A R U B A

National Informatio System
Proposals for development 1988 - 1992

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Report prepared for the Government of
Aruba by the United Nations Educational,
Scientific and Cultural Organization
(Unesco)

U N E S C O

INFOBILA

CONTENTS

SUMMARY OF FINDINGS AND RECOMMENDATIONS

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1.   The existing national information system and services
which are available in Aruba were examined in the context of
the development of a full-fledged coordinated national
information system.

2.   The orientation of the political directorate, the
officials responsible for policy formulation, and the key
information personnel, as well as the stage of development of
the Biblioteca Nacional Aruba (BNA) and other information
units means that Aruba is at present in a good position to
establish a coordinated national information system which
would be able to:

-    determine and monitor policies for all areas of the
     information sector
-    identify areas of the national information system
     for priority development
-    provide appropriate information services to
     specific user groups
-    make plans for the future development of the
     national information system and services

The principal users

3.   As the recommended system is to be completely national,
the users and potential users are identified as :

Ministers of Government, Parliamentarians,
Students, and Teachers at all levels, Policy
designers, Managers, Planners, Technical personnel,
and information personnel in the public and private
sector. The system will also continue to provide
information to the general public including
community groups and small scale entrepreneurs.

These users, and organizations have served as sources of
information, and this aspect of the system is expected to
increase with the development of a full-fledged national
information system.

Types of information

4.   The system will consist of all types of information
required by the users, and the present needs as ascertained
during the mission indicate that the system must provide the
following types of information:

-    Numerical and quantitative data
-    Analyses of numerical data
-    Bibliographical references to material held by the
     units of the national information system
-    Actual documents to be made available to the user

community
- Information in non-print formats — audio-visual
  publications, computer software, computerized
  databases etc.
- Access to external databases
- Undocumented information consolidated by the
  national information system
- Referral services advising users of the location of
  certain types of information held by the system, or
  available through cooperative arrangements
- Repackaged information
- Active services of dissemination of information
- Information support for national Development
- Support Communication activities

The system

5.   Evaluation of the existing information systems, sources,
services and cooperative arrangements, led to the conclusions
that the BNA as the main service organization holds a
significant position in the community and is very well placed
to serve as the coordinating organization of the libraries,
and as the referral centre for the system.

The components of the system were defined as :

The User Community

The Information producers and generators
The Central Bureau of Statistics
and other statistical units
Authors and researchers
Publishers etc

Institutions of access
The Biblioteca Nacional Aruba and branches
Documentation Centres
The Central Archives
Private libraries
Bookstores/sales agents of information materials

Facilitators of information and information flows
Central Computer Service
Servicio di Telecommunicacion di Aruba (SETAR)
TELE ARUBA (National Television Station)
Media in the public and private sector
Postal services

6.   Recommendations for development of this system over the
next five years include:

- More systematic identification of users' needs
- Increase of the membership of the BNA and more
  accurate monitoring of the impact of the services
- Development on a phased basis of a computerized

database of materials held by the BNA and branches
and other libraries in Aruba to permit more
effective access to the contents of the books and
other materials
- Development of databases of national projects
and specialists
- Access to external databases - regional and extra-
regional - through the BNA as the central point
- Referral services to identify sources of
bibliographical, textual and quantitative
information within the national information system
- Establishment of an adult outreach service through
additional bookmobiles
- Expansion of the cooperative arrangements with
external information institutions to provide access
to relevant information held by these agencies.

7.   Dissemination of information
     A more active method of dissemination of information
is recommended. The BNA presently provides support to the
educational system, and should also provide current awareness
services to all groups, and Selective Dissemination of
Information (SDI) services at least to some users.

8.   Within the government sector a free flow of information,
between government departments including the BNA and the
Central Archives should improve access to the locally
produced information and to other information which might
be held by these departments.

9.   Information technology requirements
     Several areas of information technology will be required
for the efficient development of the national database, and
as this is a new area for this system, basic requirements
include:

     - Computer software for textual database management
       Unesco's CDS/ISIS software package Micro and
       Mainframe version
     - Computer hardware - 3 microcomputers IBM
       PS2 Model 80 to be linked by a local area network
     - Modems to permit online searching regionally
       and internationally
     - Processing time on an IBM Mainframe - Year 5
     - Costs of access to external databases -
       (Telecommunications and access charges)

10.   Participation in external networks and systems
     Aruba's membership in the Caribbean Development and
Cooperation Committee has resulted in participation in the
Caribbean Information System for Economic and Social Planning
- CARISPLAN and more recently membership of Unesco has
encouraged participation in the Caribbean information
networks organized under Unesco's auspices. This

participation is still at an early stage, but as the national information system develops it will be able to receive information and to provide input to the systems above and to other relevant systems.

11. National Referral Centre

The system components as defined above should be developed over the next five years, and within the BNA a new component, a National Referral Centre, should be established to advise users on sources and locations of all types of information.

12. Databases to be created

A database of ongoing national projects and specialists is recommended as a means of providing decision-makers with information, which might not otherwise be accessible from any one source.

13. Training

Training of information personnel and users in the relevant aspects of information services and systems and in information resources management should be initiated as soon as possible and should be undertaken at intervals over the next five years.

14. Institutional framework

The BNA is recommended as the coordinating institution for all libraries and documentation centres within the national information system, and coordination of policies and activities of all types of information systems and services should be the responsibility of the newly created office of Chief of Staff which is to be based in the Office of the Prime Minister.

15. Cost of system development

As the Government of Aruba has over the years provided a substantial proportion of the human, material, and financial resources required to establish the national information system, the costs of system development will include:

    Training of information personnel - long term and short
    term
    Consultants fees (Systems analysts and programmers)
    Additional staff to fill vacancies
    Computers and related equipment
    Computer software
    Information materials
    Telecommunications charges
Additional costs for system development are estimated at US$180,600

16. Action plan for system development

The action plan will include the following principal

activities:

- Review and acceptance of the plan by the Government of Aruba
        Publicity of Plan and national policies

- Establishment of a National Information Policy Coordination Committee

- Establishment of a "Friends of the BNA" Committee

- Training of BNA staff and other information professionals

- Detailed survey of information units, and databases in Aruba

- Establishment ofaNational Referral Centre and referral database at the BNA

- Detailed survey of users' long and short term information needs

- Establishment of databases
        Central database (bibliographic)
        Database of ongoing projects and specialists
        Numerical databases

- Current Awareness Services from BNA

- Selective Dissemination of Information to sample group of decision-makers

- Access to external databases (regional)

- Access to external databases (extra-regional)

16. **Recommendations for immediate follow-up action**

The following preliminary activities were identified during the mission as being essential to the effective implementation of the plan for the development of the national information system. It is therefore recommended :

1   That a meeting be held with representative groups of the user community to discuss this report and its proposals and the immediate coordination of national information activities and national participation in regional and international information activities

2   That there should be follow-up action on the requests for information received during the mission, and Selective Dissemination of Information Service provided

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to a sample group of users

3   That the Caribbeana section of the BNA prepare a monthly list of new materials received and publish this list in one of the local newspapers which has a wide circulation

4   That a request be submitted by the BNA to the Unesco Science and Technology Adviser for funds to assist the BNA to purchase a microcomputer locally

5   That an introductory seminar, in the relevant areas of computer literacy, be mounted for the staff of the BNA.

CHAPTER 1

BACKGROUND

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17. The Ministry of Welfare had in early 1987 submitted a request to Unesco for assistance in the development of some areas of the national information system.

18. The Biblioteca Nacional Aruba is a department of the government of Aruba, and is one of the eight departments which fall under the Ministry of Welfare. It was originally the Public Library of the Island Government of Aruba, and since Aruba achieved separate status from the Netherlands Antilles in 1986, the Public Library has been assigned the additional responsibilities of carrying out the functions of National Library.

19. The Biblioteca Nacional even before it was officially designated as National Library, has been carrying out several of the functions traditionally assumed by a national library, and in some areas has also been utilizing various media and technologies for collecting and disseminating information to the users.

20. The law governing the legal status of the Biblioteca Nacional is currently being drafted and will formalize the library's role as the coordinating institution for the libraries and other information services in Aruba.

21. The recognition of the role of the National Library, and of the fact that effective information services cannot be tied to particular media or to a single type of institution, led to the request for this consultancy and to the identification during the mission of the information services which could be developed by the Biblioteca Nacional in consultation with the other national institutions in the public and private sector.

22. In addition to the BNA there are other Departments of the government which carry out information activities, and which consequently are considered to be involved in the national information system.

INFORMATION ACTIVITIES WITHIN THE GOVERNMENT STRUCTURE

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                    Ministerie van Algemene Zaken
                    (Ministry of General Affairs)
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  ----------------------------------------------------------------
  |                    |              |------------              |
  |                    |              |           |              |
  |                    |              |           |              |
  Ministry             Ministry       |           |              Ministry
  of                   of             |           |              of
  Economic             Welfare        |           |              Finance
  Affairs etc          |              |        Central           |
  |                    |              |        Archives          |
  |                    |              |           |              |
  |                    Biblioteca     |                          Central
  Central              Nacional       Dept of                    Computer
  Bureau                              Information                 Service
  of
  Statistics
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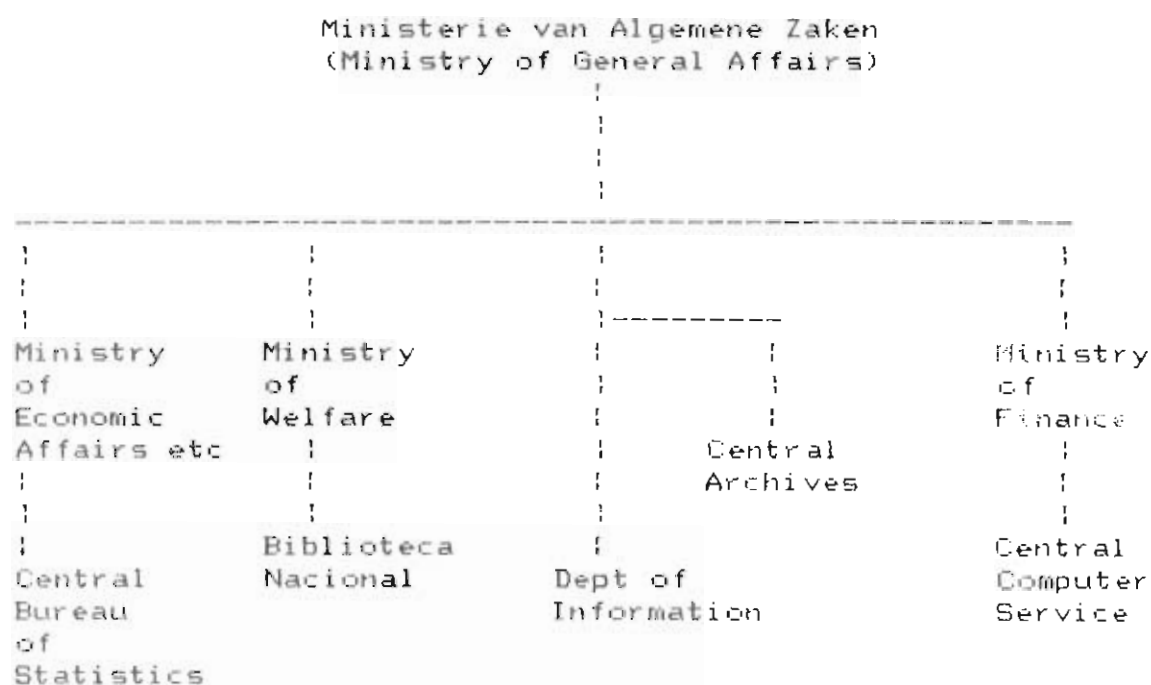
NOTE: TELE ARUBA the national television station run as a
government corporation also carries out information
activiites.

The feasibility of establishing a full-fledged national
information system therefore involves the coordination of the
activities of several departments, and access by the users to
information held by several units within and outside of the
government sector.

Influences on the development of the national information system

23. National developments in Aruba, the new constitutional status and the consequent responsibility for all internal affairs, has resulted in the increased need for information services at all levels of the national development activities. Aruba now has increasing responsibility for negotiation as an independent state, and therefore requires the type of information support which can serve as an input to decision-making.

24. Regional information activities have also influenced the increasing recognition by the policy makers and policy formulators that information relating to the region can facilitate planning and policy formulation relating to national and regional development activities. Aruba's participation in CARISPLAN - the Caribbean Information System for Economic and Social Planning has resulted in the beginnings of a two-way flow of information between Aruba and the Caribbean.

25. Global influences have also   stimulated an increased awareness of the role of a national information system in national development. Of particular note is Aruba's recent membership of Unesco, which now permits participation in relevant activities sponsored by Unesco.

REPORT OF CONSULTANT MISSION TO ARUBA

22 October to 5 November 1987

Purpose of mission

To advise the national authorities of Aruba on the
formulation of a national information policy and coordinated
development of the country's information resources and
services within the context of a national information system.
In particular the mission sought to:

a)   Identify the principal user groups and entities in the
      public and private sectors that could potentially
      benefit from such a system;

b)   broadly define the types of information and information
      resources to be made available;

c)   examine the extent to which the existing information
      systems, sources and services and cooperative agreements
      are able to meet present and potential demands;

d)   define services and information products to be provided
      by the system to the different user groups;

e)   determine the information technology required for the
      implementation of the system;

f)   study the feasibility of the interconnection of the
      national system with external information networks and
      systems;

g)   recommend system components in terms of resource
      centres, hardware, personnel and their training that
      would be required over a three/five year period for
      developing and operating the full-fledged system;

h)   recommend an appropriate institutional framework and
      coordination and management mechanism for the system;

i)   provide an estimate of the cost of developing the
      components of the system over a three/five year period

j)   draw up a corresponding action plan for the development
      of the national information system

CONSULTANCY MISSION

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27. The mission to Aruba which was undertaken between October 22 and November 6 was organized by the Biblioteca Nacional Aruba (BNA) on behalf of the Ministerie van Welzijnzaken (Ministry of Welfare). An initial meeting was held with the Acting Director and staff of the Biblioteca Nacional. At this meeting the consultant's terms of reference were discussed, relevant background documents, and previous studies identified, and initial arrangements made for meetings and consultations during the reminder of the mission.

28. Ms Lourdes Croes, Deputy Director of the Biblioteca Nacional Aruba, acted as local counterpart and accompanied the consultant to all meetings.

29. As the BNA is expected to be the focal point for the national information system, the mission included an analysis of the objectives, procedures and activities of the library. Meetings were held with the heads of sections and other staff of the library, and procedures were observed, analyzed and discussed.

30. In an effort to identify the users of the proposed national information system and their information needs, meetings were held with the key personnel in the public and private sectors

31. Meetings for de-briefing and for identification of areas for immediate follow-up action were held with the Minister of Welfare Hon Mito Croes and with the Director of the BNA, Ms Alice van Romomdt and the Deputy Director, Ms Lourdes Croes.

32. All arrangements for the mission, including advance publicity and briefing of officials, were carried out in a very satisfactory manner. This greatly facilitated the consultant's activities, and the collection of information required for preparing this plan. All officials, and other persons consulted had been well briefed and were therefore able to make meaningful contributions to the discussions on the development of a national information system for Aruba.

Thursday October 22
Introductory meetings Biblioteca Nacional Aruba (BNA)
Ms Lourdes Croes Acting Director
Ms Susan de Lange Documentalist Caribbeana
Drs Jan Welmers Research and Development Officer

General meeting BNA staff

Review of background documents, and previous studies

Friday October 23
Review of procedures and activities of BNA
Circulation Dept
Caribbeana Dept
Audio visual Dept

Monday October 24
Cataloguing Dept
School Media Centre
Caribbeana Indexing and Abstracting procedures

Tuesday October 25
Colegio Arubana (Branch Library)
San Nicolas Branch Library
Meeting with Director and Deputy Director BNA

Meeting with Director and Documentalist Central Archives
Caribbeana Indexing and Abstracting procedures

Wednesday October 28
Creation of prototype of bibliographic database
Meeting with Director Servicio Central di Computashon
(Central Computer Service)

Thursday October 29
Meeting with staff
Directie Economische Zaken, Handel en Industrie
(Dept of Economic Affairs, Commerce and Industry)

Meeting with Director
Servicio di Telecommunicacion di Aruba (SETAR)
(Aruba Telecommunications Service)

Meeting with the Ministerie van Welzijnzaken
(Minister of Welfare - responsible for libraries)

Meeting with Director TELE - ARUBA

friday October 30

Testing prototype of database

Review of background documents and previous studies

Monday November 2
Testing of prototype of database

Meeting with Director and Staff Dept of Foreign Affairs

Meeting with representatives of:
Aruba Hotel and Trade Association (AHATA)
Aruba Trade and Industry Association (ATIA)
The Chamber of Commerce

Tuesday November 3
Meeting with Director Tourist Board
Meeting with interim librarian Law Faculty Library
Meeting with Director Radio Keklboom

Wednesday November 4
Meeting with Directors Depts of Social Affairs, and Labour
Meeting with representative of Labour Unions
Meeting with representatives of OSTICEBA
Meeting with Director Central Bureau of Statistics
Meeting with President and Clerk of Parliament

Thursday November 5
Meeting with representative of Netherlands Ministry of
Antillian Affairs
Meeting with Director and Educational Planner of the Dept of
Education
Meeting with Principal Colegio Arubano

Debriefing meeting BNA
Departure Aruba

34.   Plans for the development of the BNA, as well as those
for other libraries, and information services were,
summarized by the BNA management, and were used to inform about
proposals as described in the   plan.

35.   The proposals for computerization of libraries in the
Netherlands Antilles in which Aruba has been invited to
participate, have direct relevance to the proposals for
computerization of the national information system, and it is
recommended that there be established a national database of
materials held by libraries in Aruba, and that access by
Aruba to the holdings of the libraries of the Netherlands
Antilles, be gained by telecommunications linkages. Similar
linkages can be used to permit the Netherlands Antilles to
gain access to materials held in Aruba. Duplicate copies of
the databases can eventually be acquired and run on the
mainframe of the Central Computer Service, or on optical disk
depending on the comparative costs.

36.   The Unesco report on the media, which was prepared by Dr
Aggrey Brown, included some significant recommendations on
the BNA's activities, and although some are already in
process of being implemented, the relevant ones have been
incorporated into the recommendations of this consultancy
mission.

CHAPTER 2

USERS AND POTENTIAL USERS OF THE NATIONAL INFORMATION SYSTEM

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37.   The principal user groups and organizations which could
potentially benefit from the national information system are
by definition, all members of the community, and all
organizations operating within the nation. In addition to
the traditional services of supplementing the educational
system, and providing leisure and background information, the
national information system is expected to support the
information needs of the public and private sector and to
stimulate interest in continuing education and in all areas
of development.

Identification of user groups
38.   The experience of the BNA in information policy
formulation and in providing information services was used to
inform about the preparation of the programme of consultation with
users and potential users of the national information system.

39.   Members of the private and public sector, the
educational system, and the labour movement, and
representatives of community organizations were interviewed
in order to determine their information needs, areas in which
the system could provide them with relevant information, and
areas in which they could serve as sources of information.

40.   There was found to be a significant demand for
information among the users and potential uses, and in some
cases the meetings served to identify immediate requirements
for information which can be served by the BNA'S present
resources. Meetings were held with representatives of
several user groups - mainly those in the public and
educational sector, and as a result of these discussions, the
scope of the user community was defined as including all
institutions and groups in the nation. The members of these
groups and institutions have been identified in detail as the
users, as well as the 'general public'.

The scope of the user community as defined below, is based on consultations with key information personnel, and with representatives of the user groups during the mission.

INSTITUTIONS AND GROUPS   USERS

Political directorate   Ministers of Government

Parliament   Parliamentarians

Educational institutions   Students (all levels)
                                                 Primary
                                                 Secondary and
                                                 Vocational
                                                 Tertiary
                                         Teachers (all levels)
                                                 Primary
                                                 Secondary and
                                                 Vocational
                                                 Tertiary

Government departments and   Policy formulators
corporations   Managers
                                         Economic, social and
                                         physical planners
                                         Technical personnel
                                                 Engineers, Architects
                                                 Agriculturalists etc

                                         Legal officers
                                         Mass communicators
                                         Information resource
                                         managers
                                                 Computer system
                                                 analysts
                                                 Telecommunications
                                                 Engineers
                                                 Librarians,
                                                 Documentalists

Medical and health   Medical and health
institutions   personnel and the general
                                         public

Research institutes   Technicians
                                         Researchers

Private corporations	Administrators
Manufacturing	Managers
Trading and service	Technical personnel
enterprises	Legal officers
Large and small	Financiers
enterprises	Wholesalers
	Retailers
Employers Associations	Managers mainly (private sector)
	Chamber of Commerce
	Manufacturers Association
Labour unions	All membership
(Private and public sector)	
Professional associations	Engineers, Architects
	Medical and other professionals
The General public	-including-
	Community groups
	Small scale entrepreneurs
	Small farmers

During the mission users demonstrated the ability to serve
also as sources of information, particularly of specialized
information. Some of this information is primary
information, collected and or generated by the users and
their organizations, and some is information sent from
external sources to these users in their capacities as
national focal points for Aruba.

CHAPTER 3

TYPES OF INFORMATION AND INFORMATION SOURCES
TO BE MADE AVAILABLE BY
THE NATIONAL INFORMATION SYSTEM

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42. In its original role of Public Library, the Biblioteca Nacional functioned mainly as a source of printed information, but this role has been gradually modified to incorporate audio-visual information in anticipation of users' needs.

43. The national information system will aim to meet the needs of the user groups as defined earlier and this will dictate the provision of information services and products in all formats, and from as many sources as can be economically tapped.

44. The main types of information provided by the system will therefore be:

45. **Numerical data**
    Data which can assist in quantifying the performance of various aspects of the economy or relevant projects and activities

46. **Analyses of numerical data**
    The results of manipulations of numerical data, – local and relevant external data – in areas required by the user community

47. **Bibliographical references**
    Indications to the user of published and unpublished documents (in all formats) and to a limited extent the scope of the contents. This information will be held in the most appropriate format, manual or automated as the system develops, and will therefore consist of several databases including one which will have referral functions. Particular emphasis will be given by the system to the collection and bibliographic control of information produced in or about Aruba.

48. **Bibliographical information**
    Actual documents which are collected by the BNA and other libraries within the system which will be made available to users as required.

49. **Information in other formats**
    The various types of contemporary publishing require the national information system to hold information in all formats – audio-visual

publications, computer software, computerized
databases etc. The system will also be required to
provide adequate bibliographical references to all
the types of information held.

50.   **Access to external databases**
The national information system will periodically
be required to provide access to information not
held by the system. Information held in commercial
databases and in other external databases should be
used by the national information system to provide
actual data, or references to relevant information.

51.   **Undocumented information**
The information, - mainly local - which has not
been documented, which is not published, and has to
be consolidated from source data, is currently
being collected, by several agencies, such as the
Dept of Labour, and the Tourism Bureau, and the
Central Bureau of Statistics. This information is
a national resource, and should be held by the
producing organizations, but should also be known
to the system, thus increasing its availability to
qualified users.

The national information system would also be
required to stimulate the development of databases
of otherwise undocumented information such as data
on ongoing projects approved for execution by the
Government

52.   **Referral services**
As the system currently consists of several
libraries and will incorporate sources of
information within the country, it will be
necessary for information referral services to be
introduced. These will assist the present and
potential users in locating the various types of
information held by the components of the national
information system and will ensure that all
possible channels between the users and the system
and the component units are efficiently utilized.

53.   **Repackaging of information**
The results of research, and other information
of general appeal requires repackaging and in some
cases translation to permit greater accessibility
to the general public. Some possible areas are
information in the area of public health, and
skills training.

54.   **Dissemination of information**
In addition to the library and book promotion
activities of the BNA and the other libraries, more

in depth dissemination of information to advise
users of the type of information held on specific
subjects, will be required as the system develops.
The development of this service is one on which the
BNA as the main institution of access within the
system should place great emphasis. These services
when implemented will permit the users greater
awareness of the information held by the system and
will provide the basis for more effective use of
the system's holdings.

55.   Development Support Communication
In addition to general support for national
development activities, the system should also
support specific development activities which are
expected to benefit particular communities, or
sectors of the country.

CHAPTER 4

EXISTING INFORMATION SERVICES

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56. Initial evaluation of the system was based on analysis of the activities and procedures of the BNA and the relationship with users. The BNA has a very high profile in the community, and has for some time been very active in several areas which encourage the use of information by the members of the community.

57. There is a significant demand for information at some levels, some of which has been stimulated by the increased scope of national responsibilities and development activities, and some as a result of the library's efforts to promote the use of information.

58. Some of the information required is in various forms, and held by different units within the system. Demand for this information is not therefore easily monitored as this demand is usually articulated in several different ways and is usually communicated to particular officials of departments known to hold particular data.

59. An obvious requirement, expressed by several users is for the BNA to function as a central source of information on the location of various types of local and external information, as this is expected to save time and to ensure that users are aware of all types of information relevant to their needs.

60. The meetings during the mission were also used to identify other types of services which the BNA could provide in the long and short term. The present "national information system" can be defined as being composed of all sources of information within the country. In the case of Aruba, most of the traditional centres or units exist, and some have been functioning successfully for some years. The components of the national information system have been defined in relation to the complete information transfer cycle, with libraries - the main institutions of access, acquiring information from producers and generators, and processing and disseminating it through the use of the facilitating mechanisms of information technology.

EXISTING COMPONENTS OF THE NATIONAL INFORMATION SYSTEM

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------------------        ;----------------
INFORMATION     :/--------:      :  USERS OF     :
PRODUCERS &     :\--------:      :               :
GENERATORS      :               :  INFORMATION  :
------------------:               ----------------
Central Bureau:               :          /:\
of Statistics :               :           :
Authors       :               :           :                ;-----------------
Researchers   :               :           :                :FACILITATORS
Publishers    :               :           :                :OF
Other sources :               :           :                :INFORMATION
              :               :           :                :AND
------------------               :           :                :INFORMATION
                                 :           :                :FLOWS
                                 :           :                :
                                 :           :                ;----------------
                                 :           :                :SERVICIO
                                 :           :                :CENTRAL DI
                                 :           :                :COMPUTASHON
                                 :           : - :            ;----------------
              \:/              \:/            :SETAR
              ;-------------------------------;            ;----------------
              :                               :            :TELE-ARUBA
              :  INSTITUTIONS OF ACCESS        :            :Press & Radio
              :  ------------------------      :/-------\:  ----------------
              :  BIBLIOTECA NACIONAL           :\-------/:POSTAL
              :       and branches             :            :FACILITIES
              :                                :            ;----------------
              :       Documentation Centres    :
              :       Private Libraries        :
              :       Central Archives         :
              :       Booksellers & Sales      :
              :       Agents                   :
              :                                :
              ;--------------------------------;
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61. **Identification of users needs**
In order to determine the role of the national
information system in satisfying the needs of present and
potential users, it seemed appropriate to begin at the point
of evaluation of the methods used by the present system and
services to identify the needs of users. This was done for
the Biblioteca Nacional as the main agency providing services
and for the other units offering information services.

62.   The sector in which there has been the most detailed
analysis of users needs is the education sector. There is
regular liaison with teachers on curriculum developments, and
on the areas in which background materials – in all formats –
can be provided by the library system.

63.   In other sectors, users' articulated requests, and
anticipation by the library staff of future needs have been
the main means of identifying the users' information needs.
The Information Centres for Adult and Youth readers, as well
as the other departments, within the BNA have been able to
establish a close relationship with some users and are
therefore able to identify requirements for information. The
BNA also used the opportunity afforded by the mission to
identify topics and types of information needed by the users.

64.   While the efforts of the BNA have paid off in terms of
its ability to encourage a variety of information-related
activities, the size of the current membership in proportion
to the total population indicates the need for more
systematic targeting of sections of the population to ensure
that the membership can be increased from the current 14% to
at least 50% of the population within the next five years.

65.   The other information units which operate outside of the
BNA's structure are mainly inhouse units which collect
bibliographical, or quantitative data to provide an input to
the organization's decision-making.

Recommendations
66.   The BNA as the focal point for the national information
system should undertake a more systematic identification and
study of users needs, particularly those in the public and
private sector. Regular communication with users, and
feedback on the effectiveness of the services will be a
valuable aid in the identification of users needs.

Selection of information materials within the national information system.
67.   Within the BNA system, information materials are
selected according to the needs of users as perceived by the
staff of the libraries, and in response to specific requests.

The Information currently held by the national
information system

68.   As the analysis of the users' needs reflected demand for
specific types of information, the evaluation of the current
services was based initially on the availability of these
services and also on the level to which these services have
been developed.

Numerical data

69.   Most of the government ministries and departments are
collecting numerical data relating to the activities of their
sector.   This data is collected initially on vouchers or
worksheets, and is based on the perceived requirements of the
departments as the particular user community.   The Central
Bureau of Statistics (CBS) collects information on the
economic sector to provide a national profile of that sector,
trade activities, companies registered in Aruba, and the
population structure. The Tourism Bureau, the Education,
Labour, and Economic Affairs Departments are among those also
active in establishing numerical databases,

Recommendations

70.   The development of these data collection activities
should be rationalized to prevent overlap with other
departments as well as to ensure that the information
requirements can be met at the time of output.   The
professional staff of the Central Bureau of Statistics are
able to advise on appropriate input requirements, and the ad
hoc advisory role of the CBS should be formalized to permit
policies for data collection to be rationalized and worked
out for each department and to provide more professional
input into these activities.

Analyses of numerical data

71.   The data collected is in some cases not analyzed, or
subsequently available for manipulation, and therefore cannot
be effectively used for planning and decision making either
within the government, by the private sector, or by external
agencies.   This situation leads to duplication of effort in
collection and manipulation of numerical data, and to gaps in
the provision of valuable statistical analysis.

Recommendations

72.   As the Departmental activities are gradually becoming
computerized the above recommendation becomes even more
important.   The determination of significant data elements
and the priorities for collection will facilitate subsequent
analysis and consequent availability for planning and
decision-making.

Bibliographical references

73.   The BNA's collections are the main sources able to
provide bibliographical references to the users, and
consequently while there is a wealth of valuable unpublished

material, and in some departments useful specialized
published studies or texts, there is need for a means of
identifying available materials on particular topics even
within the government sector, and consequently some effort is
evidently being expended in querying external sources for
materials which might be held within the national information
system.

Recommendations
74.   Bibliographical references need to be prepared for all
documents - published and unpublished - which are considered
to be of long or short term value to the system.   A
standardized format which can subsequently be computerized is
recommended at this stage so as to permit subsequent
interchange of data between the units of the system.   It is
recognized that at the earlier stages of computerization it
will be necessary to use several microcomputers within the
system, and therefore the standardized format is particularly
important for the future development of the national
database.

Processing
75.   As the system is all manual main entries have to be
selected and this is done according to the Anglo American
Cataloguing Rules II.

76.   Bibliographic description, which aims to provide a
unique and accurate description of each item, is presently
done according to the International Standard Bibliographic
Description (ISBD) which is the uniform method of description
used by bodies responsible for producing national
bibliographies.

77.   Another processing format, related to the BNA's
participation in CARISPLAN, is based on the UNISIST
Reference Manual for Machine-readable Bibliographic
Description.   This format was recently employed in the
Arubiana/Caribbeana section, and is being used for
cataloguing the materials in that section.

78.   Subject analysis is presently by the SISO (a modified
Dewey) classification scheme which includes an alphabetical
index.

Recommendations
79.   Computerization of the holdings of the BNA is
recommended as a means of improving access by author, title
and subject to the items held.   In preparation for the
implementation of the computerized system, however, it will
be necessary to standardize some of the current procedures,
and to establish standardization of the forms of personal and
institutional names, particularly those in Papiamento, as
well as subject headings and thesauri which will provide
increased as well as standardized access to the collections.

Access to documents held by the system

80.   The BNA, its branches, and several other departments as well as organizations in the private sector hold texts, studies and reports in collections in various degrees of organization and accessibility.

81.   As the BNA and branches are open access libraries which allow free entry and consultation by all members of the community, this library is the main source of documents cited in the bibliographical references.

Recommendations

82.   The recommendation relating to uniform and standardized bibliographic references throughout the system, seeks to provide eventual access to all documented data held within the libraries and documentation centres of the national information system, and this with locations will assist in identification of sources of relevant materials.   In an island of Aruba's size, which is relatively isolated from the main centres of publishing it is essential that document delivery - i.e. access to the actual documents be maximized. It is therefore recommended that the BNA's liberal policy of document availability be implemented by other departments as this can save users valuable time and financial resources in the location and acquisition of documents.

Information in other formats

83.   This information, - audio visual products, computer software, and other information in non-print format, is increasingly becoming a significant component of Aruba's information resources and although they all require the same treatment as regards bibliographical references and availability, this relatively new format has facilitated the collection, storage, and dissemination of information in Aruba, particularly local information which is being collected by the BNA and other centres.

84.   The BNA, in particular has made significant use of audio-visual formats as a means of collecting and storing local information and of disseminating information to a wider audience particularly in the school system.

85.   The information held in machine-readable format, computer software, and computerized databases, tends to be held in individual units, without bibliographical references, and consequently their availability to the national system is greatly reduced.

Recommendations

86.   The non-print materials held by other centres should be recorded in standardized bibliographic record format incorporated into the national database as it develops and given the same considerations of availability as the printed

materials.

Access to external databases

87. This facility has been found necessary by professionals
in several disciplines, partly because the locally held
information is not given detailed enough treatment, and
partly because the national information system cannot provide
information in all specialized areas. The experimental
searching of DIALOG which was undertaken by the Department of
Economic Affairs was a useful exercise in demonstrating the
kind of information which can be provided by DIALOG and other
hosts. The difficulties experienced were due to lack of
background information on the available databases, and the
need for training of the searchers. The need for backup
document delivery as voiced by the users was another factor
which limited the usefulness of the exercise.

Recommendations

88. As the selection and searching of external databases
requires background information, training in the most
appropriate access methods, and the regular use of the
manuals and the thesauri, it is recommended that the BNA be
the central point within the system through which all
requests for database searching are channelled. This will
enable the reference librarians as intermediaries to develop
expertise in translation of the users needs into the language
of the databases, in identifying appropriate databases, and
in the techniques of information retrieval.

89. While the telecommunications charges for searching will
be reduced with the improved infrastructure proposed by
SETAR for 1988, there will be variable costs for database
access attached to each search, and these can be assigned by
the BNA to the individual, organization or department,
requesting the search.

Undocumented information

90. The information system is expected by the users to
provide access to information which might not yet be
systematically documented. This ranges from the type of
information which is usually provided by the BNA's
Information Centre in answer to queries - names of persons,
dates of events, etc, to the indexes of law reports, and
information on ongoing projects which at this point need to
be compiled in the form of locally produced databases.

91. Projects which have been approved and are in the process
of implementation provide decision makers with a valuable
source of information on current activities, and their
relationship with other projects under consideration. One
point of access within the government will permit policy
formulators - planners, and technical personnel - to identify
ongoing projects, specialists and resource persons
responsible for project execution.

Recommendations

92.   As no such database(s) are currently in existence, it is recommended that the basic format for data collection be drawn up by the office or department which has most responsibility for policy coordination. The newly created office of Chief of Staff seems to be the most appropriate location for development of this database. The BNA as the referral centre would need to know the form in which the database(s) are held, and to have a copy of the database(s) for providing related information services

93.   The effectiveness of such database(s) is dependent on the degree of comprehensiveness as well as the number of access points by which information is readily available.   The processing would therefore need to be immediately computerized using data structures, and application programs which are identical to or compatible with those used in the other areas of the national information system.

Collection

94.   As the collection of information for this type of database would be a new feature for the national information system of Aruba, and is one which is crucial to several development activities, the collection procedures will need to be established immediately to ensure that the flow of information into the database(s) reflects the national project activity at least within the government.   Additional arrangements would need to be made with the private sector organizations for information on physical and economic development projects which might be mainly the responsibility of the private sector.   The department responsible for granting physical development permits should be able to assist the flow of information for the database by providing an inventory of projects for which physical planning permission has been granted.

95.   At a later stage in the development of the referral services another **textual database should be established to provide information on specialists.**   This should be closely coordinated with the projects database which should include persons working on particular projects, as this would be an indication of some degree of specialization.

Repackaging of information

96.   This is being done by several organizations and departments including the Department of Social Affairs, and by OSTICEBA.   The immediate impact of some of the information held by the BNA and some other units, for example the results of research on primary health care, can be reduced unless it can be transmitted in a more appropriate form to the general population.

97.   Some of the technical information available, if

repackaged can be used for the retraining of people who wish to enter new trades or to become small entrepreneurs.

Recommendations

98. It is therefore recommended that the BNA serve as the link with organizations responsible for repackaging information and provide current technical information which can subsequently be repackaged. The recording on video tape, and transmission by TELE ARUBA will permit a much wider impact than might be the case at present.

Dissemination of information

99. This is a crucial function of any information system. The present methods mainly involve local publications of primary information, such as the bulletins of the Tourism Bureau, the Central Bureau of Statistics, and of the Educational Planning Unit. There are no secondary publications, and consequently potential users are not as aware as they might be of the valuable sources of information held by the BNA and other units of the national information system. The BNA particularly as the main source of bibliographical information and the main institution of access needs to establish channels for communicating with users who might not come regularly to the library, or who might not be aware of all the areas in which the library can provide information.

Recommendations

100. The channels for dissemination of information to users should include the communication to individual users through the distribution of current awareness bulletins, and should also include the use of the available mass communication services to gain access to a wider section of the user community.

Current Awareness Services

101. Current Awareness Bulletins listing significant new publications are recommended. These should be published at regular intervals preferably monthly, and should be distributed to government departments, schools, and colleges and to private sector organizations. In addition to the bulletins of new acquisitions, the BNA should monitor the contents of newspapers in relation to items of current interest to Aruba such as The Caribbean Basin Initiative, or the trading relations with Japan. BNA's Information Centre in conjunction with other departments in the library would therefore be able to advise users of new information received in a particular field, and could also make this information available to users in the library.

102. The mass media - radio, television and newspapers should also be used to reach a larger number of users, and to advise them of new publications received, and of special areas in which the BNA is collecting information.

Cooperative arrangements

103. Within the national information system of Aruba there are some formal cooperative arrangements for processing and availability of books and other materials. The BNA is responsible for processing books and other materials for the San Nicolas branch and for some of the materials acquired for the library of the Colegio Arubano.

104. Inter-library loan services are provided by all the libraries and this is expected to extend to the Faculty of Law Library when it is established.

105. The recently established Documentation Centre of the Central Archives is not linked administratively to the BNA's structure nor are there yet any cooperative arrangements to ensure compatibility of databases or to facilitate inter-library loan.

106. The Library of Parliament which is to be established next year, plans to use the same procedures, and methodologies as the BNA and has been exploring the areas in which cooperative agreements can be worked out

Recommendations

107. That cooperative arrangements be established within the BNA's structure for standards, compatible processing and inter-library loans among existing libraries and documentation centres and new ones as developed. These arrangements when fully implemented will ensure that there is maximum access to the materials held within the national information system.

Development Support Communication

108. The national information system does not at present provide any services of Development Support Communication. These activities are currently carried out by individual departments such as the Labour and Social Affairs Departments but in other sectors this type of information service could be very usefully linked to development activities in the community, and to providing repackaged information on development projects to sections of the community.

109. In the case of Aruba the language factor and the medium of transmission are important influences on the presentation and communication of technical information.

Recommendations

110. That the Government undertake activities of Development Support Communication for informing the community about aspects of national development activities. As an example, information on the development projects proposed for the San Nicolas area, including the possibilities for retraining of personnel now unemployed after the closure of the Lago

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Corporation, should be repackaged, translated into Papiamento
where relevant and disseminated through the national
information system to members of the community.

Outreach services

111. The national information system has its main service
point in the BNA which provides services from the main
building in Oranjestad, through one branch library in San
Nicolas, some additional service points and two bookmobiles
which provide services to schools during the school term.
The size of Aruba, and the cost of establishing and running
branch libraries does indicate that it might not be cost
effective to establish additional branches in other
communities. On the other hand the present distribution of
the service points seems to restrict access to the
information available from the system and some additional
means of providing outreach services to communities outside
of Oranjestad and San Nicolas needs to be provided.

112. The exhibitions, lectures, and other presentations which
are regularly held in the BNA's auditorium are a significant
feature of the BNA's activities. These presentations
incorporate exhibitions of background materials held by the
BNA and serve to develop interest in particular topics while
stimulating general encouragement of reading and research.

Recommendations

113. It is recommended that bookmobile services be provided
for adults in the outlying districts, and that the services
should be initiated as soon as possible to the areas furthest
from the main and branch libraries.

CHAPTER 5

INFORMATION SERVICES AND PRODUCTS TO BE OFFERED BY THE SYSTEM TO THE DIFFERENT USER GROUPS

114. The system, through the BNA and through other information units will provide information products and services to all users in the community. In order to fulfil the general objectives of the system, several types of information services will need to be systematically developed. As a means of introducing users and potential users to the system, orientation tours provide a means of making users aware of the available services and products of the system. This orientation is currently carried out within the library and through the media, and this serves as a very important means of communicating with users

115. **Bibliographical instruction** — provides more detailed guidance to the holdings of the library, and as the referral centre, the BNA would also be able to demonstrate how access can be provided to information held by the various units of the system.

116. **Reference Services** — answers to queries raised by users — are available to all users who are aware of this facility, and as use of the reference services does not require membership, of the library, they can be considered to be universally available.

117. **Referral Services** — as the main institution of access, the BNA is required to advise users on all sources of information avaiable within the country. These services would include identification of locations of items within the system, identification of numerical databases, and the contact person in each organization, identification of databases on projects and specialsits. Initially the BNA will advise users on the location of information, and in some cases will arrange its transfer or loan to the library for consultation by users. In other cases users can be put in touch with contact persons as appropriate.

118. **Current Awareness Bulletins and Services** — these services which are relatively new, will keep users abreast of information that has recently been received or identified by the system. The BNA will select a set of topics of interest to the user community, and will inform users through bulletins, lectures, exhibitions, etc of developments in these areas.

119. **Selective Dissemination of Information** – a procedure for supplying each user or group of users with the references to documents and other sources of information relating to their areas of interest – is recommended at this stage for a select group of users within the political directorate, and of those responsible for policy formulation.

120. **Access to external databases** – It is recommended that the system provide one central point of accessing external databases. Although all sections of the user community can potentially benefit from such a service, greater use is expected by the groups specified below.

121. **Advisory services on the implementation of Information Technology** – The system will gradually develop expertise in the implementation of information technology, and will therefore be able to serve in an advisory capacity on implementations in other organizations.

122. The main services to be offered by the system have been identified below. These services should be offered by the system to all users, and where particularly applicable to specific user groups certain services have been defined.

USERS	INFORMATION SERVICES AND PRODUCTS
Ministers of Government Parliamentarians	Selective Dissemination of Information
Students (all levels) Primary Secondary and Vocational Tertiary	Book promotion Bibliogrphic instruction Guidance in research procedures Reference services Current Awareness Services Referral services
Teachers (all levels) Primary Secondary and Vocational Tertiary	Information support for areas of the curriculum Referral services Current Awareness services
Government departments and corporations Policy formulators Managers Economic, social and	Selective Dissemination of Information Reference services

physical planners	Referral Services
Technical personnel	Advisory services on the
Engineers, Architects	implementation of information
Agriculturalists etc	technology
Legal officers	Access to external databases
Mass communicators	Current Awareness Services
Information resource	
managers	
Computer system	
analysts	
Telecommunications	
Engineers	
Librarians,	
Documentalists	
Medical and health personnel	Current awareness services in
	developments in health
	technology and in primary
	care
Research institutes	
Technicians	Current Awareness Services
Researchers	on new technological
	developments
Private corporations	
Manufacturing	
Trading and	
Service enterprises	
	Current Awareness Services
	in business management and
Technical personnel	production policies and
Legal officers	techniques
Financiers	
Wholesalers	
Retailers	
Employers Associations	
Managers mainly	
(private sector)	
Chamber of Commerce	
Manufacturers	
Association	
Labour unions	Current Awareness Services on
All membership	industrial relations, and on
(Private and public sector)	new production techniques
Professional associations	

Engineers, Architects Medical and other professionals	Current Awareness Services in relevant fields.
The General public -including- Community groups Small scale entrepreneurs Small farmers	Current Awareness Services relevant to production and marketing of local products

CHAPTER 6

THE INFORMATION TECHNOLOGY REQUIRED FOR THE IMPLEMENTATION OF THE SYSTEM

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123. Maximum utilization of the national information resources, will require the introduction of Information Technology for the processing, storage, and dissemination of locally held information and for gaining access to external databases. Several areas of the present operations, and those proposed, were examined with a view to determining Information Technology requirements, and those which can be implemented in the next five years.

124. The information resources currently available in Aruba can be more effectively exploited by the introduction of various aspects of Information Technology to enable the national information system to collect, process/manipulate and disseminate information more effectively.

125. One of the distinguishing features of the new information age is the ability of information systems to quickly process data and to identify information promptly when it is required. As Information Technology is the main facilitating mechanism in this new development, and as the systematic usage of computers, telecommunications and the media, is the main basis of the provision of the services from modern systems, it seems appropriate to identify the areas in which Information Technology has begun to be employed in the Aruba national information system, as these have to some degree permitted improved access to numerical data, and wider dissemination within the educational system of some of the information held by the libraries.

126. In relation to the present proposals for the development of the national information system, there are several areas in which Information Technology can be effectively employed to improve access to the content of the information, and to generally provide a more effective service.

Access to information

127. At this point it is recommended that priority be given to the development of one central point within the system, which can provide a bibliographical reference for each of the items available in the libraries which comprise the national information system. A national union (card) catalogue is the traditional method used for providing this service but establishing such a catalog manually implies a large physical structure, physical reproduction of cards for various sequences in the catalogue, and a limited number of access points.

128. The manipulation of the bibliographic records which is possible in a computerized database permits the user to search by multiple access points, and in addition to search for combinations of terms which can consequently reduce the number of records retrieved while providing a more precise response to search queries.

129. The computerized database which is recommended will permit the development of a facility equivalent to the union catalogue but which will:

- be able to accommodate a much more complex record format

- be able to provide printed output for current awareness bulletins and printed results of searches in response to users' queries

- be accessible at various points throughout the country as the telecommunications facilities become available

130. A computerized database is recommended, and this can be initially established on a microcomputer, with communication facilities which will permit access from other departments or organizations. The current telecommunications facilitates permit online communication between personal computers in Aruba, and it would therefore be possible for the microcomputer holding the database to be equipped with an interface, which will permit interactive communication with other personal computers.

131. The growth of the database will eventually require additional computer storage capacity, and the expansion can either be handled by additional microcomputers linked by a network, or by transfer to the IBM 4341 mainframe at the Central Computer Service.

132. The establishment of the database will require a software package which can efficiently process textual data, and which can permit subsequent transfer to a mainframe computer as the system expands.

Bibliographical information (Document delivery)
133. The delivery of bibliographical information is treated on two levels, the form in which the information is delivered, and the methods used for actual delivery of documents through the reference and circulation services. This relates to information held by the national information system, as well as information which might need to be acquired from external sources.

134. Documents held by the system are and will be provided in conventional printed form, or in audio visual formats including microfilm/microfiche, video tapes and film strips.

Video tapes are produced by the media centre of the BNA and in some cases are purchased from commercial sources. The microfilm/fiche format provides a rapid means of acquiring externally produced information, and also a space-saving means of storing documentary information. The microfiche reader/printer held by the BNA's Information Centre provides access to documents held on microfiche and with the correct lens will be able to provide printed output from the microfiche as required,

135. There are currently no local facilities for producing microfiche/film, and in the case of local documents which are held by the archives, the BNA and other centres, and which require preservation, this is a facility which will be required in the future.

Circulation systems
136. The circulation systems of the BNA and the Colegio Arubano were considered for automation, but neither the size of the clientele nor the number of items borrowed seem to justify automation of these circulation systems at this time. It is therefore recommended that the circulation systems be subsequently linked to the databases, and that in the interim the manual systems be rationalized to reduce duplication of effort. In the case of the BNA multiple part forms can be used to reduce the duplication of borrowers information.

137. The areas in which computerization would be valuable are the creation and updating of the membership file which presently is prepared annually. This can be prepared on one of the two Apple computers which are held by the BNA and which are awaiting servicing.

138. Very detailed statistics of items loaned from all departments are kept by the BNA and by the other libraries. Computerization of this information and of the membership file would permit a clearer view by the BNA's management of the state of the membership, and of the type of materials borrowed.

Numerical data and analyses of numerical data
139. The numerical databases currently existing are mainly held on microcomputers in individual departments and organizations. The Central Bureau of Statistics which had been using the mainframe computer at the Central Computing Service is now transferring its data to a recently acquired IBM 36 F2. As the initial impetus for developing the numerical databases will come from the individual departments, and as the computerization of these databases depends on indivifual departmental resources, it will be necessary for the Office of the Chief of Staff which will be responsible for policy coordination within the government to determine the priority areas of numerical data which require microcomputer databases, and those which can use the recently upgraded services of the Central Computer

Service for their departmental databases, and for analysis of the data.

140. Software policies for numerical databases and for other microcomputer applications have been initially drawn up by the Central Computer Service, and if formalized these will help to ensure compatibility of hardware and software systems, and to permit the transfer of data between the individual organizational databases.

141. There are likely to be numerical databases in the private sector which would be expected to form part of the national information system, but during the mission it was not possible to identify any of these or their possible contribution to the national information system.

Access to external databases
142. Several organizations, and individuals have expressed the need for access to databases on specialized areas. This service needs to be developed in conjunction with the national database to ensure that the items available in the country can be readily identified and located.

SOFTWARE AND HARDWARE REQUIREMENTS FOR THE DEVELOPMENT
OF THE SYSTEM

143. One of the objectives of the original request by the
Aruba authorities was to determine the areas in which the BNA
as the coordinating agency for libraries can benefit from the
availability of the new Information Technology. The
authorities therefore required an initial identification of
the areas in which such technology can be immediately
employed.

144. In discussion with the Director and staff of the BNA, it
was also disclosed that their aim is to improve the quality
of service available to the public, by speeding up procedures
where possible, introducing new features of the service which
cannot be reasonably undertaken manually, and obtaining
management information which can assist in defining future
plans.

145. As the operations of the BNA were examined it became
evident that there are several areas in which Information
Technology can be employed to improve the effectiveness of
the operations. As the introduction of Information Technology
would be a fairly new area in terms of experience and
training of the staff, and the availability of hardware and
software, priorities had to be determined to permit the
development of a plan of action for the next five years.

146. The highest priority was given by the consultant to
increasing users' awareness of the contents of materials held
by the BNA and related libraries. As recommended the
cataloguing process should include as many subject headings,
indexing terms or descriptors as might be necessary, as these
will therefore provide additional access points at the time
of searching.

147. During the limited time available for the mission, the
consultant examined the human, and material resources
available and examined possible types of computerized systems
with a view to selecting one which could be used to accomplish
the stated objectives.

THE AVAILABLE RESOURCES

Human resources - general computer skills
148. As the regular staff of the BNA has had very little
exposure to or training in the development of computerized
library systems, it is initially recommended that the
preparatory activities for automation include:

    1.   Initial orientation of all relevant staff in
        computer literacy

2. Development of a specialized collection of books, journals and audio-visual materials, which relate to the development of computerized bibliographic and other information systems

3. Training of at least one staff member of the BNA's management in information resources management and information systems

4. Short-term attachment of one staff member at management level to the Caribbean Documentation Centre of the United Nations Economic Commission for Latin America and the Caribbean (UNECLAC)

5. Theoretical and hands-on training in the use of the main features of the selected operating system and the utilities which it offers

Human resources - systems analysis and programming skills

149. As the staff of the BNA do not presently have any experience or training in systems analysis or programming, it is recommended that the expertise in programming be requested from the Central Computer Service, and that a consultant with experience in computerized bibliographic information systems, and in the use of the selected system be periodically employed as necessary.

150. As the system expands, a half/full-time programmer will be required for establishing a multi-user system and for transferring it if necessary to a mainframe computer.

Physical resources

151. The BNA has, since 1983, been situated in a new, very well laid-out building. The open-plant layout of the ground floor provides for flexibility of the arrangements and for positioning of the computer(s) and peripherals at locations accessible to the staff and the users. The central air conditioning of the building, and the reliable supply of electricity provide a good climate for use of computer equipment.

Support, and maintenance

152. There are several dealers of computer equipment in Aruba, and the major ones are equipped to provide initial training, as well as some system support, and maintenance.

System components for automation 1988 - 1992

153. Several components of the existing system were examined, and the areas which would be most able to influence the general objectives of increasing access to the holdings to the libraries, were selected for early automation.

Technical services

154. Creation of a database of the holdings of the BNA and other libraries in Aruba is expected to provide users with one point of access to documents and other materials on particular subjects. The database would also be the master file of an integrated online library system, and could subsequently be linked to other modules such as circulation, acquisition, serials registration etc. as the system develops. Linkages as described in the diagram below will permit the system to make maximum use of the information initially collected for the bibliographic database, and to use it without duplication of effort for other areas as they become automated.

AN INTEGRATED LIBRARY SYSTEM

CIRCULATION

INTER-
LIBRARY
LOAN

* REFERENCE

* INTEGRATED BIBLIOGRAPHIC DATABASE

SERIALS
CONTROL

ACQUISITIONS

* CATALOGUING
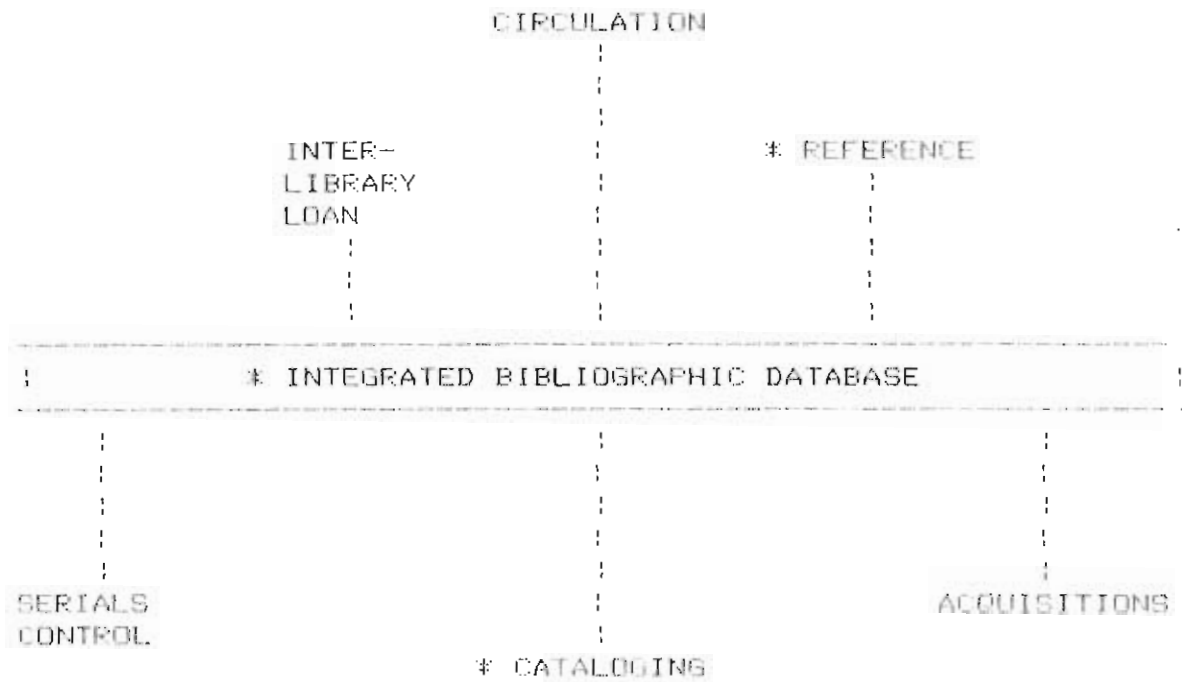
*Priorities for implementation

155. As the material held in the Caribbeana section seems to be most in demand, and in the case of the Arubiana is not covered by any indexing or abstracting service, it is recommended that this be the first section of the database to be developed.

Reference

156. The Reference component would use the same information held in the Integrated Bibliographic Database but this will require a user friendly interface to prompt the users to the quickest means of searching by subject, author, title, or by post-coordinated terminology.

157. A current awareness bulletin can be an immediate and useful by-product of the database, and will assist the reference librarians and users in locating information in answer to queries. Cummulations of these bulletins will serve as backup to the computerized systems and will provide information at the initial stages, when there is only one computer or when the reference computer might not be available, because of unanticipated downtime.

Management Information

158. The management of the BNA can use the statistics presently collected to provide a basis for planning and for identifying new areas for services. The Membership file, and the Circulation statistics are two areas which if manipulated in a spreadsheet program, can demonstrate the need for particular types of relationships with users of different communities or age groups, or can be used to inform the selection and acquisition policies.

Software selection

159. The types of software which could potentially be selected were considered, but custom software was eliminated as the BNA's needs indicate that there are several existing software packages which have been tested in other libraries, and which can be considered. Inhouse development of software was also ruled out for similar reasons, and because of lack of local expertise in computerized bibliographic information systems.

160. An existing package which is already in use in libraries and bibliographic information systems, and which can accommodate the data elements required for flexible retrieval seemed the most likely candidate, and the cost of initial purchase, and of subsequent updating adds additional weight to the selection process.

161. As the initial establishment of the database can be done on a microcomputer, microcomputer software was reviewed in an effort to identify a package which can efficiently accommodate :

textual data
variable fields,
repeatable fields
the number of fields which might be required
transfer to a mainframe version
writing of front end, or other custom programs
different language versions, with diacritical marks

and can efficiently generate printed output.

162. Of the systems reviewed, Micro CDS/ISIS was selected
over other possible systems as it has all the features
required for establishing the database, is issued and
maintained by Unesco without cost, and although originally
issued in 1985 has already developed a user group in the
Caribbean and in other parts of the world.

Hardware

163. The identification of hardware was based on its ability
to run the Micro CDS/ISIS package, and to provide maximum
storage capacity. Support for a local area network and for
telecommunications were also considered to be valuable assets
which should be available if possible.

164. The IBM PS2 Model 80 is a microcomputer which can run
the Micro CDS/ISIS package, and which is able to provide the
features detailed above. The basic hardware configuration
would therefore require one IBM PS2 Model 80 for establishing
the database, and additional machines for further expansion.

AREAS FOR INITIAL AUTOMATION

```
CIRCULATION
         | Members file
         | & Statistics
         |
         |               REFERENCE
         |                   | (Arubiana &
         |                   | General)
         |                   |
         |                   |
         |                   |
-------------------------------------------------------------------------
 |        INTEGRATED BIBLIOGRAPHIC DATABASE                              |
-------------------------------------------------------------------------
         |
         |
         |
         |
         |
         |
         |
         |
       CATALOGING    (Caribbeana and the
                         general collection)
```
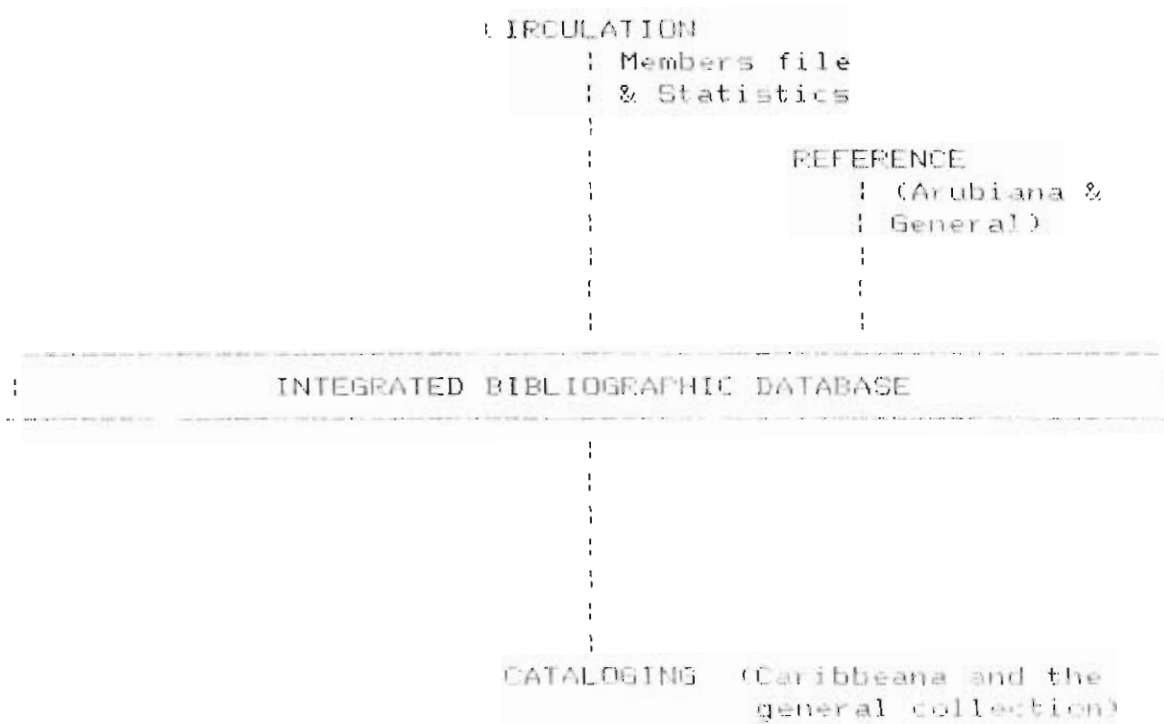
Installation

165. The transfer from a manual card catalogue requires more specific definition of :

the information to be retrieved (searching and printed reports)
the most suitable method of retrieval
and consequently
the data elements to be included
the data entry format including length of fields,
and other characteristics

Data for input to the database then needs to be recorded on the appropriate data entry format, and verified before entry into the database.

Data entry format

166. Two possible formats were considered, the MARC format, and the bibliographic record format used by input to the CARISPLAN database. Several variations of the MARC format exist, and are widely used by national and university libraries.

167. The CARISPLAN bibliographic record format can include all the fields required by the MARC format, is structured to permit repeatable authors, titles and other repeatable elements, and to record analytical entries, serials as entities and other types of entries. This permits a single database to be established, and therefore provides the user with one point of access to all the types of material held by the library. An additional advantage of the CARISPLAN format is the capability which it provides for communication with other national and regional information systems in the Caribbean.

168. The above structure as proposed will permit the BNA, the other libraries, and the users to gain more effective access to the materials held in the system thus maximizing the investment which has already been made mainly by the Government in purchasing information materials, and saving the time of library staff and users in locating materials required.

169. Other factors which determine installation procedures are the size of the database — current and anticipated, the type of access required, the availability of storage capacity. There are 60,000 items to be recorded and entered in the database. The records of the general collection are allowed a maximum of 2,000 characters, and those of the Caribbeana section which have abstracts, approximately 5,000 at present, are allocated a maximum of 4,000 characters. The storage capacity presently required is therefore estimated to total:

```
                        CURRENT HOLDINGS

General collection   55,000 (@ 2,000 chs)      110,000,000
Caribbeana            5,000 (@ 4,000 chs)       20,000,000
                                               ------------
TOTAL                                          130,000,000


                       ESTIMATED EXPANSION

Estimated annual growth   10% for five years
General collection 5,500 (@ 2,000 chs) x 5      55,000,000


Caribbeana              500 (@ 4,000 chs) x 5   10,000,000
                                               ------------
TOTAL                                          195,000,000
Minimum estimated storage capacity required   over the next
five years  = 195 MB
```

170. Additional storage capacity will be required for
obtaining data from regional or other information systems,
and while this can initially be stored on the hard disk of
one of the microcomputers, the developments in the technology
indicate that the possibility of storage of this information
on optical disk should be investigated for implementation in
the future.

THE FEASIBILITY OF PARTICIPATION IN REGIONAL AND INTERNATIONAL INFORMATION SYSTEMS NETWORKS AND PROGRAMMES

171.

                                                REGIONAL
                                                INFORMATION
                                                SYSTEMS

                                                CARSTIN
                                                Programme

                                                CARNEID
                                                (Education)
                                                (Unesco)

                                                CARISPLAN
                                                (Socio-Economic
                                                Planning)
                                                CDCC/UN ECLAC

    ARUBA
    NATIONAL   /--------------------------\   CAGRIS
    INFORMATION   \--------------------------/   Agriculture
    SYSTEM   CDCC/UWI

                                                CARPIN
                                                Patents
                                                CDCC

                                                ENVIRONMENT
                                                UNEP (proposed)

                                                CEIS
                                                Energy
                                                IDRC, Unesco,
                                                Commonwealth
                                                Secretariat/
                                                SRC Jamaica

172. Several regional and international information systems and networks have been developed over the past decade, with the general objectives of sharing the results of experience and research among participating members of the sytems. The systems have been organized mainly by regional organizations or international organizations to facilitate sharing of information resources among Member States.

173. Initially the systems aim to collect, process, and disseminate information - bibliographic and non-bibliographic produced in member states, while providing some degree of assistance in the development of national focal points.

174. Participation in these systems, and the ability to make maximum use of the resources is dependent on:

    The relevance of the systems' activities to the national information system

    The compatibility of system procedures and methodologies

    Standardization of formats wherever possible

175. In an effort to maximize the participation in and benefits from regional information systems, A Regional Information System Stragegy to the year 2000, has recently been formulated by the representatives of national and regional information systems and was approved by the CARICOM Heads of Government Conference in July 1987, and by the Caribbean Development and Cooperation Committee in November 1987. This provides a framework for the coordinated development of the systems, and general guidelines for the development of future systems.

176. Aruba is already participating in some of these systems and networks, and participation in others should be evaluated in terms of the type of services which the systems offer, and their relevance to the users of the national information system.

177. CARISPLAN - The Caribbean Information System for Economic and Social Planning is one in which Aruba has begun participation. This participation has involved attendance at seminars, and training programmes, and the input of bibliographic records to the regional database at UN ECLAC. As the system which is most widespread, the CARISPLAN input format and related methodologies have been adopted by other systems which are in process of being developed. There has not yet been maximum utilization of the regional database by users in Aruba, but this is expected to develop with greater familiarity with the database, and other services, and subsequently with online access to the regional database held at the United Nations Economic Commission for Latin America, Office for the Caribbean in Trinidad. Input from the BNA is

expected to continue and in addition it is recommended that
the Documentation Centre which has been recently established
in the Central Archives use the CARISPLAN format for
preparing bibliographic records for its database, as this
will facilitate development of the local database, and input
to the CARISPLAN database.

178. CARPIN - the Caribbean Patents Information Network,
which is also based in the UN ECLAC Caribbean Documentation
Centre, collects information on Patents in force in the
region since 1962, has established a database, and has begun
disseminating information to users in the region.

179. CARSTIN - the Caribbean Network for the Exchange of
Information and Experience in Science and Technology in the
Carbbean, is a regional Unesco programme which provides
assistance to Caribbean Member States in the development of
their information infrastructure, and in the creation of
information resources to support reference and referral
services. An aspect of the CARSTIN programme which is
expected to benefit Aruba's national information system, is
the provision of hardware and softwere and assistance
for establishing the national databases.

180. CARSTIN's database of Research Projects and Specialists
is expected to provide an indicator to the region of
available Scientific and Technological Potential. The
formats and data structures have been prepared and can be
used by Member states for the creation of their own
databases.

181. CAGRIS - The Caribbean Information System for the
Agricultural Sciences is a programme of the CDCC which
collects all areas of bibliographical data on agriculture,
and processes it for distribution to Member States. This
system is linked to AGRIS and is therefore a source of
information and services from the international system.

182. CEIS - The Caribbean Energy Information System - CEIS is
a recently formulated information network which includes
bibliographical and quantitative data on new and renewable
sources of energy, and a database on petroleum prices which
can be used by decision-makers to determine suitable
petroleum pricing policies.

183. CARNEID - The Caribbean Network on Education and
Innovation for Development is a Unesco project which aims to
identify innovative acivities which can be utilized by Member
States

184. ENVIRONMENT This Caribbean wide network is being
developed by the United NationsEnvironment Programme, and
while still at the design stage, is an area   which is
likely to be of significant interest to Aruba's development

-52-

policy.

185. Aruba is elegible for participation in the systems
listed above, and in others which are being developed, and
such participation is expected to increase the information
resources available to the national information system, as
well as providing a means of communication with information
personnel in other countries in the region.

CHAPTER 8

INSTITUTIONAL FRAMEWORK FOR THE DEVELOPMENT OF A
NATIONAL INFORMATION POLICY AND THE
NATIONAL INFORMATION SYSTEM OF ARUBA

186. The requirement for an institutional framework for the
development of the national information system was
demonstrated during the mission. The information sector as
defined is in fact an inter-disciplinary sector which
interacts with the traditional sectors. An increasing number
of the development activities in Aruba will require,
development of related information resources, access to
information, and dissemination of information.

187. The coordination of national information resources and
activities is therefore not only a political ideal, but also
an economic necessity which can provide, at reduced cost a
valuable input into the national development projects.

188. As described earlier, the components of the national
information system are administered by several ministries,
and until now there is no policy which ensures that their
activities are coordinated. These policies if formulated
in accordance with the national development framework would
help to reduce the current level of duplication. Improved
access and reduced duplication is expected to result from the
establishment of a National Referral Centre, which can be
used to direct users to sources of information within the
system. The establishment of a policy coordination
committee, composed of public sector officials is recommended
as a means of coordinating the national policy and of
monitoring its implementation.

```
 ----------------------        ; -------------------
 INFORMATION      ;/--------;   ;  USERS OF        ;
 PRODUCERS &      ;\--------;   ;                  ;
 GENERATORS       ;             ;  INFORMATION     ;
 ----------------------        --------------------
 Central Bureau;                        /;\
 of Statistics ;                         ;
 Authors       ;                         ;                    -------------------
 Researchers   ;                         ;                    ;FACILITATORS
 Publishers    ;                         ;                    ;OF
 Other sources ;                         ;                    ;INFORMATION
 ----------------------                   ;                    ;AND
                    ;                     ;                    ;INFORMATION
                    ;                     ;                    ;FLOWS
                    ;                     ;                    -------------------
                    ;                     ;                    ;SERVICIO
                    ;                     ;                    ;CENTRAL DI
                    ;                     ;                    ;COMPUTASHON
                    ;                     ;                    -------------------
                  \;/                   \;/                    ;SETAR
 --------------------------------------------                  -------------------
 ;                                          ;                  ;TELE-ARUBA
 ;  INSTITUTIONS OF ACCESS                  ;                  ;Press & Radio
 ;  ------------------------------------    ;/--------\;-------------------
 ;  BIBLIOTECA NACIONAL                     ;\--------/;POSTAL
 ;        and branches                      ;          ;FACILITIES
 ;        Referral Centre                   ;          -------------------
 ;        Documentation Centres             ;
 ;        Private Libraries                 ;
 ;        Central Archives                  ;
 ;        Booksellers & Sales               ;
 ;        Agents                            ;
 ;                                          ;
 --------------------------------------------
```
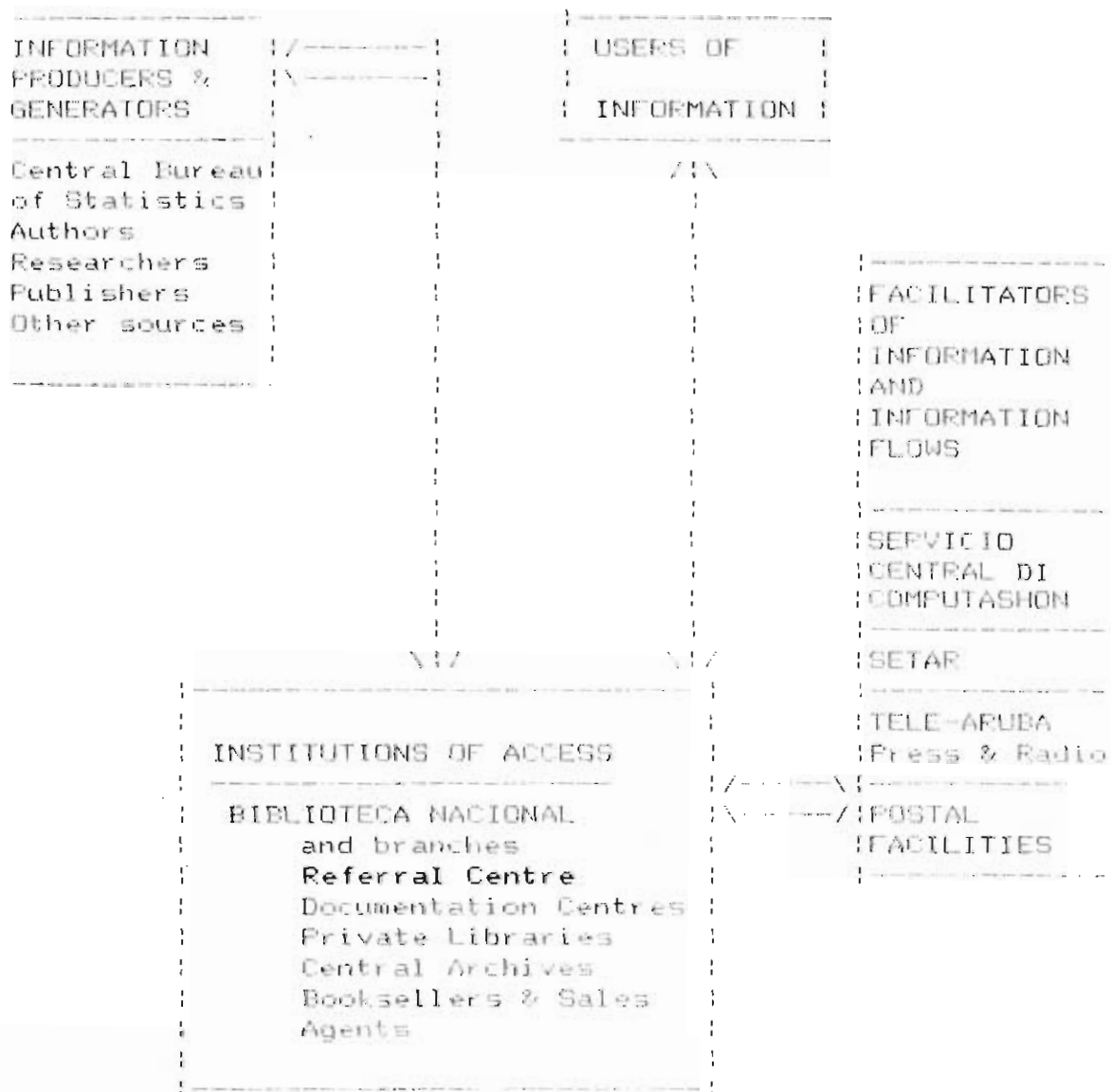
The diagram above shows that information activities are
carried out by several organizations in the public and
private sector, and consequently responsibility for policy
formulation and policy making rests with several ministries
and departments:

189.

```
                    Ministerie van Algemene Zaken
                     (Ministry of General Affairs)
                                  and
                      Office of the Prime Minister
                                   :
                                   :
                                   :
    --------------------------------------------------------------
    :              :                :               :            :
    :              :                :               :            :
    :              :                :               :            :
  Ministry       Ministry           :               :          Ministry
  of             of                 :        Ministry of        of
  Economic       Welfare            :        Transport &        Finance
  Affairs etc    :             -------        Communications     :
    :            :                 :   :              :          :
    :            :                 :   :              :          :
    :          Biblioteca          :   :       SETAR           Central
  Central      Nacional            :   :                       Computer
  Bureau                           :   :                       Service
  of                               :  Central
  Statistics              Dept of  :  Archives
                          Information
```
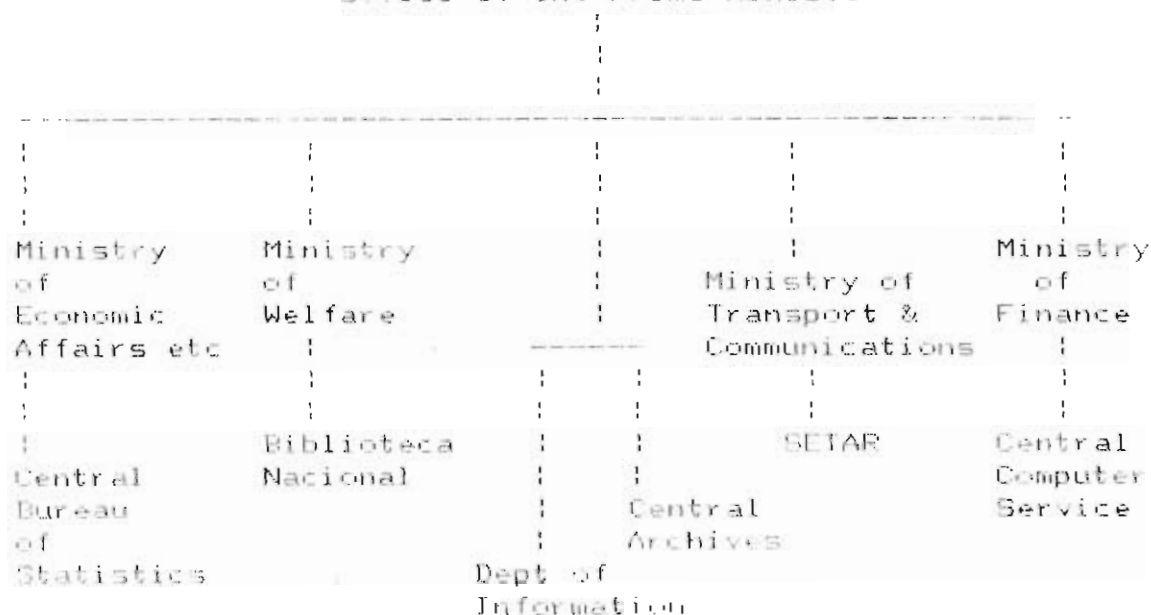
Note:
TELE-ARUBA the national television station is a government
corporation which carries out information activities.

Levels of coordination

190. A policy for the coordinated development of the information resources sector requires overall information policy making to be done at the highest level, and therefore it is recommended that the Policy Coordination Committee which is being established in the Prime Minister's office be specifically assigned the responsibility of information policy coordination as this will ensure that the information activities which are related to the components listed above, and are the natural function of sectoral ministries or departments, are compatible.

191. At a second level there is also need for technical policy implementation, and for a more detailed degree of policy formulation. The agencies mainly responsible for telecommunications, computerization, library and information services and the media, are best equipped to formulate the technical aspects of policies in their areas. The role of these agencies in implementation of technical policy needs to be recognized, by all private and public sector agencies, to ensure that the databases, and other national information resources are in fact in keeping with a national policy and are technically compatible. This method of technical policy formulation is expected to provide Aruba with a truly coordinated national information system linking compatible information activities.

192. The development of databases by various departments and agencies has demonstrated duplication of information and in some cases lack of access to relevant data. It is therefore recommended that policies of access to data held within the government be outlined by the policy formulation committee. Several categories of data can be identified, and the following recommendations are proposed as a means of ensuring a free flow of information required for policy formulation and decision making, while respecting the requirements for confidentiality and for restricting access to information on sensitive matters. It is recommended that the policy guidelines be presented to the Council of Ministers for implementation.

Information policy guidelines

193. It is recognized that Government officials and others of the community should be able to have access to information produced in and for the government.

   It is also recognized that some of this information needs to be kept secret to preserve the State's integrity.

   It is also recognized that some materials need to be kept confidential for a period while negotiations are taking place.

194. Information held within the ministries and departments including the Central Archives provide a valuable source of information, documentation relating to national development activities and experience, and this should therefore be made available as a pool of knowledge and which can provide the basis for policy formulation, policy making and decision making.

195. Policies governing the availability of locally produced, and locally relevant information can therefore be broken down into the following categories:

1. Projects at the stage of formulation. These projects should be confidential, within government, until negotiations have been completed.

   Access
   Access can be provided to members of the political directorate, and to relevant public service officials through a central computerized database describing national projects and related documents

2. Projects on which negotiations have been completed and for which documents have been signed.

   Access
   Access can be provided to members of the public and private sector through the central computerized bibliographic database described above.

   Copies held by the Central Archives should be available to the public and private sector.

   Copies of the actual documents should also be deposited in the BNA to ensure increased access by the public to these documents

3. Numerical data which reflect and quantify areas of the country's activities in the public and private sector.

   Access
   This data can be provided from the databases held by the Central Statistical Service, or from the databases held by individual departments.

196. Policies relating to increased access should also recognize the role of the BNA as the main institution of access, and as the agency providing referral services to the nation. Databases and other sources of information should be reported to the Referral Centre in the BNA to permit these sources to be accessible to the largest user group.

107.

INSTITUTIONAL FRAMEWORK FOR MANAGEMENT OF THE NATIONAL
INFORMATION SYSTEM

```
                        COUNCIL OF MINISTERS
                                :
                                :
                                :
                    Ministerie van Algemene Zaken
                     (Ministry of General Affairs)
                               and
                     Office of the Prime Minister
                   Committee on policy coordination
                            (all sectors
                        internal and external)
                                :
                                :
                                :
                                :
    _____
    :                    :              :            :                 :
    :                    :              :    _____:_____        :
    :                    :              :   :                 :        :
  Ministry           Ministry          :   :              Ministry
  of                 of                :   :              of
  Economic           Welfare           :   :              Finance
  Affairs etc          :               :   Central          :
    :                   :              :    Archives         :
    :                   :              :                     :
    :                Biblioteca        :                   Central
  Central            Nacional       Dept of               Computer
  Bureau               :            Information           Service
  of                   :
  Statistics           :
    :                  :
                     National
                     Referral
                     Centre
```

198. The transition of the BNA's role from Public Library to National Library is in progress and the relevant development of the institutional framework which is recommended is the establishment of a Friends of the BNA committee composed of representatives of various sections of the public and private sector. The Committee should be named by the Minister of Welfare, on the advice of the Director of the BNA, and should be able to assist the library in identifying additional resources and technical expertise which might be available, for development of the library's services.

MANAGEMENT MECHANISM OF THE BIBLIOTECA NACIONAL ARUBA

```
MINISTER OF WELFARE ─────────── :   FRIENDS OF THE BNA
                    :               :   COMMITTEE
                    :
                    :
                    :
                    :
:   BIBLIOTECA NACIONAL              :
:                                    :
:   National Referral                :
:   Centre                           :
:                                    :
:                                    :
:   INTERNAL SERVICES                :
:   Acquisition                      :
:   Processing                       :
:   Dissemination                    :
:                                    :
:                                    :
:   EXTRA MURAL SERVICES             :
:   Bookmobile services              :
:   Special units                    :
:                                    :
:                                    :
```
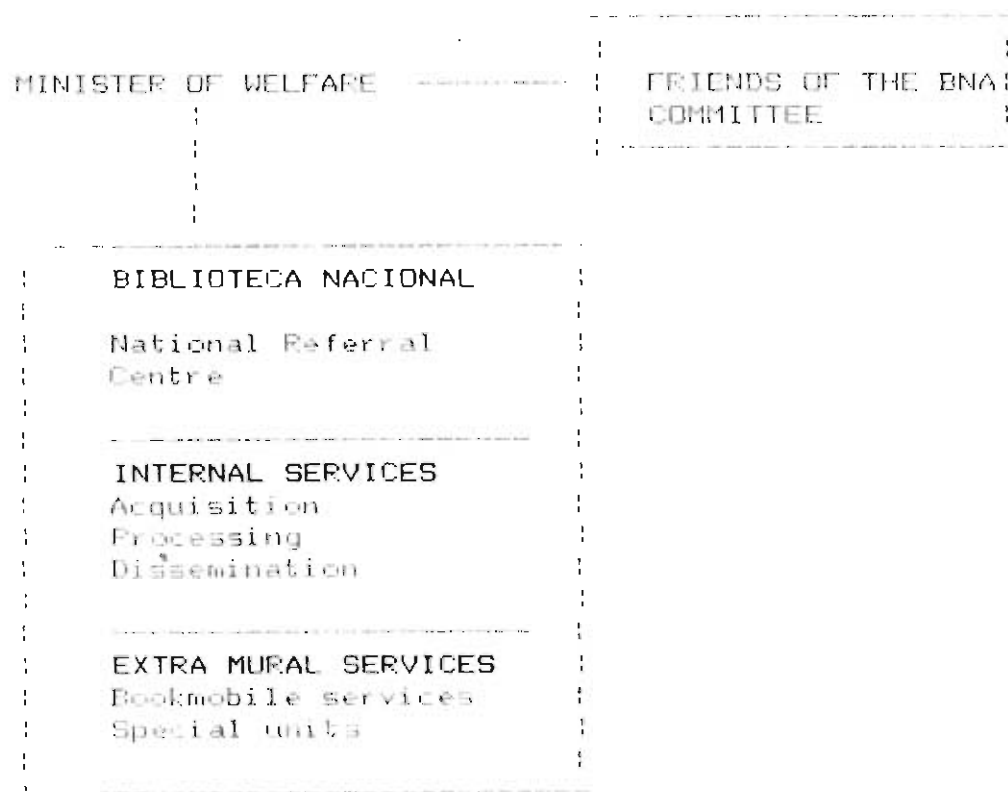
ESTIMATED COSTS OF DEVELOPING THE COMPONENTS OF THE SYSTEM
OVER A FIVE-YEAR PERIOD

199. The new components of the system which is proposed will require additional resources to ensure their development over the next five years. These resources fall into the categories of human, and material, and will have implications for national and external funding. It is particularly recommended that the funding provided by the national government, be initially used to permit the re-activation of vacant positions in the Biblioteca National Aruba system and where relevant, the training of para professional staff to fill the vacant professional positions. Extra-budgetary funding will also need to be sought from local and external sources, and the following strategy is therefore recommended. for effective implementation of the Action Plan detailed in Chapter 10.

1.   Initial consultation by the Government of Aruba - through its Office for Policy Coordination, and its Dept. of Foreign Affairs - with funding agencies known to be supportive of Aruba's development objectives. As all agencies emphasize particular areas of development, and provide development assistance according to defined conditions, this consultation will permit indications of the areas of the national information system - human resources, human resources development, hardware, software, and information materials - which these agencies will be willing to provide. and the counterpart contributions which will be required from the Government of Aruba.

2.   Preparation of corresponding project document(s) Submission of these requests in the form of project documents need to be carefully tailored to the requirements of the funding agencies and where possible assistance in the preparation of the project proposals should be sought from the agencies as this can be expected to achieve the expeditious passage of the project proposals through the approval processes.

As several discrete projects might be necessary, it is recommended that these be prepared within the context of the present proposals for development of the National Information System that they be arranged to run concurrently. This will help to ensure maximum impact of the developments within the system, on the services and outputs provided to the users, and will permit full implementation of the proposals for the system by the 1992 target date.

200. The development of the system will emphasize increasing the system's ability to advise users on the location of information resources within Aruba. Several computerized databases are therefore recommended, and these will require the assignment of staff, and additional training in the creation of databases, the use of the software, and the preparation of printed products.

NATIONAL REFERRAL CENTRE

	$ US
RESOURCE MATERIALS FOR REFERRAL CENTRE	
Directory of Libraries in Aruba (printed output of a computerized database 50 printed copies)	500
Directory of databases in Aruba (printed output of a computerized database 50 printed copies)	500
National Bibliographic Database Union List of Serials (printed output of computerized database 100 copies)	(development costs included below) 1500
Current Awareness Bulletin (printed output of computerized database 100 copies monthly)	7000
National Database of Projects (costs included below) National Database of Specialists (costs included below)	
HARDWARE	
IBM PS2 Model 80 (3) for databases	24000
Local Area Network	5000
SOFTWARE	
CDS/ISIS Micro and Mainframe versions (Unesco distributed)	NO COST
General purpose application software	1500
Communication software	500
ACCESS TO EXTERNAL DATABASES	
Modem	500
Access charges	1500

STAFF AND TRAINING

Permanent Staff
Supervisor Readers' Services S7/S9 *
Supervisor Dept of Extra-Mural Services S7/S9*
Law Librarian   S7/S9*
Colegio Arubano Librarian S7/S9*

Consultants
Installation of prototype
of bibliographic databases   7000
(10 days)

Training
Seminar in Computer literacy
3 Seminars of 3 days each
Rental of computers   900
Instructors fees   1,200
Seminar materials and specialized
collections   4,000

Training in Database creation, and
management
Attachment to UNECLAC (Travel and subsistence)   2.400

Seminar on DOS utilities
3 seminars of 3 days each
Rental of computers   900
Trainers' fees   1,200

Seminar on Micro CDS/ISIS
2 seminars of 1 week each
Rental of computers   1,800
Trainers' fees   2,400

Training course in Information   2.500
retrieval (online access)

MANAGEMENT TRAINING

Medium-term (1 year)
Training of Librarian/Documentalist
in Information Resources Management   15,000

PROFESSIONAL TRAINING

Long-term (3 years)
Training of 2 paraprofessionals to
Professional level   .   36,000

OUTREACH SERVICES

Bookmobiles (2)   50,000
Information materials   20,000

COMPUTER RESOURCE CENTRE

Microcomputers (4)
Apple 2E (2) (repairs)   800
IBM PC (2)   4,000
Software included above
Training materials included above

```
                                           ------------------
```

TOTAL   . $ US 187,600

* vacant positions to be filled.

ACTION PLAN FOR THE DEVELOPMENT OF THE NATIONAL INFORMATION SYSTEM

ACTIVITIES

YEAR 1   1988/89

MONTHS
1 2 3 4 5 6 7 8 9 10 11 12

Activities	1	2	3	4	5	6	7	8	9	10	11	12
Review of the plan	—											
Acceptance by Council of Ministers		—										
National publicity of the Plan		-----										
Establishment of information policy coordination committee		—										
Consultations with funding agencies	——	——	——	——	——	——	——	——	——			
Submission of project proposal(s)			———	——	——	——	——	——	——	——	——	——
Survey of libraries and databases in Aruba				—								
Survey of users' information needs				...	...	...						
Establishment of Friends of the BNA Committee					—							
Attachment to UNECLAC		—										
Acquisition of 1st Computer (IBM PS2) and resource materials					—							
Installation of Computer					—							
Development and testing of prototypes for national databases					—							

Training seminars   --
Computer literacy
Micro CDS/ISIS

Design of database   --
for membership and
circulation statistics

Current awareness   ------------------------------
bulletin (monthly)   (ongoing)

                              YEAR 2   1989/90

                         MONTHS
                         1 2 3 4 5 6 7 8 9 10 11 12

Appointment of Supervisor --
Readers' Services S7/S9 *

Establishment of Referral ----------------------------
Centre

Training of Librarian   ---
/Documentalist in
Information Resources
Management

Directory of Libraries   -----
(printed output of database)

Directory of databases   -----
(printed output of database)

Development of National   ------------------------
Bibliographic Database
Union List of Serials   -----
(printed output of database)

Development of   ---   --------
National Database of
Projects

Development of   --------------
National Database of
Specialists

YEAR 3   1990/91

```
                              MONTHS
                              1   2   3   4   5   6   7   8   9   10  11  12
```

Acquisition of 2nd micro   ---- ·
computer   (IBM PS2)

Installation of
Local Area Network   --

Training course in online   --
retrieval

Access to external databases
Installation of hardware   ---
software   ----
Demonstrations

Training of 1 paraprofessional   ------------------------
to professional level (3 years)

Appointment of
Supervisor Dept of Extra-   ----
Mural Services   S7/S9*

Development of specialized   ------------------------
collection on computer and
information systems

Seminar on Micro CDS/ISIS   ......
(2nd seminar)

Training of 1 paraprofessional   ---------------------------------
to professional level (3 years)

YEAR 4   1991/92

```
                              MONTHS
                              1   2   3   4   5   6   7   8   9   10  11  12
```

Acquisition of   ----
1st Bookmobile

Acquisition of   -----------------------------
Information materials for
Bookmobiles

Development of Computer
Resource Centre

Acquisition of equipment
Apple 2E (2) (repairs)
IBM PC (2)

Acquisition of 3rd micro
computer IBM PS2

Appointment of Librarian   ----
Law Library S7/S9*

YEAR 5   1992/93

MONTHS
1 2 3 4 5 6 7 8 9 10 11 12

Installation of mainframe   ------ ----
version of Micro CDS/ISIS
at Central Computer Service

Transfer of databases to   . --- --------
mainframe

Acquisition of 2nd   ------
Bookmobile

Appointment of Librarian
Colegio Arubano S7/S9*   -----

* vacant positions to be filled.

PERSONS CONSULTED

Dr. A. G. Croes	Minister of Welfare

Biblioteca Nacional Aruba

Ms Alice van Romondt	Director BNA
Ms Lourdes Croes	Deputy Director
Dr Jan Welmers	Research & Devt Officer
Ms Miriam Malberg	Catalogue Dept
Ms Michel Roos	
Ms Susan Delange	Caribbeana
Mr Roque Dirles	
Ms Belkys Flores	School Media Centre
Ms Lucien Dumfrice	Information Centre
Mr Matis	Director Central Archives
Mr Vic Maduro	Documentalist
Mr H de Cuba	Director Central Computer Service
Mr Reisdeg	Dept of Economic Affairs
Mrs Croes	Commerce and Industry
Ing Edwin Croes	Director SETAR
Mrs Maduro	Director TELE ARUBA
Drs E.A. Jacopucci	Director Central Bureau of Statistics
Mr P Hanns	Director of Education
Mr Ralph van Breet	Educational Planner
Mr Kelkboom	Radio Kelkboom
Mr Gonzalez	President of Parliament
Mr Dolf Hoeveltsz	Principal Colegio Arubano
Mr Robertico Croes	Director Dept of Foreign Affairs
Mr Ivan Juliana	Secretary of Information SEPA
Mr Lwe Atan	Government Information Service
Mr Pete Pronk	Law Faculty
Mr DeGoya	Ministry of Antillian Affairs

RELEVANT STATISTICAL DATA

BIBLIOTECA NACIONAL ARUBA

Membership	Population	Precentage of population
1986		
5167 Main		
3420 Branches etc		
8587	60,274	14.24%

CIRCULATION STATISTICS

Loans (Main and branches)	Membership	Average Loans per Member
1986		
213,425	8587	24.85

RELEVANT STUDIES AND REPORTS

Aruba. Government
Program of government 1986 - 1990

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