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DEVELOPMENT OF TECHNOLOGY INFORMATION SERVICES

DP/PHI/86/016

PHILIPPINES

Terminal report*

Prepared for the Government of the Philippines
by the United Nations Industrial Development Organization,
acting as executing agency for the United Nations Development Programme

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* This document has not been edited.

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EXPLANATORY NOTES

Currency

According to the actual UN operational rates 1 US\$ is equivalent to 25.40 Pesos of the Philippines what means that the Peso has the value of 0.0394 US\$s.

Acronyms and other short terms used

- AID** - Answered Inquiries' Data (subdatabase of the TIS database; hereinafter: TIS subdatabase)
- AIT** - Asian Institute of Technology
- APCTT** - Asian and Pacific Centre for Transfer of Technology
- BSMBD** - Bureau of Small and Medium Business Development
- CD-ROM** - Compact disc - read only memory; an opto-electronic medium for the storage of large amount of retrievable data on a special diskette
- CDS/ISIS** - short name of a database management software developed by Unesco for the storage and retrieval of textual data on microcomputers
- DATANET** - Short name of the packet switched data telecommunication network of PT&T
- DELDI** - Data Element Directory (of the TIS database)
- DESIRE** - Design Information Retrieval (TIS subdatabase)
- DOST** - Department of Science and Technology
- DOT** - Descriptions and Offers of Technologies (TIS subdatabase)
- DTI** - Department of Trade and Industry
- IIA** - Industrial Information Adviser
- INTIB** - Industrial and Technological Information Bank (of UNIDO)
- METI** - Mechanism for the Exchange of Technology Information
- MINISIS** - Short name of a database management software developed by the International Development Research

Centre for the storage and retrieval of textual
information on mini-computers

- NGO - non-governmental organization
- NTE - National Training Expert
- OOG - Organizational and Operational Guidelines for TIS
- PIT - Patent Information on Technologies (TIS subdatabase)
- PT&T - Philippine Telegraph and Telephone Corporation
- RATIO - Research and Technology Information Online (TIS
subdatabase)
- STAR - Standard Retrieval System (TIS subdatabase)
- STII - Science and Technology Information Institute
- TIS - Technology Information Services
- TOP - Technological Training Opportunities (TIS
subdatabase)
- TUNE - Technology Users and their Needs (TIS subdatabase)

ABSTRACT

Personal author: Erik I. Vajda
Corporate author: UNIDO
Title of project: Development of Technology Information
Services (TIS)
Number of project: DP/PHI/86/016
Title of report: Terminal report

Project activities were started in July 1989 and will be terminated in August 1993. The immediate objectives of the project: the establishment of a technology (and market) information system consisting of regional information centers serving the needs of users of information in rural areas (small and medium size businesses) and linked through a coordinated network to information sources and facilities at central information providing agencies, were achieved. Four regional information centers were established with personnel trained in project frameworks, a network of computer equipments at the regional centers and two central agencies using compatible software and database design was established together with telecommunication connections. Information services were designed: inquiry services, including referral services, technology (and market) information packages, extension and follow-up services. The design of services and the definition of priority areas was based on the survey and analysis of the users' needs. The methods of marketing TIS were defined and marketing activities have been started. Detailed guidelines, manuals and training materials were prepared. The coordination, management and financing/pricing principles of the system were included into Organizational and Operational Guidelines of TIS. Conclusions were drawn, concerning the necessity of decentralized, user friendly technological and market oriented services, the necessity, principles and conditions of networking and the financing of technological information services. A nation-wide extension of the Technology Information Services is recommended.

INTRODUCTION

Introductory remarks:

a) Because of some repetitions in the text of the project document and for other reasons changes were proposed in the wording and arrangement of the immediate project objectives and descriptions of outputs, without changing the contents. These changes were initiated in 1990 when a revised work plan was prepared and they were officially proposed for and approved by the Tripartite Review Meeting in March 1992. In this report the changed wording and arrangement is taken into consideration.

b) *This (draft) terminal report is being prepared three and a half months before project termination, at the end of the last mission of the IIA. During the period until project termination significant activities will be accomplished, funds will be used and outputs achieved. The duration of project activities was extended just because of these circumstances until end August 1993. To help the preparation of the final terminal report, all parts of the present report which will be probably subject of changes or even deletion are printed with italics and the fact that activities are not terminated yet will be mentioned only exceptionally. The final version of the Terminal Report will be prepared by the national project management in co-operation with the NTE upon completion of all project activities before the final Tripartite Review Meeting.*

-.-

The Government of the Philippines asked for international development aid to accelerate the utilization and commercialization of developed technologies and thus contribute actively towards national development efforts. For the achievement of these aims the development of an appropriate technological information base for rural development was the aim of the present project in line with the strategies of the Philippine Development Plan.

The project was essentially envisaged as a follow up of the previously completed, UNDP funded project PHI/79/018 Strengthening the National Scientific Information System (executed by the Philippine Government with the assistance of Unesco), which aimed at the establishment of a national information system for science and technology (NISST). Although the objectives of the project were achieved, it was felt that the established information system remained incomplete since the outputs have not reached the desired target groups, and therefore the information infrastructure in the countryside should be strengthened.

The assistance was requested in 1986 and included into the Fourth Country Program in 1987. The Project Document was approved by the Government, UNDP and the executing agency (UNIDO) in October 1989. The project became operational by the first requisitioning and purchasing of project equipment in 1989, but project activities started in July 1990 only, with the mission of the Technology Information Training Expert and the Industrial Information Adviser (hereinafter: IIA). The project ends in August 1993, after the repeated extension of project activities (modification of the work plan) to May and later to August 1993, respectively.

UNIDO was the executing agency on behalf of UNDP. The Department of Science and Technology (DOST) and the Department of Trade and Industry (DTI) were the appointed agencies on behalf of the Government of the Philippines. The Science and Technology Information Institute (STII) was acting for DOST and the Bureau for Small and Medium Business Development (BSMBD) for DTI. The directors of these agencies are the Project Managers.

The UNDP contribution was as follows (US\$):

Originally stated	432,400
Increase April 1991	57,166
Increase May 1992	<u>25,710</u>
Total:	515,276

The main reason of changes was the increase of costs of personnel (travel expenses etc.), as well as, the release of additional funds for equipment (networking) and for training by fellowships and study tours.

At the time of the preparation of the present report the amount of US\$ 505,659 was used or obligated. The pending amounts are necessary for purchases under way (equipment), travels of the national training expert and for miscellaneous costs.

The contribution of the Government was in kind. According to the project document (after correcting an addition mistake) the value of this contribution was planned as

Pesos 5,525,000

The factual contribution in kind can be estimated as

Pesos 5,680,000

whereas the proportion of elements of government contributions slightly differs from the proportions envisaged by the project document. (See also Annex 5.).

The project had three immediate objectives concerning the organization of service centers, the establishment of a servicing network based on appropriate information sources and techniques and the establishment of a coordination mechanism (for details see Chapter II.).

These objectives were not revised. The objectives were attained if the operational servicing of users becomes regular within the time until project end.

Training was provided by the project in various forms of study tours and fellowship training (courses and "hands on" training) abroad, by three workshops and one training course and by on the job training (for details see Chapter I. Section and Annexes 3. and 4.).

All ordered equipment has been received. The ordering of further modems is going on, because it was clarified by the network carrier with a big delay, that further modems are needed and the technical specification was also delayed. Some information sources might be ordered later, depending on available funds. Outstanding consignments will be received by DOST/STII. Year end inventories were verified, signed and returned via the Resident Representative's Office in Manila. The copy of the latest property record form is a part of Annex 6. The equipment was not formally transferred yet to the Government (see also the Recommendations) The equipment met in general the specifications and requirements, although failures of the personal computers occurred more often than usually. For further details see Chapter. I. Section D. and Annex 6.

There were no subcontracts awarded.

I. ACTIVITIES AND OUTPUTS

This chapter is organized by outputs, following the wording of outputs as revised (see Introductory remark a)). This corresponds also with the activities listed in the work plan.

A. Organization, coordination and training

The planned output is the following:

Organized TIS centers with trained core staff consisting of 2 persons each at headquarters level of DOST and DTI and two persons each at the selected pilot regional offices of DOST and DTI capable of undertaking TIS activities.

The TIS centers are operational in all pilot regions. They all consist of the TIS project leader and staff at a host and a supporting agency. DOST regional offices are the host agencies and DTI regional offices the supporting agencies in regions VII. and X., whereas DTI regional offices are the host agencies and DOST offices the supporting agencies in regions I. and XI.

Not counting the directors of the host agencies (who are members of the Management Board of TIS) and of the supporting agencies, the number of TIS staff members varies, but the at least three trained persons are with the TIS staff at each host agency and two at each supporting agency. This is more than planned but practice has shown that this personnel is needed to cope with the tasks of TIS and most of the TIS staff members have also additional tasks in the regional offices. The TIS staff is led by project leaders who are under the supervision of the directors of the regional offices.

TIS staff at both central agencies consists of three qualified persons, including the heads of TIS staff who are under direct

supervision of the directors of the respective agencies. The directors of the central agencies are the project managers and will be the co-chairmen of the Management Board as stipulated by the Organizational and Operational Guidelines for TIS (OOG).

The OOG contains the rules and guidelines for coordination, management, planning, monitoring, reporting, financing and for substantial activities of TIS.

During project duration two Project Performance Evaluation Reports were prepared and two Tripartite Review Meetings evaluated the project performance and gave further guidance for project activities.

The work plan of the project was essentially revised in 1990 and slightly modified in 1992, taking into account the delay in starting the project and various changes which occurred during the project activities. Former minor changes were made in the work plan because of the extension on project activities first until May and later until August 1993. These extensions became necessary because of some delays in project performance, caused by various factors among others because of delays in setting up the physical (telecommunication) network of TIS, because of the transfer of the host computer of TIS, what caused a delay in the establishment of databases and because of some interim manpower cuts etc.

- Organized contacts with various agencies (NGOs, associations, chambers of commerce etc.) were established in the regions, first of all for marketing TIS and making users aware of its services, as well as, for supporting the survey of users' information needs.

Training was provided to TIS staff by various means. Fellowships and study tours abroad included a study tour of the project managers to Austria, Germany, United Kingdom and Thailand to study the management and organization of technology information services,

a fellowship for six TIS staff members/heads at the central agencies to Thailand (short course on information repackaging and desk top publishing at the Asian Institute of Technology; AIT), Austria (to get acquainted to UNIDO/INTIB) and Hungary (to be trained on online searches and the use of CD-ROM databases) and a fellowship for eight regional TIS project leaders/staff members to Thailand (course on information repackaging and consolidation at AIT) (see also Annex 3.)).

Three workshops were organized: one for TIS orientation (Manila, July, 1991) and a second one on planning TIS activities and development (Cebu City, December 1991) for the regional directors, project leaders and staff in the pilot regions, finally a model workshop for users' training (Davao City, May, 1993). Local training courses were organized at all TIS centers on the use of the application oriented software of TIS (CDS/ISIS, text processing software). This training was provided by the data processing staff of STII. For workshops and courses see Annex 4.

Continuous on the job training was provided for the staff at the central agencies by the IIA and by the national training expert (NTE), and for the TIS staff at the regional offices by the IIA, the NTE and by skilled personnel of the central agencies. Training materials were prepared for the workshops and by the NTE for in service training. The TIS personnel is well trained and able to fulfil its tasks.

B. Computers, telecommunication, TIS network

The planned output is the following:

Installed computer and telecommunication hardware and software capable of handling TIS databases and interconnected for data transfer within the network of TIS.

The TIS network, established by the project consists of the computers of the central and regional agencies. The physical networking is done by connecting the computers of the TIS centers to each other by appropriate telecommunication links. For reasons of transparent networking the hardware and software of the networked centers is entirely compatible.

The computer hardware of TIS consists of six microcomputers, 6 printers, two CD-ROM drives, 6 modems, 6 UPS devices and accessories. The host computer at DOST/STII, is an HP 3000 series 37 minicomputer, which was not supplied, only upgraded within the project but it should also be considered as an element of the TIS computer hardware.

The ZEMA, AT compatible microcomputers are available at the two central agencies and at all regional centers (host agencies). The Hitachi 1503S CD-ROM drives are used at the central agencies, handling the CD-ROM based databases.

The printers at the central agencies are HP Laser Jet III laser printers. The regional centers (host agencies) got IBM Proprinters.

The modems for the connection of the computers to the telecommunication network are Hayes Ultra 96 Smartmodems. Further modems will be purchased by the project for the TIS network, but this purchase is still going on and leased modems are used by some centers.

Telecommunication connections in addition to phone, telefax and telex are essential for the decentralized TIS to connect the servicing regional centers to the information sources and databases at the central agencies, as well as for connections with UNIDO/IN-TIB and online database hosts. The following means of telecommunication are used by TIS:

- * **Computer to computer communication** for sending and receiving messages, for the transfer of files (downloading/uploading, transfer of search results (hits)) and for accessing international networks (online hosts).
- * **Electronic mail** (via telephone lines and/or the data communication network) for sending and receiving messages and, by exception, files, as well as a tool for sending communications to all or more agencies, by any of the agencies (bulletin board).

The physical data transfer network (carrier) for TIS is the DATANET network of the Philippine Telegraph and Telephone Corporation (PT&T). This is a packet switched data transmission network which supports synchronous (X.25) or asynchronous (X.28) communication protocols as stipulated by the relevant recommendations of CCITT. The network can be used for computer to computer communications and as a carrier for electronic mail, too. DATANET also provides access to the main international data networks.

The electronic mail system (software supplied by UNIDO) to which TIS has access is the General Electric GE-mail system. The use of this system is free of charge for TIS because the costs are covered by UNIDO (of course except for the use of the telecommunication line).

The network will also be used, if the necessary funds are available for accessing international database hosts for searches and for communication of search results.

For the establishment, updating, storage and use (retrieval and display) of the TIS database two application oriented software packages are used:

- * **MINISIS**, developed and maintained by the International Development Research Centre (Canada), and

* Micro CDS/ISIS developed and maintained by the United Nations Educational, Scientific and Cultural Organization (Unesco, Paris).

These two software packages are in a great extent compatible. The transfer of data between MINISIS and CDS/ISIS and vice versa is possible by appropriate techniques, including the auxiliary software HP Advance Link, provided by the project.

The MINISIS software is used at STII for the storage and use of the integrated TIS database. All other uses of the TIS database at the regional centers and at BSMBD are based on CDS/ISIS.

The identical specification of the database and the use of identical application oriented software means that data exchange is easy and does not need any special communication formats.

Other application oriented software was also provided by the project to TIS centers. Ventura Publisher, Word Perfect, and Stat Graphics can be used for the preparation of repackaged information for the users. PC Tools and Microsoft Windows are used for the improvement of the use of personal computers. PROCOM is necessary for computer to computer communications, whereas Paradox and Quattro Pro can be used for the establishment of special databases, containing also numerical data.

C. Information sources, databases

The planned output is the following:

Extension and development of TIS information sources based on the local, national and international survey of existing sources; development and establishment of technological databases; access to local, other national and international databases.

As the result of the survey of available information sources

- * a plan for the establishment of the integrated TIS database and for the transfer of own and imported databases existing at STII and BSMBD to the integrated database was prepared;
- * the integrated TIS database was designed and established; the entering of backfiles and current information into the database was started;
- * the distribution of databases and TIS subdatabases among the regional centers and the central agencies was defined;
- * CD-ROM based and other databases, as well as, printed sources of information were acquired;
- * preliminary links to online database hosts were established.

The core of TIS information sources is the integrated TIS database. It consists of the following subdatabases:

DOT - Descriptions and Offers of Technologies

RATIO - Research and Technology Information Online (records describing ongoing or completed technological R & D projects)

PIT - Patent Information on Technologies (records describing Philippine patents or applications for them)

STAR - Standard Retrieval System (records describing Philippine and adopted foreign/international standards)

DESIRE - Design Information Retrieval (records describing industrial designs)

TOP - Technological Training Opportunities

AID - Answered Inquiries' Data

TUNE - Technology Users and their Needs (records describing enterprises, other institutions, individuals and their information needs).

The DOT, RATIO, PIT, STAR, DESIRE and TOP databases are subdatabases within the TIS master database at the HP host computer

under MINISIS. This database is used for retrieval by the central agencies.

The TUNE and the AID databases are separate databases at the regional centers set up also as subdatabases of the integrated TIS database framework.

A part of the input to the DOT database is prepared by the regional centers. These are records on locally available technologies, primarily entered into DOT databases at the regional centers, using the installation of the CDS/ISIS version of the TIS database. The regional DOT records will be uploaded to the host computer and the entire, merged and updated DOT database will be downloaded to regional centers.

Permanent and/or transitory CDS/ISIS based subdatabases at DTI/BSMBD are installed and/or modified according to actual needs.

For the TIS integrated database a detailed documentation (Data Element Directory; in short: DELDI and auxiliary material) was prepared to guide the data entering and the use of the database. All information sources of TIS require regular updating by acquisition, subscription, data entering etc.

D. TIS services

The planned output is the following:

Guidelines, other procedural documents and training material on the operational techniques used for retrieval, processing, packaging and dissemination of information through TIS services; operational inquiry, referral, and technology extension services and provision of technology and market information packages.

In spite of the importance of guidelines and training material the main outputs of TIS are the information services. These services were started on a pilot scale but they are not regular yet. The main task of the TIS staff and management is to make them regular before project termination. For the reasons of this delay see the reasons given in Section A. of this chapter.

TIS services were designed as

- * inquiry services (including referral services)
- * technology (and market) information packages and
- * extension services.

The main services of TIS are the inquiry services. The purpose of TIS is to help the development of industry and related economic activities by appropriate technological, economic, or market oriented information services. The best way to achieve the above mentioned aims is to encourage the potential users to inquire for information, whenever they

- * prepare their decisions on the establishment of a new industrial activity or on the extension of their present activities,
- * are faced with current technological, economic or market problems disturbing their every day activities and/or hindering the development of their business,
- * are looking for the possibility to improve the performance of their business in general or in a given field in particular, or they
- * are interested in new methods, technologies or other development trends within the field of their business activities.

The provision of information capable to meet the above listed needs and requirements of the users is the aim of TIS inquiry services. Inquiry services are as a rule written but sometimes oral information services containing the information asked for by the

user in a user-friendly way. They are accompanied by feedback sheets, asking for the users requests for extension of the provided information and/or for follow-up services. In some cases these follow-up services are integral parts of the inquiry services.

Sometimes the available written information is not satisfactory, or it seems to be more advantageous to replace or extend the written service by establishing contacts of the user/inquirer with persons and/or institutions having a special expertise in the field addressed by the inquiry. The establishment of such contacts is the purpose of the TIS Referral Services.

It follows from the development trends of the country and from the intensity of users' needs concerning given subjects, that there are certain development priorities among and within the various industrial sectors. The preparation and provision of information packages, containing the most essential technological, economic and, if feasible, market information concerning the given priority area, contributes to the achievement of development aims and is a more economic way to answer inquiries concerning the given priority field than the individual servicing of inquiries. Information packages are based on selection from all available information sources, are edited in a user-friendly way and distributed in a number of copies corresponding to registered users needs and predictable individual requests.

The potential users of information are often not aware of their needs or do not know about the possibilities offered by information services. The regional centers will plan and accomplish visits to be paid to selected users for interviewing them on their technological problems and interests. These visits will result in a second visit, delivering information, similar to that provided by the inquiry services. Similarly, the regional centers will take part at industry and trade fairs and to demonstrate the usefulness of TIS services by answering immediately or later, by correspon-

dence, inquiries made on the spot. These extension services are identical to inquiry services, as far as the content of supplied information is concerned. However, the servicing the user's needs differs from the inquiry services by its "provocative" character, as well as by the personal contacts and explanations given by the TIS staff in all cases, as well as, by immediate feedback and follow-up services.

The information delivered to the users can be directly used by them, it can be useless, or it can require further servicing. TIS does not stop with the delivery of services, but gets aware of the users' evaluation concerning the provided services and of his further wishes and reacts on them. This means that all types of information services are connected to feedback and follow-up services.

The Organizational and Operational Guidelines contains detailed guidance to the establishment and running of TIS services. The methods of the preparation of services was one of the focuses of training provided to TIS staff. The development of training materials on TIS services is going on.

E. Assessment of technology information needs

The planned output is the following:

Assessment of technology and related market information needs by area and by type of clientele; definition of priority subject areas for services (information profiles, packages).

A survey questionnaire on the users of TIS and their information needs has been prepared and is regularly used by the TIS regional centers. Filled in questionnaires contain three groups of data on the institutional or, in some cases, on individual users of TIS:

* general (access) data,

- * characteristics of the user for analysis and eventual selection,
- * data on the activity (production profile) and on the related information needs, as well as on present information sources and interests of the user.

The data collected by the survey are used for various reasons:

- * as input to a data base (TUNE) which can be used for the production of general and selected address lists of users as targets of sending information and publicity material on TIS in general and on services and actions of TIS in particular;
- * as a basis of the selection of users' priority needs, concerning both priority activities (products, businesses) and priority subjects. The analysis of these data can serve as basis for the selection of subjects for technology packages.
- * as starting point for targeted extension services and marketing actions, based on the needs and specific problems encountered by the user.

The collection of data became a permanent activity of TIS regional centers. The collection of data can never stop because of the changes in the data and needs of actual and potential users. The circulation of questionnaires did not and will never result in appropriate recall and users do not like TIS bothering them with questionnaires. Therefore the main form of getting filled in questionnaires are interviews, made by the TIS staff or by voluntary intermediaries, like officers of associations, chambers of trade and industry, provincial DOST and DTI offices, etc.

F. Marketing of TIS

The planned output is the following:

Marketing of TIS services by circulars, regular print and broadcast media exposure and by provision of inquiry services at

trade and industry fairs and exhibitions; liaison arrangements with commerce and industry associations, other representatives of the private sector and NGOs for marketing TIS.

Although marketing methods were developed and the relevant guidelines were included into the OOG, full marketing can be started together with regular services only. This concerns first of all the direct methods of marketing, like approaching users by circular letters and other publicity materials and starting marketing by visits paid to potential users.

The regional TIS centers established closed contacts to users' organizations (associations, etc.) and other institutions for approaching users and making them aware of the usefulness of TIS services. Mass media were used also by the regional centers to make TIS publicly known.

Preparations were made for the exposure of TIS services in central media. Two issues of TIS Newsletters were edited and published.

Preliminary information was given on TIS at fairs and exhibitions. The regular participation of TIS is planned by the regional centers, but also by the central agencies.

The most intensive marketing method is the training of users on TIS and its services. This is planned as a regular activity of the regional centers. A pilot users' training workshop was organized to train the participating users but also to test and teach the methods of such training.

G. Coordination mechanisms; sustaining TIS

The planned output is the following:

TIS network coordination mechanisms regulated by procedural guidelines and manuals; plans for sustaining TIS operations.

There was and there is no need to prepare other guidelines on coordination mechanisms than the OOG, which regulates not only the coordination but also the management structure of TIS, together with the guidance given to TIS operations.

The coordination items are dealt with in detail by Chapter 1, of the OOG, within the sections on

- * the purpose and general structure of TIS,
- * the tasks and working procedures of central agencies,
- * the tasks and working procedures of regional centers,
- * management of TIS (structure and methods),
- * planning, reporting, monitoring.

Essentially the guidelines for coordination within TIS as set in the OOG are obeyed. However the management structure as described in the OOG is not yet operational and the OOG was not formally put in force.

The sustaining of TIS will be assured by

- * the inclusion into the regular budget of the agencies involved into TIS operations the funds necessary for every day operations of TIS, including the current acquisition of information sources and most of the working and overhead costs of TIS personnel,
- * charging the users for TIS services and using the income to cover the costs of the preparation of services and development of TIS activities by constituting the charges into a revolving fund of DOST agencies involved.

The financing and pricing principles are described in Sections 1.6 and 5.4 of the OOG. The outcome of discussions on these matters was that entirely self-sustaining operation or even privatization of TIS is not or not yet feasible.

II. ACHIEVEMENT OF IMMEDIATE OBJECTIVES

The immediate objectives of the project were achieved or will be achieved before the termination of the project. However, there were some delays in the progress of the project compared to the schedules of the original and revised work plan as indicated in Chapter 1. Section A. This chapter gives a summary of the achievement of the immediate objectives. Details are given in Chapter 1. in the sections on outputs related to the given objective.

The first immediate objective is as follows:

Establishment of four Technology Information Service Centers in selected regions and linking them to existing and upgraded databases and other information sources at DOST and DTI central agencies for the provision of information services to users for the promotion of technological development in rural areas.

The TIS centers were organized and are capable to serve the users with the required technological and market information. The regional TIS servicing centers are linked by working connections, by skills and by a physical (telecommunication) network to information sources at the central agencies and abroad. Some information sources will be downloaded to the regional centers.

Actions were taken to make the users in the areas served by the TIS centers aware of the existence and services of TIS.

The second immediate objective is as follows:

Development of operational techniques for the acquisition of information sources, establishment of databases, retrieval, processing and packaging of information for TIS inquiry and other information services.

The operational techniques were developed and described in the OOG and in other guidelines (documentation of the integrated TIS database), as well as in training materials.

Available and potential information sources were surveyed. Information sources (CD-ROMs, other databases, printed sources, access to online database hosts) were acquired. Databases were upgraded, and extended; the integrated TIS database was designed, established and became operational. Guidelines were prepared for the preparation and provision of information services. Operational services have been started and will become regular before project termination.

The third immediate objective is as follows:

Coordination of the TIS activities of national and regional DOST and DTI offices for sustaining and expanding the dissemination and use of technological information.

The coordination mechanism of TIS has been established. The working links are operational and the coordination of activities is effective. Coordination mechanisms were defined and enclosed into the relevant guidelines. Proposals and schemes for sustaining TIS were prepared. Various plans and proposals were prepared on the extension of TIS services.

III. UTILIZATION OF PROJECT RESULTS

The results of the project are utilized to date only slightly. The real utilization will be the use of services and therefore only some time after the starting of regular services the users may utilize the results.

The conditions for effective utilization of project results are given. It will depend on the quality of services and of their

marketing in what extent TIS will contribute to the success of users and to the development of the Philippine economy and society. The ambitious plan of the government (Philippines - 2000) stresses the key role of science and technology as development factors. This creates a good atmosphere for the development of technological information in general and for TIS in particular.

The utilization of project results will be influenced by further development of the technological information system, too. The present project, being a pilot one can be utilized fully if the developed and applied methods and structures will be applied on a nation-wide scale.

IV. CONCLUSIONS

The following main conclusions can be drawn as a result of experiences gained by the project:

a) Technological information is a main input to the development of developing countries in general and of the Philippines in particular.

b) Technological information cannot and should not be separated from market and marketing information.

c) The only user-friendly and effective way of the provision of technological information services is the establishment and functioning of a networked system, because the ultimate services must be decentralized to achieve the desired results and a certain centralization ("one stop" principle) must be followed in the acquisition, establishment and use of information sources, databases.

d) Networks can work only, if the elements of the network are following the same procedures. Therefore the compatible design of all network elements, the preparation of exact operational guidelines and the full obeying of them, as well as the intensive training of those working within the system is a precondition of the effective functioning of the system.

e) A kind of "mixed financing" of technology information services for users in rural areas (mainly small and medium scale entrepreneurs) seems to be the most feasible way of sustaining such services. This means that users should be charged for services but the core of the service should be financed by means of the central and/or local governments.

RECOMMENDATIONS

1. The extension of TIS to all or most regions of the country is recommended to the Government of the Philippines. After a year of functioning of TIS all advantages and eventual disadvantages can be clarified. The extension of the system to other regions requires less intellectual and financial input than the establishment of TIS, because the central facilities (databases etc.) exist and the results of completed planning, coordination, design and other operations are available. (Comment: an intermediate proposal was prepared by the project management for a follow up project concerning information marketing. Marketing is an organic part of TIS activities and therefore the above recommended follow-up seems to be more appropriate.)

2. The transfer of project equipment to the Government of the Philippines, for use by the agencies using it at present is recommended to UNDP.

3. The inclusion into budget plans of funds for sustaining TIS is recommended to the TIS Management (directors of all TIS centers). It is recommended that the regular budget covers the costs of permanent TIS personnel, (including overhead costs, too) and the acquisition of information sources, including the accessing of online hosts and document procurement.

4. The putting in force of the Operational and Organizational Guidelines is recommended to the Steering Committee and Management of TIS.

5. The starting of the preparation and distribution of technology (and market) information packages is recommended to the Management of TIS. At least 10 packages should be prepared during this calendar year.

6. The completion of the transfer of records from existing databases to the TIS integrated database and the complete editing of transferred records, as well as the entering of new records (with special regard to descriptions of available technology packages, feasibility studies, designs and training opportunities) is recommended to the Management of TIS and TIS staff at the central agencies.

7. The downloading of backfiles of the DOT subdatabase to the regional centers and the regular update of downloaded information is recommended to the TIS staff at DOST/STII.

8. The regular input of market information from DTI sources into TIS inquiry services and to technology (and market) information packages is recommended to the TIS staff of DTI/BSMBD.

9. The uploading to the central database of records prepared at the regional TIS centers on locally available technologies and the use of these records also for international cooperation (e.g. supplying edited records to the Mechanism for Exchange of Technology Information (METI) of the Asian Pacific Centre for Technology Transfer (APCTT)) is recommended to the TIS staff at regional centers and at DOST/STII. The same is recommended to DTI/BSMBD for UNIDO/INTIB databases, provided UNIDO restarts the collection and provision of records on offered and requested technologies.

10. The follow up of final steps for the use of DATANET and electronic mail (leasing and purchase of modems, starting regular communications, establishing the electronic mail with the use of the DATANET network, eventual claims concerning reliability) is recommended to the TIS Management and staff at all TIS Centers, particularly DOST/STII.

11. The preparation of detailed guidelines on the use of the TIS network for computer to computer communications through

DATANET and for the use of the electronic mail on the basis of practical experiences is recommended to the TIS Management.

12. The renewal of subscription to the most significant CD-ROM databases, a wide cooperation with other CD-ROM users and the development of the acquisition of information sources (further CD-ROMs, e.g. on standards, guidebooks, other reference tools) is recommended to the TIS Management.

13. The upgrade of the union catalogue of serials (together with other libraries/information centers involved), the establishment of connections to foreign document supply centers and the planning/budgeting of funds for document copy acquisition is recommended to the TIS Management for the improvement of document procurement within TIS.

14. The revision of existing STII databases and a harmonization or, in some cases, merging with the TIS database is recommended to the STII Information Resources and Analysis Division (IRAD).

INTERNATIONAL PROJECT STAFF

F U N C T I O N	N A M E	N A T I O N A L I T Y S E X	D A T E S*
INDUSTRIAL INFORMATION ADVISER	Erik I. Vajda	Hungarian/ male	1990-11-04- 1990-12-08 1991-06-14- 1991-08-13 1991-11-04- 1992-03-24 1993-01-16- 1993-05-19
TECHNOLOGY INFORMATION TRAIN- ING EXPERT	Dr. Bahaa El-Hadidy	American/ male	1990-07-17- 1990-08-17
NATIONAL TRAINING EXPERT	Dr. Josephine C. Sison	Philippine/ female	1992-01-01- 1992-03-31 1992-10-01- 1992-12-31 1993-02-01- 1993-05-31

* In the case of Erik I. Vajda the dates of the first mission include briefing and debriefing, the dates of further missions include only travel and work in the field. In the case of Dr. Bahaa El-Hadidy, the dates include only work in the field.

SENIOR COUNTERPART STAFF*

N a m e	Designation, dates of service (if not to date or not from start)
Department of Science and Technology - Science and Technology Information Institute (DOST/STII)	
Dr. Jose L. Guerrero	Director of STII, Project Manager
Mr. Enrico F. Florencio	Head of the Information Technology Division and of the TIS staff of STII (1990 - July, 1992)
Ms. Maribel B. Palafox	Senior Science Research Specialist, (from August 1993 Head of STII TIS staff)
Ms. Charity M. Bolos	Information Officer, (August, 1992 - January, 1993)
Ms. Imelda O. Casal	Senior Science Research Specialist
Ms. Carmelita F. Nobleza	Senior Science Research Specialist (February, 1993 -)
Department of Trade and Industry - Bureau of Small and Medium Business Development (DTI/BSMBD)	
Ms. Zoila Pedro-Elevado	Director of BSMBD, Project Manager (April, 1993 -)
Ms. Ma. Fina C. Yonzon	Officer-in-charge of DTI/BSMBD, Project Manager (October, 1991 - May, 1992)
Mr. Zafrullah G. Massahud	Director of BSMBD, Project Manager (- September, 1992)
Ms. Alicia M. Opena	Chief Trade and Industry Develop- ment Specialist, Head of TIS staff at BSMBD

* The Directors of DOST and DTI Regional Offices (host and supporting agencies of TIS Regional Centres) are not included into this list. - Those persons whose function in TIS is not presented are TIS staff members

N a m e	Designation, dates of service (if not from start or not to date)
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DTI/BSMBD - continued

Ms. Elvira P. Tan	Supervising Trade and Industry Development Specialist
Ms. Gladina M. Aquino	Senior Trade and Industry Development Specialist
Region I - DTI (host agency)	
Mr. Mario B. Piedad	Senior Trade and Industry Development Specialist, Project Leader
Ms. Josefa C. Tayaban	Senior Trade and Industry Development Specialist
Mr. Renato O. Coloma	Senior Trade and Industry Development Specialist
- DOST (supporting agency)	
Ms. Paulina P. Nebrida	Senior Science Research Specialist
Ms. Alejandra Eslava	Senior Science Research Specialist (- 1991)
Region VII - DOST (host agency)	
- Mr. Edilberto L. Paradela	Senior Science Research Specialist, (Project Leader 1990 - September, 1991) (September, 1992-
Mr. Rene Burt N. Llanto	Supervising Senior Science Research Specialist, Project Leader (September, 1991 -)
Ms. Raquel Regina M. P. Peralta	Senior Science Research Specialist
Mr. Jeffrey Roy N. Llanto	Senior Science Research Specialist

N a m e	Designation, dates of service (if not from start or not to date)
Region VII continued - DTI	
Ms. Brenda A. Orosco	Director, DTI Cebu Provincial Office (1990 - June, 1992)
Ms. Victoria M. Diaz	Senior Trade and Industry Development Specialist, (1991 -)
Ms. Josephine Guan Hing	Chief Trade and Industry Development Specialist (June, 1992 -)
Ms. Laura Rollan	Trade and Industry Development Specialist (June, 1992 -)
Ms. Grace Durano	Trade and Industry Development Analyst (June, 1992 -)
Region I - DOST (host)	
Ms. Roselyn V. Arellano	Science Research Specialist, Project Leader
Ms. Ma. Lilian S. Espedilla	Science Research Specialist (January, 1991 - May, 1993)
Ms. Kirlyn L. Baconguis	Science Research Specialist (January, 1992 -)
- DTI	
Ms. Emilia A. Lasquites	Senior Trade and Industry Development Specialist
Ms. Elizabeth C. Tagaylo	Senior Trade and Industry Development Specialist
Ms. Josephine.T. Ortiz	Senior Trade and Industry Development Specialist (January, 1991 - July, 1991)
Ms. Lodie M. Cadiz	Trade Development Analyst

N a m e	Designation, dates of service (if not from start or not to date)
Region XI - DTI (host agency)	
Mr. Larry N. Digal	Chief Trade and Industry Development Specialist, Project Leader (March, 1991 - September, 1992)
Mr. Teolulo T. Pasawa	Chief Trade and Industry Development Specialist, Project Leader (1990 - March, 1991; September, 1992 -)
Ms. Evelyn Perin	Senior Trade and Industry Development Specialist (199 - March, 1992)
Ms. Mary Mylene S. Aquino	Trade and Industry Development Analyst (March, 1991 -)
Ms. Kathleen Herschel E. Obed	Trade and Industry Development Analyst (March, 1991 -)
- DOST	
Ms. Maria Delia Moran-Morados	Chief Science Research Specialist, Project Leader, (October, 1992-)
Ms. Maria Riza A. Melliza	Science Research Specialist
Ms. Christina S. de Guzman	Science Research Specialist

FELLOWSHIPS AND STUDY TOURS

TYPE AND DATES	VENUES AND SUBJECTS	NAME AND SEX OF PARTICIPANTS
Fellowship 1992-02-02- 1992-03-07	Asian Institute of Technology, Bangkok, Thailand Course on repackaging and consolidation of information	Larry Digal/m Victoria Diaz/f Lilian Espedilla/f Emilia Lasquites/f Riza Melliza/f Paulina Nebrida/f Raquel Peralta/f Mario Piedad/m
Fellowship, 1992-06-10- 1992-07-12	Asian Institute of Technology, Bangkok, Thailand Short course on information repackaging and desktop publishing/ UNIDO, Vienna, Austria Services of UNIDO-INTIB/ National Technical Library, Budapest, Hungary Online and CD-ROM retrieval	Gladina Aquino/f Imelda Casal/f Enrico Florencio/m Alice Opena/f Maribel Palafox/f Elvira Tan/f
Study tour 1992-08-17- 1992-09-02	Four institutions, organized by the Carl Duisberg Gesellschaft, Germany, various sites/ Intermediate Technology Development Group, Rugby, United Kingdom/ UNIDO-INTIB, Vienna, Austria/ Asian Institute of Technology, Bangkok, Thailand Management of technology information services	Dr. Jose L. Guerrero/m Zoila Pedro-Elevado/f

TRAINING COURSES AND WORKSHOPS

Name	Venue and duration	Subjects (curriculum)	Participants
<p>Training on Microcomputer Systems and Applications for TIS Staff</p>	<p>Each regional TIS Center and DTI/BSMBD. Two weeks each. 25 February-17 May, 1991</p>	<p>Basic concepts, Microsoft Windows 3.0, WordPerfect 5.1, Statgraphics 4.0, Ventura Publ. 3.0, PC Tools, 6. CDS/ISIS 2.3 Data Communications</p>	<p>TIS Project leaders and staff members, other staff of regional centers and BSMBD, other interested users</p>
<p>Orientation Workshop on TIS</p>	<p>Asian Institute of Tourism Hotel, Quezon City 21 July, - 02 August, 1992</p>	<p>Aims and Principles of the Project; Networking, Work Sharing, Databases, Activities; Users and Services; Marketing information; Database demonstrations</p>	<p>Project Managers, Directors of TIS Regional Centers, host agencies, TI+S staff of regional centers and central Agencies (29)</p>
<p>Planning Workshop on TIS</p>	<p>Park Place Hotel, Cebu City 02-04 December</p>	<p>Operational and Administrative Guidelines; Training for TIS staff; TIS Budget; Activity Monitoring; Survey of Information Needs; TIS Work Plan</p>	<p>Project Managers, three Directors of TIS Regional Centers, TIS project leaders and selected staff of staff of regional centers and central agencies - (26)</p>

- continued

Annex 4.- continued

N a m e	Venue and duration	Subjects (curriculum)	Participants
TIS Pilot Users' Training Workshop	Villa Victoria Davao City 11-12 May, 1993	(The training aimed at the orientation of users and at demonstration of methods of users' training in regions) TIS - aims and background; TIS services; Information sources and network of TIS; Demonstration of databases	Project Managers, 2-3 users per region, Regional directors (host agencies), Project leaders, TIS staff members (2 per region) (40)

BUDGET DATA

I. UNDP contributions*
(State of 17 May, 1993; data in US\$)

BUDGET LINE	TOTAL BUDGET	USED OR OBLIGATED	A V A I L A B L E	
			IN TOTAL	FOR LOCAL EXPENSES
Personnel	171,761	171,291	470	470
Training	130,371	130,371	-	-
Equipment	204,002	197,903	6,099	1,060
Sundries	9,142	7,539	1,603	1,603
Total	515,276	507,104	8,172	3,133

* Data on local (and therefore also for total) expenditures in 1993 are estimated

II. Government contributions in kind
(For whole duration; estimates in Pesos)

KIND OF CONTRIB.	PLANNED	ESTIMATED	DIFFERENCE	NOTE
Project personnel	3,800,000	4,250,000	+ 450,000	1/
Training, workshop	150,000	70,000	- 80,000	2/
Equipment	1,500,000	1,250,000	- 250,000	3/
Miscellaneous	75,000	110,000	+ 35,000	4/
Total	5,525,000	5,680,000	+ 155,000	5/

1/ Estimated on the basis of the average salaries of TIS staff without overhead costs, including proportionally the non full time staff.

2/ Most costs were covered by UNDP contributions.

3/ Difficult to estimate (e.g. use of premises) but more does not seem realistic.

4/ More, because of telecommunication costs.

5/ The grand total in the project document is 5,325,000, but only because of an addition mistake. Correct is 5,525,000

EQUIPMENT

The main items of equipment, provided by the project, are listed as follows (for costs see the last property control sheet, a copy of which constitutes a part of this annex):

- 4 vehicles (Isuzu Trooper) for the regional centers
- 6 microcomputers for the regional centers and central agencies, with accessories and software
- 6 printers (two laser printers and four IBM proprinters for the regional centers and central agencies
- 2 CD-ROM drives, for the central agencies
- 7 modems (one lost) for the regional centers and the central agencies
- Upgrading of the HP 3000 minicomputer at DOST/STII, including the purchase of an expander box
- 6 units installation and subscription to packet switched data network (not included in the property control sheet; cost USD 17,360.)
- 6 PC Mailbox

Other purchases (mainly expendable equipment) were various software packages, CD-ROM-s and other information sources.

The purchase of further modems and, if funds are available, of further information sources is going on.

The expenditures for equipment are included into Annex 5.

Project Number
DP/PHI/86/016

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
NON-EXPENDABLE PROPERTY CONTROL RECORD

Page No. : 1
Period Ending : DECEMBER-92

Country : PHILIPPINES

Project Title : DEVELOPMENT OF TECHNOLOGY INFORMATION SYSTEM (TIS)

Purchase Order Number	Item No.	Description	Qty. Ord.	Stock-on-hand in US\$	Received			Cond.	Qty On Hand	Remarks
					Qty.	M	Y			
15-0-00358	1	ISUZU 5 DOOR STATION WAGON 4WD 9 SEATER. CHASSIS NUMBER ---> JACUBS55FL7105040 ENGINE NUMBER ----> 435775 REGISTRATION NO. => ????	1	12,696.00	1	05	90	G	1	Sent to DOST Reg. 7
15-0-00358	2	ISUZU 5 DOOR STATION WAGON 4WD 9 SEATER. CHASSIS NUMBER ---> JACUBS55FL7105063 ENGINE NUMBER ----> 435947 REGISTRATION NO. => ???	1	12,696.00	1	05	90	G	1	Sent to DOST Reg. 10
15-0-00358	3	ISUZU 5 DOOR STATION WAGON 4WD 9 SEATER. CHASSIS NUMBER ---> JACUBS55FL7105087 ENGINE NUMBER ----> 435732 REGISTRATION NO. => ???	1	12,696.00	1	05	90	G	1	Sent to DTI Reg. 11
15-0-00358	4	ISUZU 5 DOOR STATION WAGON 4WD 9 SEATER. CHASSIS NUMBER ---> JACUBS55FL7105108 ENGINE NUMBER ----> 436096 REGISTRATION NO. => ???	1	12,696.00	1	05	90	G	1	Sent to DTI Reg. 1
15-0-01154	1	ZEMA PC AT SPECIFICATION 80286 - 16 MHZ RAM, 1.2MB FLOPPY DISK, 1.44MB FLOPPY DISK 2 SERIAL/1 PARALLEL INTERFACE, 80 MB HARD DISK, HD/FDD CONTROLLER, 80MB TAPE CONTROLLER (INTERNAL) VGA MONITOR + VGA CARD, MOUSE, MS-DOS 4.01.	6	38,100.00	6	12	90	G	6	1 with DOST-STII 1 with DTI-BSMBD 1 each at 4 Reg. Cel.
15-0-01155	1	CDR-1503S HITACHI CD-ROM DRIVE.	2	2,115.00	2	10	90	G	2	1 with DOST-STII 1 with DTI-BSMBD

Country : PHILIPPINES

Purchase Order Number	Item No.	Description	Qty. Ord.	Stock-on-hand in US\$	Received			Cond.	Qty On Hand	Remarks
					Qty.	M	Y			
15-0-01197	1	LASERJET III 8PPM 300DPI 1MB (5), S/NOS: 3033A86633, 3033A86634.	2	3,048.00	2	1	91	G	2	1 with DOST-STII
15-0-01197	3	4208W PROPRINTER, S/NOS: 0923F4800112098542, 0923F4800112098605, 0923F4800112098688, 0923F4800112098690 WITH AUTOMATIC SHEET FEEDER.	4	3,424.00	4			G	4	1 with DTI-BSMBD Sent 1 each at 4 Reg. Centers
15-0-01197	4	VENTURA PUB V3. 0 DM F/MS WINDO.	2	1,096.00	2	1	91	G	2	
15-0-01197	5	STSC. STATGRAPHICS V4. 0 8.25".	2	1,162.00	2	1	91	G	2	
15-1-00839	1	V-SERIES ULTRA 96 EXT SMARTMODEM.	7	4,424.00	7	8	91	G	6*	* Pls. see attached Case Report
19-2-8718N	1	I/O EXPANDER BOX FOR MICRO 3000 XE. PART NO. 30545ER.	1	5,300.00	1	9	92	G	1	LOCAL PURCHASE
19-1-08744	1	HP 24405A No. 110 NS x .25 3000/VNetwork Link	1	6,318.00	1	1	92	G	1	LOCAL PURCHASE
19-1-08744	2	2MB Memory Board HP 30462A	1	4,180.00	1	1	92	G	1	"
19-1-08744	3	670MB Disc Drive HPC22031	1	9,940.00	1	1	92	G	1	"
19-1-08744	4	NS 3000/V Right to use HP32344A for use on Micro 3000 XE No. 310	1	3,762.00	1	1	92	G	1	"
19-1-08744	5	MPE UB-Delta Update to V-Delta 8	1	1,785.00	1	1	92	G	1	"

Project Number
DP/PHI/86/018

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
NON-EXPENDABLE PROPERTY CONTROL RECORD

Page No. : 3

Period Ending : DECEMBER-92

Country : PHILIPPINES

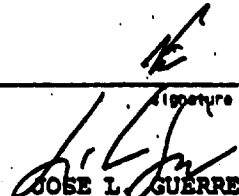
Project Title : DEVELOPMENT OF TECHNOLOGY INFORMATION SYSTEM (TIS)

We certify that the quantities of non-expendable equipment received, less the quantities of non-expendable equipment written-off, reflect the physical count of the items on hand.

Unido project manager
or
Resident representative

Date _____

Government counterpart


signature
JOSE L. GUERRERO

ZOILA PEDRO-ELEVADO

Date January 22, 1993

PROJECT DOCUMENTATION

1. **Technical Report: Development of a Training System for a core of Industrial Information Specialists of TIS. Based on the work of Dr. Bahaa El-Hadidy, Technology Information Training Expert. Vienna, October 1990. 51 p.**
- 22 **Technical Report: Planning and starting the development of technology information services (TIS). Based on the work and prepared on behalf of UNIDO by Erik I. Vajda, Industrial Information Adviser. Vienna, December 1990. 41 p.**
3. **Project Performance Evaluation Report. Prepared by the National Project Management and project staff at DOST/STII and DTI/BSMBD. Manila, February 1991.**
4. **Technical Report: Design of databases, networking and services; development of information sources, equipment and training. Based on the work and prepared on behalf of UNIDO by Erik I. Vajda, Industrial Information Adviser. Vienna, August 1991. 34 p.**
5. **Project Performance Evaluation Report. Prepared by the National Project Management, the TIS staff at DOST/STII and DTI/BSMBD and by Erik I. Vajda, Industrial Information Adviser. Manila, January 1992.**
6. **Development of Technology Information Service Project. Progress Report of National Training Expert. January-March 1992. Prepared by Josephine C. Sison. Manila, March 1992. 90 p.**
7. **Technical report: Further development of TIS - establishment of databases, of the network and of procedural regulations. Based on the work and prepared on behalf of UNIDO by Erik I. Vajda, Industrial Information Adviser. Vienna, June, 1992. 52 p.**
8. **Development of Technology Information Services (TIS) Project. [Interim] Progress Report of National Training Expert. October-December 1992. Prepared by Josephine C. Sison. Manila, January, 1993. 2 p.**