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ABSTRACT

The Pacific Information Center (PIC) was established in 1983 to identify, collect, and record information about materials from and relating to the South Pacific region. The project involves sharing access and information among countries in this region. PIC, which works in conjunction with the University of the South Pacific (USP) Library, receives requests for information from government officials, students, researchers, lecturers, and business people (local, regional, and from other regions) about various aspects of marine and fisheries; agriculture; environmental studies; small industries; communications; rural technology; and politics/government. Because services of and demand for PIC increased rapidly, it was determined that PIC's existing base needed to be strengthened and that computerization was essential. This report assesses the various computerization options available to PIC and the USP Library. Information was gathered about the following: (1) hardware and software options; (2) configurations for those options within a fixed price range; and (3) staffing requirements for each configuration. Numerous systems were considered. However, the Minisis and the Urica systems emerged as the two most preferred. Each of these systems was further analyzed in terms of software, hardware, costs, user group support, and general staffing. It was recommended that USP/PIC look more closely at the application of the Urica hardware and software for all of its orientations. Additional information on the sites visited and the computer systems examined is appended. (SD)

Automation of the University of the South Pacific Library and The Pacific Information Centre

A Report

by

Daniel Ferrer

The University of the South Pacific
Library
October 1985

AUTOMATION OF THE UNIVERSITY OF THE SOUTH PACIFIC AND THE PACIFIC INFORMATION CENTRE

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This report has been compiled in consultation with the University Librarian, Mrs Esther W. Williams

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I would like to thank the International Development Research Centre (IDRC), Canada for so graciously funding my tour and The University of the South Pacific for granting me leave to visit information centres during my tour. In addition, I would like to thank Mrs. Esther W. Williams (University Librarian) for her continuing support on this entire project and assistance in writing this report. I am especially grateful to Maria Ng (IDRC), who has given her support and guidance for this project. Also, Sally Tan from IDRC has given administrative support. Librarians and information workers whom I met on the tour and who are too numerous to mention. I thank them one and all for their time. However, I would like to particularly thank Tony Richardson, David Fraser, Dick Goodram, Peggy Hochstadt, and Bess Flores. I would like also to thank all of the hardware vendors who gave their time to answer innumerable questions. Of course, Puspha Ram for doing the word processing and typing. Again, thanks.

Daniel Ferrer

AUTOMATION OF THE UNIVERSITY OF THE SOUTH PACIFIC LIBRARY AND THE PACIFIC INFORMATION CENTRE

INTRODUCTION

This report is the result of a tour of 18 library and information services sites, undertaken during June and July 1985. The countries included in the tour were New Zealand, Australia, Singapore and New Caledonia. The tour was funded by the International Development Research Centre.

It has been attempted, in this report, to give a detailed analysis of the computerization of the Pacific Information Centre and the USP Library. Briefly the report looks at the various options available to the Pacific Information Centre and USP Library.

The two most viable options are then analysed in terms of software, hardware, costs, user group support, and general staffing. A summary comparison of the two systems is given at the end of the report.

MID-PROJECT VISIT

During the visit to PIC in February 1984 by Martha Stone, Director, Information Services Division, IDRC, Ottawa it was recognised that PIC was meeting its objectives well. To continue with PIC's on-going activities it was seen that PIC's existing base must be strengthened. Discussions and meetings suggested that PIC must, at the earliest

possible time, examine possible computerisation of information activities as well as develop subject sectors.

In response to these discussions IDRC agreed to the funding of a study/tour programme on the computerisation of PIC as preparation for consideration of computerising PIC operations.

TERMS OF REFERENCE

The basic terms of references then are as follows:

1. Determine all of the hardware/software options that we could have in the Pacific Information Centre and the University Library.
2. Determine the configurations for those options in the price range of F$50,000 to F$100,000 for the Pacific Information Centre as well as determine the costs for a complete library system.
3. Analyze the configuration and determine the advantages and disadvantages for the Library and all of the configurations. This includes both hardware and software.
4. Determine staffing requirements for the different configurations.
5. Give a report on the entire work done during the computerization tour.

The computerization tour is a fact finding project and does not include making any final judgement as the best system or the priorities of the computerization of the Pacific Information Centre and the University Library.

At the end of the tour it was recognised that visits to University of Honolulu ADLIB(US) and University of Papua New Guinea (UPNG) ADLIB (UK) were necessary to have a better overview of developments in the region. University of Hawaii was visited by Esther Williams and UPNG is yet to be visited by Mr Nandan in early November. It should be noted here that the visit to University of Hawaii was very worthwhile as as we covered many aspects of this project that were not highlighted earlier, e.g.the need to consider conversion costs, incorporation of new technology and costs, possible co-operation in information exchange via exchange of discs, tapes and use of satellites in the future. Relevant details of this visit are included in this report.

It is hoped that the visit to UPNG will provide us with additional information that will be useful.

This report reviews the various Library Systems visited.

It will be important to note here that during this study tour the following considerations were maintained throughout.

1. The system chosen for PIC and USP Library must be one which has a servicing agent in Suva, Fiji.
2. It must have efficient maintenance services.
3. The system must be used in Fiji and this part of the world.
4. While the system will be for PIC operations it must also have modules that can accommodate other library functions and routines.

BACKGROUND

PIC was formally established in 1983 with a grant from the International Development Research Centre (IDRC) Canada. The project is in its third year of Phase I.

Objectives of Phase I included primarily the identifying, collecting and recording of published and unpublished materials originating in the region as well as materials about the region published outside and disseminating information about them. The project allows for sharing of information and access by individual countries of the region to the collective resource of publications arising from the research activites in the region.

In its Report for the period April 1984-March 1985 the following are highlighted.

In the second year of operation the Pacific Information Centre recorded dramatic increases in its various activities and services. Particularly successful was the task of collection and recording of

materials on the Pacific region for inclusion in the various PIC publications. This directly affected the number of entries that appeared in the bibliographies:

> the South Pacific bibliography 1982 issue recorded 1500 entries, the 1983 issue recorded 3,500;
>
> the South Pacific Union List of Periodicals recorded 1,200 entries for the 1982 Supplement and 4,000 entries for 1983-84 Supplement;
>
> the South Pacific Periodicals Index recorded 2,500 entries in 1977-78; 3,500 entries in 1979-81

The most gratifying trend was the continued growth in the number of participating libraries contributing their records for inclusion in this co-operative bibliographic project. For instance, the South Pacific Union List of Periodicals 1982 Supplement had two (20) contributors compared to the twenty (2) for the 1983-84 supplement.

Making available this material and data to users, whenever and wherever they may be, was an essential PIC service. Information requests received were sufficient to keep the information section of the University Library very busy.

Also during the year PIC pursued the need to establish in each participating country a national focal point. PIC in association with the Library was able to have consultations and discussions with government libraries and USP Centre Directors in a number of countries. To date focal points are in Cook Islands, Western Samoa, Tonga, Fiji. For Vanuatu, the USP Centre and its Librarian

participate in PIC work. The Solomon Islands, Kiribati and Tuvalu have been approached and replies received have been positive.

PIC's 1984 training programme was manageable. A training workshop was held for agricultural librarians and information officers in the region and another on ISBN and ISSN. Two internships of focal point staff members were organised.

Information Service

Requests for information, general and specialised, are received by PIC by letter or telephone. The range of people (local, regional and overseas) making requests is broad including government officers, students, researchers, lecturers, business people, students of other tertiary institutions in the region. The range of questions has been wide also from very general and easy to attend to questions to very detailed and specialised requiring the input of academic staff of USP and expertise from outside the University. Information questions have covered various aspects of the following:

(i) marine and fisheries
(ii) agriculture
(iii) environment studies
(iv) small industries
(v) communications
(vi) rural technology
(vii) politics and government

In 1984 we recorded 150 requests received by letter but failed to keep records of telephone requests and requests received at the Issue Desk of the Library. This demand is now monitored more closely. The ability to meet these demands has been good. If PIC

is not able to fulfil completely the information query, this is referred to another source mainly an expert in the field working in the region or in the University. Occasionally we seek assistance from abroad.

Computer Searches

It is envisaged that the demand for this will grow. In the period under review 76 computer searches were processed. We acknowledge the National Library of Australia's assistance in this area of PIC work.

Advisory Service

This is an important service. PIC draws on USP Library staff for this work. In 1984 work was done in

Vanuatu
Tonga
Kiribati
Tuvalu

The needs were mainly for professional and technical advice, assisting in the setting up of the catalogue, organisation of the library, advice on legal deposit and staff training.

Training

In 1984 PIC was approached to conduct training for:

1. Agricultural librarians and information officers in the region. This was held from 16-2 July, 1984, Suva and was funded by the Commonwealth Secretariat.

2. Librarians on ISBN/ISSN

   This was held from 28th November to 7th December 1984 and was funded by USP, IDRC and Unesco.

Library Assistants from the region were attached to USP/PIC for training. They were:

Ms Margaret Namel, National Library of Vanuatu
6 weeks

Ms Tereu Urirau, Cook Islands Library and Museum
5 weeks

Other training workshops conducted by the Library and had direct effect of PIC included:

1. USP Certificate in Librarianship Regional Workshop held in April 1984. 2 weeks.

2. Workshop on Information Sources in Libraries and the Community, held in May. 2 days. Organised by the Fiji Library Association.

3. Workshop on equipment for libraries. This was held in September. 2 days. Organised by the Fiji Library Association.

OUTPUT AND PRODUCTS

It is planned that these bibliographies be produced with the aid of the computer.

1. PIC newsletter (quarterly) which serves as a means of effective communication among members of the network.

2. South Pacific Union List of Serials (annually) which provides a location list for periodical and serial titles available in the libraries of the region. The 1983-84 supplements lists 4,000 entries. The list is arranged alphabetically with entries following AACR2. 20 libraries in the region participate in thiis.

3. South Pacific Register of Research(annually) which inventorize current research projects in the region relating to development-oriented subjects. Approximately 400 entries are added annually.

4. South Pacific Bibliography (annually) which lists published and unpublished material relating to the region, whether originating in the region or published outside the region. The latest issue is 1983. This has 3,000 entries. Entries include holdings of libraries in the region. There is every indication that this number will increase.

The Bibliography is arranged by Dewey numbers and includes author and title index, subject index, publishers and printers directory, periodicals listing arranged alphabetically by geographical area and legal notices, statutes, etc. listed alphabetically by country. Full bibliographical records using AACR2 for each entry is given including prices.

5. South Pacific Periodicals Index (annually). It aims to bring together in one annual publication all articles published on the region (USP countries) anywhere in the world. It is arranged alphabetically by subject and within subjects alphabetically by author.

6. Topic and country-specific bibliographies. The size of bibliographies varies. During 1985 PIC completed a TESL which included 100 entries. Visitala which was published in July 1985 had 4,800 entries. The entries follow as much as possible AACR2 and include author, subject indexes. The number of bibliographies produced during the year varies.

Currently PIC/Library is involved in the following:

1. Population and migration bibliography
2. Women in the South Pacific bibliography
3. Kava bibliography

EXISTING PIC FOCAL POINTS INCLUDE:

Cook Islands	Carmen Temata, Librarian, Cook Islands National Library, P.O. Box 71, Rarotonga. Phone: 26468
Kiribati	Kunei Etekiera, National Library and Archives, P.O. Box 6, Bairiki, Tarawa. Phone: 256 Bairiki
Solomon Islands	Walter Basile, Librarian, National Library Service, P.O. Box 165, Honiara. Phone: 21601
Tonga	Judy Ma'ilei, Information Officer, Institute of Rural Development, USP, Private Bag, Nuku'alofa. Phone 21955 or 22656 Mana Tuita, Librarian, USP Centre, P.O. Box 178, Nuku'alofa. Phone: 21540
Tuvalu	Kataloto Lopati, Librarian, National Library and Archives, P.O. Box 36, Funafuti. Phone: 711
Western Samoa	Mataina Te'o, Librarian, Nelson Memorial Public Library, P.O. Box 598, Apia. Phone: 21028 Mikki Valasi, Assistant Librarian in Charge, Library, School of Agriculture, USP, Private Bag, Apia
SPC	Bess Flores, Librarian, South Pacific Commission, Library, Post Box D5, Noumea Cedex, New Caledonia.

Phone: Noumea 262000
Telex: 139 NM
Cable: SOPACOM

SPEC

Stephen Vete, Research Officer, South Pacific Bureau for Economic Cooperation, Ratu Sukuna Road, Suva, Fiji.

Phone: 312600

USP

Library, University of the South Pacific, P.O. Box 1168, Suva, Fiji.

Phone: 313900
Telex: FJ2276

Esther Williams, Librarian	Reference queries Equipment, Training
Phone: 313900 Ext. 282	
Elizabeth Reade, Assistant Librarian, Reader Services	Inter-Library Loans Photocopying Current Awareness
Phone: 313900 Ext. 284	
Judith Titoko, Assistant Librarian, PIC	General PIC matters and Bibliographies
Phone 313900 Ext. 287	
Daniel Ferrer, Assistant Librarian	Computer Searches
Phone: 313900 Ext. 287	
Salim Baksh, Assistant Librarian, Periodicals	Binding
Phone: 313900 Ext. 291	

However, from these visits the following general principles have emerged, which give an overview to the systems encountered and discussed by most of the experts.

LIBRARY SOFTWARE : GENERAL PRINCIPLE

There are some general principles concerning both the way library software is being developed and its on-going support which are important to consider in this report. The first basic continuum is between complete turnkey system and development systems based on Data Base Management Systems (DMBS). This can show us how the different library application software compares to one another.

LIBRARY APPLICATION

TURNKEY				SYSTEM DEVELOPMENT
Libramatic	VLTS	URICA	ADLIB(UK) Exsy	La Trobe (card)
GEAC			MINISIS	Palmerston (cir)
ADLIB (UH)				National Library of Singapore (cir)
				Ngee Ann (cir)
				University of Hawaii

The systems which are turnkey packages are on the far left of this continuum. These are systems which the users cannot change once they are set up. So, although they may be still parameterized upon

the initial installation, but in general, the systems cannot be changed or programmed by the users. However, as you go out of the continuum then the user themselves can make more and more changes. In general, the users program and design their own systems using tools given by the software vendors. In the case of ADLIB and Exsys systems the users indeed defined most of the system to match their own library's unique processing system. In addition, some libraries have developed their own systems to handle certain library functions. University of Hawaii has done this. They have their own system handling cataloguing and on-line circulation, public access, Acquisitions. Serials Reservations, Special materials are still to be developed. Except for La Trobe University, which developed their own in-house card reproduction system, the rest of the systems are circulation systems. Ngee Ann Polytechnic will be replacing their old in-house circulation system which runs on a Prime Computer with their new systems. They have recommended replacing that system with a URICA Library system.

The second continuum is in terms of integration. What this means is that the library system provides different amounts of integration between major library functions. For example, the circulation system uses the same bibliographic record as cataloguing subsystems.

Single System				Integrated Multi-subsystem
Libramatic	GEAC	VTLS	ADLIB	URICA
TechnoCrat	ADLIB(UH)		MINISIS	

The URICA system is the best example of an integrated library system. Indeed, the URICA Library system is also the most complete system. For example, it has the following subsystem: Cataloguing, Public Enquiry, Circulation, Monograph-Acquisitions, Serials Control, and Closed Reserves. Also it has Authority control over Authors, Subjects, and Titles with some level of Authority control over Publishers' names.

MICROCOMPUTER

To automate some operations using various microcomputers. This option is the less expensive of all of the options for PIC and does allow for an increase in productivity and better services in a few select areas of the library. However, in the long term it is not an integrated approach and has very limited expansion capabilities. There are also some library functions which would have to wait for several years before the microcomputers reach a level of being able to handle larger applications. This option would also split the database over several different systems. In addition, it would be very difficult for this database to be backup in a reasonable way and to transfer it to any other system at a later date. In other words, this would lock the data in a certain hardware/software system and would not be an open system. However, for some limited single applications this may still be the best option and the most

efficient way of using the computers. Also, there is limited software available for microcomputers that can be used by university or research library level of processing. That is, most of the library software for microcomputers is designed for small libraries or public libraries, which have limited requirements for technical processing, especially in the area of cataloguing where they might support only one author instead of multiple authors and restricted field lengths. This became apparent from seeing the Technocrat system at Nanyang Technological Institute in Singapore.

MINICOMPUTERS

There are many other systems available on minicomputers. most of these are too expensive to even look at. For example, a small VTLS system (which still needs huge amount of disk space) would start at around $200,000. Furthermore, many of these systems have no user base in New Zealand or Australia. Even VTLS is supported from the east coast of the USA. The GEAC system quotations in Singapore are running around $US500,000. In addition, the machine is not a standard minicomputer, but is rather created and built by GEAC. Another example is called "Book : An Automated Library Management System". This system was developed by Stowe Computer Consultants. Reportedly, this system is running in some 20 libraries in Australia. However, the vast majority of these are public

libraries, which have less requirements than academic bibliographic centres.

Another example is the ADLIB(UK) system. This system has been installed in three or four sites in the region. I had the opportunity to closely study the ADLIB system installed at the State Library of Tasmania. The ADLIB system is an open system which can be designed to do many different library and information retrieval functions. However, proper designing of the system would require considerable expertise and more development staff than most libraries have within their resources. The initial cost of software and the on-going cost of additional staff would be exhorbitant. For a small operation, it would seem to rule the ADLIB system off of the shortlist. It is difficult to judge the practicality of having the ADLIB system as most of the systems in the region are still in the development stage as against most other turn-key systems which are up and running.

There is also an ADLIB (UH, University of Hawaii) system developed in the United States that is still being implemented in Hawaii. However, the costs for a system of between 125,000 and 500,000 records is in the range of US$250,000 to US$790,000. Only two modules are being offered at present, namely, cataloguing/on-line catalogue and circulation.

PIC- PREFERRED OPTIONS

Working with this background two systems have emerged to be the preferred options for both PIC and the Library.

I. MINISIS

The first alternative is to concentrate solely on creating a database of bibliographic information and using this database to do information retrieval. This would also include the production of bibliographies and other publications. In general, this points towards the production of hardcopy and printed works as opposed to interactive online information retrieval for users. The best system that would meet these needs is clearly the MINISIS system. This system could not be used to meet most of the standard library functions like circulation control or serials control. Rather, it was designed as an information retrieval package to meet the needs of an information or documentation centre. Also, it does not have a user friendly interface for searching. So, it was not designed to be used by the general public, but rather the query language or QUERY processor is to be used by the information specialist. This system also has authority control over various indexes and a multilingual thesaurus, which supports up to nine different languages. In addition, this system has different ways of linking concepts together with any given descriptor and can be related by either Broader Term or Narrow Term or Related Term. Although this is not the same as the Library of Congress usage, nevertheless, the relationships can be represented.

The basic advantages are:

- Information retrieval
- Variety of formats
  Books, serials, articles, conferences, reports
- multilingual thesaurus
- bibliographies

MINISIS HARDWARE

HP-3000 SERIES 37

1	MByte Memory
14	Terminal Ports
3	55 Mbyte Disk Drive
1	Cartridge Backup
10	Model 2392 Terminal
1	1600 bpi Tape Drive

The Hewlett-Packard hardware is one of the most reliable computer hardware on the computer market today. There are several HP-1000 in the South Pacific Commission in Noumea and they have a total of 2 hours unscheduled down time in the last 18 months. This is quite remarkable. In Fiji, there is a HP-1000 at FINTEL and they have not had any down time from hardware in almost two years. However, they did replace one board, but this was not considered a problem. Their HP-1000 is used to keep surveillance on a $400 million system so flying people in from New Zealand for maintenance whenever it happens will not be a problem in terms of costs.

The basic configuration of the HP-3000 Series 37 has been designed to allow for individual parts to be down without the whole system

being down. There are no HP-3000 sites in Fiji. It has also been suggested that the best and the most cost effective maintenance and service for the HP-3000 in Fiji would be to mail the parts to New Zealand and have them serviced, then returned to Fiji. The cost to mail them would be between F$2.80 and F$2.90 per kg. Various parts of the system are not very heavy. For example, a terminal weighs 13 kgs. and the disk drive 12.8 Kgs. Flying maintenance people in from New Zealand is the other alternative. These costs are included in the tables.

MINISIS USER GROUP

MINISIS has a user group and many of the user group come from developed and developing nations around the world. For example, Tunisia, Colombia, Netherlands, Morocco, Romania, etc. They also publish a newsletter, the MINISIS Newsletter. In one of these newsletters there is a discussion of one of the problems that libraries have encountered with the MINISIS software, that is, the loading of MARC records into MINISIS. There are also positive reports of the implementation of non-Roman alphabets in MINISIS. In addition, there are also discussions of SDI processor and thesaurus development. In general, these point to an active user group spread around the world.

MINISIS SOFTWARE

The MINISIS System is an information retrieval package developed to run on HP-3000 equipment. This system was convertefrom a mainframe package developed in 1965 by the International Labour Office. The system was called ISIS (Integrated Set of Information Systems). However, this system could be used only on a large and expensive IBM mainframe. So, in 1976 the International Development Research Centre (IDRC) started a project to conmvert the ISIS system to a minicomputer. At the same time, IDRC decided to include more features. For example, the AGRIS and DEVSIS databases. Thus, the project finished in 1978 with a product known as MINISIS.

The MINISIS System supports two basic modules.

1. Acquisitions System
2. Cataloguing or Reference System

Acquisitions System

The acquisition system is used to input the initial order. At that time, the order is first checked to verify that it has not been ordered already and the library does not own a copy. Next the operator inputs an order record using the MINISIS in an online interactive mode. This record will later be used as the basis for a full cataloguing record. The record that has been input as an order record has the information for the publisher to supply the book and a due date. This due date can be searched and the PRINT program is

then used to print out in hard copy the orders that are overduie. In addition, the QUERY program can be used to select a group of records and then COMPUTE Program is used to calculate:

- costs of outstanding
- vendor by vendor analysis
- currency changes
- year by year orders

These can then be formatted for a report on the acquisitions of the information centre.

However, once the book is actually received, then the RELEASED program allows the book to be processed. This also takes it out of the Acquisitions subsystem and brings it to the attention of the cataloguing section.

Cataloguing System

The basic structure of MINISIS as an information retrieval package is in the design of the database. The system is based on relational algebra. Instead of building MINISIS on separate files, a new approach has been used. The entire MINISIS information is built into an integrated database design. Of course there are some important concepts that are then implemented into the overall database structure. Those are a standardization of all files and record structures. This is important for both the consistency for

authority files and for the easy of bringing online new applications. Entire new databases may then be created and is a straight forward matter. Furthermore, because of the database design the information may be easily shared between various different databases. Also there is a general overall reduction in disk space, since the data is only stored once. This makes for a very efficient system.

The basic structure of the database is not in MARC format nor a similar format. Rather, the database structure is in terms of a record and fields. A field may be subdivided into nine subfields. So, the MINISIS system has a limitation of only nine subfields for a field. Although this is a lot by standard data processing needs, nevertheless, the MARC format may contain up to 20+ subfields. However, not all of these need be contained within a field, but that many subfields are specified. The individual name of a subfield may not be repeated. The basic group field name must end with an 'o' zero. For example, 240, this can then be subdivided into nine subfields by changing the last digit, for example, 241, 242, 243... 249. Up to 256 of these group fields may be defined. MARC can use 999 fields within each record.

The basic programs that the cataloguing section uses to create the database are:

ENTRY

MODIFY

RELEASE

The ENTRY processor or program provides for online interactive data entry or inputting of bibliographic information. The ENTRY processor checks for various conditions during the input process

- data correct length
- numeric or text data
- validation for authority file
- duplication within the database

These are important functions which allow for the overall integrity of the database. These checks are then used to keep the database consistent.

The MODIFY processor is used to make changes to the database either online interactively or using batch processing. After they have been changed or edited, then they are run through the RELEASE program.

The RELEASE program set records as to being either locked or unlocked. Also, the RELEASE program handles the deletion of records. This program takes care of uninverting the indexes too.

QUERY

The QUERY program provides for retrieval of information from the database. This is done interactively online by the information

specialist. The QUERY programs also supports the multilingual thesaurus, so besides showing the number of posting on English language keyword the other languages will also be posted. For example:

```
Q >          =     school
SCHOOL  P    =     51
ECOLE   P    =     3
ESCUELA P    =     1
```

In this case, the French word for school has three postings and the Spanish word has one. The system then includes all 55 of the citations in one group or set.

Once the set is created other keywords can be comined by the use of Boolean operators, namely, 'AND', 'OR', and 'NOT'. Plus the keywords can be selected from certain fields. For instance, if we select 'titlem education', then MINISIS will look at only the monographic title field for the keyword 'education'.

COMCAT

The COMCAT or Computer-Output-Microfiche Catalogue has been used by the National University of Singapore instead of producing catalogue cards. They update the COMCAT every 3 months. It is a divided catalogue with separate series for:

- name
- title
- subject
- call number
- title/corporate name (serials)

Also, there are separate series for 'Personal Name see Refs' and 'Corp Name See Refs'. This means that 'see also' and 'not used' references are not included.

MINISIS AND MARC

The MINISIS system does not use MARC format either internally or for displaying to the user. Rather, the basic structure follows UNISIST (Intergovernmental Programme for Co-operation in the Field of Scientific and Technological Information). So, the MINISIS does not follow ISBD (International Standard Bibliographic Description) nor Machine Readable Cataloguing (MARC) format. This is a source of controversy and needs to be examined.

Presently, all bibliographic networds use the MARC format. Plus, all primary producers of bibliographic information for books and serials. For example, the Library of Congress, British National Bibliography, Canadian, etc. Hence, the MARC format is used universally. In fact, the MINISIS system will load MARC formated records, but it changes the record structure significantly. Some of the data from a MARC structure can not be converted into the MINISIS System, hence that data must be dropped. The question at this point is how important is the information that is being dropped. This is

hard to determine in a general way, but would have to be looked at closely. Some of the problems are:

1. MINISIS has a limit of five subfields, MARC no limit
2. MINISIS may not repeat subfields, MARC repeats subfields
3. MINISIS does not use indicators, whereas MARC uses two indicator positions per field or tag
4. MINISIS does not use subrecord directories, whereas MARC uses the concept and uses the 002 field as a subrecord directory
5. Although MINISIS does use non-Roman alphabets, it does not accept a full ALA character set from magnetic tape transfer

At the present time, MINISIS can not take information from its internal format and convert that to MARC format and write a tape. This is important for sending information from the MINISIS system to other computer systems at other information centres. However, the UNIMARC conversion has been tested but not yet released. Although as yet, it is not clear how much of the information is converted to the right fields. So, this would have to be examined more closely.

The program ISOCONV supports the reading or writing of magnetic tapes in the ISO 2709 international data exchange format. This format is the current one that MINISIS supports, but is somewhat limited and generalized. For example, the standard says it does not define 'the meaning assigned to the tags, indicators, or identifiers'. In other words, it is a very general standard. Furthermore, the MINISIS program BATCHIN allows for data to be input into MINISIS in other formats that are not ISO format. This has

been developed to allow for locally developed formats to be input into MINISIS.

II. URICA

The URICA system is strong in some basic areas. The first is that it is integrated system which provides for the automation of all of the major functions of a university library. So, it is an integrated system and its a complete system, that is, it is not lacking any major functions. URICA does not have a strong emphasis on circulation control, but rather, its strongest areas are cataloguing and authority control. Another strong advantage over many other systems is its database structure. What it means is simple. It stores information in variable length records in all of its database applications. Correspondingly, the amount of disk space used is much less than other automated library systems. So there is less disk accesses and thus, less processing power needed. This all keeps the cost and complexity of the hardware down. Quite large operations are being run on smaller size machines, because of this database organisation and structure.

The basic advantages for PIC are:

- subsystems integration
- cataloguing and authority control
- bibliographies
- database structure facilities easy processing
- complete system

This report looks at the following URICA hardware:

URICA Reality 8000
URICA Sequel 6521
URICA Sequel 9000

and accompanying software.

URICA HARDWARE

1	REALITY 8000
1	256 Kbytes Memory
1	130 Mbytes disk
16	Serial Ports
1	Diagnostic maintenance Port
10	ADM-11-R Terminals
2	Model 3404 Dot Matrix Printer
1	1600 bpi Tape Drive

There are currently two AWA Microdata REALITY 8000s in Fiji. They have been here for over two years now and have operated well under the Fiji environmental conditions. Both of these sites are well established and do not seem to be having any problems with either the hardware or software. One important aspect of the reliability is the built-in battery backup, which provides for power during short term powers outages. In addition, the system handles long power cuts with little loss of data. Normally, the loss of data is only what is appearing on the terminal at the time of the power outage. Furthermore, AWA already has a product to tie their minicomputers in the microcomputers for the use of running stand alone circulation when the minicomputer or communications links are down for any reason.

In terms of maintenance, there is a full time AWA field engineer in Fiji. He is a field engineer and also sells both microcomputers and minicomputers in Fiji. Also, this person can do operational training. It should be noted that the same person set up the URICA site at Hamilton Public Library in New Zealand. So, although he is not trained in the URICA Library package software, nevertheless, he certainly has experienced setting up URICA sites. This is also a direct advantage for the URICA. Local hardware and software support reduce the risk of having the system down for an indefinite length of time. Also, this will help with on-going support for peripherals, such as printers,terminals and light pens.

SEQUEL

The AWA Sequel series is the larger 32 bit processors. These have been designed to handle more transaction processing than the Reality models. However, one important point should be noted about software compatibility. Both of the series(Reality, Sequel) use the PICK operating system. URICA and all applications can be taken off the Reality and put on directly to the Sequel series. In other words, both of the hardware systems run the same software applications without conversion. This is a very important consideration for the growth path of the URICA Library system.

PIC is interested in

1). a larger growth path in the future

2) numeric and full text databases

3) increasing applications in information sources

So, it is very important that a larger system be available now in case of the current needs. Also, that the system can grow to handle a large database and many users on the system. The Sequel series can handle the increase.

The two Sequel models that PIC is looking at in closer detail are the Sequel 6521 and Sequel 9000. The Sequel 6521 is best suited to meet the needs of PIC since the Sequel 9000 would be too large and costly However, it is important to consider the growth path and to make sure there is no limitation on how large the system may be able to expand. So, it is important to have the Sequel 9000

series as a growth path. The basic configuration for the Sequel 6521:

Hardware: Sequel 6521

1	Sequel 6521
1	512 Kbytes
1	40 Mbyte Disk Drive
1	130 Mbyte Disk Drive
1	1600 bpi Tape Drive
1	Parallel Printer controller
3	Local Cluster Controller
2	Asynchronous Communications Link Controller (ACLC)
10	ADM-11 terminals
1	AWA SP-830 Letter Quality Printer

Software: Sequel 6521

The URICA Library system runs the same on the Reality 8000, Sequel 6521 and the Sequel 9000 series. Further, they all run the same PICK operating system. Therefore the software and the application are the same across the entire range of Microdata minicomputers.

The Sequel 6521 is the proper size for PIC operations in the near future. The system itself can be expanded for more processing power, disk space, printers and of course more terminals. The question of more terminals is important not only for local use of the machine for inputting records , but also access to the machine for information from the entire South Pacific region. The vast majority of these users will be accessing the information system using dial-up ports. The Sequel 6521 will be able to handle a sizeable number of these dial-up terminals simultaneously. This is important to the PIC focal points. The PIC focal points will

then be able to query the database for the information that they need.

In addition, the Sequel 6521 will be able to handle the processing needs for other kinds of information. For example, the storing of full text numeric information relating to agriculture especially, but also, other database applications.

URICA Software

The URICA Library system supports all the major functions of a library. These are as follows:

1. Acqusiitions
2. Cataloguing
3. Circulation
4. Conversion
5. Enquiry
6. Public Access
7. Closed Reserve
8. Serials Control

The system may be configurated with all of the above listed modules or with only a few. Some of them may be used by themselves, for example, acquisitions, cataloguing or circulation. The basic system use a common database and information along with their authority files. Thus, all of the modules may be used at one time and ensure that the system is consistent and integrated. The system in general uses menus for its user interface. This system does not allow for quick subsystem switching like the VTLS system. However, if subsystem switching is not done properly, then this results in database corruption. URICA on the other hand, is designed with high database integrity.

The bibliographic database is the k y to the URICA system. The basic design of the database is relational so that the files for titles, author, publisher, call numbers are all interlinked by the system at the same time allowing for complete authority control over all elements within a bibliographic record. All of the records are in fact variable length records, fields, subfields, etc. There is no padding of even fixed length filled by blanks. If there is no data or information in a fixed length field, then it takes no disk space whatsoever - this allows for a large amount of bibliographic records to be stored in a lot less space than most library systems. This in turn reduces the processing power and the size of the computer system that is needed. In addition, this allows for the creation of more and more access points without worrying about running out of disk space continually. A single data element is held in only one place, so that any change to information held in the computer needs only be changed at one place. That is, there is no updating the same data element in different files. This in turn means that there is no redundancy of information the database. Again, this reduces the amount of disk space needed. This becomes increasingly important as more and more modules are added to the system. The overall structure of data storage allows for automating all the major functions of a library without taking up huge amounts of disk space, which would make the system prohibitive to the ordinary library.

The URICA Library system has its own internal format. During the loading of records into URICA, the system can convert the following different MARC formats: Library of Congress, British National

Bibliography, AUSMARC, UNIMARC and South Africa. Special conversion have been written to convert non-MARC formats for loading into URICA. Furthermore, the URICA system can convert back from its internal format to MARC format for the transfer of records to other machines.

In addition, there are no required fields in the database. However, the user can define required fields and even change these at a later date. Furthermore, new fields can be added at a later date. Thus, the database structure is very flexible.

Enquiry

The ENQUIRY module is undergoing extensive enhancements. There will be the addition of an expert mode to make the system easier to use for the experienced user. Currently, the system support BooLean operates in searching and provides for searching for any key on any field. However, this sequential searching is slow on a large database. So there is also the generation of indexes and authority files of defined fields. The fields normally indexed are as follows:

Title
Author
Corporate Author
Subject headings
Series
Call Number
Record Number
ISBN/ISSN
Accession Number
Library of Congress Card Number
Borrower

In addition, other fields may be added as required. For example, the name of who gave the book if its a gift. So, separate indexes can be created to gain access to the information needed. Other systems like VTLS support searching by only a limited number of fields. For example, in VTLS there is no separation of authors into personal or corporate author. Further, keyword indexing takes a great deal of space and time to generate on the VTLS system, so libraries often do not create keyword indexes. Also, after a 1,000 records are indexed under a particular keyword then no more records can be indexed under that keyword. This is a severe limitation of VTLS and shows a corresponding strong point for URICA.

In URICA search terms can be truncated on either side of the search word pattern, that is, right and left hand truncation. This is a powerful feature that is normally used by an information specialist to capture all relevant information from the database. For example, to find terms like 'womanhood', 'woman', 'prewoman' - these can be searched by the following search request '?WOM?N?'. This is an important concept for once the information gets into the database, its crucial to be able to get the information out of the database. Hence, this can be achieved with a good information retrieval system which includes features like Boolean operations and truncation.

Public Access

The URICA system Public access module includes:

- different levels of contents displayed

- selection of specific access points
- security
- reservations for books checked out

Further enhancements are being added to this module includes access from a large variety of different models of terminals. This will allow for easier interconnecting links to a university wide network or links with other computer systems within the region. For example, the growing Fiji government EDP network or the computers in the Kiribati Government offices in Tarawa. Of course, this will also allow access from the University of the South Pacific Centre computers. This would include either the IBM PC or the Apples, assuming the use of a satellite link

Cataloguing

The cataloguing module is important because it is used in the creation of the database. In the beginning it accepts the data being input in various MARC formats. However, the user does not need to know all of the tags and subfield codes. For example, the 260 d is the tag and subfield for the date of publication. Rather, the user is prompted with the more meaningful request of 'DATE OF PUBLICATION'. Or, as in the case of the Language code, the system says '041 LANGUAGE OF TITLE ENG (Y/N)?'. If the answer is no, then it displays 35 or so languages with their codes. From these the cataloguer can choose the right one without having to look them up in a reference manual. Thus, the URICA system gives meaningful prompts for any of the operator to use in inputting bibliographic records.

Also some authority work is done on the record during actual inputting. For example, links are automatically set between the publishers number part of ISBN and the publishers name that is input. So, if the ISBN is input, then a selection can be made from the publishers in the database with the same ISBN publishers prefix. In addition, the cataloguing module supports use of both multiple classification schemes (e.g. Dewey, LC, etc.) and multiple subject heading schemes (e.g. LCSH, SEARS, etc). Also copy specific information can be input using the catalogue module. For example, bar codes and holding library information.

The cataloguing module also produces on-going reports for analysis by normally the head of the cataloguing section. The following reports are the standard reports:

1. Authority File Maintenance
2. New Headings
3. Titles, new or edited.

Of course, the system can also produce COM microfiche of catalogues. In terms of editing, the URICA system uses a simple but powerful string replace technique so that corrections can be made within a word or a word phase without retyping the word. This same editing technique is standard and used with all of the URICA modules. Thus, it allows for operators trained in one part of the system to learn the other parts of the system easily.

Authority Control

Authority control extends over subject headings, keywords, authors and publisher. Included in this is also: see reference, see also references, and terms that are not used. The authority files can be input and edited by the library from the keyboard or as in the case of Philips Institute, the authority records can be loaded by machine readable records. These records are loaded in LC MARC authorities format. Once the records are loaded into URICA they can be changed by the Library according to their own local authorities. The URICA system also allows for the easy merging of variant forms into one heading. Besides making changes to elements under authority control, URICA can also make global change to any element in all of the records kept in any of the databases. This is not used often, but is a very powerful tool in making corrections to the database. For example, converting all abbreviations of a country like U.K. to United Kingdom. On a large database this process may take several hours but its an important function.

In addition, the authority records or the syndetic structure can be included in the production of COM (Computer output microfiche) catalogues. The MINISIS system at this point does not have this capability. In fact, completely separate files must be maintained for corporate and personal authors. This is important in both the online interactive mode and the production of bibliographies.

URICA's TELECOMMUNICATIONS FACILITIES

The URICA library system has an intelligent microcomputer interlink connection. This system uses a CORONA microcomputer with 384 Kbytes of internal memory, a 8087 Maths chip, a 10 Kbyte hard disk. The software needed to run the system is MS-DOS version 2.0, Revelations (Release F), and RNETPLUS. The CORONA can act in two modes. the first one is as a normal standard terminal connect to the URICA library system. The second, is as a stand-alone circulation system. Although in its stand-alone mode the CORONA still has data that came from the URICA library system. For example, information may be down loaded to the CORONA. This information may include such things as black listed borrowers, staff mebers and their authorisation codes.

The CORONA can also have a bar code reader or light wand attached to it, thus making the input faster and easier for the operators.

The basic operations of the CORONA in the stand-alone mode is to log offline circulation trasactions, check borrowers ID against a black list, and check borrowers ID authorisation level. For a small list of borrowers they can quite easily fit on the 10 Mbyte hard disk.

In addition, the CORONA can act as tool to do inventory work. For example, when doing a shelf list reading to make sure the books not on the shelves are checked out, then the CORONA can be moved around from shelf to shelf to read bar codes. Although the CORONA still needs a power supply it does not have to have a computer line connecting it to the computer. Rather, it acts in a stand-alone

mode checking the material into its transaction files to be processed later. So by using the CORONA in the offline mode, the microcomputer can go to the books on the shelves instead of the books going to the machine. This makes shelf list reading much easier and faster.

The future direction will be with more processing capacity and much larger disk space. This will allow for greater distribution of processing and faster response times. In fact, not just branch libraries could be connected to the URICA library system but the complete libraries could be handled using this concept with larger microcomputers.

CAPACITY

At the present time a more detailed capacity analysis has been done on the URICA system. From table 1 it is clear to see that URICA uses a lot less space than other information retrieval systems or library packages. The base disk configuration is used for capacity planning for the URICA system.

Disk space available	130.0 Mbytes
URICA Software	5.5 Mbytes
PICK Operating System	3.5 Mbytes
Patron file (1,000 x 3,000)	3.0 Mbytes
Pacific Collection (1,000 x 30,000)	30.0 Mbytes
Circulation Record (80 x 30,000)	2.4 Mbytes

This would leave about 85 Mbytes for article citations or 172,000 records. Assuming 25% error rate, this would still allow for 126,000 citations.

The addition of another 130 Mbyte disk drive would add space for about 120,000 more bibliographic records. The second drive would cost $F20,000 (or 6 records per dollar). This is assuming 1000 characters per bibliographic record, 1000 character per patron record, 500 character per article citation.

However, this analysis has not included authority records. Although the amount of data needed to store authority records can be estimated, the actual number of authority records is hard to determine. Obviously, serials records with corporate entries would need a lot more space for the syndetic structure than most personal name references. Also, if all of the cross reference for subject heading were included that were blind heading or 'see also' reference to subject heading with no citation in the database, then this would increase the disk space. These kinds of decision would change the amount of disk space that the syndetic structure would take up in the authority records. The Library of Congress Name Authority records averages about 450 characters per record. The Subject Authority records would be longer than the Name Authority records. Still, the URICA system does not retain all of the information upon input of Library of Congress Authority records. Nevertheless, a more detailed analysis would be needed to determine how much the authority records would take up. Although most information retrieval of Library packages provide for authority records and syndetic structure, nevertheless, very few centres are actually inputting information. Phillip Institute of Technology's

Library is inputting authority records in machine readable form from Blackwell North America for both name and subject headings. Most other libraries or information centres are not presently inputting authority records with syndetic structure. This area is often overlooked. The Pacific Information Centre because of its role as a regional bibliographic centre must include the authority records and syndetic structure in their database.

DATABASE CREATION

There are several different ways of creating the database.

The order of priority of creating the database would be -

1. the Pacific Collection in total (30,000)
2. South Pacific Periodicals Index (4,000 - Annually)
3. non-USP Library material from the South Pacific Bibliography (1,000 - Annually)
4. South Pacific Union List of Periodicals (4,000 - Annually)
5. Agricultural information from Fiji and USP Library branch at the School of Agriculture in Western Samoa. (8,000 - Annually)
6. Other PIC Bibliographies (16,000 - Annually)
7. General collection (287,000 - Annually)

The first is to input all the records straight from the shelf list. This would mean that all of the information from our own cards would be input into the system. Additionally, this would mean that the

typist would be inputting current work and some part of the older records. Also, some part-time or temporary help could be employed to increase the conversion project. Given that they are currently about 6 typists doing cataloguing and bibliographic work, then another 4 could be easily added with a 10 terminal computer system. Furthermore, some of the cataloguing staff could be trained to input their own records. Thus, leaving the typist to work on the older records. These would be input from cards. Some of the typists could also work into the night time as the computer system would be available 24 hours a day normally.

Although it takes both more time and money, this would provide for the cleanest database with the highest quality of records. Plus, the information in the database would match our records and the actual titles we have in the collection. Note, if the cataloguing is of good quality and good standard, then this quality will be reflected in the database that is created in the computer. Records from outside may or may not be of the same standard of quality. Additionally, copy specific information must still be added to outside records and these records check against the local cataloguing record.

Procurement of machine readable cataloguing records. The following organization could provide bibliographic records in machine readable form:

1. Australian Bibliographic Network
2. New Zealand Bibliographic Network

3. Australian MARC Record Service

4. Blackwell North America

5. Online Computer Library Centre (OCLC)

6. User group

Some of these organisations will create machine readable cataloguing records from local catalogue cards, if there are no records matching in their database. In general, there will be a low match or hit rate with any of these groups with the Pacific Collection. Further, some of them only use the Library of Congress Card Number (LCCN) or the ISBN number to match records against. In the case of local cataloguing records many of the books which may have LCCN or ISBN do not have this information included in the cataloguing information. Hence the books themselves would have to be checked for the information. However, a much better approach would be to use an author/title key. This would be the construction of a key which would include 5 characters from the authors last name and one character from the author's first name along with 4 characters from the beginning of the title. This would allow for fairly close matching and should produce a high percentage of correct hits using this unique key.

The number of matching hits for the general collection including serials will be quite high. However, the number of matches for the Pacific Collection will be low. The other materials like the South Pacific Periodicals Index will have to be input locally.

REPORT SUMMARY

It is very difficult to directly compare the MINISIS and URICA systems. Basically, they are two different systems designed with different objectives in mind. URICA was designed for a fairly large size university library. Clearly the most central idea of URICA was to be an integrated library system with most of the technical processing areas of the library automated.

MINISIS on the other hand, was designed as an information retrieval system for a specialized library or documentation center. However, it was designed to handle more than just monographs or serials, but also, bibliographic information for journal articles, conference papers, research documents and reports.

URICA sites are clustered in Australia and New Zealand although there is a growing number in Europe and the USA. Whereas, MINISIS site are spread quite evenly all around the world. There are some features being added to MINISIS, but there is not a large development team that is working continuously on MINISIS. Also, since the objectives are different than URICA the development work is in different areas from URICA. For example, extending the character set to include non-Roman alphabet. URICA development on the other hand is going on terms of enhancements to the Serial Control module, increasing authority control over Publishers, and microcomputer links.

So it is unlikely that these two systems are on a convergent course. Rather, the two systems are developing on quite different paths.

Furthermore, the two systems are designed to run on different computer hardware. MINISIS runs on only the HP-3000, which is a general purpose minicomputer with a slight emphasis toward scientific processing. The URICA system, on the other hand, runs on the Microdata Reality and Sequel minicomputers. These use the PICK operating system which is designed for text and information processing with a built-in database management system. Both of the systems are equipped with the capacity to do networking and telecommunications. However, the URICA software has two additional features in the area of telecommunications. These are: an intelligent microcomputer connection and a link with bibliographic networks. In this case, the New Zealan Bibliographic Network (NZBN) and the Australian Bibliographic Network (ABN). Also under development in Melbourne is the URICANET, which when finished will link La Trobe University, Phillip Institute, Preston College of TAFE and Preston City Library.

In conclusion, based on the USP situation and information and facts obtained froms study/tour of library systems it would be highly recommended that USP Library/PIC looks more closely at the possible application of URICA hardware and software for all its operations. Furthermore, it would also be practical to consider, at this stage, a larger capacity computer based on the fact that the PIC operations and records to be accepted will grow at a rate that will outgrow URICA Reality 8000 in eighteen months from the date it is introduced.

SITE VISITED (TABLE A)

Name	Software	Hardware	Memory	Terminal	Disk Space (Mbyte
1. Hamilton Public Library	URICA	Sequel	1 Mbyte	40	120
2. University of Waikato	User written	DEC VAX		Batch	
3. Massey University	VTLS User written	HP-3000/48 Prime	3 Mbytes	30	1200
4. Palmerston North Public Library	User written	NCR		1-2?	
5. University of Tasmania	URICA	Sequel 9000	2 Mbytes	32	520
6. State Library of Tasmania	ADLIB	Prime 750	4 Mbyte	28	1200
7. Phillip Institute of Technology	URICA	Sequel 9050	512 Kbyte	32	260
8. La Trobe University	URICA User written	Sequel 9050 DEC VAX	1 Mbyte	25	500
9. Ngee Ann Polytechnic	User written	Prime 9550			
10. Singapore Polytechnic	VTLS	HP-3000/48	2 Mbyte	22	536
11. Nanyang Technological Institute	TechnoCrat	Data General			10-20
12. National University of Singapore	MINISIS	HP-3000/48	3 Mbytes	34	928
13. National Library of Singapore	Systems Analysis on-going				
14. Australian Defence Force Academy	URICA	Sequel 3270	2 Mbyte	45	512
15. National Library of Australia	ABN	IBM			
16. Australian Bibliographic Network	Washington Library Network	IBM			
17. Blacktown City Library	URICA	Reality 8000	512 Kbyte	28	512
18. South Pacific Commission	User written	HP-1000		17	
19. University of Hawaii	ADLIB(US)	Honeywell	2 Mbytes	MAX.50	3320

SITES VISITED (TABLE B)

Name	Bib.Records	Automation Staff	Costs	Subsystems
1. Hamilton Public Library	135,000	1.5	NZ$700,000	All
2. University of Waikato				
3. Massey University	120,000	1	NZ$500,000	CAT, CIR.
4. Palmerston North Public Library	small			CIR
5. University of Tasmania	210,000	1.5	A$ 367,000	ACQ, CAT, SER
6. State Lib. of Tasmania	150,000(ACQ)	3	A$ 500,000	ACQ, CAT, CIR
7. Phillip Institute of Telchnology	61,000	1	A$380,000	ACQ, CAT, CIR, OPAC
8. La Trobe University	370,000	1	A$420,000	CIR, ACQ, OPAC, CAT, ENQUIRY
9. Ngee Ann Polytechnic	50,000			
10. Singapore Polytechnic	57,700	1		ACQ, CAT, CIR PUBLIC ACCESS
11. Nanyang Technological Institute	SMALL			CIR
12. National University of Singapore	70,000	3	S$ 500,000	ACQ, CAT, CIR.
13. National Library of Singapore				
14. Australian Defence Force Academy	136,370	1	A$700,000	ACQ, CAT, CIR, SER, ENQUIRY
15. National Library of Australia				CAT
16. Australian Bibliographic Network				CAT
17. Blacktown City Library	140,000	1	A$ 450,000	ACQ, CAT, CIR
18. South Pacific Commission	5,000			CAT/BIB
19. University of Hawaii	Just started inputting Sept. 1985	2	US$500,000	CAT, CIR

SITES VISITED (TABLE C)

	NAME	REMARKS
1.	Hamilton Public Library	First URICA site in New Zealand. Largest Library automation site in New Zealand
2.	University of Waikato	Large integrated computing facilities for Campus. However, very little used by Library. Not useful.
3.	Massey University	One of the first VTLS sites. Interesting problems. Very useful.
4.	Palmerston North Public Library	Oldest Library automation in New Zealand
5.	University of Tasmania	First and well established URICA site outside of South Africa. Produces many specialized bibliographies. Very useful.
6.	State Library of Tasmania	ADLIB site still under development. Large staff and not noticed by library staff. Very useful.
7.	Phillip Institute of Technology	Very good use of machine readable authority files. Extremely useful.
8.	La Trobe University	Close Reserve room in operation. Useful
9.	Ngee Ann Polytechnic	System review under way. Comparison of notes. Useful.
10.	Singapore Polytechnic	Very well planned and administrated. Useful.
11.	Nanyang Technological Institute	Microcomputers in use, planning under way. Useful.
12.	National University of Singapore	MINISIS site. Very useful in understanding MINISIS
13.	National Library of Singapore	Huge requirements. Planning under way for $700,000 system
14.	Australian Defence Force Academy	Inside view of URICA software. On-going user changes. Useful.
15.	National Library of Australia	Discussion about future automation plans.

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NAME	REMARKS
16. Australian Bibliographic Network	Telecommunication connections from Fiji. Very useful.
17. Blacktown City Library	Response time on Reality 8000 good except when school is just getting out. Useful.
18. South Pacific Commission	Batch processing of bibliographic records with local software. Very useful.
19. University of Hawaii	Huge development under way. Very promising. In-house development site. Useful data exchange source for Pacific materials.

I. COMPUTER SYSTEM : MINISIS

ITEM		INDIVIDUAL COST	TOTAL	REMARKS
1. **HARDWARE**				
HP-3000 SERIES 37				
1	Mbyte Memory			This is recommended by HP to handle the numbers of terminals, printers, tape drives.
14	Terminal Ports			This is for terminals and printers
3	55 Mbyte Disk Drive			This will handle 120,000 bibliographic records
1	Cartridge Backup			This is used to backup and save all programs and information, in case of electric outages
10	HP-2392 Terminals			These will be used by operators, data entry conversion, system managers etc.
1	HP-2392 Draft Printer			This is used to produce draft reports and short bibliographies upon request.
1	HP-2601A Daisy Wheel printer			This is used to produce reports for publishing
1	HP-79744 1600 bpi Tape Drive			This is used to transfer information from other computer systems to PIC
15	Tapes			This is used for backup and tape transfers
Capital Hardware/Software Costs			117,733	This includes operating system software
1.1 MINISIS Software		Free	-	Request entire package

	ITEM	INDIVIDUAL COST	TOTAL	REMARKS
2.	**TRAINING**			
2.1	**Hewlett Packard** Training for 1 operator in computer hardware	1,200		Training to be done in Auckland, New Zealand. This would be one staff member from USPL. Paid to HP for training
		500		plane ticket
		431		F$55 per day
2.2	MINISIS Training	3,120		Training at site (USP Library/PIC). Duration : 5 weeks. Costs will include: Expertise Travel Accommodation depending where trainer orginates from. Assume trainer is from Singapore. Cost of expert's time is not included here. Installation costs not included also.
	Total		5,251	
3.	**ON-GOING YEARLY COSTS**			
	Ribbon	480		Costs exclude maintenance and expansion costs.
	Paper	1,500		See item 5 and 6
	Total		1,980	

ITEM	INDIVIDUAL COST	TOTAL	REMARKS
4. CONVERSION			
	12,000		For typists for conversion of data.
	2,625		Matching of records at .35 per record for Pacific Collection. General collection would be matched on 75,000 records at .35 per record, then total extra costs 26,250
Total		14,625	
5. EXPANSION OVER FIVE YEARS			
2 55 Mbyte Disk Drives	22,932		This is for additional 91,000 bibliographic records
5 HP-2392 Terminals	11,165		This is to add one terminal per year for more data entry and searchers use
1 HP-2686A LaserJet Printer	5,892		This will allow for high quality printing of bibliographies of other reports.
Total		39,989	
6. MAINTENANCE			
Hardware maintenance per month - $179	179		Since no servicing agent in Suva recommended that hardware be posted to New Zealand for maintenance.
Software maintenance per month - $112	112		This is not a good situation.
Cost per year	3,492		Alternatively, servicing can be done by agent
Postage est.	1,500		visiting Suva. Costs, however, will be high:
Total		4,992	travel, per diem, charge per hour.
GRAND TOTAL		184,570	

II. COMPUTER SYSTEM : AWA (Amalgamated Wireless Australasia) Reality 8000 for URICA

	ITEM	INDIVIDUAL COST	TOTAL	REMARKS
1.	**HARDWARE**			
1	AWA MICRODATA REALITY 8000			
1	256 Kbytes Mos Memory			Recommended for number of terminals, printers
1	130 Mbyte disk drive and controller			This will handle 116,000 bibliographic records
16	Serial ports			These are for printers and terminals
1	diagnostic maintenance port			This is for AWA field engineer to test machine
1	1600 bpi Tape Drive			This is used for backup, transfer of records, loading all software
10	ADM11-R Terminals			These will be used by operators, data entry conversion operators, system managers, etc.
2	Model 3404 dot matrix printer			These used for producing draft reports and short bibliographies upon requests
2.	**SOFTWARE**			
	PICK Reality Operating System			This is needed for the machine to run
	URICA Level 1 including Cataloguing, Enquiry, Circulation, Global Authority File Maintenance			This is the main application software.
	TOTAL : HARDWARE AND SOFTWARE		80,000	This was given as a bundled cost

II. Computer System : AWA ... p.2

ITEM	INDIVIDUAL COST	TOTAL	REMARKS
3. TRAINING			
3.1 Operator Hardware (Reality 8000)			1 or more persons from USPL staff at USPL
3.2 Staff Training	600		Trainer from Auckland, New Zealand - 200 person-hours. This person will train all staff on URICA database design, input, enquiry, etc as desired.
			PIC will only have to bear transportation costs from New Zealand and back.
Total		600	$600 cost of ticket.
4. ON-GOING YEARLY COSTS			
Ribbon	480		
Paper	1,500		
Total		1,950	
5. CONVERSION			
	12,000		For typists for conversion of data.
7,500 Vendor Supplied records	2,625		Matching of records at .35 per record for Pacific Collection. General collection would be matched on 75,000 records at .35 per records, then total extra costs 26,250.
Total		14,625	
6. EXPANSION OVER FIVE YEARS			
130 Mbyte disk drive	20,000		Additional 120,000 bibliographic records
5 Terminals (ADM-11	7,885		This is for more data conversion operators and searchers
1 AWA SP-830 Letter Quality Printers	2,742		Print letter quality reports
1 Memory upgrade 256 to 512	11,000		To increase number of terminals, response time.
Total		41,627	

ITEM	INDIVIDUAL COST	TOTAL	REMARKS
7. **MAINTENANCE**			
Full maintenance contract per month - $776.00			First six months are free. Includes 200 per month for URICA. This represents 12% of total cost.
Per year	9,312		
Total		9,312	
GRAND TOTAL		148,114	

III. **COMPUTER SYSTEM : AWA (Amalgamated Wireless Australasia) Sequel 6521 for URICA**

	ITEM	INDIVIDUAL COST	TOTAL	REMARKS
1.	**HARDWARE**			
1	Sequel 6521			
1	512 Kbytes Memory			Recommended to handle number of terminals, printers, tape drives
1	40 Mbyte Disk Drive			Use to backup memory in case of power failure
1	130 Mbyte Disk Drive			This could handle 116,000 bibliographic records
1	1600 bpi Tape Drive			This is used for backup, transfer of records, loading all software
1	Parallel Printer Controller			This handles communications with the printer
3	Local Cluster Controller			This is used to handle communications with terminals, printers, and tape drives
2	Asynehronous Communication Link Controller (ACLC)			This handles communication with terminals
10	ADM-11 Terminals			These will be used by operators, data entry conversion operators, system manager, etc.
1	AWA SP-830 Letter Quality Printer			This is used to print letter quality reports and bibliographies
	TOTAL CAPITAL HARDWARE COSTS		113,719	
2.	**SOFTWARE**			
	PICK Operating system			This is needed for the machine to run
	URICA			This is the main application software
	TOTAL		22,000	

ITEM	INDIVIDUAL COST	TOTAL	REMARKS
3. **TRAINING** Note: Same as with Reality 8000		600	
4. **ON-GOING YEARLY COSTS** Note: Same as with Reality 8000		1,950	
5. **CONVERSION** Note: Same as with Reality 8000		14,625	
6. **EXAPANSION OVER FIVE YEARS**			
1 130 Mbyte Disk Drive	20,000		This system could be expanded to handle a lot more terminals. Over 40 terminals could be added at a price of 1,577 each. For every 8 new terminals, an additional controller at 3,329 would need to be added.
5 Terminals (ADM-11)	7,885		
Total		27,885	
7. **MAINTENANCE**			
Hardware } per year Software }		11,400	This is for a full service contract. Includes both hardware and software. This is about 10% of costs.
GRAND TOTAL		192,179	

IV. COMPUTER SYSTEM : AWA (Amalgamated Wireless Australasia) Sequel 9000 for URICA

ITEM	INDIVIDUAL COST	TOTAL	REMARKS
1. **HARDWARE**			
1 Sequel 9000			
1 Mbyte Memory			Recommended to handle more processing needs, terminals, printers, etc.
1 130 Mbyte disk drive			This could handle 116,000 bibliographic records
1 1600 bpi Tape Drive			This is used for backup, transfer of records, loading all software
1 Parallel Printer Controller			This handles communications with the printer
2 ACLC (Asynchronous Communication Line Controller)			This is used to handle communications with terminals
10 ADM-11 Terminals			This will be used by operators, data entry conversion operators, system manager, etc.
1 AWA SP-830 Letter Quality Printer			This is used to print letter quality reports and bibliographies
CAPITAL HARDWARE COSTS		197,545	
2. **SOFTWARE**			
Note: same as on Sequel 6521		22,000	
3. **TRAINING**			
Note: same as on Reality 8000		600	
4. **ON-GOING YEARLY COSTS**			
Note: Same as on Reality 8000		1,950	

	ITEM	INDIVIDUAL COST	TOTAL	REMARKS
5.	**CONVERSION**			
	Note: same as on Reality 8000		14,625	
6.	**EXPANSION OVER FIVE YEARS**			
1	130 Mbyte Disk Drive	20,000		This system can expand to over 60 terminals with a database over 500,000 bibliographic records. Additional configuration would include more communication controllers and memory.
10	ADM-11 Terminals	15,770		
	Total		35,770	
	GRAND TOTAL		272,490	

TABLE V.

COMPARISON OF URICA, MINISIS AND ADLIB

	URICA	MINISIS	ADLIB	ADLIB(UH)
Hardware	Microdata Reality Sequel	HP-3000	PRIME	PRIME Other
Country of Manufacture of Hardware		U.S.A.	U.S.A.	U.S.A.
Country of source of software	Australia	Canada	United Kingdom	U.S.A.
Source of software support	Australia/ New Zealand	Canada	United Kingdom	U.S.A.
Source of maintenance service	Fiji/ New Zealand/ Australia	New Zealand	Fiji/ Australia	Fiji/ Australia/ U.S.A.
Current sites in South Asia/ Pacific region	33	3-4	3-4	1
Largest site	Australian National University	National Univ. of Singapore	State Library of Tasmania	University of Hawaii
Links to Bibliographic networks (ABN, NZBN, SILAS)	Yes	No	No	No
LIBRARY MODULES				
Cataloguing	Yes	Yes	Yes	Yes
Serials	Yes	-	-	-
Acquisitions	Yes	Yes	Yes	-
Circulation	Yes	-	Yes	Yes
AUTHORITY CONTROL		Not implemented		Planned to cover all
Author	Yes		Yes	
Title	Yes		-	
Subject	Yes		Yes	