



TOGETHER
for a sustainable future

OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.



TOGETHER
for a sustainable future

DISCLAIMER

This document has been produced without formal United Nations editing. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as “developed”, “industrialized” and “developing” are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

FAIR USE POLICY

Any part of this publication may be quoted and referenced for educational and research purposes without additional permission from UNIDO. However, those who make use of quoting and referencing this publication are requested to follow the Fair Use Policy of giving due credit to UNIDO.

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

17316

Distr.
RESTRICTED

IO/R.89
16 February 1989

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

ORIGINAL: ENGLISH

STRENGTHENING THE PLANNING UNIT OF THE
MINISTRY OF INDUSTRY AND TECHNOLOGY

BR/UA/84/003

UGANDA

Technical report: Proposals for the computerized information system
to be implemented in the Planning Unit of the
Ministry of Industry and Technology*

Prepared for the Government of Ghana
by the United Nations Industrial Development Organization

Based on the work of Mr. G. Levain, consultant in
informatics and information systems

Backstopping officer: W. H. Eckert, Industrial Planning Branch

* This document has not been edited.

V.89 51551

73

EXPLANATORY NOTES

Value of the local currency - New Ugandan Shillings (N.USh)
at the end of the mission in terms of Unites States Dollars (US-\$)
1 US \$ = 150 N.USh.

ABBREVIATIONS

BSL	Business Systems Limited
MIT	Ministry of Industry and Technology
UDB	Uganda Development Bank
UDC	Uganda Development Corporation

Unusual technical abbreviations

CD-ROM	Compact disk read only memory
FOREX	Foreign exchange
U.P.S.	Uninterrupted power supplier

CONTENTS

	PAGE
I RESUME	1-2
II INTRODUCTION	3
III TERMS OF REFERENCE	4
IV FINDINGS	5
1- Structure and functions in the Ministry of Industry and Technology	5
2- Space allocated to the Information Unit	7
3- Information available in the Country	7
3.1- General survey	7
3.2- Industrial information available	8
3.21- bibliographical information and documentation	8
3.22- information available on the enterprises	9
3.23- computerized information systems	16
3.24- information system of the information unit	17
V DEVELOPMENT ISSUES	18
1- Information system	18
2- Objectives needs and main types of information	18
2.1- Planning level	19
2.2- Enterprise level	19
2.3- Information unit level	20
3- Main future users	20
4- Information and documentation network	21
VI PROPOSALS	22
1- Information system	22
1.1- Documentation and bibliographical information	22
1.11- technical and technological information	22
1.12- documentation on the Country	23
1.13- proposals	23
1.2- Information and data on the enterprises	25
1.21- existing files	25
1.22- proposals	26
1.3- Other types of information and data	28
1.31- types of information	28
1.32- proposals	28
2- Recommendations on hardware on software	30
2.1- proposed configuration	30
2.2- comments	31
VII GENERAL RECOMMANDATIONS	34
ANNEXES	36

I RESUME

After an assessment of the Industrial Information already available or to be collected and/or processed for the needs of the Planning Unit and other (Internal and external) users, it is proposed in this report to implement, in the first stage, the Information System of this Unit / using two IBM compatible MS/DOS micro computers PC AT (IBM or COMPAQ).

These two micro computers should be equipped with the **appropriate software packages** needed for the different uses and applications to be implemented progressively :

- Office automation softwares.
- Word processing (Word or Wordstar).
- Spread sheet (LOTUS 1-2-3).
- Data base management (D BASE III +).
- Integrated software (FRAMEWORK or SYMPHONY).
- Information retrieval software (for the management of the library) :
 - . MICRO-ISIS V.2 (from UNESCO).
- Specialised software as :
 - . Evaluation of project (COMFAR).
 - . Statistical software (if needed).

Small software developments will be made, if necessary, by using the macro-instruction facilities of the above software packages. The micro computers should also be equipped or supplied with the following **peripheral and auxilliary equipments and facilities** :

- Printers.
- Voltage stabilisers and U.P.S. (Uninterrupted Power Suppliers).
- Back-up equipment (for the permanent files).
- Consumables.
- CD-ROM (compact disk read only memory) Driver (when the CD-ROM will be available (in about one year) .

The main uses of the two micro computers and computerised applications will be :

- Self training on the use of the micro computers by the future users inside the Ministry .

- Entering, updating and processing of basic, statistical and industrial data on the industrial enterprises of the Country in consideration of the respective attributions of the Ministry of Planning and Economic Development and of the Ministry of Industry and Technology.
- Collecting, entering and updating of reliable and selected information on industrial projects in the Country.
- Exchange of industrial, economic or statistical information already available on computerised information systems with other organisations such as ministries, banks, associations, ... (by using floppy disks, for example).
- Use (of one of the micro computers) as a tool for specific studies (assessment of industrial projects, statistical studies, ...).
- Collecting and updating of economic, financial, commercial, customs, foreign exchange data on the Country (and several other countries).
- Creation and updating of computerised files to answer to the specific needs of the Planning Unit (for instance : main sources of information inside and outside the Country with addresses, names, main users and profiles of users, ...).
- Creation and updating of a bibliographical data base on the documents of the library (which is foreseen in the Planning Unit).
- Office automation uses related to the above applications (word processing, editing of reports, directories, tables and graphs, ...).
- Access, within one year, to the extended industrial information coming from outside the Country available on CD-ROM (technology, directories, patents, bibliographical information, economic and statistical information, ...).

The above uses and applications should be implemented progressively and by using a pragmatic approach, defining the priority areas, the main characteristics of each application and taking into consideration the manpower available for collection, validation, updating and keyboarding of the data, in the concerned units, and the reliability of the collected data.

This means that all the information available will not necessarily be computerized and that the Information System should be partly manual, partly computerised. Consequently different media of Information will be used (paper, magnetic disk, optical disk, microfiche, ...).

Although all the computerised applications will not be in operation before at least one year, some information, output products (directories, for instance) and office automation uses should be available within six to eight months after the delivery of the micro computers.

The micro computers should be imperatively located in a safe, easily accessible and lockable place under the responsibility of the Information Officer of the Planning Unit.

The Planning Unit should also either recruit or provide a programmer or a technical assistant having experience with micro computers in order to assist the main internal users (Information Officer, Librarian, Economist, ...) in using the micro computers, in the implementation of the applications and in the entering of the data.

II INTRODUCTION

The establishment of an Industrial Information Service and the implementation of its **computerised information system** are sub-activities of the overall project design to strengthen the Planning Unit of the Ministry. (Project n°. DP/UGA/84/003/A).

The objectives of the main project are :

- Strengthening and refining the capabilities of the Planning Unit to prepare sectoral and sub-sectoral plans.
- Strengthening its facilities to identify feasible areas for investment.
- Monitoring of implementation programmes and recommending changes in policies, infrastructure facilities, etc.
- Strengthening the acquisition and maintenance of industrial statistics and its computerisation.
- **Establishment of an Industrial and Technological Information System and Computerisation of Information.**
- Formulation and development of technological input in industrial planning.

The objectives of the present mission are summarised in the following terms of reference.

III TERMS OF REFERENCE

As defined by the terms of reference, the expert must, under the guidance of the Chief Technical Adviser of the project and in cooperation with the other experts of the project and the National counterpart, advise the Ministry of Industry and Technology on **hardware and software requirements** for the establishment of an **Industrial Information System** in the Planning Unit of the Ministry.

More specifically, the expert is expected to :

1. Review the amount of Industrial Information available and define the requirements for Industrial Information which should be processed under utilisation of computers.
2. Recommend procurement of appropriate hardware, which is in line with the increasing requirements for industrial information and which is adaptable to the other parts of the Country's economic information system.
3. Advise procurement and adaptation of appropriate software in accordance with the requirements for industrial information.

IV. FINDINGS

1. STRUCTURE AND FUNCTIONS IN THE MINISTRY OF INDUSTRY AND TECHNOLOGY

The present structure of the Ministry comprises four Divisions with the following functions :

PLANNING DIVISION

- Preparation of long term and short term industrial policies and programmes.
- Appraisal, monitoring and evaluation of industrial projects.
- Identification and analysis of industrial projects.
- Monitoring of external aid.
- Provision of industrial advisory services.
- Carrying out industrial survey and maintenance of industrial data.

INDUSTRIAL OPERATIONS DIVISION

- Control and supervision of industry.
- Licensing of industries under the Industrial Licensing Act.
- Promotion of incentive schemes for industry.
- Promotion of investment in the private sector.
- Supervision and control of parastatals.
- Promotion of regional cooperation.

TECHNOLOGY DIVISION

- Acquisition of technology.
- Promotion of the transfer of technology.
- Updating of technologies in use.
- Promotion of R&D.
- Establishment of a Technological Research Centre.
- Promotion of the Establishment of a Technological Data Bank.
- Dissemination of information on appropriate technologies.

SMALL INDUSTRIES DIVISION

- Licensing of small and medium scale industries.
- coordination of assistance schemes and financing of SMI's.
- Appraisal and evaluation of projects in the SMI sector.
- Provision of advisory services.

The new functions and structure of the Ministry proposed in the frame of the overall project foresee four Departments :

Administration Department
Planning Department
Industrial Operations Department
Technology Department

The Planning Department in which is to be implemented the Information System has (in the project) three sections :

- **Two sections of economists** in charge of the industrial planning activities on different manufacturing sectors.
- **One statistical and Technological Information Section.**

This section, headed by a Principal Industrial and Technological Information Officer, will provide statistical and technical inputs to the Industrial Planning Department, Industrial Technology Department, Industrial Operations Department and the Small Industry Division.

This section will also receive relevant information from the other Departments and Divisions. It will assess technological information from various sources, and establish mechanism for its dissemination to the private and public enterprises. The Section will build up Technological Information base with the following types of information among others.

- a. Alternative technologies ; relevant and appropriate technologies which can potentially be adopted in the Country.
- b. Information on process technologies, appropriate raw materials available and potential.
- c. Information on machinery and equipment through directories and catalogues.
- d. Information on institutions which could transfer technology.
- e. Information on relevant international, regional and national organisations which can be sources of technological information.
- f. Industrial statistical data base.
- g. Information on policies and programmes and incentives for the development of large and small industrial enterprises in other Countries.

- h. Compilation of a Directory of Industries.
- i. Maintenance of a roster of national experts who could be utilised by local industry for consultancy.
- J. Information on training facilities pertinent to industry.
- k. Information on available sources of external financial and technical assistance to the industrial sector.

The activities related to acquisition, organisation and dissemination of technological information will be done inside the section by a Senior Industrial Information Officer assisted by two Technical Information Officers, one Computers Programmer, and one Librarian.

The above proposals are still under examination at the present date. The Ministry has therefore not yet provided the minimum staff required for the Information Unit. This means :

- An Industrial Information Officer.
- A Librarian.
- A Computer Programmer.

2. SPACE ALLOCATED TO THE INFORMATION UNIT

The space and the rooms for the Information Unit (staff, library and computers) are not yet allocated and now in discussion in the Ministry on the basis of the proposals made by the experts.

3. INDUSTRIAL INFORMATION AVAILABLE IN THE COUNTRY

3.1 GENERAL SURVEY

The Industrial Information available **on the Country** : bibliographical information, statistical and technical information, is scattered in different places and often poor, not updated and unreliable.

The Ministry of Industry and Technology itself has no information service(s) nor library for internal and external users.

There is at present no reliable directory of the enterprises of the Industrial Sector especially in the range of the small scale enterprises and no one can tell how many they are : one to three thousands or more ? ; the last census (1983) mentions around two thousand enterprises of all sizes and has only been partially updated since then.

The surveys presently or recently conducted by the Ministries and by the Development Banks are generally limited, and based on different criteria : geographic (district) and/or sub-field(s) of the industrial sector and/or size of the enterprise.

General and full survey on all enterprises have not been recently conducted or are incomplete due to the lack of manpower and/or financing. The rate feedback from the enterprises is generally low except for some special surveys conducted (with visits) on the medium or large scale enterprises ; one exception to the above findings : the parastatal enterprises which are few (30 to 40) and better known, are being followed up by a Department of the Ministry of Industry and Technology, by the UDC (Uganda Development Corporation) and by a team of experts.

The bibliographical, technical, economic and statistical information related to the **other Countries** and available in the Country is also scattered and often poor and not updated.

It seems, moreover, that there is no formal or informal **Information exchange network** between the main producers and users of industrial information in the Country.

It seems, also that there is, for the time being, no specific new policy at the **national level**, concerning the processing of **statistical information** and the **computerisation** of the **information processing** in the administration (this last point has nevertheless to be confirmed).

3.2. INDUSTRIAL INFORMATION AVAILABLE

Although the Industrial Information is often poor, scattered, not updated and unreliable, its exists : the visits to the organisms or administrations listed in Annexe 1 have made possible the identification of several sources of information and documentation which could be of use for the Information Unit which are listed below ; other sources of information may exist (at the Ministry of Finance, for example) in order to identify the enterprises ; new surveys may also be launched by different organisms to answer specific needs which can be of interest for the Information Unit of the Ministry of Industry and Technology (the continuous identification of the information sources will be one of the attributions of this Unit).

3.21 Bibliographical Information and Documentation

- *MAKERERE UNIVERSITY :*

The library receives among others all documents published in the Country (books, articles, theses). The assessment of the number of the existing documents and of the documents received per year which could be of **interest** for the Information Unit would need a **specific enquiry** by the Ministry : to give some figures, the corresponding values could be estimated to 200 to 300 documents for the existing documents and about 50 per year (minimum values).

- *LIBRARY OF THE MINISTRY OF PLANNING AND ECONOMIC DEVELOPMENT :*

Although small and limited, this library includes many documents of interest for the Information Unit : books, reports, publications, directories, catalogues (more than 200 references).

- *MINISTRY OF INDUSTRY AND TECHNOLOGY :*

The existing documentation in the Ministry may be estimated at several hundred references including the technical documentation already collected by the Project's Industrial Information Expert.

- *OTHER SOURCES OF INFORMATION :*

East African Development Bank, Uganda Development Bank, Uganda Development Corporation,

- *TOTAL EVALUATION :*

- Existing documents (books, reports, studies, articles, reference books, ...): 700 to 1 000 references.
- Yearly flux 150 to 300 references.

These evaluations are only indicatives of the present situation without taking into account the specific needs of the future users, the future criteria for the selection of the documents and the future budget of the library for the acquisition of the documents.

3.22 Information available on the Enterprises

- Listed below are some of the main existing identified information sources.

A. FILE OF THE INDUSTRIES LICENSED (MIT)

This file is updated and a card is filled in and updated for each enterprise. A Directory of Industries licensed since 1970 by Sector and sub-sector has just been established with an index by product (by the Industrial Information Expert of the Project). This directory lists **867 enterprises** of all sizes (mainly those of small size). This file may be considered as a **reference tool** for the permanent inventory of the industries although it is not updated for the industries that do not exist any more (by lack of information).

The industry licensed card includes the following data :

Name.

Address.

Location.

Telephone.

Products manufactured.

Inventory in plant and machinery.

Inventory in land and building.

Local raw materials.

Imported raw materials.

Licence N°.

Ownership.

Employment.

Total Inventory.

Local.

Foreign.

Plant Comm. ?

Plant in Operation ?

Origin of Equipment.

Remarks.

B. EXISTING INDUSTRIAL ESTABLISHMENTS BY DISTRICT

(Department of Census and Statistics, Ministry of P.&E.D.). The corresponding file established in 1983 comprises about 1950 establishments ; it is partially updated and is also to be used as a cross reference file.

The information collected in the file by the district is the following :

- **Summarised table of the number of establishments** by district, by sub-sector and by size of class of employment.
- **Detailed information by establishment.**

Name.

Codes/sub-field/district/industrial code.

Postal address.

Telephone.

Location.

Products manufactured.

Ownership.

Average employment.

Comments.

C. INDUSTRIAL STATISTICAL INFORMATION (MENTIONED IN THE BACKGROUND TO THE BUDGET 1988-1989)

(origin : Ministry of Planning and Economic Development)

- **Census of Industrial Production 1982/1983**
selected economic indications.

Presentations for 49 sub-sectors of the following information separately for 1982 and 1983 :

Number of establishments.

Average employment.

Total earnings.

Production costs.

Gross output.

Value added.

Gross Fixed Capital.

This census is based on only 230 establishments for 1982 and 76 for 1983.

- **Industrial Production Statistics 1982/1987**

- a. Selected products and establishments (100 establishments), are presented with the following information :

Name of establishment.

Products.

Unit.

Installed capacity.

Production per year from 1982 to 1987 and expected 1988.

Capacity, percentage of utilisation per year.

Capacity, utilisation change from one year to the following.

- b. Selected products (94 products) of the same establishments :

Products.

Unit.

Installed capacity.

Production per year (as above).

% capacity/utilization per year (as above).

Capacity utilisation change.

• **Employment and wage bill for selected manufacturing establishments 1982-1987**

Information presented in the table by sector of activity :

Number of establishments per year from (1982 to 1987).

Average number of employees for all from (1982 to 1987).

Annual wage bill for all establishments from (1982 to 1987).

(This survey is limited to 67 - 89 establishments).

D. **MONTHLY INDUSTRIAL PRODUCTION AND SALES STATISTICS**

A new survey launched in 1988 using a sample of 100 establishments on a monthly base and on a period of 18 months (1987 to middle of 1988) by the Department of Census and Statistics of the Ministry of Planning and Economic Development with the cooperation of the Ministry of Industry and Technology and of the Statistician Expert of the present project.

This survey should be theoretically updated and extended to other establishments. The information collected by establishment is as follows :

Name of establishment.

Code.

Type of activity.

Address.

Location.

Number of persons	Monthly
-------------------	---------

Wages and salaries	•
--------------------	---

Employer's contribution	•
-------------------------	---

Total earning per employee	•
----------------------------	---

Commodity manufactured	•
------------------------	---

Unit of measurement	•
---------------------	---

Actual monthly production (activity)	•
--------------------------------------	---

Actual monthly production (value)	Monthly
Total sales production (quantity)	.
Total sales production (Value)	.
Other general information	.

This survey is under completion and will include calculations of monthly indices.

Production average earnings.

Unit costs.

Labour input.

Labour productivity.

E. NATIONAL MANPOWER SURVEY

The Manpower Planning Department of the Ministry of Planning and Economic Development is conducting National detailed manpower surveys by sector activity (agriculture, industry,)

The types of information which will be available (when and on how many establishments is not known) are listed in Annexe 2 ; they are related to :

- | | |
|-----------------------------------|--------------|
| - The Economic Units | - 5 tables. |
| - The Employment | - 10 tables. |
| - The Vacancies | - 5 tables. |
| - The Training | - 5 tables. |
| - Other miscellaneous information | - 8 tables. |

F. SURVEY OF SMALL SCALE ENTERPRISES (by the Ministry of Industry and Technology)

A detailed survey is to be launched in the next future by the Department of Technology in the range of the small scale enterprises ; this survey will first be conducted on a sample of about 160 enterprises with visits and is expected to last about 2 months.

The types of information to be collected are :

- General information on the enterprise.
- Products manufactured, capacity, production.
- Products which could be manufactured with existing facilities.

- Existing machineries and equipment.
- Machines requiring replacement.
- Spare parts needed for machinery
- Manpower.
- Raw materials.
- Packing materials.
- Utilities needed.
- Financial information.

The survey would be extended later by using a simplified questionnaire mailed to the other enterprises.

G. SURVEY OF SMALL SCALE INDUSTRIES IN KAMPALA
(by Uganda Development Bank and other organisations)

This survey has been carried out on 406 S.S.I. of the district of Kampala in 1988 with the aim to development to implement a specific programme to their attention. The following information has been collected :

- Capital.
- Turnover.
- Employment.
- Machinery.
- Education.
- Registration.
- Premises.

(report of 50 pages with tables, graphics, findings and recommendations).

H. REGISTRATION OF THE COTTAGE INDUSTRIES

The small Industries Division of the Ministry of Industry and Technology update a chronological registration book when the application form for the registration of a new cottage industry is filled in by a visitor applicant. The filled-in form is filed by district ; the types of information collected are :

- General information (name, address).
- Capital investment.
- Products and production.

- Employment.
- Raw materials required.
- Customs.

However all the enterprenors do not register and the registration book is not updated with the suppression of enterprises.

I. INFORMATION ON THE PARASTATAL ENTERPRISES

Detailed information on these enterprises may be found :

- a. In the files of the Administration, Finance and Establishments Division of the Ministry of Industry and Technology (on the past and existing periods).
- b. In the Board Memorandum UDC/2285 (Parts I and II) published by UGANDA DEVELOPMENT CORPORATION for the future (PLAN 1988-1991).

J. DEVELOPMENT BANKS -

These banks implement and update data bases for internal needs and financial management on the enterprises themselves and for specific projects. For example, UDB has implemented :

- a. A computerised file on several industries with the following information in 1986:
 - Industry.
 - Products.
 - Unit.
 - Inst. Capac.
 - Production (quantity, year).
 - % capac. util.
 - Raw materials (and suppliers).
 - Spare parts (and suppliers).
 - Essential capital.
 - Present suppliers.
 - Forex requirements.
 - Raw materials, spares parts, capital, total.
 - Investment plan.

- b. **A project data base including the following information by enterprise with calculation of the macro-economic impact on 50 % capacity installed by sub-sector :**
- Name of the enterprise.
 - Budget year.
 - Region.
 - Sub-sector.
 - Product.
 - Installed production.
 - Unit prices.
 - UDB finance amount.
 - Forex cost.
 - Forex earn/save.
 - Number of jobs created.

K. OTHER EXISTING SOURCES OF INFORMATION ON THE ENTERPRISES AND INDUSTRIAL PROJECTS

Valuable information and data on the enterprises and projects and macro-economic information on the Country are also, of course, available in the documents published (or not published) on the Country (which are to be identified and collected from different sources and people by the Information Unit) :

- Feasibility studies.
- Sectoral economic studies.
- Publications.
- Reports.

3.23 Computerised Information Systems

The visits made to the Ministries and Organisms in Kampala mentioned in Annexe 1 have permitted the identification of several computerised Information Systems dealing with Industrial Information ; most of them are operating on IBM compatible micro computers using office automation software packages. The Manpower Survey of the Manpower Department of the Ministry of Planning and Economic Development, because of the large amount of data to be processed is using the facilities offered by the Ministry of Finance.

3.24 Information System of the Information Unit in the MIT

This Information System is not yet formalised and precisely defined in term of applications. This means :

- Identification of the applications (in accordance with the needs).
- Definition of each application :
 - . type structure and volume of information to be collected.
 - . processing(manual/or by computer).
 - . dissemination.

Nevertheless, useful work has already been done (by the Industrial Information expert of the project) with :

- Identification of the needs (which are developed in the next chapter : development issues).
- Identification of the basic data to be collected and updated by enterprise.
- Producing of a reference directory of the licensed enterprises.
- First collection of technical documentation.

V. DEVELOPMENT ISSUES

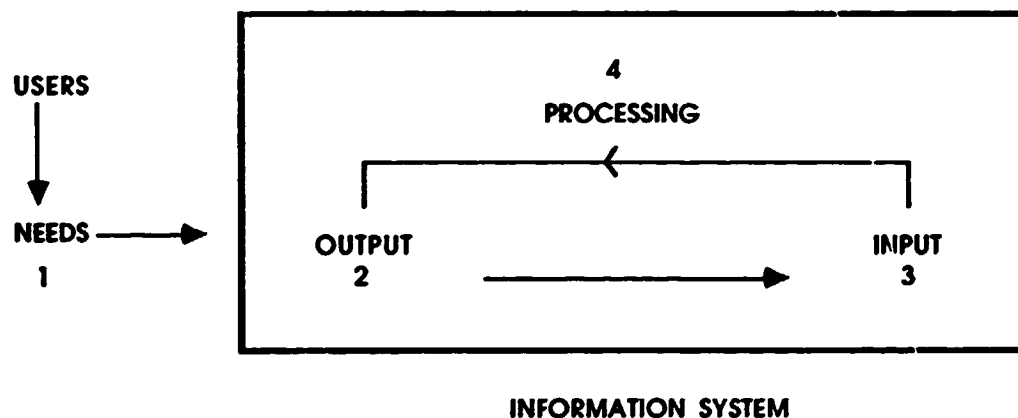
1. INFORMATION SYSTEM

The implementation of an efficient Information System in the Information Unit or more correctly in the future "statistical and technological information section" of the Planning Department is the main problem to consider and to solve inside this Unit.

The use of computers for the storing and the processing of textual bibliographical information and data and other office automation uses **must not be considered as an objective** but only as a possible way among, and with other ones, to deal with the information and to improve, generally speaking, the documentation and information management.

So before making proposals and defining the requirements (in chapter VI) for the Industrial Information which should be processed under utilisation of computers, it is of first importance to define more precisely the concept and the contents of the **Information System** regard less of future options in matter of computerisation.

The Information System should be built in consideration of the needs of the future internal and external users ; from the **needs** it is possible as shown in the following diagram, to define the **output** (information products or services) and then the **input** (any type of information and data to be identified and/or collected and/or processed) and finally the **processing** ; this methodological approach may be used for any type of computerised or not computerised information system.



The Information System must evolve with the users needs and be submitted to a permanent assessment ; it needs time, infrastructure facilities, manpower and financing especially when it is created from almost nothing as it is here the case.

2. OBJECTIVES, NEEDS AND MAIN TYPES OF INFORMATION

As already mentioned (in other documents of the project) the supply of information is of vital importance for the :

- Preparation of plans and programs for the sectoral development of industries, regionalisation of industries and the balanced development of the large, medium, small and cottage scale sectors.

- Establishment, development and diversification of industry.

More specifically the needs at the Planning level and at the Enterprise levels are now identified as follows.

2.1 PLANNING LEVEL

1. Structure of existing industries.
2. Inventory of industries.
3. Data on industry pertaining to ownership, investment, capacity, production, employment, raw materials, machinery and equipment, markets, ex-factory prices, products manufactured, etc.
4. Raw materials with industrial potential.
5. Potential for promotion of import substituted industry.
6. Potential for promotion of export oriented industry.
7. Information on Imports/Exports.
8. Government policy on Industrialisation, and programmes, Regulations, taxes, duties and incentives, licensing regulations.
9. Information on policies and programmes of other Countries.
10. Assistance programmes of International Organisations e.g. World Bank Schemes to assist small and medium industries (SMIs).
12. Information on sources of technological information and information on acquisition of technology, etc.
13. Information on technologies.
14. Information on expertise in relevant industrial areas who could be used for Consultancy to industry.

2.2 ENTERPRISE LEVEL

1. Information on feasible areas of investment.
2. Information on materials, machinery and equipment, specification, etc.
3. Information on process technologies.
4. Standards and specifications.
5. Information on potential markets.

6. Information on techniques of management, production, planning, product development and financial planning, etc.
7. Technological information to meet specific production problems, etc.
8. Information on possibilities of accessing technologies - licensing, turnkey operations, contractual agreements, etc.
9. Information on government regulations, incentives schemes, taxes, duties, etc.
10. Competitors and the feasibility of further investment.
11. World trends and developments in varied sectors.

2.3 INFORMATION UNIT LEVEL

This Unit may have its own needs in order to improve progressively and permanently the Information System.

- Internal and external sources of information and documentation with characteristics.
- Information network inside the Country.
- Profiles of users.

3. MAIN FUTURE USERS OF THE INFORMATION SYSTEM

- Ministry of Industry and Technology all departments and more specifically the Industrial Planning Department.
- Ministry of Planning and Economic Development.
- Enterprises of all sizes.
- Investors, Entrepreneurs.
- Experts, Consultants, Consulting firms.
- Professional Associations :
Chamber of Commerce and Industry.
Uganda Manufacturers Association.
Uganda Small Scale Industries Association.
- Banks.
- International or National Organisms.
- Universities.

- General public.

This preliminary list will have to, of course, be detailed and completed with the specific needs of each user (profile of user) with permanent updating.

4. INFORMATION AND DOCUMENTATION NETWORK

The Information System of the Ministry of Industry and Technology will be one focal point inside an information and documentation Network comprising the existing and future main sources of Industrial Information. The exchange of information will have to be negotiated and formalised as far as possible when needed.

V I. PROPOSALS

1. INFORMATION SYSTEM

From the main needs of the internal and external users, it has been possible to identify the **main types of information and documentation** which are to be collected or produced by the Information System.

From them it is proposed to structure the Information System in **several sub-systems** which can be implemented separately :

SUB-SYSTEM 1 : Documentation and bibliographical information :

- a. from outside the Country (mainly technical and technological).
- b. on the country (studies, reports, publishing, ...).

SUB-SYSTEM 2 : Information and data on the industrial enterprises and projects :

- a. files and directories.
- b. statistical data on the enterprises.

SUB-SYSTEM 3 : All other types of information on the Country and from outside the Country :

- a. markets, imports/exports, policies, programmes, taxes, licensing regulations, ...
- b. sources of information directly available for the users.

SUB-SYSTEM 4 : Information to answer specific needs of the Information Unit :

- a. user's profiles.
- b. specific Sources of Information.

1.1 DOCUMENTATION AND BIBLIOGRAPHICAL INFORMATION

1.11 Technical and Technological Information

- Technologies, process technologies.
- Alternative technologies.
- Machinery and equipment.
- Manufacturers.
- Standards and specifications.
- Materials.

- Patents.
- Various techniques (production, finance, management, ...).

This information is generally available from outside the Country on paper media such as :

- Technical books and reports.
- Articles, publications.
- Directories, Catalogues, Manuals, Guides,

but also, for some of them, on other media such as :

- Microfiches (with or without index file).
- Data bases (magnetic disks).
- CD-ROM (optical disks).

This type of documentation has already begun to be collected inside the project (one to two hundred references : articles, directories, catalogues, technical reports, ...) ; some may be also found inside the Ministry and in other organisations, banks or Ministries ; nevertheless the main collection of documents still have to be done and then updated by the future Information Unit from several sources inside and outside the Country and to be organised and analysed before computerisation.

1.12 Documentation on the Country

- Technical reports, sector studies, feasibility studies, any type of publishing on the Country (published in or outside the Country) related to the Industrial Sector.

This documentation, scattered in different places has to be identified and collected from several sources mainly inside the Country documents themselves or if not possible, references of the documents with location and availability.

1.13 Proposals and recommendations concerning the sub-system 1

- A. The above-referenced documentation from outside the Country and on the Country should be **organised in library** for access by the users as soon as the Information Unit is set up and the librarian recruited.
- B. The number of documents will be at the opening of the library **too weak to justify immediate computerisation** of the library ; the computerisation of library or documentation centre is generally implemented when : there are at least several thousand references, one or two people to manage the library, a budget for the acquisition of the documents, many users, ... conditions which are not yet realised.

- C. In the present conditions **priority** should be given to the :
- Identifying the main sources, internal and external sources of information.
 - Selecting and collecting documents and/or specific documentation and/or documents references on paper media, or on microfiches and, when possible, on floppy disks and later on CD-ROM.
 - Analysing the documents (cataloguing and indexing).
 - Creating a card file to facilitate the access to the documents and to prepare the computerisation.
- D. Although the computerisation of the library may not be considered as a necessity in the short or middle term, the availability of micro computers inside the Unit (for other applications) constitute an opportunity to use an **Information retrieval software** to manage the documentation in order to :
- Improve the information retrieval.
 - Produce various editing products, bulletins, profiles, etc...
 - Facilitate the documents inventory.
- E. The computerisation of the library could begin **about six months** after the official setting up of the Information Unit and of the Library, this means when the main problems of organisation and collection of the information, of furnishing and other facilities and of financing (current library budget) have been solved.
- F. Some types of documents **should not be entered** in the bibliographical data base : catalogues, directories, documents or references on microfiches delivered with index, ...
- G. As the documentary analysis and data entering into the computer are time consuming, some agreements should be found, as much as possible, with other sources of information (MAKERERE UNIVERSITY, LIBRARY OF THE MINISTRY OF PLANNING ...) inside the Country to share this work for further exchanges of references on floppy disks ; a previous agreement should be negotiated on the bibliographical structure of the document references.
- H. Proposed bibliographical structure for the references :
- Identification or Inventory number - coded.
 - Type of document - coded.
 - Title.
 - Author(s).
 - Corporate source or Publisher - controlled vocab.

- Collation (number of pages).
- Date of publication - month/year.
- Location - controlled vocab.
- Availability (for external users) - coded.
- Key-words - controlled vocab.
- Résumé (when needed).

Remark 1 : *It is possible to create two separate Sub-bases : one for the technical information (from outside the Country) and one for the documentation and publishing on the Country.*

Remark 2 : *The average volume of the data base may be estimated at 300 bytes by reference without a résumé of the document and at 800 bytes with a résumé. The future average number of documents in the library will not probably exceed several thousand documents in the next five years, this means less than 4 to 5 Megabytes of memory capacity (with the indexes) for the computer.*

I. INFORMATION RETRIEVAL SOFTWARE

The bibliographical data base may be implemented by using an office automation software for file management as D BASE III +. Nevertheless it is advisable to use preferentially on information retrieval software portable on micro-computers which are several on the market, more user friendly and offer many facilities for editing, thesaurus management, validity check, ...

As the library will be perhaps the first computerised one in the Country with open access, the choice of this type of software may also be of interest.

We propose to choose MICRO-ISIS (version 2) from UNESCO.

1.2 INFORMATION AND DATA ON THE ENTERPRISES

The Sub-system 2 comprises of any type of data which is collected (through survey and census) on the enterprises themselves or on plans and projects of enterprises (through studies or reports) and from the enterprises themselves.

The corresponding computerised "Information Sub-system" is not yet designed. Nevertheless a preliminary study conducted by the Industrial Information Expert proposes that two forms be filled-in and updated manually by enterprise (before computerisation) :

- a. An **Industry data card** that contains mainly statistical information on a yearly basis.
- b. An **Industry licensed card** that contains general and basic information on the licensed enterprises.

PROPOSALS :

In consideration of the type of information available and/or to be collected through general or specific surveys it is proposed to structure first the Sub-system 2 in several "applications" or files which could be of use as reference files, tool files, cross files, etc... for regular or specific studies and analysis. These files should be implemented after a detailed study on information, data, structure, codification, periodicity of updating, etc...

A. FILE OF THE LICENSED INDUSTRIES

This file may be created (by using D BASE III +) with the following types of information :

- Identification number of the enterprise.
 - Code district (3 digits).
 - Code Subfield (5 digits).
 - Code Ind. (4 digits).
- All other information and data mentioned in page 14 - A.

Some information should be coded and each field identified by a tag field.

This file may be created from the actual card file and then updated in close cooperation with the Unit in charge of this file for : weekly or monthly updating, editing of enterprises lists sorted by district, subfield, etc... for checking, updating, studies, ... mailing, disseminating to the District's administrators for control and updating and to other potential users, ...

EXPECTED VOLUME OF THE FILE :

1 000 to 3 000 enterprises x 300 bytes
= 0.3 to 0.9 Megabyte.

B. STATISTICAL DATA BASE

Limited to the medium and large scale enterprises (+10) and fed with the information and data of the Industry Data Card with additional information and codification of several types of information.

Proposals on the types of information to be collected and stored by enterprise in this data base :

- Identification (same as defined above).
- General Information (Name, address, ...).
- Ownership (coded and more detailed).
- Production (quarterly).

- Planned additional production (yearly).
- Planned Investment (yearly).
- Power consumption (yearly).
- Raw materials (yearly).
- Employment (quarterly).
- Labour costs (quarterly).
 - Wages and salaries.
 - Other labour costs.
 - Total labour costs.
 - Depreciation.
 - Net profit.
 - Value added.
 - Value added per employee*.
 - Total labour cost per employee*.
 - Total labour cost per unit of output*.
- (*) if entered manually.

Remarks : *Ratios by enterprise, index and other agregates should be, as often as possible, automatically calculated by the computer by using the facilities of the Software used to build the data base : D BASE III + and spreadsheet software LOTUS 1.2.3 (for example) and macro-instructions or sub-routines.*

IMPLEMENTATION :

A preliminary detailed study in cooperation with the statisticians team has first to be conducted before entering the data (collected by the statistician expert on about 100 enterprises mentioned in page 18 - D).

EXPECTED VOLUME OF THE FILE

300 to 500 enterprises x 2 000 bytes
= 0.6 to 1 Megabyte

C. OTHER FILES

Results of census and specific surveys may be entered in the computer by creating specific files if needed for further updating, processing, cross-checking, sorting, merging with other files, dissemination of information, ...

These files may be created by using D BASE III + or LOTUS 1.2.3 in consideration of the type of processing on the file and with other files.

Some other files may also be created by exchange of information on floppy disks with other organisations in the Country.

1.3 OTHER TYPES OF INFORMATION AND DATA

1.31 Several types of information and data which are needed by internal and external users cannot be classified (at least before a more in-depth analysis) inside the two previous sub-systems (documentation bibliographical information and information on the enterprises and the projects) : they belong to what we have called Sub-system 3.

A. VARIOUS SOURCES OF INFORMATION AND ASSISTANCE

- Sources of Industrial Information inside the Country.
- Sources of Industrial Information outside the Country.
- Sources of external financial assistance.
- Sources of external technical assistance.
- List of institutions for transfer of technology.
- Roster of National experts.

B. INFORMATION AND DATA ON THE COUNTRY AND ON OTHER COUNTRIES

- Information and data on markets and potential markets.
- Information and data on imports and exports.
- Raw materials with industrial potential.
- Potential for promotion of export-oriented industry.
- Potential for promotion of import substituted industry.
- Programmes.
- Policies.
- Regulations.

1.32 Proposals regarding the Sub-system 3

Since above types of Information have not yet been collected or have only begun to be collected for some of them it is still too early to think about the computerisation of information which is not yet collected, structured, or assessed (volumes, amount of data, reliability of the information, updating facilities, dissemination needs, ...).

This information should be in the first step processed manually until the most of it has been collected and structured.

In the second step it should be possible, and advisable, to use the office automation facilities offered by the micro computers to improve the information management and facilitate the updating and the dissemination of the information (as proposed below).

A. INFORMATION SOURCES FILES

The above-mentioned sources files, lists of addresses, ... may be created easily by using D BASE III + or the selected Information Retrieval Software and creating separate computerised files or a common file with an identifier sub-field.

The expected volumes should be small in comparison with the memory capacity of the micro computers ; for example, a file of 100 names or references of 200 bytes by reference needs only about 0.02 Megabytes.

B. INFORMATION AND DATA ON THE COUNTRY AND ON THE OTHER COUNTRIES

This information may include :

- Text.
- Files.
- Data.
- Mixed information.

It has to be structured by type of information in several "applications" which can be managed and processed separately. The eventual computerisation will also depend here on the amounts of information, ...

The choice of the type of software (word processing, file management, spreadsheet, information retrieval, integrated software) will depend upon the characteristics of each application. These applications should be implemented easily by using the office automation software or eventually the information retrieval software when the Information entered in the computer contains full text and needs information retrieval (ex : programmes, regulations, ...) ; in this case the application may be transferred in the Sub-system 1 (documentation, textual and bibliographical information). The expected volumes for all these files if they are computerised should not exceed 1 to 3 megabytes.

2.1 PROPOSED INITIAL CONFIGURATION**2.1.1 Micro-computers (two units)**

- Type : PC AT 03 IBM
high speed, 16 bytes (intel 80826)
- Keyboard : enhanced keyboard english AT 03
- Memory : 1 MB (RAM)
- (Initial) integrated storage capacity:
 - 1*1.2 MB diskette drive
 - 1*30 MB hard disk
- Display : enhanced color display
- Enhanced graphics adapter
- Mouse

2.1.2 Printer + cable (two units)

- Type : IBM/PROPRINTER XL (4208)
- Serial/parallel printer adapter AT
- Parallel printer attachment cable

2.1.3 U.P.S. (uninterruptible power supplier) (two units)

- 500 VA-20 minutes

2.1.4 Backup Equipment (two units)

- Proposal: PASSPORT (Plus Development Corporation) 20 MB
which is a removable hard disk that can take the place of
second driver.

2.1.5 Operating system (for each post)

- DOS 3.3 (English)

2.1.6 Programming languages

- Compiler BASIC
- TURBO-PASCAL (Borland Editor)
- Others (if and when needed)

2.1.7 Software (for each post)

- D Base III+ (file management)
- Lotus 1.2.3. (spread sheet)
- Word 3 (word processing)
- Micro-Isis v.2, english, from UNESCO
(information retrieval software)
- Statistical software (if and when needed) as:
 - SAS from SAS INSTITUTE (USA) vers. micro
 - STATGRAPHICS from STSC

- CD ROM driver :HITACHI CDR-1503S or PHILIPS CM100
(when needed in 1990 or 1991) with card and cable
- CD ROM subscriptions from all sources available (UNIDO and others)
(when needed)

2.19 Consumables

- Printer ribbons (for one years and two posts)
- 20 diskettes boxes single density 5 1/4 "
- 10 diskettes boxes double density 5 1/4 "

2.2 COMMENTS**2.21 Configuration**

The proposed choice of micro computers is justified by several reasons:

- Sufficient power and memory capacity for the applications to be implemented
- Easiness and flexibility of use
- Possibility of exchange of information,files , programmes and packages with many others organisations inside the Country and outside the Country under the MS-DOS standard
- Possibility to transfer files and programs from one micro to another inside the Ministry and to connect if necessary in the future the micros through a local network.
- Present lack of experience of the Ministry in the use of computers
- Flexibility of the configuration which can be extended in the future by acquiring one or several others micro-computers to answer the needs of others Departments.

2.22 Operating systems and standards

The proposed choice of the MS-DOS standard and 5 1/4" diskette format is dictated for several of the above criteria

This standard will still be in use for many years being used now by more than 90% of the present users of micro computers;further - more the files created under MS/DOS can be re-used under the future standards as UNIX or OS

2.23 Hardware

The choice of IBM PC AT Model is mainly dictated for maintenance reasons;IBM has indeed recently opened offices in Kampala through B.S.L(Business Systems Limited)

Otherwise the choice of COMPAQ Deskpro 386/20 or 25 would have been made.This model is indeed known as the best and most powerful micro computer at the present time and several operating systems can be run on it.At the present time COMPAQ is only represented in Nairobi

The choice of the new IBM model PS that runs under OS and uses 32 a 3 1/2" diskette format has not been retained because this new standard is not yet sufficiently disseminated and assessed by the market. Nevertheless this option may be reexamined in two or three years. Although MS-DOS can be used on PS models programs formerly developed on PC XT or AT may encounter problems after transfer.

The choice of a model is a necessary prerequisite but the priority has to be given to the implementation of the applications which can be run on MS-DOS IBM compatible micro-computers: IBM (as proposed for the Planning Department) but others models as well in the future in others Departments of the Ministry, for instance: *COMPAQ, ZENITH, VICTOR, SANYO*, ...depending of the maintenance facilities;

Memory capacity: The proposed initial capacity 30 Megabytes may of course be extended in the future by installing a second disk drive of 30 MB or a HARDCARD of 20MB (Plus Development Corporation

Diskette format: An external driver for 3 1/2 "diskette format may also be installed in the future when needed

Back up facilities: It has been proposed to use the above mentioned -Passport-

Others solutions are nevertheless possible:

Use of disquettes for small volumes

Use the two micros as back up facilities for each other

Use of commercial backup tapes devices for micros

2.24 Software

Information retrieval software: The proposal made to choose *MICRO-ISIS* from UNESCO version 2, English is justified by the fact that this software is now used by several hundreds of users, is free of charge in developing countries but for the documentation (300 US\$); version is a new integrated package with menus.

FRAMEWORK It is also proposed to acquire this integrated package for the office automation needs of the Planning Department. It includes :

word processing

data base management

spreadsheet

graphics and outlining facilities

It easily combines and exchanges information among different applications and allows to print out reports with words, numbers and graphics on the same page.

It is suggested to install first the micro computers in the same safe ,lockable and easily accessible room for security and training facilities;air conditioning is not necessary.One of the micro computers should be installed later in the library room.

The main files should be installed with the directories on both micro computers.

A detailed analysis with pertaining documentation must be established for each application but for the ordinary office automation uses of the micro computers.

A responsible must be appointed for each application including updating and maintenanc of the pertaining documentation

2.26 Training of the internal users

It should comprise:

General information on the main characteristics and uses of the micro computers for all the civil servants of the Ministry;

Specific training with practicing,on the use of the micro-computers with small teams of 3 to 4 people by course:

Information Unit

Economists

Officers of others Departments

Secretary'office of the project(word processing)

Training may be done by the computer expert of the project or by specialised firms in Kampala offering training services such as:

IBM,HITECH,MTC(Micro Technology Centre),....

2.27 Maintenance

It is advised to negotiate a contract maintenance with BSL (IBM representative in Kampala)

BSL may also provide several of the required equipment ,software and services;

2.28 Budget

The total amount of the proposed initial configuration may be estimated at 22,000 US\$ for the two systems software included.

Maintenance,training and further equipment as CD ROM are not included.

A separate budget has also to be established for the library:

Subscriptions and book acquisition

Equipment(microfiche reader,photocopier,...)

V II. GENERAL RECOMMENDATIONS

1. Priorities should be given before the delivery of the micro computers to :
 - a. The **allocation of space and the furnishing** of two rooms (for three people, library, microfiche reader/printer, micro computers)
 - b. The **providing of the initial required staff** of the Information Unit ; this means :
 - One Information Officer.
 - One Librarian.
 - One Programmer or a Technical Assistant experienced in micro computers.
2. Priorities should be assigned to the **collection and to the organisation of the Information** in accordance with the needs and the types of information and documentation required mentioned in the report, **before computerisation of the information sub-systems** (files, bibliographical data base, data banks ...). In the meantime (several months) the micro computers should be used for training, small office automation uses (word processing, mail, small files and spreadsheets, ...) and beginning of the implementation of a file in the enterprises.
3. The Information Unit should be **assisted and advised** during the implementation of the Information System from now up to the end of 1989 and, if necessary, longer **by two experts**.
 - a. One expert in **Industrial Information System** for the implementation of the library and the Information System.
 - b. One expert in **computers** experienced in micro computers, office automation software and programming.
4. The Information Unit and the experts will have also to cooperate closely with the statisticians of the Planning Department to define more precisely the **statistical computerised information sub-systems** in accordance with of the actual needs and means for the collection and the updating of reliable data in the Country.
5. The Information Unit should play an important role in the building and the strengthening of an **industrial information network** in the Country for the exchange and dissemination of information on every type of media (paper, microfiche, floppy disk, ...) between the main producers and users of industrial information.
6. The computerisation of the information must not be considered as an objective but only as a mean of **improving the information management** storing, updating, processing, information retrieval, dissemination for some sub-systems of information (applications).
7. In the implementation of the information sub-systems (related to the enterprises or to the library), care should be taken not to build and use, in parallel, two separate systems : that is to say **one manual and one computerised** ; two separate systems can be accepted only for a limited period ; used for longer period of time, the two systems should bring more work and would, inevitably favor one system to the expense of the other.

In other words, the computerisation of the information necessitates the review of all the process of collecting, processing and dissemination of the information. Computerisation means also **organisation and information management**.

8. The library and the computers should be located in **safe, lockable, easily accessible rooms** (close to each other) for internal and external users.
9. The two micro computers should be **IBM compatible MS/DOS (IBM or COMPAQ) model AT** with one **5 1/4" floppy disk drive** and one **30 MB hard disk**. One of the micro computers should also be equipped with a **CD-ROM reader** when technological and other types of information or data from outside the Country will be available on CD-ROM (one to two years).
10. The initial configuration of the computerised system (two micro computers) should be extended in the future, if and when really needed for other users inside the Ministry, with one to three **micro computers** and of files and applications already computerised and/or implementation of a network to connect the micro computers.
11. The whole Information System and its computerised applications should be **regularly assessed** according to the evolving needs of the internal and external users.
12. If other computerised systems are to be implemented in other Departments of the Ministry they should be **compatible** with the Information System of the Planning Unit (Enterprise identifier, codification of the information, types of information, data collecting, ...)

ANNEX 1

ORGANIZATIONS VISITED

1. Hitech - Uganda House - Dr. Katiti.
2. Ministry of Planning and Economic Development - Mr. Balidawa.
3. East African Development Bank - Mr. Kinobe, Mr. Senkumbo.
4. Mr. Disch - UNDP - Mr. Disch.
5. Business Systems Ltd.
6. Makerere University - Chief Librarian - Mr. Mugasha.
7. Department of Manpower Planning Mr. Zydler and Mr. Ranjit.
8. Ministry of Finance - Economic Analysis UML - M. Zake.
9. Ministry of Agriculture - Computer Centre.
10. Ministry of Commerce - Commissioner of External Trade -
Mr. Tibekyinga.
11. Business Machines.
12. Apple Computer Centre.
13. Micro-Technology Centre.
14. Ministry of Finance - Data Processing Centre - Mr. Barongo.
15. Department of Census and Statistics, Entebbe - Mr. Kayiso.
16. Chamber of Commerce and Industry - Mr. Namugowa.
17. Sectional Heads of Ministry of Industry and Technology.
18. Uganda Manufacturers Association - Mr. Baryaruha.

NATIONAL MANPOWER SURVEYLIST OF PROPOSED TABLES FOR FORM III. ECONOMIC UNITS

- 1.1 No. of establishments (ESTAB) :: ownership :: Industry (1).
- 1.2 No. of ESTAB :: size [(5-9) + (10-19) + (20-49) + (50-99) + (100-249) + (250+)] :: Industry (3) (Major divisions + Major groups).
- 1.3 NO. of ESTAB x size group :: geographical location (districts).
- 1.4 No. of ESTAB x geographical location x industry (1).
- 1.5 No. of ESTAB x industry (1) x date of registration (before 1962 + 62-69 + 70-85 + 86 and after).

II. EMPLOYMENT

- 2.1 No. of employed persons (male + female) x size of establishment x industry (1).
- 2.2 No. of employed person (E.P) (1981+.....1987 + 1988) x industry (1).
- 2.3 No. of E.P. x industry (1) x district.
- 2.4 No. of E.P. (1981 + 1982.....,1988) x establishment ownership.
- 2.5 No. of E.P. :: category (permanent + temporary + casual/group employees + other) x nationality (Ugandan + Non-Ugandan) x sex.
- 2.6 No. of E.P. by employment category and average Gross Remuneration (wage/salary + cash allowance + total x industry (1+2+3+.....+ 910 + 931 + 933 + residual + total) x ownership of establishment.
- 2.7 No. of E.P. x Industry (1) x occupation [Major groups (1) + Minor groups (3)]
- 2.8 No. of E.P. x occupation (1) x Nationality (Uganda + Non-Uganda) x sex.
- 2.9 No. of E.P. Nationality :: Industry (1) :: occupation (1).
- 2.10 No. of E.P. :: (1) :: Industry (1) :: qualification status (No. of those not having qualifications + No. of those having qualifications)

III. VACANCIES

- 2.11 No. of vacancies :: occupation (3) :: required basic qualification :: years of experience required (less than 3 + (3-5) + and more).
- 2.12 No. of vacancies, occupation (major groups (1) and (2)) measures of experience required (less than 3 + (3-5) + 5

ANNEX (page 2/2)

2.13 No. of vacancies :: occupation (1) :: reason for not filled (low salaries + lack of manpower + low economic activity + other)

2.14 Additional staff requirement :: occupation (3) :: year (1989 + 1991)

IV. TRAINING

3.1 No. of ESTAB :: Industry (1) type of training [apprenticeship + on-the-job + own training institutions + other] + No. provision].

3.2 No. of ESTAB providing in-house training :: type of training programme :: capacity [less than 10 + (10-19) + 20 and above] :: duration.

3.3 Total capacity for in-house training :: occupation (3) :: Industry (1) :: duration.

3.4 No. of ESTAB having provision for training :: type of training :: problems in training (inadequate facilities + shortage of instructors + others).

3.5 No. of ESTAB accepting outside trainees :: Industry (1) :: capacity.

V. OTHER

4.1 Manufacturing Establishments :: Industry (4) :: capacity utilization ratio (1982 + + 1987).

4.2 No. of ESTAB :: Industry (1) :: Number of normal hours of operation/activity per week.

4.3 No. of ESTAB :: Industry (3) + major problems in expanding activities (financial + raw materials + manpower + + other)

4.4 No. of ESTAB :: Industry (3) major changes envisaged.

4.5 No. of needed staff :: Industry (1) :: major needed occupations (3) :: availability of skilled manpower (yes + no).

4.6 No. of ESTAB :: Industry (1) :: occupations most difficult to find (3).

4.7 No. of vacancies advertised in newspaper :: advertised occupations (3) :: industry (1).

4.8 Distribution of advertised vacancies in newspaper :: occupations (3) [No. of vacancies advertised + No. of applicants + ratio of applicants to advertised vacant posts].

LOGICIELS FRANÇAIS

Logiciel	Système d'exploitation	Développeur	Adresse
ADHOC	MS-DOS	AIO	81, rue Saint-Thiebault - BP 133 29102 Dreux Cedex Tél. : 37.46.26.56
BASIS	VMS	IDI France	165, avenue Charles-de-Gaulle 92200 Neuilly-sur-Seine Tél. : (1) 46.37.58.51
CDS-ISIS	MS-DOS	M. DEL BIGGIO UNESCO-LAD	7, place Fontenoy 75007 Paris Tél. : (1) 45.68.10.00
G.CAM-BRS	UNIX VMS	G.CAM	Tour Maine Montparnasse 33, avenue du Maine - BP 08 75755 Paris Cedex 15 Tél. : (1) 45.38.10.20
GESBIB III	MS-DOS	LOGI+	2, passage de la Cathédrale 67000 Strasbourg Tél. : 88.60.17.60
HYPERDOC	FactFinder (Macintosh)	André DEWEZE	Saint-Vincent de Mercuze 38660 Le Touvet Tél. : 76.41.01.33
INFLUX	UNIX	DATAWARE	95, boulevard Sébastopol 75002 Paris Tél. : (1) 42.36.17.16
JLB-DOC	MS-DOS	JLB- Informatique	39, boulevard Victor-Hugo - BP 105 92116 Clichy Cedex Tél. : (1) 47.30.99.19
LIBER	Pick	LIBER	7, rue Charles-Dordain 93600 Aulnay-sous-Bois Tél. : (1) 48.79.07.02
MEMOLOG	MS-DOS	CRDP Poitiers	6, rue Sainte-Catherine 85034 Poitiers Cedex Tél. : 49.88.11.70
MICRO- QUESTEL	MS-DOS	Questel Télé systèmes	83-85, boulevard Vincent-Auriol 75013 Paris Tél. : (1) 45.82.64.64
MIKRO-DOC	MS-DOS	MIKROS-CERID	5, rue Paul-Bert 92100 Boulogne Tél. : (1) 49.25.50.19
POLYBASE	MS-DOS	POLYPHOT	17, rue de la Plaine 75020 Paris Tél. : (1) 43.73.81.28
SIDERAL	MS-DOS	CRDP Lyon	47, rue Philippe de Lassalle 69316 Lyon Cedex 1 Tél. : 78.29.97.75
SIGMINI	UNIX	Ecole Nationale Supérieure des Mines de Paris	33, rue Saint-Honoré 77305 Fontainebleau Cedex Tél. : (1) 64.22.42.21
SUPERDOC	MS-DOS	AIDEL	Le Cheylis-Bourg 32570 Guncelin Tél. : (1) 76.42.76.50
TAMIL	MS-DOS XENIX UNIX	TAMIL	91, boulevard Edmond-Rostand 92500 Rueil-Malmaison Tél. : (1) 47.22.35.34
TEXTO	MS-DOS UNIX	CHEMDATA	17, quai Gillet 69316 Lyon Cedex 04 Tél. : 78.29.70.55
VALSE 16	MS-DOS	SOPROGA	21 Saint-Hippolyte - RN 96 13770 Venelles Tél. : 42.61.12.42

**ANNEXE III
INFORMATION RETRIEVAL SOFTWARE
ON MICRO COMPUTERS**

LOGICIELS ÉTRANGERS

Logiciel	Système d'exploitation	Diffuseur	Adresse
ASSASSIN PC	MS-DOS	MGS Computing Services	Maidenhead (GB)
BRS-Search	UNIX XENIX	BRS Europe	Londres (GB)
EDIBASE	MS-DOS	Information Informatique	5175 de Maisonneuve, Ouest Suite 302 Montréal, Québec H4A1Z3 Tél. : (514) 454.5951
INMAGIC MICRO	MS-DOS	INMAGIC	238. Broadway Cambridge MA 02130 (US) Tél. : (617) 661.8124
MICRO-CAIRS	MS-DOS	Leatherhead Food research association	Randall Road Leatherhead Surrey KT22 7RY (GB) Tél. : (0372) 37.67.61
MICRO-POLYDOC	MS-DOS	Norsk Senter for Informatik (NSI)	Forskningsveien 1 Oslo 3 (NO) Tél. : 02.69.52.80
Professional bibliographic system for the Macintosh	FactFinder (Macintosh)	Personal bibliographic Software	PO Box 4250 Ann Arbor, Michigan 48106 (US) Tél. : (313) 955.1580
SCI-MATE	MS-DOS	Institute for Scientific Information	3501 Marketstreet Philadelphia PA 19104 (US) Tél. : (215) 386.0100
SIRE	MS-DOS	KNM	6118, Swansea Street Bethesda MD 20817 (US) Tél. : (301) 365.4449
STAR	AMOS (Alpha Micro)	CUADRA Associates	2001 Wilshire Bid. Ste 305 Santa Monica CA 90403 (US) Tél. : 213.829.9972
Tinman	MS-DOS	IMB Ltd	1, Carthusian Street: London EC1M 6EB (GB)

ANNEXE IV

QUOTATION FOR IBM PC AT EXPANDED MODEL

ITEM	QTY.	DESCRIPTION	RATE (US\$)	COST (US\$)
1	1	IBM PC AT Expanded Model featuring:- * Intel 80286 microprocessor running at 8 MHz. * 24 bit address, 16 bit data buses. * 512 Kb of RAM. * 30 Mb fixed disk. * 1.2 Mb floppy diskette drive. * Parallel/serial adapters. * Clock/calendar/system configuration with battery backup. * security key. * 102-key keyboard.		4,012.50
2	1	Enhanced colour display.		597.50
3	1	Enhanced graphics adapter.		225.75
4	1	IBM proprietary 4202 XL.		591.25
5	1	DOS 3.3 dual media.		112.50
6	1	Promue 500 VA UPS.		800.00
		TOTAL FOB		6,442.50
		ESTIMATED INSURANCE & FREIGHT		650.00
		TOTAL CIF ENNEBE		7,092.50