the various GAELIC sites;
- Other Z39.50 problems are the large number of duplicates retrieved in a search of several million records, and that 'See References' in the authority record are not taken into account; and
- The holdings format is not adequate for collection development and statistics. The holdings statement needs more detail, especially serials holdings for inter-institutional rationalization. At present the holdings

record on SACat consists of the following string of subfield codes: $aCall number $bLocation $cVolume, etc. $xLoan restriction.

These subfields cannot be used for statistical reports for collection development purposes. It would be desirable to have more subfields to accommodate media/format, code for subjects, code for identifying publisher, code for identifying titles that form part of existing/future consortium agreements, code for identifying and retaining the last holding of a serial title in the region or South Africa, etc.

8 GAELIC's Cataloging Problems on the SACat

In terms of functionality, the new SACat had a number of problems that had to be addressed with the vendor, including the cumbersome way of updating holdings statements.

Ironically, instead of reaping the rewards of using the same software, GAELIC libraries have more problems with copy cataloging than non-INNOPAC libraries. This is mainly because of the functionality problems of the dual connection that INNOPAC libraries use for downloading records from the SACat into their local systems. When the dual connection is open, duplicates are generated, since there is no matching on ISBN or OCLC number. The item information must then be transferred from the incomplete record to the full record and the duplicate deleted.
There are three possible procedures for cataloging:

Method 1:

1. Open Dual Connection on Cataloging Workstation.
2. Open local and central connection.
3. Search central database, SACat, for bibliographic / authority record.
4. Find bibliographic / authority record.
5. Save to local database.
6. Display screen to set institution holdings for bibliographic record on SACat.
7. Search local database, add local item data and other relevant data to bibliographic record and save.

Method 2:

1. Find no bibliographic/authority record on SACat.
2. Open OCLC session via CatME to WorldCat.
3. Search WorldCat for bibliographic/authority record.
4. Find bibliographic/authority record and export to SACat (the system automatically validates the record and sets the holdings) via a networked interface.
5. Repeat steps 1 to 7 in order to make the bibliographic records available on the local database.

Method 3:

1. Find no bibliographic/authority record on SACat/WorldCat, or records need to be upgraded.
2. New full bibliographic records are created on OCLC WorldCat.
3. New authority records are created only by NACO participants on OCLC WorldCat.
4. Bibliographic or authority records are upgraded on OCLC WorldCat.
5. Export new / upgraded bibliographic / authority records to SACat via a networked interface.
6. Repeat steps 1 to 7 in order to make the bibliographic / authority records available on the local system.

9 GAELIC's Cataloging Decisions for National and International Compatibility

GAELIC's aim of promoting shared cataloging could only become reality if common standards and practices were established, and the GAELIC Cataloging and Technical Services Workgroup (GCATS) had a lot of work to do in this area. A survey carried out among the first twelve members of GAELIC in 1996 revealed a great diversity of cataloging practices:

- Number of library systems: 5 (5 ERUDITE, 3 Stylis, 2 ITS, 2 in-house);
- MARC system used: 10 SAMARC, 1 USMARC, 1 UKMARC;
- Language of catalog: 10 English, 2 Afrikaans;

- Format of authority records: 1 USMARC, 11 local system format;
- Form of names: 4 use only initials and surname, others use full names;
- Contribution to SACat: 6 contribute bibliographic records and holdings, 2 contribute holdings only, 2 contribute incomplete holdings, 2 do not contribute;
- Extent of original cataloging: 9 perform all original cataloging, 2 download from SACat only, 1 downloads from OCLC WorldCat and SACat.

These differences needed to be resolved before there could be any talk of shared cataloging or the merging of catalogs in a union database. In choosing the library system, the functionality rather than the particular MARC system was the overriding consideration, namely that it should be Web-based, have the latest bibliographic and technical developments, quality control mechanisms and electronic data interchange, and incorporate international standards such as ANSI, NISO, ISO and especially Z39.50. It was seen as a bonus that the INNOPAC system chosen was USMARC-based, as the SAMARC system was no longer being updated and did not include new technological requirements such as URLs for Internet linking or other requirements for new formats.[11] This decision by GAELIC to be the first consortium in South Africa to change to a USMARC-based system no doubt influenced other consortia and libraries to do likewise.

GAELIC members were keen to become part of the global library community, and GCATS took the following decisions to ensure that they conformed to international standards:

- Changeover from SAMARC to USMARC (now called MARC21),[12] since this would allow for greater use of copy cataloging
- Language of the library catalogs to be English

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[11] D. L. Man and L. Erasmus, "Changing to Another MARC format: the GAELIC position," paper presented at Future MARC Format for South African Libraries, Pretoria, April 24–25, 1997.

[12] MARC Standards. MARC21. http://www.loc.gov/marc/.

- Cataloging rules and guidelines to be AACR2R with all revisions and updates,[13] Library of Congress Rule Interpretations,[14] OCLC bibliographic formats and standards[15]
- Library of Congress core records with a few local adjustments
- ALA-LC Romanization Tables: Transliteration Schemes for Non-Roman Scripts[16]
- MARC21 format for bibliographic records, authority records and holdings
- Library of Congress subject headings (LCSH) and Medical Subject Headings (MeSH). Where a local deviation is required, formal approval is sought from the Library of Congress, e.g. kwaito (music).
- Library of Congress Name Authorities on OCLC WorldCat.
- Classification systems are Dewey Decimal Classification (latest edition), Library of Congress Classification System and National Library of Medicine Classification System. Local deviations are not recommended except where there is a formal agreement to deviate because Dewey does not accommodate local needs satisfactorily, eg classical literature, African languages. GAELIC's proposed changes to the schedule for African languages have been incorporated in DDC Edition 21 (see Table 4).[17]

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[13] *Anglo American Cataloging Rules*, second edition, revised 1988, under the direction of the Joint Steering Committee for Revision of AACR, eds. Michael Gorman and Paul W. Winkler (Ottawa, Canadian Library Association: ca. 1988).

[14] *Library of Congress Rule Interpretations* (Washington DC: Cataloging Distribution Service, Library of Congress, 1990).

[15] OCLC Bibliograpic Formats and Standards. See http://www.oclc.org/oclc/bib/about.htm.

[16] *ALA-LC Romanization Tables: Transliteration Schemes for Non-Roman Scripts* (Washington, DC: Library of Congress, 1991). Approved by the Library of Congress and the American Library Association. Tables compiled and edited by Randall K. Barry.

[17] *Dewey Decimal Classification and Relative Index*, devised by Melvil Dewey, Edition 19, Vol. 2 (Albany: Forest Press, 1979); *Dewey Decimal Classification and Relative Index* devised by Melvil Dewey, Edition 21, Vol. 2 (Albany: Forest Press, 1996).

Table 4. Dewey Decimal Classifications

Dewey Decimal Classification Edition 19		Dewey Decimal Classification Edition 21	
African Languages	-96	African Languages	-96
Bantu languages	-963 9	Bantu languages	-963 9
Tswana	-963 9	Tswana	-963 977 5
Xhosa	-963 9	Xhosa	-963 978
Zulu	-963 9	Zulu	-963 986

All these cataloging decisions have been debated with other libraries through the Sabinet Online Standards Committee and have been adopted as national standards for use in the SACat.[18] Having made these decisions, GCATS also had the task of implementing them. It arranged many training sessions in preparation for the implementation of INNOPAC in the various libraries, and also to raise the level of cataloging expertise in all the GAELIC libraries. Being the pioneer in MARC21 system implementation presented its own challenges, since the trainers had to train themselves before they could train others. These training sessions covered various areas, including MARC21 Bibliographic; MARC21 Authorities; cataloging of law publications, music publications, electronic publications and serials; assigning Library of Congress subject headings; using the INNOPAC cataloging module, and downloading bibliographic records from SACat and OCLC WorldCat. The standardized approach to cataloging policies and practices was seen as a key benefit to consortium membership and INNOPAC system implementation, in addition to training by experienced catalogers and sharing of ideas and expertise.

[18] SABINET Online Standards Committee.
See http://www.sabinet.co.za/sabicatweb/sabicat_standards.html.

10 Authority Control and Participation in NACO

Most systems used by GAELIC libraries prior to 1997 did not allow for authority control, although some libraries used the Library of Congress name authorities and subject headings as guides. The SACat itself did not have an authority file, and could not be used as a reference source.

It was agreed that the proposal for donor funding should include database conversion from SAMARC to MARC21, and for the newly converted MARC21 database to be sent for authority headings matching and cleanup. The result of this process was that each of the libraries started off with a much cleaner catalog, as well as name and subject authority files for all the headings that matched an existing name or subject heading in the Library of Congress authority files. The hit rate for the GAELIC libraries varied between 67% and 87%. The more closely a library conformed to the Library of Congress's authority control practices, the higher the hit rate.

GAELIC also compiled the Authority Control Manual and Policy Guidelines for GAELIC Libraries[19] in 1998 to ensure the adoption of a standardized approach to authority control and to maintain the quality of the new authority files.

In 1999, GAELIC libraries decided to formally become participants in the Names Authority Cooperative (NACO), a part of the Program for Cooperative Cataloging (PCC) managed by the Library of Congress and consisting of nearly 400 cataloging organizations worldwide.[20] The reason for this was that GAELIC had agreed to accept the Library of Congress Name Authorities as the sole source of name authority headings, but this meant acceptance of the many incorrect headings for Southern African authors. Over the years, the Library of Congress had had little or no knowledge of Southern African languages or access to local reference sources, with the result that many South African headings were incorrectly established, e.g. N.P. van Wyk Louw appeared as Van Wyk

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[19] *Authority Control Manual and Policy Guidelines for GAELIC Libraries*, prep. by Hester Marais, Ann van der Walt and Welna van Eeden (GAELIC, ca. 1998).

[20] Program for Cooperative Cataloging. NACO. See http://www.loc.gov/catdir/pcc/naco.html.

Louw, N.P. This has since been corrected by GAELIC to Louw, N.P van Wyk (Nicolaas Petrus van Wyk) 1906–1970. The first group of libraries received NACO training from a Library of Congress trainer in July 2000. Since then, GAELIC has been accepted as a member of PCC and acts as a funnel for interaction with Library of Congress.

Table 5. NACO Statistics, October 1, 2000, to March 31, 2002

	Record Created	Records Changed
GAELIC	2,551	934
Rest of South Africa	581	69

These NACO headings are posted on the GCATS listserv as well as the Sabinet Online Standards Committee website. GAELIC plans to expand its international activities by participating in NACO's series training.

11 GAELIC's Progress and Achievements

To measure GAELIC's progress from original cataloging to copy cataloging between 1997 and 2001, a subsequent survey was done and showed remarkable declines in original cataloging (see Table 6).

The survey conducted in 1997 among 11 GAELIC libraries in preparation for the implementation of the common library system highlighted the high percentage of original cataloging done by the GAELIC libraries on their local systems, although bibliographic utilities or services, e.g. SACat, Library of Congress MARC records, were available for copy cataloging purposes. Only four of the GAELIC Libraries explored the copy cataloging option, either by downloading bibliographic records from SACat (if their local systems supported the capability) or importing full Library of Congress MARC records from other sources.

Table 6. Original Cataloging in 1997 and 2001

GAELIC libraries	% in 1997	% in 2001
Medical University of South Africa (Medunsa)	10	20
Potchefstroom University for CHE	15	20
Rand Afrikaans University	100	20
Technikon Northern Gauteng	30	50
Technikon Pretoria	100	30
Technikon South Africa	100	10
Technikon Witwatersrand	100	20
University of Pretoria	100	20
University of South Africa (Unisa)	60	20
University of the Witwatersrand	100	20
Vista University	100	20
* Technikon North West	–	10
* Vaal Triangle Technikon	–	20
* University North West	–	20
* University of the North	–	100
* University of Venda	–	20

* Became formal members of GAELIC in 1998 and were therefore not surveyed in 1997.

A follow-up survey conducted among the 16 GAELIC libraries at the end of 2001 showed that the percentage of original cataloging done by the GAELIC libraries changed dramatically. Thirteen of the GAELIC libraries reported that they were cataloging between 10% and 20% of the new items received originally. Only two libraries initially experienced no dramatic improvement

in their rate of original cataloging; however, that was mainly due to networking problems between their sites and the bibliographic utilities, which have fortunately been resolved. One library is experiencing problems and is doing no copy cataloging.

The implementation of the INNOPAC/Millennium system and the ease of downloading full bibliographic records from either SACat or OCLC WorldCat via the CatMe facility contributed to the lower rate of original cataloging done by the GAELIC libraries.

The general conclusion from the GAELIC libraries was that most of the original cataloging was required for non-English titles, South African published titles, local theses and dissertations, as well as very specific subject areas not covered in the bibliographic utilities, such as alternative health science.

Table 7. Cataloging Statistics April 2001 to March 2002

	New records added to WorldCat		Records copied from WorldCat to SACat	
GAELIC	3,459	35%	49,106	46%
Rest of South Africa	6,378	65%	58,451	54%

It is evident that GAELIC members have made good progress during the past five years in terms of shared cataloging, and there could be many more developments during the next five years as the GAELIC scope is developed. However, there is concern about the need for speed in loading GAELIC holdings onto the SACat for resource sharing purposes. One of the GAELIC member libraries has written a program for the batch loading of holdings onto the SACat, and this is being tested. The GAELIC scope will not be successful until all member holdings are loaded and kept up to date and accurate.

12 The Future

In June 2002, the long-awaited final report of the Department of Education was released, setting out a new model for higher education in South Africa that would

reduce the number of institutions from 34 to 21 through mergers and closures. Some institutions would remain as separate institutions.[21] It is proposed that GAELIC institutions will be reduced from 16 to 8, which may result in the merging of their databases. GAELIC's system architecture may therefore need to change to a new one, which will be a mixture of the earlier models discussed, i.e. separate systems as well as regionally distributed clusters.

In hindsight, GAELIC's decision to opt for separate servers and systems at each institution will actually help these new developments, because it will not be necessary to undo any databases, only merge already established ones. There will be a high initial cost in merging and deduplicating the databases and changing holdings statements, but in the long run there will be savings in maintenance costs. As far as the GAELIC scope is concerned, the current way of working with OCLC WorldCat and SACat will probably remain unchanged, but holdings statements will have to be updated. There are interesting times ahead, and GAELIC will have new challenges to face.

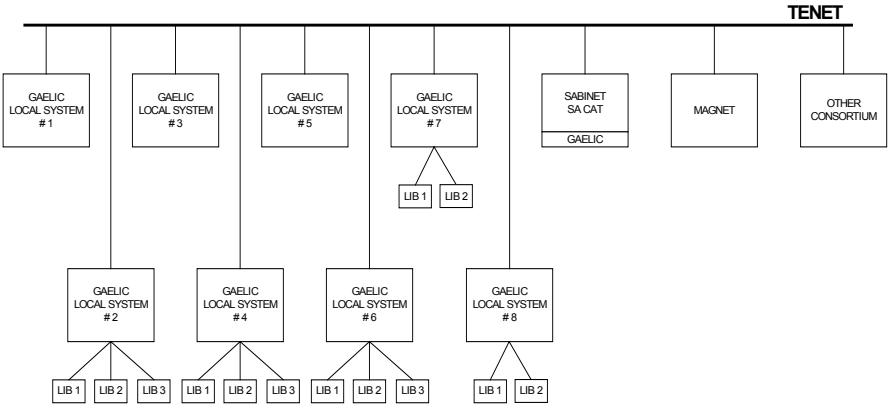

Figure 4. New GAELIC Architecture

[21] "Transformation and Restructuring: A New Institutional Landscape for Higher Education" (Ministry of Education) (June 2002).
See http://education.pwv.gov.za/Policies%20and%20Reports/2002_Reports/he/transrestructuring/transformation_and_restructuring.htm

13 Evaluation

GAELIC's progress and achievements in terms of original versus copy cataloging and the pros and cons of giving up the idea of a regional union database in favor of a national union database are discussed in earlier sections. But how does the SACat measure up in terms of a real versus a virtual catalog, and the success or failure in meeting GAELIC's requirements for a union database and in cost savings? Have the right decisions been made?

SACat is a physical union database and meets the requirements of GAELIC librarians for cataloging and interlending purposes in the South African context. Although expensive to maintain and not current in terms of GAELIC holdings, the quality of the bibliographic records can be controlled. Access is stable and reliable, and there is no dependence on Z39.50 access, the problems of which were discussed above. End-users are able to access the SACat via MagNET and to request material through the linked ReQuest Interlending module. There is less dependence on high bandwidth, which in South Africa is expensive and not readily available.

In terms of cost savings, a record is copied from OCLC WorldCat once by a member library, and all other libraries make use of this same record. This saves staff time and OCLC costs. Libraries can then add their holdings symbols to this record on SACat, thereby allowing other libraries to borrow the item. According to a GAELIC survey, for the period 1997–2000, an average 35,300 documents were supplied annually within the consortium. Universities supplied 95% of these documents, and technikons 5%.[22] This is an indication of the extent to which the SACat and the ReQuest Interlending modules facilitate resource sharing within GAELIC alone, not taking into account the extensive resource sharing with libraries throughout South Africa. This level of activity will increase once the GAELIC libraries are able to load and update their holdings onto SACat and the GAELIC scope is fully utilized.

[22] Visser.

There is still a great deal of work that needs to be done on the GAELIC scope on SACat, and cataloging problems need to be sorted out, but it is important that the GAELIC libraries and Sabinet Online maintain the interest and goodwill to make the union database as accurate and up-to-date as possible.