



CENTER ZA MEDNARODNO SODELOVANJE IN RAZVOJ, LJUBLJANA  
Centre for International Cooperation and Development

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Prefeasibility Study

INFORMATION SYSTEM ON TECHNOLOGIES AND PROJECTS

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## 1. Summary

Lack of information is one of the most serious obstacles to selection, acquisition and application of appropriate technology options in developing countries. Some of the newly industrialized countries among developing countries have in their process of industrialization achieved the level of technological capability at which they are able not only to adapt imported technologies to their own local conditions and develop appropriate technologies but also transfer them (or projects embodying them) to other developing countries. Yet exchange of knowledge on available appropriate technologies/projects is not adequately developed.

Therefore it is proposed that an international network for exchange of information on appropriate technologies and projects (the word "project" is used to describe the combination of both technology and know-how for the production process of a specific product) available for transfer among developing countries be established. Such an information system would be based on national centres, where an inventory of technologies and projects an individual country has to offer will be collected. The data gathered will be processed according to an agreed standard format and disseminated through the network. The concept of ISTP at the national level and its potential to be developed into international network was the main topic of the expert group meeting on "Exchange of Information among Developing Countries on Available Technologies in the Field of Small and Medium Industries", Ljubljana, Yugoslavia, 12-14 April 1988 which was organised by CICD and UNIDO.

The basic principle as well as orientation of the system for identification, selection and processing of information should be the suitability of the technology/project to the environment found in developing countries, in particular suitability for small and medium-sized enterprises.

The objective of the development of the information system is to promote technical and thus also economic cooperation among developing countries, foster national technological capability and assist developing countries in their development process through identification and fulfillment of their needs.

On the national level, CICD has already established a system for gathering, processing and distribution of information on technologies and projects, available for transfer to other developing countries. Their experience and methodology could be used in developing ISTP internationally. At the same time, the experiences and principles of already established international networks, like UNIDO's INTIB, of various regional organizations (ARCT, APCTT), INRES-South of UNDP, etc. should be closely examined both to avoid unnecessary duplication and to incorporate their valid experiences in development of international network. Cooperation should be sought with all of the named institutions, particularly in the field of network and institution building. The concept and the working protocol of Multisectoral Information Network (MSIN), accepted by the Group of 77, should serve as the base for ISTP network.

## 2. Definition, background and justification of ISTP

In the process of industrialization, developing countries encounter a number of very complex problems. Since industrial development is closely connected with a process of acquiring technological capability, many developing countries have been highly dependent in the first stages of industrialization on technologies imported from developed countries.

If we define technological capability as the application of existing knowledge to evaluate and choose technology, to acquire and operate processes and produce products, and eventually create new technologies, it becomes obvious that a low level of technological capability leads to the import of inappropriate technologies and also fails to enable the country to modify these technologies to indigenous needs. Successful industrialization of developing countries will only be attainable once these countries reach a sufficiently high degree of technological capability.

A number of newly industrialized developing countries (NICs) have made significant advances in the field of adaptation, modification and development of specific technical and technological solutions. These "appropriate" technologies can be much more suitable for other developing countries and can help them increase their technological capability much faster. In general, technical change originating in developing countries will tend to be more appropriate than technical change originating in developed countries, since the local environment influences the area of research as well as the results that will prove economically efficient.

Here it needs to be stressed that appropriate technology is by no means always simple technology: it may be highly sophisticated. Appropriate technology is characterized mainly by the following:

1. Adjustment of production technology to local factor supplies and prices in order to minimize costs.
2. Adjustment to the use of local materials. This differs from number 1 in that it involves the substitution of a different input rather than a change in input proportions. For instance, shoe soles may be made out of rubber instead of leather.

3. Adjustment of the scale of plant to local market size, for example, downsizing a plant.
4. Economizing of foreign exchange, that is, on imports of materials and equipment, this being one of the most serious problems in the majority of developing countries.
5. Adjustment of the product to local market conditions, for example, high transport and utility costs, difficulty with repairs and maintenance, lack of replacement parts, as well as lower income of consumers, specific standards existing in a country, customs, etc.

Appropriate technology may be defined as the set of techniques which make optimum use of available resources in a given environment. Very often appropriate technology is also less capital intensive and less dependent on skilled labor, and thus particularly suitable for small-scale enterprises.

Despite widespread agreement among developing countries on the need for appropriate technology, progress in achieving appropriate technology on a significant scale is generally acknowledged to have been disappointing. This type of technology, because it has not been developed or used by multinational corporations, is much less known, and less accessible, than the standard technology of industrialized nations. When technology is developed in a developing country, the problem of information and its dissemination is seriously aggravated.

A major area for development, identification and promotion of dissemination of appropriate technology consists in the establishment of appropriate information channels. The present systems of information transfer tend to be systematically biased towards recently developed, advanced country technologies. Sources of technology - both as to information and the development of new technology - have been heavily biased towards the modern sector, and within the modern sector towards the relatively large-scale. These biases arise because in the main, R & D is carried out in developed countries by larger-scale firms.

To overcome this bias, there is a need to promote a network of institutions - nationally and internationally - for the development and dissemination of appropriate technology through the establishment of special information

channels. Existing information channels among developing countries are often weak and need improvement both nationally and internationally. Lack of information is one of the most serious obstacles to development, acquisition and use of appropriate technology options.

Being aware of this and possessing an increasing number of technologies which are potentially transferable, the more advanced developing countries have by now succeeded in creating national inventories of available technologies and projects. Although these inventories are based on various methodologies, they are all intended to serve the same purpose: to inform potential partners of the specific possibilities of technological cooperation.

What these inventories lack, besides a more standardized methodology in gathering information on available technologies and projects, is a network for transmission of this highly relevant information to other developing countries. Such a network would not only make information on available appropriate technologies easily accessible, but could also stimulate both development and dissemination of appropriate technologies.

### 3. Objectives of the ISTP

#### a. Immediate objectives:

- to stimulate identification of appropriate technologies and projects available for transfer in each of the participating countries and thus create national inventories of such technologies and projects;
- to identify appropriate national institutions in developing countries which could serve as national centres for identification, processing and exchange of information;
- new techniques frequently require considerable modification before they can function successfully in a new environment. This process of modification often involves a high order of skill and ability, which is typically underestimated or ignored. Yet the capacity to achieve these modifications

and adaptations is critical to the successful transfer of technology. In the selection of technology special attention will be paid to potential modifications and adaptations of these technologies to make them most appropriate to a particular environment. This would increase the success of transfer of technology;

- to provide the interested national centres with the training to qualify the manpower necessary to perform the task of gathering, processing and exchange of information;
- to set up ways and means for the linkage of national centres to ensure a permanent flow of information among developing countries in the field of appropriate technologies and projects, collected within ISTP.

b. Development objectives:

- an international information system on technologies and projects available for transfer among developing countries could significantly promote and facilitate information flows and strengthen technological and economic cooperation among developing countries;
- a basic rationale of collective self-reliance and South-South cooperation as a development instrument is better utilization and mobilization of internal human, material and all other necessary resources and - by pooling them collectively - acquiring economies of scale, tailored to the authentic needs of developing countries. ISTP, with its stimuli to promote development and dissemination of appropriate technologies could thus become one of the major instruments of collective self-reliance;
- a major effort needs to be made to promote technical change in developing countries, starting with a careful look at the analysis of what promotes or inhibits such change. Deficiency in quantity and quality of R & D and in the dissemination of resources devoted to suitable technology is one of the major obstacles to faster technological change. The increased viability of appropriate technology through ISTP should be an important contribution to overcoming this obstacle;

- with its data on available appropriate technologies and projects for developing countries, ISTP should become a major instrument in assisting less developed developing countries in meeting their technology needs. The methodology used for identification of available technologies and projects should be used also for the identification of the needs, particularly in less developed developing countries;
- technology transfer is not an end in itself. Its general objective is economic development and growth. With improved technology transfer among developing countries through ISTP, economic development could be significantly stimulated.

#### 4. Basic Principles of ISTP

Presentation of the basic principles of ISTP is divided into two parts: part one describes the characteristics and principles of collection, processing and storing information on appropriate technologies and projects on the national level, while part two presents the prerequisites for the establishment of the national centres.

##### 4.1 National system on technology/project information

The development of a national system on basic technology/project information should be based on the following principles:

- the system should be simple to operate, flexible and should include all sectors of the national economy in order to open doors to all potential exporters or buyers of technology;
- identification and selection of the project/technology should take into account its quality/performance, and suitability to local requirements and needs of a given country;
- special attention is given to the selection of appropriate technologies (modern or traditional) for small and medium-sized industry taking into account technical, environmental, financial and commercial aspects;

- the system should be built according to the needs, technical and financial possibilities of ISTP promoters, i.e. national centres and enterprises as suppliers or buyers of the technology in question;
- the system should be developed gradually and it should prove its viability through eventual self-financing based on special agreements between national centres and interested enterprises;
- national centres should be capable of collecting, storing and disseminating information on available projects/technologies and at the same time they should be able to field inquiries received by mail, telex or computer and provide additional information if necessary;
- national standardization of collected data and its transparency within the international information systems, particularly those of the UN special agencies, is to be required; a methodology/work sheet prepared by CICD could be taken as a good initial approach to standard format;
- special priority should be given to projects/ technologies with in-built flexibility, meaning that they can be easily adapted to smaller/ larger scale of production;
- the national centre should, in the process of identification of technologies/projects, stimulate the owner of the technology to assist the potential buyer in the process of adaptation and modification of the offered technology on the basis of his past experience with developing this particular technology in his own environment (i.e. acceptance of a complete transfer of technology is assumed, if such should be required from the potential buyer).

#### 4.2. The role of and prerequisites for the establishment of national centres

National centres should be primarily institutions with close links with business enterprises (Chambers of Commerce, Investment Centres, independent commercial or research institutions, engaged in promoting trade or technology transfer, i.e. different types of institutions depending on the economic system in each participating country). They should have strong commercial



interest in participating in the system. For the proper functioning of ISTP, it is essential that an institution decides by itself that it wants to act as a national center and sees its engagement in the network as something yielding a financially attractive activity. Even in countries, where such activity is government-sponsored, national centre should in the long run commercialise ISTP. Only commercialisation guarantees that the national centre's interest in being active both nationally and internationally will stay alive.

They should be in a position to:

- identify appropriate technologies/projects within the national economy: i.e. they should be able to motivate companies in their national economy to chose and prepare information on technologies/projects available for transfer to other developing countries according to the basic principles of the system for gathering and processing the information on appropriate technology/projects and supplying them into the international network;
- assess a particular technology/project for its suitability for developing countries' small and medium size enterprises, since they bear full responsibility for data passed on to the network.

Arrangements between the supplier of technology and the national centre should be left to the national centre and will not be coordinated at the level of the international network.

Also, the financing of identification, assessment and processing of information on available appropriate technologies/projects at the national level is organized by the national centre independently. Seed money for the establishment and operation of the international network will be sought jointly from international sources according to previous agreement among all participating national centres.

National centres may be linked to chambers of industry, commerce and economy, to business associations of small and medium-sized industry, research institutes, universities, innovation centres and other relevant information sources within their countries and international information systems as well.

## 5. Organizational structure of ISTP

ISTP is conceived as a network of national centres. National centres will act as coordinators of the network within a given country and they will be responsible for a smooth flow of information from/to enterprises and particularly to small and medium -sized industry.

In the process of identifying, selecting and processing data, the following elements will be observed:

- a) basic technology/project information should be identified with close cooperation between the business enterprises offering the technology/project for transfer and the national centre. Experts of the centre have to examine the offered technology/project, assess its suitability and suggest eventual modifications or additional data a company should provide.
- b) information on a technology/project should be organized according to a common format (the CICD work sheet could be a basis for discussion):
  - additional information may be supplied to the experts of the national centre, but should not be incorporated in the basic information on the technology/project which goes into the system, in order to assure clarity of data processed through the network,
  - for easier communication, information processed through the network should be given in English, but with further development of the system, other languages should also be used,
- c) as the system develops, all gathered information should be gradually computerized. The software should be portable, user-friendly and inexpensive. (CICD has created its ISTP data base on dBase III plus running on an IBM PC XT/AT comp.). In designing the software, it is important to bear in mind the software used by various UN agencies, to secure maximal complementarity.

The required hardware configuration at the level of the national center is an IBM or IBM-compatible personal computer with a minimum 20 Mb (single hard disk) memory, in order to have sufficient room for cross-referencing of information.

The existing software developed by CICD and used in the preparation of the Yugoslav catalogue of available appropriate technologies/projects for transfer enables easy processing of information, quick access to data and elementary cross-searching of data. As such it can be used in the beginning stages of setting up the international system. It can be developed further according to the identified needs of the system.

#### 6. Main conclusions of expert group meeting

CICD and UNIDO organized an expert group meeting on the exchange of information between developing countries on available technologies in the field of small- and medium- sized industries, which was held at Ljubljana from 12 to 14 April 1988. The meeting aimed at identifying appropriate national systems in developing countries to ensure a permanent flow of information on locally available technologies, particularly within small- and medium- sized industries.

After intensive discussion, the experts, who came from Algeria, Argentina, China, Egypt, India, Pakistan, Romania, Turkey and Yugoslavia, supported the proposal of CICD to establish an international information system on technologies and projects (ISTP). This would consist of a network of national centres, which should aim at identifying, selecting and processing information existing in developing countries suitable for transfer to other developing countries.

It was recognized that a considerable reserve of indigenously developed or adopted imported technologies existed in developing countries regardless of their different levels of industrial development, and that considerable progress had been made in collecting information in different national institutions. What was needed, however, was a more business-oriented and user-friendly international information system, which would enable information on those technologies to be exchanged.

The main recommendations of the meeting were:

- That unified national systems for collecting, processing and disseminating technology information should be established and strengthened;
- That national information centres should maintain close links with technological enterprises with a view to collecting and disseminating information on them;
- That technologies that were to be transferred should be carefully evaluated, selected and acquired according to needs and adapted to the existing human and material resources in order that they could be integrated fully into the industrial and economic structure of the country;
- That a common format should be used for the preparation of information on technologies and projects using computer applications and a unified international product code;
- That CICD should act as a co-ordinating centre for the proposed information centre, assisting national centres by training and advice.

#### 7. CICD experience on the national level

At the beginning of the 1980s the CICD decided to begin the elaboration of a permanent program of promotion of Yugoslav technologies, suitable for transfer to other developing countries and interested developed countries, based on the selection of quality technologies, already adapted or able to be adapted to the needs of developing countries with regard to their technical and economic level, existing infrastructure, quality of inputs, local customs, standards, etc.

Building up ISTP means to CICD a new, original way to promote enterprise to enterprise South-South cooperation based on selected commercially available technologies and projects in Yugoslavia and linking them with potential needs and technological requirements in other developing countries.

### 7.1. Objectives of Yugoslav firms

At the outset, most firms in Slovenia contacted by CICD were not very enthusiastic about a new project on the promotion of technology transfer. However, they thought it worth trying an innovative approach offered by the CICD's ISTP programme. So they supported the idea that CICD should get financial support from the Slovene Government.

In general, the major objectives of the participating firms are the following:

Firstly, they see in ISTP an opportunity for the inventory work on their own technological potentials for export and systematic search and collection of basic data on economic, legal, financial and technical aspects of the technology transfer;

Secondly, an independent research and information center like CICD can provide them with a wide dissemination of information on available technologies to all relevant addresses in the developing as well as developed countries and international organizations, and

Thirdly, being among the selected technology exporters represented in the ISTP data base and the catalogue, means to them also a valuable reference for future marketing of their know how, technologies or complex projects.

### 7.2. Methodological issues

The implementations of the ISTP project was divided into several phases. First of all, a coding manual and a work sheet for collection of relevant data and information on identified and selected technologies/projects were prepared.

After extensive consultations with a number of enterprises and leading engineering firms in Slovenia (one of the republics in Yugoslavia), the working team decided that ISTP coding system for Yugoslavia would be based on National Standard Classification of Economic Activities. It is widely used by Yugoslav statistics and is obligatory to all economic entities in Yugoslavia according to the Federal Law.

There is a considerable similarity between the Yugoslav classification of economic activities and the International Standard Industrial Classification of all Economic Activities (ISIC) which is used in UNIDO technological data base INTIB, and from the very beginning it was planned that Yugoslav code would be accompanied by the ISIC code in order to enable a compatibility between ISTP and any other international information system, including INTIB on the first place. All technologies projects are now classified according to ISIC.

### Coding

The ISTP coding system represents a mix of the classification code (first 6 digits) and of the project current number ( four digits).

The classification code is introducing the divisions (two-digit code), groups (five-digit code) and subgroups (six-digit code):

XX XXXX

I I I \_\_\_\_\_ (01) Industry and Mining  
I I  
I I \_\_\_\_\_ (01 030) Coal Processing  
I  
I \_\_\_\_\_ (01 0301) Manufacture of coke  
and semi-coke

### Work sheet\*

The ISTP work sheet is divided into three major parts:

Part one: includes basic data or codes on the owner of the technology, economic sector, code number of the identified and selected technology or project and the year of last issue or updating.

Title of the project/technology

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\* A sample is included at the end of the paper.

Part two: presents a short description of the technology or the process with a separate sketch of the product or production facilities lay-out.

Part three: presents all other relevant data and information needed for initial decision making: total investment cost, value of the equipment, required area, number of personnel, type of commercial arrangements, financial and ecological aspects.

Having in mind the problem of getting additional information on other relevant matters in time, the team suggested that contractors should add any relevant data or information which might be useful for the clients concerning the mode of transfer of technology, standards, references, licence or patent information, etc., under the separate item at the end of the working sheet.

While the first two parts of the work sheet correspond to technical-technological type of information and can be found in other relevant information systems on technologies (INTIB), the third part includes economic, financial and ecological aspects and more detailed explanations in Additional Information.

This kind of information makes ISTP more commercially oriented system in comparison to other information systems on technologies and science.

### 7.3. Dissemination of information to interested partners abroad

A very important question had to be solved in the first, pilot phase of ISTP implementation: how to make ISTP known among the potential users and buyers of appropriate technologies in developing countries.

In March 1987 the first issue of the catalogue of the first 200 technologies/projects was published and mailed to all UNDP national offices in developing countries, to Yugoslav embassies abroad and the embassies of developing countries in Yugoslavia, to UNIDO, the Chambers of Economy in Yugoslavia and given to the participants of the international conferences on small and medium enterprises in Belgrade, on Information Systems Development at Nova Gorica, of Business weeks of Yugoslavia in Jordan and in China and to the members of the Slovene Fund for Promotion of Cooperation with developing

countries. More than 2000 copies, out of 2500, have already been distributed by the end of 1987. Several representative offices in Yugoslavia and some embassies had asked for additional copies.

The catalogue proved to be a very successful strategic decision. A number of requests for additional information and data on specific technologies have already been received and replies of the technology owners sent back in a relatively short time. There have been also proposals for direct contacts and business talks between potential partners from Argentina, India, Nigeria, Cyprus, Jordan, etc.

Due to rapidly growing number of information on technologies and projects in ISTP data base, CICD decided to publish sectoral and company catalogues instead of a general one. This way, a catalogue on agricultural technologies and 6 company catalogues were published so far.

#### 7.4. Past Experience and results of ISTP

Although it is very difficult to make a final assessment of this stage of the ISTP project at the moment, it is more than evident that most of the goals were fulfilled:

- there is a growing interest among Yugoslav enterprises to make their inventory work on technologies in their possession according to ISTP methodology in order to find out whether these technologies are suitable for certain conditions (climate, technical, legal, financial, environmental, etc.) in interested developing or developed countries;
- CICD has succeeded in inspiring interest among Yugoslav enterprises for such kind of permanent promotion of their capabilities and technological potentials either through a modern sophisticated information system or through traditional communication links. Some larger firms have chosen the ISTP methodology as a way to better organize more efficient service for their companies at home and abroad;
- some engineering firms have found the ISTP methodology as a very appropriate solution for their own marketing activities on new markets in developing countries and are now preparing firm's catalogues according to ISTP;



- dissemination of the catalogue stimulated a number of SMEs in developing countries to become interested in Yugoslav export and technological capabilities not only for buying specific technologies in Yugoslavia but also in potential cooperation, joint ventures and joint bidding in third countries;
- CICD exchange of information and promotion of South-South cooperation got a new, very practical push on different levels: at the enterprise level, regional and national level and at the international or interregional level as well. It is expected that ISTP will become a part of the international information systems on technologies and as such enlarge South-South information flows in the future using traditional and modern information technologies, as backbone infrastructure.

Of course, there are still many problems to be solved. Many smaller enterprises need assistance in collecting of data and preparation of production processes lay-outs. CICD has reached an agreement with some interested engineering firms to offer such assistance based on their rich experience in transfer of technology and marketing of the investment projects in developing countries.

So far CICD has received about 150 different requests and letters from a number of developing countries, asking for more detailed data and information including the breakdown of the investment costs, possible scale down of the particular technology/project, financial conditions, etc. All these requests were sent to the owners of the desired technologies. Relatively short time was needed to get back the replies and additional explanations.

#### 8. International network for information system on technologies and projects

The system should be open-ended, not only with respect to the number of national centres participating, but also in its functional mechanisms, coordination activities and linkages. Any mechanism which the participating centres shall identify as beneficial for the improved functioning of the system, should be integrated. The common goal, that is, promotion of exchange of information on appropriate technology/projects among developing countries, should represent the basic principle in development and upgrading of the system.

An international system should be built gradually, with the use of a step-by-step approach. In the first stage, a pilot network of a limited number of countries at a sufficiently high development level (NICs), should be established to test the potentials of such a system. If the system proves itself, it should be opened to any developing country willing to participate in the exchange of information on available appropriate technologies/projects. ISTP can also be used as a means of development assistance to the least developed developing countries. The national centres of the participating countries should pay special attention also to meeting the needs of the less developed countries for appropriate technology/ projects to foster their development.

The participating national centres are responsible to process information according to commonly agreed methodology. All gathered information should be supplied into the system as soon as it is processed so as to be available to all other national centres. To facilitate the functioning of the system, contacts between national centres can be establish directly. Each national centre is responsible for the information supplied to the system.

National centres assist in establishment of contacts between suppliers and potential buyers of technology/ project. Other support services can, but need not be offered by national centres, depending on their own policies and abilities to provide such assistance.

If request arises for the technology/ project currently not available in the system, all national centres should be notified. They should try to identify proper solution. This way, assistance to least developed developing countries could be provided through the system. Also, the role of the system in promoting R & D in the field of appropriate technology should be fulfilled.

CICD could, in the initial, pilot, phase act as a coordinating centre of ISTP, assisting national centres in training of personnel, in advising the national centres in implementing the methodology of gathering, assessing and processing data and information on available technologies and projects and holding seminars for users of ISTP, both on the demand and the supply side. It could also assist national centres in information services development as well as in establishing other relevant data bases on economic, legal and other relevant business aspects under which a transfer of technology or joint investment can be undertaken in respective countries.

CICD should be responsible for the continuous upgrading of the methodology of the system; suggestions for such further development are expected from all participating national centres.

### 8.1. Exchange of information

Transfer of information between the national centres should be organized in stages. Initially, each national focal point should prepare a national inventory of about 100 different appropriate technologies/projects available for transfer. These data should then be made available to each of the participating national centres both in written form (loose leaf printed catalogue) as well as computer-processed (diskettes) form for their use.

Those national centres which might already possess adequate telecommunication means (telex, telefax) or could use public networks may test these possibilities, particularly for the transmission of data at the regional level. In cooperation with UNIDO, their network established for exchange of information gathered within INTIB, could be used also for ISTP. Similar cooperation with other established international networks should be explored as well.

### 8.2. Coordinating Advisory Committee

The supervision of the functioning of the network should be carried out through a special committee, made up of representative from each national centre.

ISTP Advisory Committee will monitor the work and assist national centres in management and technical aspects of the system. It is proposed that Advisory Board meets bi-annually. Secretarial services for the Board, which should be kept at the minimum, should be carried out by a coordinator of the ISTP in its initial stage. Financial resources to cover expenses will have to be provided either from various multilateral agencies, including UN or by the participating national centres themselves.

### 8.3. Financing

Each national centre's budget should be covered by its respective participating member. Besides local costs the national centres should also

cover part of the common pilot project costs. At the initial stage, some assistance from multilateral institutions is expected to cover part of the common project costs.

As already mentioned, it would be advisable that the system first be established among a limited number( 6-8) of more developed developing countries. These countries already have the technological capability to develop appropriate technology, and also have experience in transfer of technology. Thus the set-up process could be simpler and quicker than in cases of less developed countries. Once the system becomes operational at the pilot stage, its upgrading and opening up to new members can be envisaged.

Even though the national centres need not be connected with the local government, strong government support of the system could contribute constructively to its functioning. Through supportive policies, governments could facilitate the flow of appropriate technology/projects and create an additionally stimulating economic environment for South-South cooperation.

One of the tasks of the participating national centres, but in particularly of the initiator of the system, CICD, should be continuous monitoring of the functioning of the system, with identification of measures and instruments with which the governments could contribute to a more successful operation of the system. In view of the so often stressed dedication to closer economic and technical cooperation among developing countries at governmental level, it is believed that such suggestions could be promptly implemented.

#### 9. Coordination with existing UN information systems

ISTP should benefit from existing UN specialized information systems like INTIB, TIPS, etc. and link its national centres to them in order to enlarge its potential for servicing SMEs. There is a need for coordination between ISTP and the mentioned information systems in order to ensure the most appropriate and efficient flow of information from/to enterprises and SMEs.

Cooperation with UNIDO/INTIB is to be focused especially on possibilities that ISTP network uses, where appropriate, the communication facilities established by INTIB for the linkage between its focal points. Also, some of the dimensions of INTIB and ISTP are rather similar: the efforts in developing ISTP should be coordinated to avoid duplication.

#### 10. Future possibilities

It is expected that ISTP will, due to its business-oriented information services, have a satisfactory number of potential users in developing as well as in developed countries, particularly among the promoters of SMEs and technological cooperation, and become an economically and technically viable enterprise. With the dynamic development of communications software and hardware, the system will have new options in its further development.

Developments in decision support systems are bringing new challenges. Here we are thinking particularly of eventual development of expert systems which could assist not only the experts of the centres in evaluating specific technologies/projects available for transfer, but also help the potential investor to choose an appropriate technology/project from the system's inventory according to his original needs and local economic, legal and infrastructure conditions.

Such an expert system could compare the requirements of the investor with the conditions required for successful implementation of the transfer of particular technology or conditions required for setting up a specific project. Even modifications of offered technologies/projects could be simulated with the use of proper computer programs.

Another field where the world is making tremendous progress and where developing countries should strive to fully participate is telecommunications, particularly dissemination of information via satellite. Once an infrastructure for telecommunications between developing countries is established, the communications within the ISTP would be dramatically facilitated and much faster contacts between national centres could be established. Here, the national experiences of participating countries in satellite communications could be beneficial. Improved communication links would also enable the processing of broader and more detailed information, as well as even simpler and more flexible use of the information already stored in the systems.

From the very beginning onwards the system should be treated as living organism, which should and must continuously adapt themselves to its surroundings in order to fulfill their basic objective: to serve developing countries in their development process.



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EXPERT GROUP MEETING

on

INFORMATION SYSTEM ON TECHNOLOGIES AND PROJECTS  
April 18-20, 1990, Bled, Yugoslavia

ARCT'S ACTIVITIES IN THE FIELD OF  
INDUSTRIAL AND TECHNOLOGICAL INFORMATION

Mr. Mohamed Timoulali  
African Regional Center for Technology

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## ARCT'S ACTIVITIES IN THE FIELD OF INDUSTRIAL AND TECHNOLOGICAL INFORMATION

### I. INTRODUCTION

Since its establishment, the African Regional Centre for Technology (ARCT), has been incorporating in its successive work programmes the activities concerning industrial and technological information. The Centre's Information and Documentation Division is collecting, processing and disseminating the information needed to its member states in the priority sectors of food and energy.

Products, as well as services offered in this field are examined in the scheme of Annex I, which gives us a global presentation of ARCT's information system.

### II. LIBRARY

The Centre's library manages a documentation fund of about six thousand documents, part of which are on microcards.

Supported by the MICRO-CDS-ISIS software, the library offers to its clients the following services:

- lending of documents;
- photocopies;
- bibliographic research;
- bibliographic indexes;
- acquisition lists.

### III. PUBLICATIONS

The centre disseminates information with the assistance of various publications:

- African Technodevelopment Bulletin (semi-annual);
- Information newsletter on new technologies: Alert Africa (quarterly);
- Bulletin of network communication: Infonet (annual);
- Directory of Institutes and Experts in the Field of Science and Technology in Africa;
- Directory of Scientific and Engineering Societies in Africa (in cooperation with AAAS and UPST);
- Directory of Technician Training Institutes in Africa (in cooperation with ROSTA/UNESCO);
- Guide to Directories on Science and technology in Africa (in cooperation with AAS).

The directories are published every two years.

Distribution of publications: periodicals are distributed on subscription or exchange basis, while directories and other manuals are only for sale.

#### IV. NETWORKS AND DATA BASES

The Centre is a Regional Focal Point for the African Sub-network INTIB and for the African Network TIES, which were established with the assistance of UNIDO.

The Centre is also a coordinating centre for the Network on the Exchange of Information in Food Technologies (RITA), financed by CRDI.

Within the framework of these networks the following data bases have been developed:

- ARCTIS: A Multidisciplinary Bibliographic Data Base;
- INSEXP: Institutes and Experts in the Field of Science and Technology in Africa;
- FORMA: Technical Training Institutes in Africa;
- OFFR: Offers of Technology;
- REQ: Requests for Technology;
- VENT: Joint Venture Opportunities.

The above data bases use the MICRO-CDS-ISIS software . The information which they contain is described in the lists of Annex II.

The Centre has access to Telesystemes-Questel services in France and to ESA-IRS in Italy for on-line data base inquiries.

It also uses electronic mail services: the QUICK-COMM of GE Information Services, as well as the IBM Screen Mail and the COSY System (Computer Conferencing) of the University of Guelph (Canada).

Within the framework of a UNDP project, a study has already been prepared for the establishment of a Host Centre within the ARCT for data bases and electronic mail.

#### V. TRAINING

One of ARCT's endeavors is the development of manpower resources in the field of Information Technologies. In this respect, different activities have already been undertaken:

- Regular participation of the Division for Information and Documentation's personnel at different workshops and seminars.



- Organization of individual on-the-job training for information specialists from the Centre's member states in the field of computer documentation, implementation of data bases, telecommunications and access to services, the PAO, management of Industrial and Technological Information Services.
- Organization of training workshops and seminars at a regional level, as well as at a national level within the framework of existing networks.

Among topics which have already been discussed or taken into consideration we can enumerate the following ones:

- Patent Documentation as a Source of Technological Information;
- Industrial and Technological Information for PMEs;
- Electronic Management of Documents ;
- Management of Technology Bases.

## VI. COOPERATION

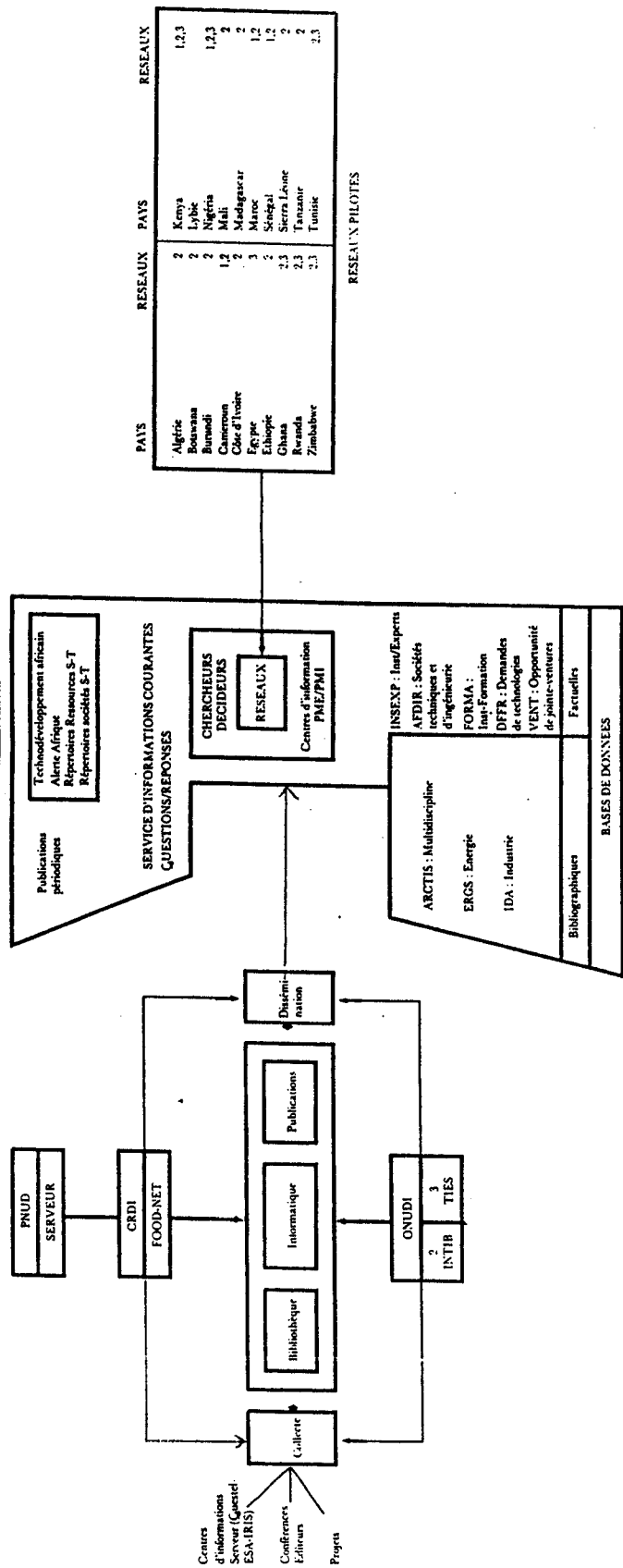
Besides with the above mentioned institutions, the Centre has also developed a fruitful cooperation with national and regional institutions dealing with industrial and technological information issues.

The Centre has signed a quadripartite agreement with the OMPI (Organisation Mondiale de la Propriete Intellectuelle), the OAPI (Organisation Africaine de la Propriete Intellectuelle) and with the ARIPO (African Regional Industrial Property Organization), and within this framework it receives reports on the status of technologies in the fields of its interest.

A cooperation agreement between the ARCT and the Panafrican Agency for Information (PANA) allows both institutions to cooperate in the field of dissemination of Industrial and Technological Information to the wide African public.

The Centre is a member of the Committee for harmonization and normalization of information systems of the institutions sponsored by the CEA. Within this context, cooperation with the PADIS (Panafrican Development Information System), the ARCEDEM (African Regional Centre for Engineering Design and Manufacturing), the ORAN (Organization Africaine de Normalisation) and other regional institutions has been established.

**SYSTEMES D'INFORMATION**



Titre Pub. Série \_\_\_\_\_  
\_\_\_\_\_ N° Vol. & Part. \_\_\_\_\_ Forme du texte \_\_\_\_\_

Source résumé \_\_\_\_\_

Source trad. \_\_\_\_\_

Langue du texte \_\_\_\_\_ Lang. index. \_\_\_\_\_ Lang. rés. \_\_\_\_\_ Lang. trad. \_\_\_\_\_

Editeur \_\_\_\_\_

\_\_\_\_\_ Date Public. \_\_\_\_\_

Collation \_\_\_\_\_ I.S.B.N. \_\_\_\_\_

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Conférence \_\_\_\_\_

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Thèse, Doctorat \_\_\_\_\_

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Brevet \_\_\_\_\_

Projet de développement \_\_\_\_\_

Disponibilité \_\_\_\_\_

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Code objet ARCTIS \_\_\_\_\_ Codes Secteurs \_\_\_\_\_

Descripteurs \_\_\_\_\_

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Projet de développement \_\_\_\_\_

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Code Point Focal \_\_\_\_\_

Code objet ARCTIS \_\_\_\_\_ Codes Secteurs \_\_\_\_\_

Descripteurs \_\_\_\_\_

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Abstract/Résumé \_\_\_\_\_

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Inventaire Des Ressources Scientifiques & Technologiques En AFRIQUE  
Répertoire des Experts

=====  
Ecran 1/2

Code Pays \_\_\_\_\_ No Institution \_\_\_\_\_ No Expert \_\_\_\_\_  
Titre \_\_\_\_\_ Nom \_\_\_\_\_  
Adresse \_\_\_\_\_  
Ville \_\_\_\_\_ B.P. \_\_\_\_\_  
Tél. \_\_\_\_\_ Télex \_\_\_\_\_  
Fax \_\_\_\_\_ Cable/Téleg. \_\_\_\_\_  
Nationalité (ISO) \_\_\_\_\_ Date de naissance \_\_\_\_\_  
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Inventaire Des Ressources Scientifiques & Technologiques En AFRIQUE  
Répertoire des Experts

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Ecran 2/2

Domaines de spécialisation \_\_\_\_\_  
Activites de recherche \_\_\_\_\_  
Ppales réalisations \_\_\_\_\_  
Notes \_\_\_\_\_  
Date de m.a.j. \_\_\_\_\_

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Inventaire Des Ressources Scientifiques & Technologiques En AFRIQUE  
Répertoire des Institutions

Ecran 5/

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Inventaire Des Ressources Scientifiques & Technologiques En AFRIQUE  
Répertoire des Institutions

Ecran 6/

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Publications - Rapport d'activités	- Bulletin
- Brochure	- Lettre d'info. _
Autres :	

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Date de m.a.j.

Notes \_\_\_\_\_

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Inventaire Des Ressources Scientifiques & Technologiques En AFRIQUE  
Répertoire des Institutions

Ecran 1/6

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Code Pays \_\_\_\_\_ No Institution \_\_\_\_\_  
Nom de l'Institution \_\_\_\_\_  
\_\_\_\_\_  
Localité \_\_\_\_\_  
B.P. \_\_\_\_\_  
Ville \_\_\_\_\_  
Tél. \_\_\_\_\_ Téléx \_\_\_\_\_  
Fax \_\_\_\_\_ Cable/Téleg. \_\_\_\_\_  
Titre \_\_\_\_\_ Responsable \_\_\_\_\_  
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Inventaire Des Ressources Scientifiques & Technologiques En AFRIQUE  
Répertoire des Institutions

Ecran 2/

=====  
Secteur - National \_ - International \_  
- Public \_ - Prive \_  
- Autre : \_\_\_\_\_  
Type - Universite \_ - Ecole (Poly)Technique \_  
- Centre de R & D \_ - Centre d'Informations \_  
- Entr. de consultations \_ - Association Sc./Tech. \_  
Autre : \_\_\_\_\_  
Date de création \_\_\_\_\_  
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UNESCO / ARCT

DIRECTORY OF TECHNICIAN TRAINING INSTITUTIONS IN AFRICA  
 REPERTOIRE DES SYSTEMES NATIONAUX DE FORMATION DES  
 TECHNICIENS EN AFRIQUE



1 - COUNTRY'S IDENTIFICATION / IDENTIFICATION DU PAYS

Code ISO : --	Name / Nom : -----	Area / Superficie : -----	'000 km <sup>2</sup>
		Population : -----	million(s)
		Density / Densite : -----	hab/km <sup>2</sup>
	Capitale : -----	Language/ Langue : -----	

END OF COUNTRY'S WORKSHEET/FIN BORDEREAU PAYS

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1 - TRAINING INSTITUTION / INSTITUTION DE FORMATION

Institution code/code Institution : \_\_\_\_\_  
Institution's name/Nom de l'institut. : \_\_\_\_\_  
-----  
Address/Adresse : \_\_\_\_\_  
City/Ville : \_\_\_\_\_  
Telex : \_\_\_\_\_ Tel. : \_\_\_\_\_  
Cable/Teleg. : \_\_\_\_\_  
Année d'introd. : \_\_\_\_\_  
Status/Type : \_\_\_\_\_ ----->> Codes : S, A, P, O

Organisme de tutelle : \_\_\_\_\_  
Source of funds/Source de financement : \_\_\_\_\_  
-----  
...../.....

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3 - ADMISSION

Requirements/ Conditions : \_\_\_\_\_ Lang. of instruction/ Langues d'enseign. : \_\_\_\_\_  
-----  
-----  
Address/ Adresse : \_\_\_\_\_  
-----

4 - ACADEMIC PERIODS / PERIODES ACADEMIQUES

Year system/ Ens. annuel : \_\_\_\_\_  
Semester system/ Semest. : \_\_\_\_\_  
Other/Autre : \_\_\_\_\_  
-----  
...../.....

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- ACADEMIC STAFF / CORPS PROFESSORAL

i

	FULL TIME/PLEIN TEMPS	:	PART TIME/MI-TEMPS
Lecturers/Charges de cours	----	:	----
Tutors/Assistants	----	:	----
Laboratory Assistants/	----	:	----

6 - STUDENTS / ETUDIANTS

	FULL TIME/PLEIN TEMP	:	PART TIME/MI-TEMPS
Annual intake/Insc.annuelles	----	:	----
Number of st./Effectif total	----	:	----

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7 - DIPLOMAS AND CERTIFICATES / DIPLOMES ET CERTIFICATS

Diplomas, Duration, Year/Diplome, duree, annee : \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

8 - DIPLOMA PROGRAMMES / PROGRAMME DES ETUDES

Programmes : \_\_\_\_\_  
\_\_\_\_\_  
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RESEARCH ACTIVITIES / ACTIVITES DE RECHERCHE

Research/Rech. : \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

10 - EMPLOYMENT SECTORS / SECTEURS DES DEBOUCHES

Main branches of industry/Debouches indust.ppaux : \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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11 - INTERNATIONAL COOPERATION / COOPERATION INTERNATIONALE

Int'l co-operation/Cooper.intern. : \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

12 - FUTURE DEVELOPMENT / DEVELOPPEMENT FUTUR

Development/Developpement : \_\_\_\_\_  
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END OF WORKSHEET // FIN DU BORDEREAU

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MFN= 293

- ACADEMIC STAFF / CORPS PROFESSORAL

	FULL TIME/PLEIN TEMPS	:	PART TIME/MI-TEMPS
Lecturers/Charges de cours	----	:	----
Tutors/Assistants	----	:	----
Laboratory Assistants/	----	:	----

6 - STUDENTS / ETUDIANTS

	FULL TIME/PLEIN TEMP	:	PART TIME/MI-TEMPS
Annual intake/Insc.annuelles	----	:	----
Number of st./Effectif total	----	:	----

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7 - DIPLOMAS AND CERTIFICATES / DIPLOMES ET CERTIFICATS

Diplomas, Duration, Year/Diplome, duree, annee : \_\_\_\_\_  
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8 - DIPLOMA PROGRAMMES / PROGRAMME DES ETUDES

Programmes : \_\_\_\_\_  
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# African Sub-Network of INTIB

United Nations Industrial  
Development Organization (UNIDO)

African Regional Centre  
for Technology (ARCT)

VIENNA INTERNATIONAL CENTRE  
P.O. Box 300. A.1400 VIENNA, AUSTRIA  
Telephone : 26 310  
Telegraphic Address : UNIDO VIENNA Telex : 135612

B.P. 2435  
Avenue Cheikh Anta Diop  
DAKAR (Sénégal)  
Tel. : 25.77.12 - Telex : 61282 CRATEC SG

## Offer of Technology

For INTIB use

ISIC :

Industrial sector :

Industrial sub-sector :

Licensor's name and address :

Telephone :

Telex :

Cable :

Title of technology :

Descriptions of technology :

Main usages of technology :

Main advantages of technology :

Status of technology developments :

Laboratory :

Pilot plant :

Commercialised :

List of patented countries with expiry-date :

Know-how available :

Yes  No

Training available :

Yes  No

Techno-economic data available :

Yes  No

List of licenses already offered to other customers and their broad result : (country and company name) :

Other remarks :



# African Sub-Network of INTIB

United Nations Industrial  
Development Organization (UNIDO)

African Regional Centre  
for Technology (ARCT)

VIENNA INTERNATIONAL CENTRE  
P.O. Box 300. A.1400 VIENNA, AUSTRIA  
Telephone : 26 310  
Telegraphic Address : UNIDO VIENNA Telex : 135612

B.P. 2435  
Avenue Cheikh Anta Diop  
DAKAR (Sénégal)  
Tel. : 25.77.12 - Telex : 61282 CRATEC SG

## Requests for Technology

For INTIB use

ISIC :

Industrial sector :

Industrial sub-sector :

Licencee's name and address :

Telephone :

Telex :

Telefax :

Cable :

Title of technology requested :

Descriptions of technology :

Main applications of technology :

Special features of technology requested :

Status of technology requested :

Laboratory :

Pilot plant :

Commercialised :

Know-how requested :

Yes

No

Training requested :

Yes

No

Techno-economic data requested :

Yes

No





# African Sub-Network of INTIB

United Nations Industrial  
Development Organization (UNIDO)

African Regional Centre  
for Technology (ARCT)

VIENNA INTERNATIONAL CENTRE  
P.O. Box 300. A. 1400 VIENNA, AUSTRIA  
Telephone : 26 310  
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B.P. 2435  
Avenue Cheikh Anta Diop  
DAKAR (Sénégal)  
Tel. : 25.77.12 - Telex : 61282 CRATEC SG

## Joint Venture Opportunities

For INTIB use

ISIC :

Entrepreneur invites joint-venture partner :

Yes  No

Entrepreneur offers joint-venture project :

Yes  No

Entrepreneur's name and address :

Telephone :

Telex :

Cable :

List of anticipated new products through joint venture :

Desired production capacity per year or per day :

Co-operation sought :

Entrepreneurs' contribution

Equity participation	_____
Technical know-how and expertise	_____
Equipment supply	_____
Raw material supply	_____
Training local staff	_____
Capital loan	_____
Buy-back arrangement	_____
Compensation trade	_____

Anticipated market share :

Domestic : \_\_\_\_\_ per cent

Export : \_\_\_\_\_ per cent

Pre-feasibility study and/or techno-economic data available :

Yes  No

List of countries of preference, if any, the joint venture :

Other remarks :





**CENTER ZA MEDNARODNO SODELOVANJE IN RAZVOJ, LJUBLJANA**

**Centre for International Cooperation and Development**

Yugoslavia • 61109 Ljubljana • Kardeljeva ploščad 1 • P.O.B. 97

EXPERT GROUP MEETING

on

INFORMATION SYSTEM ON TECHNOLOGIES AND PROJECTS

April 18-20, 1990, Bled, Yugoslavia

YUGOSLAV EXPERIENCE

WITH

INFORMATION SYSTEM ON TECHNOLOGIES AND PROJECTS

-----  
CICD expresses its gratitude to the following sponsors of the Expert Group Meeting: Group of 77, UNIDO, and from Yugoslavia: A-banka (general sponsor), Institut Jožef Štefan, Pliva, Slovenske železarne for their support and cooperation in preparation of the workshop.

Mag. Franc Tramte

The main paper yesterday has presented the general description of ISTP operation. Today, my colleagues would present you:

- a) Mr. Primož Tramte, grad. math. - computer part of the system
- b) Mr. Gojmir Uršič, grad. eng. - explanation of terms, survey of technologies and projects
- c) Mr. Franc Veselko, grad.mech.eng. - What do technology owners expect from the ISTP system.

Taking into consideration how the ISTP system has been designed, the main attention has been paid to the following basic principles:

- system should be simple and flexible
- max. standardized
- interesting for technicians, commercialists, financial specialists and ecologists
- to be suitable for computer application
- introduction costs minimal
- having up - to - date approach, be able of connections to related compatible systems, having possibility of further development.

Special attention has been paid to the form of presentation and the interests of the technology owners.

The requirements of technology owners were carefully studied, and on the basis of their requirements we obtained the following results:

- standardization grade	5 points
- simplicity and low costs	5 "
- multipurpose application	10 "
- marketing efficiency	20 "
- universal application of technology presentation	25 "
- the system is connected with UNIDO cooperation	35 "

It is evident that from above stated data, the technology owners are most interesting for the presentation of their projects by UNIDO. Second with most points, is the requirement for universal application, and marketing approach of the system. Versatile applicability of "Basic Information on Technology Project" single form sheet, can be used for:

- the base for the elaboration of technology catalogue
- for the elaboration of specialised catalogues (fairs)
- for catalogues for separate technology owners
- for separate single sheets, interesting for fast preliminary offers.

Beside of that, the separate single sheet gains on value, if the feasibility study has already been made on the basis of available project data. For the

elaboration of the feasibility study we offer forms which should be filled in by the technology owner. Only on the basis of aquired data, the technology owners can prepare proper estimate.

For the acquisition of technologies and projects in Yugoslavia, the whole territory has been divided on the principle of segmentation. Slovenia has been divided into separate regions, due to the high density of industry. For this purpose, the CICD has engaged specialists with proven record of success and knowledge of industry.

Each CICD specialist is authorized to act on the market independently, using the CICD questionnaire and price list. Basically this specialists represent the link between CICD and technology owners.

Our specialists give all required instructions to the technology owners, regarding the art of elaboration and application of CICD instructions, due to the unified data enter into the prescribed form.

If we analyse where we have acquired the most contacts we can see that we are most active in Slovenia where our specialists are covering separate regions.

The rest of territory in Yugoslavia is organised on the similar principle. Croatia is covered by her Chamber and her specialists. In Bosnia and Hercegovina and Serbia the activities are carried out by specialised companies, such as Agrozajednica, Belgrade, being on the level of Yugoslavia. In Macedonia the technology transfer is in the initial stage.

The specialists of the CICD, covering separate areas are paid for by the CICD on the contractual basis. In accordance with CICD price list, the technology owner is paying CICD for the following services:

- for the data entry and filling up of the presented form, including figures
- translation and lecturing (English language)
- data entry into the computer data base, elaboration of 10 copies of each technology.

The price for all these: US\$ 120,00 i.e.

- 20% CICD specialist
- 10% translation and lecturing
- 10% entry into the computer and printout of 10 copies
- 60% represents CICD income to cover overheads of the project manager

After all that, everything is ready for printing. Prior to that, quotations are gathered from different printing companies. They are presented to the technology owners. CICD adds 10% on the printing costs, to cover expenses.

The costs of catalogues issued by the companies are covered 100% by them. For common CICD catalogue of technologies, the financing is organised through goverment funds, sponsorships and advertisements.

Due to compulsory co-financing of catalogue elaboration from the technology owners, they are seeking return of this investment, by transfer of their technologies.

For 1990-91, the second issue of CICD common catalogue is planned. The realization of this project should follow as above described.

With the development of the computers, specially PC computers, the catalogue holds more the visual function of the technologies presentation and auxiliary single sheets are serving for fast preparation of offers. The floppy discs are used today more and more for mutual communication between technology owners and CICD.

In this purpose, two floppy discs are prepared:

- the programme one
- for the records.

The CICD has gathered up to now 412 different technology projects. Each technology owner of separate technologies can decide, to establish his own data base. The CICD would recommend that, if he has gathered at least 5 technology projects. For their own catalogue CICD would recommend at least 20 technology projects.

By the input of the technologies into their own data base, companies are creating the possibility of project identification and making inventory of further technologies available, and this work gets systematical approach and continuity. Scheme 1 represents the way of organized flow of informations between CICD and separate regional representations in Slovenia and Yugoslavia.

Scheme 2 presents the expansion of technology gathering network.

CICD represents by this way the technology data base, and serves as a link up to all participants in Yugoslavia and abroad. Linkage with foreign partners can be a problem, due to the technology identification code which is different in separate countries. Each country has usually her own nomenclature for the determination of the technologies. From experience we found out, the technology users are very much favouring the ISIC system of codification which is familiar to most of them. In one of our recent catalogues for large Slovenian engineering company RUDIS, Trbovlje we also have included the ISIC code next to the national. The acceptance was positive so we decided to introduce ISIC code for all new technology projects. By input of ISIC code, we have automatically gained decoder, that means, over ISIC code we can decode all other national codes used for the project identification.

This enables the national code to stay as a basic code. For international communication the decoder code ISIC would be used.

By using the ISIC code, the national code would not lose her identity. ISIC code has to be considered as the supplement to the national one.

Scheme 2 presents the different levels of technology acquisition. From the scheme you can see that the CICD can make connections with one or more levels of technology acquisition. Entering of technology code should be kept unified, therefore the computer programme is designed the way that nobody can enter the code, except the CICD. Beside of technology transfer, the CICD also offers their clients other services such as market surveys, legal advices, preparation of tenders, all informations about technology users country, their references e.t.c.

Characteristically for the transfer of technologies and consultations is the fact that financial covering is 100%, and enables also cooperation of other CICD departments with their activities.

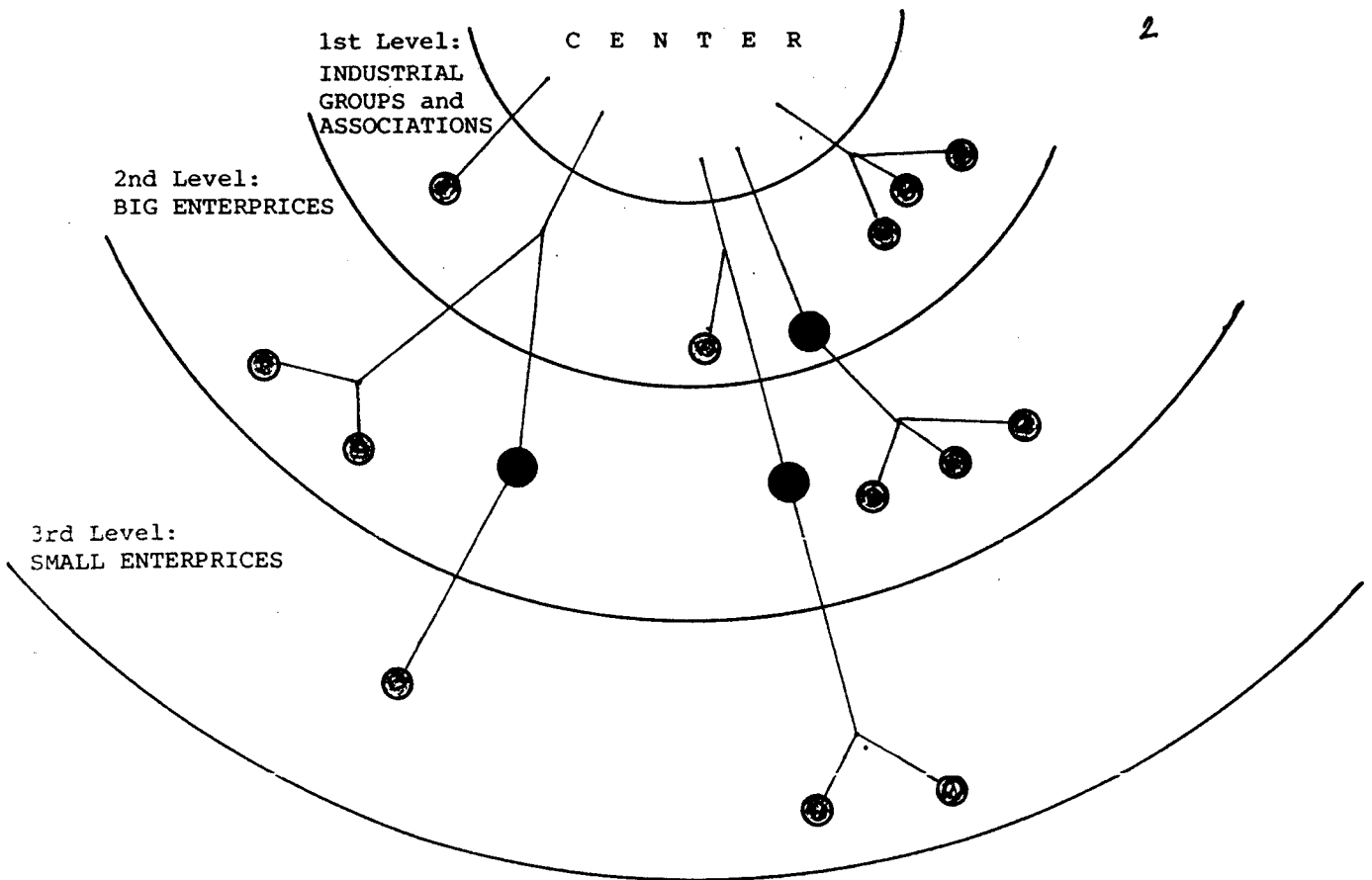
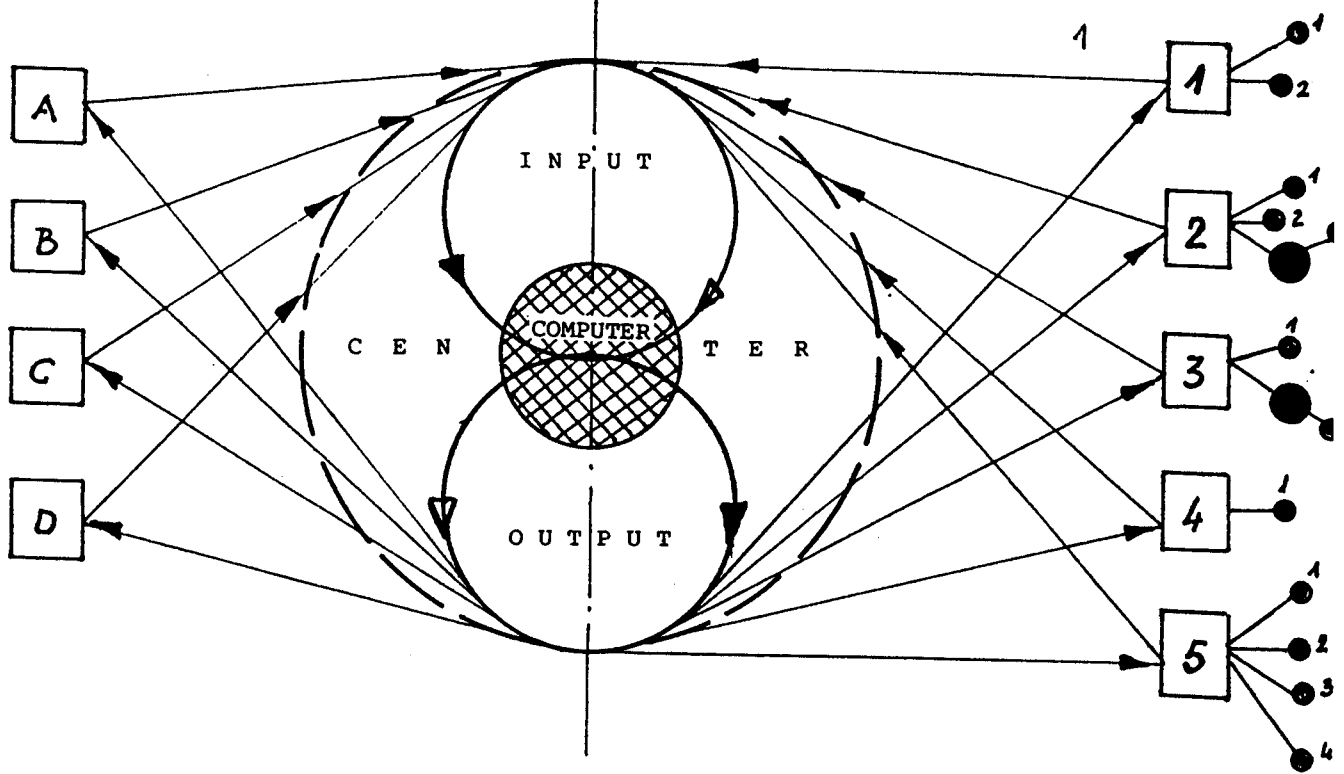
Close cooperation between separate countries, and with unified application of the coding system, acquisition and mediation of technologies, can substantially accelerate the mutual cooperation on transfer of technologies and knowledge.

Bled, April 19, 1990

USER  
MARKET

CENTER

PRODUCTION  
CONTRACTOR



Ljubljana 12. April 1990

*[Handwritten signature]*

Gojmir Uršič, B.Sc.

On the basis of yearlong own experience, considering applied principle of similar actions worldwide, and particularly the ones of UNIDO and other international institutions, our form of technology and project description has gained the present content. Let me allow please, to present and comment this form, which you have in your papers.

**YEAR:** year of issue and enter of description into the data base of the CICD.

**EDITION:** designation of issue running number. With respect to possible changes and alterations of the description, the last issue means valid and up-to-date text.

**ORIGIN:** Country of the technology owner is marked by the international car registration designation.

**CONTRACTOR:** Area of the country and the company - technology owner, are designated by code. These codes are defined in the internal register of the CICD.

**CODE YU:** Code of the subject (activity, product) according to the official Yugoslav sphere of activity classification.

**CODE ISIC:** Code of activity or product, according to International Standard Industrial Classification.

**TECHNOLOGY PROJECT:** Heading, short and exact description of the subject. Mostly used term is "Production of..." or wording, telling us what is happening with certain activity or matter. (for ex. "Purification...", "Flotation..." e.t.c.).

**DESCRIPTION:** This column is compulsory divided into three chapters which describe:

- product: technical (and eventually commercial) name of the described subject
- application: field of application
- manufacturing process or technical description, system description or similar, depending of the described subject (technology, project, service, e.t.c.).

Scope of this description is limited by available space of the form. If necessary you can add some information in column "ADDITIONAL INFORMATION".

**PROJECT COST ESTIMATE:** Includes the estimate of total investment costs for the completion of the certain project, but without land, administration buildings and working capital. Compulsary included are total infrastructure and auxiliary plants in the frame of industrial plant.

**TECHNOLOGY & PRODUCTION EQUIPMENT COST ESTIMATE:** assumes that the technology user already possess the plant building including all instalations,



auxilliary plants & infrastructure. He only has to purchase technological equipment (machines) specifically meant for new production. Estimate includes FOB value, know-how, licence, training of personnel and similar.

Due to the fact, that the purchaser, site location and other conditions are in this phase not known, all estimates given are for purchasers first orientation only.

**CAPACITY:** An optimal capacity of the plant equipment should be stated (estimate above corresponds to this capacity). Usually technology owner presents his plants capacity. In this case should be stated in the column ADDITIONAL INFORMATION the minimal and maximal feasible capacities.

**FLOOR SPACE:** Considered are covered manufacturing and storage areas. Under OTHER, all other covered areas inside the plant but not included under "production" and "storage" to be given.

**NO. OF EMPLOYEES:** Under "unskilled" all non-qualified and semi-qualified laborers are considered, and under "skilled" all qualified and highly qualified. "Technical staff" includes all staff employed with technical activities. "Other" means staff employed in management, sales, e.t.c. Usually, this column is left out, because it depends too much from local conditions.

**CONTRACTING MODE:** Suitable mode should be designated by "x". It is advisable to explain in ADDITIONAL INFORMATION what was meant under term "engineering" (project engineering, construction engineering, or only know-how, e.t.c.) and under term "others" (for ex. product in hand, technical assistance, e.t.c.).

**FINANCIAL ASPECTS:** state eventual possible financing, loans, joint venture, e.t.c. or simple "to be agreed upon".

**ECOLOGICAL ASPECTS:** state shortly two basic possibilities:

- clean process
- purification (plant) necessary.

More about that issue to be stated in ADDITIONAL INFORMATION.

**ADDITIONAL INFORMATION:** beside of mentioned notes and additions from above columns, this place is also available for other informations which technology owner considers necessary (such as raw materials, required energy, water or similar, references, patents e.t.c.).

Beside the text in the columns "TECHNOLOGY PROJECT, DESCRIPTION and ADDITIONAL INFORMATION" all other data must be stated unambiguously and with all prescribed expressions and units, to enable use of all different answers, surveys, groupings, selections and similar by an adequate computer programme.

**BACK SIDE:** Here we present technological process flow - sheet or lay-out of the plant and/or dimensional drawing of the product, including additional technical data & features.

To make it clear to the potential technology user, the note on the left side of the front page is stating: "Basic Information on Technology Projects is not an offer, but merely an Invitation to Treat".

This would be now all about the technology discription form. Let me allow few more words about the structure of already gathered technologies in our CICD.

The analysis of 412 technologies and projects which were up - to now processed and arranged into own data base, has shown the following:

63% are the procedures for the manufacture of a final product (machines, devices, equipment). Here per one third represents products from mechanical and electrical engineering, 20% are products from chemical industry, the rest are products of wood and construction industry.

20% are the technologies from the field of process industry, first of all of chemical & food industry. Projects are representing less or more pure technological procedures and are in most cases licence property of the technology owners.

7% are services for transfer of know-how for the implementation of individual industrial activities, including design, erection, putting in to operation or similar.

5% are projects of complete industrial plants of different kind, and represent mostly construction engineering for their implementation.

5% are presenting projects of agricultural plants, farms and similar. Technology owners are offering know-how, training of personnel, technical assistance, selection and supply of equipment, depending of the purchasers requirements.

Such a division in branches and kinds of technologies and projects in our data base is the result of state and development of the industry in those parts of the country where data were obtained, and beside of that also of the individual interests of the companies for their technology transfer. This interests are not present equally, and in many cases the companies do not have adequate personnel and time to elaborate their knowledge in a adequate form. More than 30% of technology projects were prepared by engineering companies which are possessing in their offers and realised projects the datas required in the ISTP form. An important point is, that all technologies and projects, filed in the CICD data base, are based on already practically in industrial scale realised projects.

Bled, april 19, 1990

Franc Veselko, dipl.ing.

## WHAT DO TECHNOLOGY OWNERS EXPECT FROM THE ISTP SYSTEM

The approach of CICD towards the technology owners can be described differently. From experience, we can state, that there are 3 main groups, each acting differently:

1. Small companies of 20 - 50 people

When we approach them, they normally say, we have no technology projects available for transfer, or we do not have enough of qualified people to do that e.t.c. After we explain them, what we want actually, their attention grows gradually. As we offer them our assistance, which is anyway always available, in preparing the required data for the transfer of their technology, they mostly agree and at least 2 or 3 technology projects are made which would otherwise never see the day light. We can learn from that, that our assistance was very important.

2. Large group of companies, 500 to few 1000 people and different programmes

When we approach headquarters of such a large company, they normally agree to our proposal of technology transfer, but at the same time do not know exactly what they have available, respectively nobody has ever made an analysis of their own technologies. Of course, this is not a rule.

By pointing them out that through the organized transfer by ISTP system, this would add a few points to their global marketing system, they normally agree to cooperate.

Another point is, that these large systems when analysing their manufacture, find out that they are producing products causing them losses, but they still hold them. These products can make interesting small projects for transfer of technology for the so called "small industry" which employs 5 - 10 people. Through the ISTP system, these projects can get available to this small industry which is very much interested in such projects.

An advantage would be, that the large companies would get those products cheaper, their losses are eliminated and the product can be more competitive.

### 3. Scientific Institutes

Their knowledge potential is very high. They produce many research and development studies which are financed by different funds or individual companies. So these studies are made for those who ordered them.

The role of the CICD, respectively ISTP system is here, to make all these generally very applicable studies also for other users. It is interesting that the large sums of money were spent for research & development, and in many cases the story ends here. Therefore it would be right, that these studies find the practical application also by others. The ISTP system can offer the potential technology users systematical survey of those projects, and very efficient low cost marketing approach.

#### CONCLUSION:

In all these cases and on the basis of our own experience, we can conclude that the ISTP system is very well suitable for fast first information on technology project.

Another important gain from ISTP projects is that they boost innovations, especially if small projects are concerned.

Our next step would be organized publishing of the innovation projects.

Today in the afternoon we will visit nearby, one of the best Slovene companies, called ELAN, best known for ELAN ski, the winning skies in many winter sports. When we approached them for transfer of their technologies, they were prepared to cooperate only with 2 technology projects, such as:

a/ Production of equipment and planning of sports facilities

and

b/ Production of boats and other products, made of composite materials.

In those two technology projects they were prepared for transfer of know how and/or manufacture of separate sportive equipment, design and planning of sport halls, technical marketing, cooperation etc.


But it is interesting, that they were not prepared to transfer technology of ski production, which is kept as their own best "top secret." Competition with other world ski producers (mostly Austrian & French) is normally very tough.

They were also not able to transfer technology for the production of their glider planes as they are contractually bound to a foreign company.

At the end, I would like to introduce myself. I'm employed at IMP in Engineering Department as sales / contracts manager. IMP was founded in 1947 as an installation company. The number of employees has been increased from 40 in 1947 to 7.900 in 1990 from which 1000 of them are university degree holders. Today, IMP is a group of companies and a powerful business system in the field of project management, engineering and manufacture of equipment for various installation systems such as A/C, heating & ventilation, controls etc.

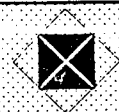
IMP is fully aware to invest more and more into knowledge and marketing approaches. Therefore, IMP decided to issue his own catalogue which is on display of "Technologies Available for Transfer" together with CICD, which actually proposed their ISTP system to us, and I was appointed to compile all projects from IMP various companies, according to the requirements of the ISTP system.

Maribor 16.4.1990

Year	Edition	Origin	Contractor	Code YU	ISIC	
<b>© BASIC INFORMATION ON TECHNOLOGY – PROJECT</b>						
Description						
Estimated Project Cost				USD		
Estimated Technological Plant Cost				USD		
Capacity in (m,m <sup>2</sup> ,m <sup>3</sup> ,t,pcs) per year at      Shifts						
Floor Space (m <sup>2</sup> )			Production			
			Storage			
			Other			
N <sup>o</sup> of Employees			Unskilled	Skilled	Tech.Staff	Other
Contacting Mode			Engineering <input type="checkbox"/>	Turn – key <input type="checkbox"/>	Others <input type="checkbox"/>	
Financial Aspects						
Ecological Aspects						
Additional Information						
Project code registered within the Information System on Technologies and Projects (ISTP) developed by CIGD Yugoslavia – tix: 32139 YUJCS/CIGD						

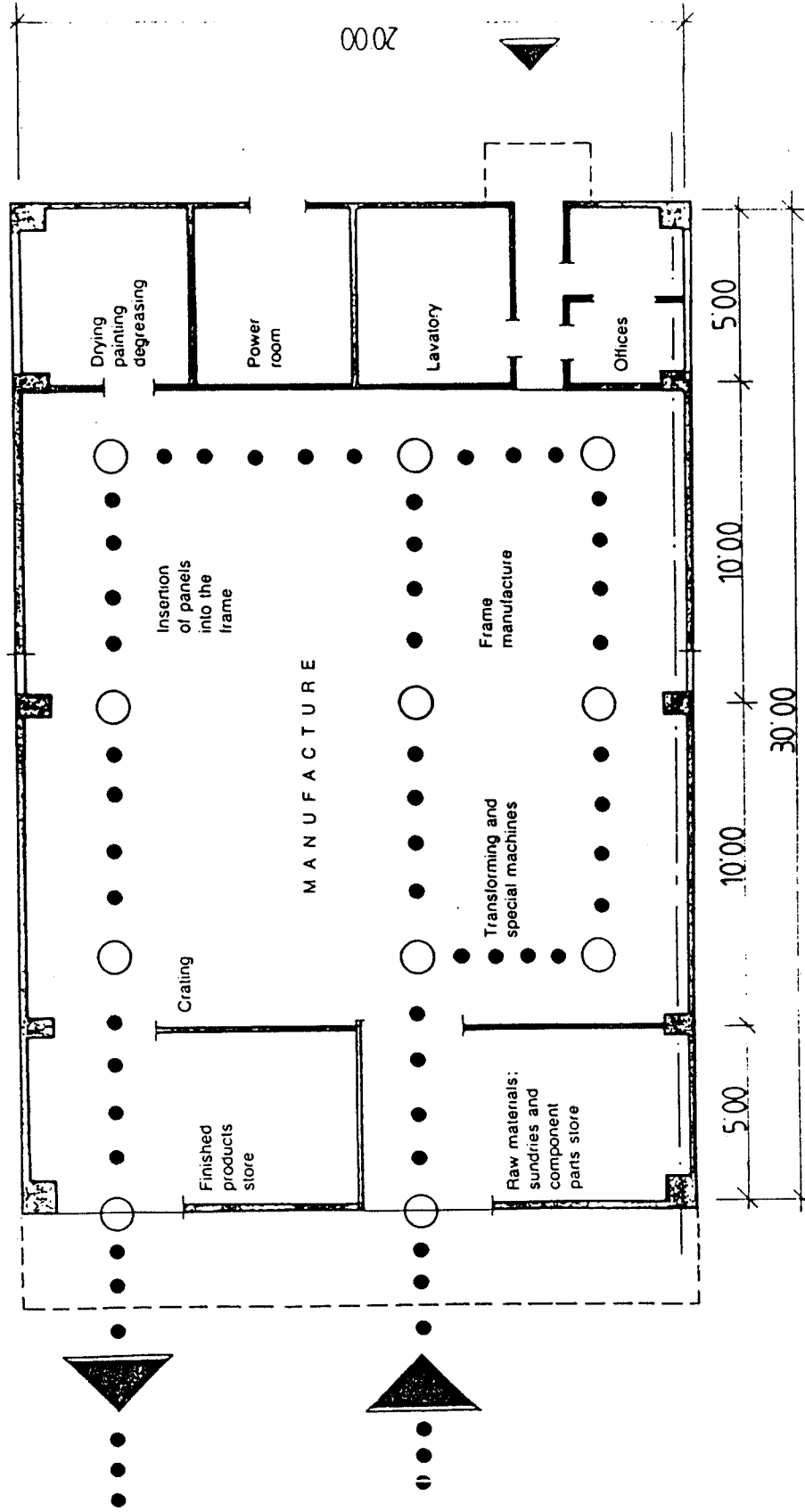
Basic Information on Technology – Project is not an Offer but merely an Invitation to Treat

Year 1989	Edition 1	Origin YU	Contractor SL 049 - NNV	Code YU 011320 - 0364	ISIC 3813	
<b>© BASIC INFORMATION ON TECHNOLOGY - PROJECT</b>						
Project		FIREPROOF DOOR PRODUCTION				
Description						
<p>PRODUCT: 60', 90', 120' fireproof single and double doors.</p> <p>APPLICATION: apartment houses, administrative and public buildings.</p> <p>TECHNICAL DESCRIPTION: Basic material is a fireproof board of required technical characteristics and thickness, laminated or veneered according to customer's order. Door frame is made of stainless or varnished sheet metal. Metal parts of door post are executed like those for the corresponding joinery. Other parts include standard products for wooden doors, except the keyhole which must not be made of a casting whose melting point is below 1000° C.</p>						
Estimated Project Cost			USD	800,000		
Estimated Technological Plant Cost			USD	250,000		
Capacity in (m, m <sup>2</sup> , m <sup>3</sup> , t, pcs) per year at 1 Shifts			3000 pcs. mod. 800 x 2000			
Floor Space (m <sup>2</sup> )		Production	440			
		Storage	105			
		Other	80			
N <sup>o</sup> of Employees			Unskilled	Skilled	Tech. Staff	Other
			5	4	3	2
Contacting Mode		Engineering	x	Turn - key	Others	
Financial Aspects		As agreed				
Ecological Aspects		Cleaning device is necessary				
Additional Information						
<ul style="list-style-type: none"> <li>- The equipment and liquid waste treatment plant for the varnishing shop are not included in the Project Cost Estimate.</li> <li>- In the framework of consultancy we offer designing services and know-how.</li> </ul> <p>Liquid waste treatment plant in the varnishing shop is necessary</p>						
Project code registered within the Information System on Technologies and Projects (ISTP) developed by CIGD Yugoslavia - tix: 32139 YUJCS/CIGD						



Basic Information on Technology - Project is not an Offer but merely an Invitation to Treat

# THE MANUFACTURE OF FIRE-PROOF DOORS





<b>Year</b> 1989	<b>Edition</b> 1	<b>Origin</b> YU	<b>Contractor</b> SL 037 – IMP
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**© BASIC INFORMATION ON TECHNOLOGY-PROJECT**

**Description**

**PRODUCT:** Circulating pump GHN-R

Hydraulic flow range of the GHN-R circulating pumps with three speeds is  $0,5 \times 10^{-3}$  to  $14 \times 10^{-3} \text{ m}^3/\text{s}$  (1,8 to 50,4 m<sup>3</sup>/h) at the pressure up to  $1,2 \times 10^5 \text{ Pa}$  (1,2 bar).

**APPLICATION:** The GHN-R group circulating pumps are used for flow of hot and cold water in heating and cooling systems, where forced water circulation is required. These circulating pumps are used for system – operational pressure of 6 bar. Temperature of fluid should not exceed 120 °C (393 K).

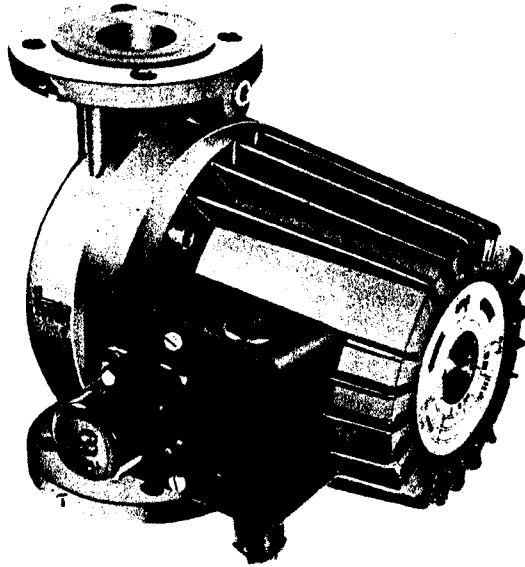
**PRODUCT DESCRIPTION:** The pumps are of single-step design, centrifugal with spiral casing. The pump and a built-in motor constitute a unit. Impeller is of closed performance and is made of stainless steel. Metal construction of the impeller prevents accumulation of residues contained in flow medium. Carefully designed vanes of impeller and the spiral construction of the casing provide smooth work of the pump and optimum hydraulic efficiency.

<b>Project Cost Estimate</b>	<b>US \$</b>	–						
<b>Technology &amp; Production Equipment Cost Estimate</b>	<b>US \$</b>	4,000,000						
<b>Capacity in (m, m<sup>2</sup>, m<sup>3</sup>, t, pcs) per Year at ... Shifts</b>		20,000 pcs						
<b>Floor Space (m<sup>2</sup>)</b>	<b>Production</b>	1,500						
	<b>Storage</b>	400						
	<b>Other</b>	200						
<b>N° of Employees</b>	<b>Unskilled</b>	68	<b>Skilled</b>	8	<b>Tech. Staff</b>	10	<b>Other</b>	4
<b>Contracting Mode</b>	<b>Engineering</b>	<input checked="" type="checkbox"/>	<b>Turn-key</b>	<input checked="" type="checkbox"/>	<b>Others</b>	<input checked="" type="checkbox"/>		
<b>Financial Aspects</b>	As agreed.							
<b>Ecological Aspects</b>	There are no negative influences on environment.							
<b>Additional information</b>	<p>Complete know-how is offered for production of these pumps</p> <ul style="list-style-type: none"> <li>– complete technology with required mechanical equipment and tools</li> <li>– designs for complete factory (production, energy supply and administration part)</li> <li>– maintenance, instructions and technological assistance</li> </ul>							
<p>Project code registered within the  <b>Information System on Technologies and Projects (ISTP)</b> developed by <b>CICD</b>  <b>Yugoslavia</b> – tlx: 32139 YUJCS/CICD</p>								

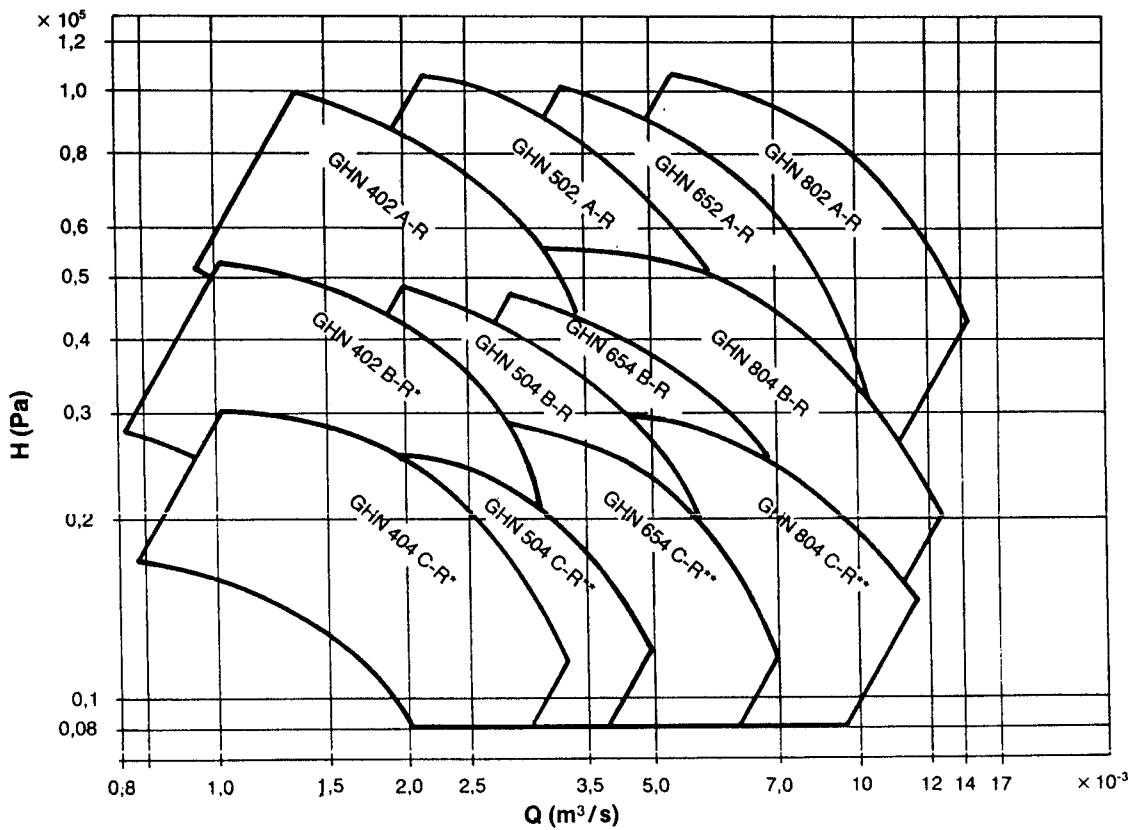
Basic information on Technology-Project is not an Offer but merely and Invitation to Treat



# CIRCULATING PUMPS GHN-R



ND: 40–80 mm  
P: 50–2200 W  
n: 700–2860 min<sup>-1</sup>



Year <b>88</b>	Edition <b>2</b>	Origin <b>YU</b>	Contractor <b>SL 027 - UMG</b>	0 2626 1322
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**© BASIC INFORMATION ON TECHNOLOGY-PROJECT**

**Spring Mattress Production**

**Description**

Production program: spring mattress of 90 – 180 cm width, and 100 – 200 length. Construction: spring core, basic filling (coir fibre), supplementary filling (natural or synthetic wadding, foam). Technological process includes manufacture of spring core and cover sewing while filling materials are purchased in the market for direct use in production. Technology for preparation of filling materials (basic and supplementary) is available as well, however the cost of machinery and equipment will be increased accordingly. Selected machinery and equipment are made by European manufacturers, proven in practice. Modifications are available, whereby the total investment cost varies accordingly.

<b>Project Cost Estimate</b>	<b>US \$</b>	approx. 500,000 (cost of infrastructure not included)
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<b>Technology &amp; Production Equipment Cost Estimate</b>	<b>US \$</b>	approx. 250,000
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<b>Capacity in (m, m<sup>2</sup>, m<sup>3</sup>, t, pcs) per Year at one Shifts</b>	30,000 pcs (dim. 190 x 90 cm)
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<b>Floor Space (m<sup>2</sup>)</b>	<b>Production</b>	700
	<b>Storage</b>	640
	<b>Other</b>	300

<b>N° of Employees</b>	20	<b>Unskilled</b>	<b>Skilled</b>	<b>Tech. Staff</b>	<b>Other</b>
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<b>Contracting Mode</b>	Engineering <input type="checkbox"/>	Turn-key <input checked="" type="checkbox"/>	Others <input checked="" type="checkbox"/>
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**Financial Aspects** To be agreed upon.

**Ecological Aspects** No pollution side effects.

**Additional Information**

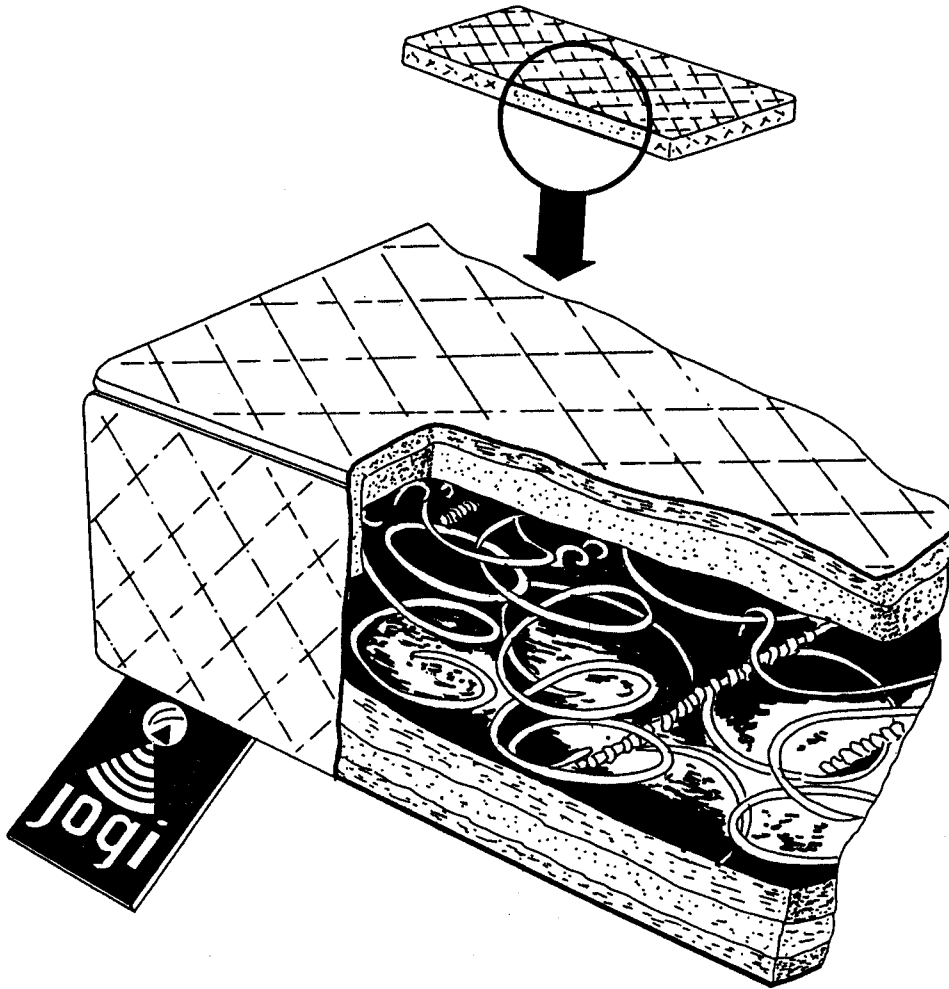
The output capacity highly depends on the workers' skill, work organization and adequate production series.

Project code registered within the Information System on Technologies and Projects (ISTP) developed by RCCDC, Yugoslavia – tlx: 32139 YUJCS/DVR



Basic Information on Technology-Project is not an Offer but merely an Invitation to Treat

SPRING MATTRESS PRODUCTION



*Twenty years have passed since the first Jogi spring. mattress has been produced. At the time this meant something special and revolutionary, whereas today one could not imagine healthy and comfortable sleep without it. The present highly perfectionated Jogi springs-mattress is distinguished by its selection of material in the core manufacturing quality, aesthetic outlook and of course the durability.*

*A special test was undertaken.  
A road roller drove several times over it and believe it or not, nothing happened. The spring-mattress preserved all its previous characteristics.*

Year 1989	Edition 1	Origin YU	Contractor SL 048 - JD	Code YU 011930 - 0363	ISIC 3521		
<b>© BASIC INFORMATION ON TECHNOLOGY - PROJECT</b>							
<b>Project</b>		<b>PLASTIFIED MINERAL PLASTERS PRODUCTION</b>					
<b>Description</b>							
<p><b>PRODUCT:</b> Plastified Mineral Coarse Package Plasters, based on hydraulic binders, quartz aggregates and acrylic emulsion.</p> <p><b>APPLICATION:</b> Plasters are intended for the protection and decoration of the usual exterior and interior wall surfaces: cement or cement-lime plasters, concretes, asbestos-cement panels (houses, hospitals, hotels, schools, banks, public places).</p> <p><b>MANUFACTURING PROCESS:</b> Large batch (over 10.000 t.p.y.) process which includes:</p> <ul style="list-style-type: none"> <li>- Automatic raw materials preparing</li> <li>- Automatic preparing of additives mixtures</li> <li>- Programmed mixing of compounds</li> <li>- Packing and palletizing of product</li> <li>- Product storage</li> </ul> <p>The total process is computer aided.</p>							
Estimated Project Cost			USD	3,000,000			
Estimated Technological Plant Cost			USD	2,700,000			
Capacity in (m,m <sup>2</sup> ,m <sup>3</sup> ,t,pcs) per year at 2 Shifts			10.000 t.p.y.				
Floor Space (m <sup>2</sup> )		Production	500				
		Storage	1,000				
		Other	150				
N <sup>o</sup> of Employees			Unskilled	Skilled	Tech.Staff	Other	
			-	2	4	-	
Contacting Mode		Engineering	<input checked="" type="checkbox"/>	Turn-key	<input type="checkbox"/>	Others	<input checked="" type="checkbox"/>
Financial Aspects		As agreed					
Ecological Aspects		Clear process					
<b>Additional Information</b>							
<p>The above mentioned capacity is a technological one and depends from the monthly season oscillations. In two shifts a monthly capacity of 2000 t is possible.</p> <p>For the realisation of the transfer of the technology and know-how our estimate includes also training of personnel, supervision of the test run and the necessary technical assistance. Partial supply of the raw materials for the start-up of production is possible.</p>							
<p>Project code registered within the Information System on Technologies and Projects (ISTP) developed by CIGD Yugoslavia - tix: 32139 YUJCS/CIGD</p>							



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CENTER ZA MEDNARODNO SODELOVANJE IN RAZVOJ, LJUBLJANA  
Centre for International Cooperation and Development

Yugoslavia • 61109 Ljubljana • Kardeljeva ploščad 1 • P.O.B. 97

EXPERT GROUP MEETING

on

INFORMATION SYSTEM ON TECHNOLOGIES AND PROJECTS

April 18-20, 1990, Bled, Yugoslavia

R E P O R T

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CICD expresses its gratitude to the following sponsors of the Expert Group Meeting: Group of 77, UNIDO, and from Yugoslavia: A-banka (general sponsor), Institut Jožef Štefan, Pliva, Slovenske železarne for their support and cooperation in preparation of the workshop.

## C O N T E N T S

- I. Introduction
- II. Background
- III. Opening of the Meeting
- IV. Presentation of papers
- V. Conclusions and Recommendations

### Annexes

- I. List of participants
- II. Program
- III. List of documents
- IV. Project proposal for pilot stage of ISTP

## I. Introduction

1. The Expert Group Meeting on Information System on Technologies and Projects was held in Bled, Yugoslavia, from 18-20 April, 1990. The Meeting was organized by the Centre for International Cooperation (CICD) in cooperation with Group of 77 - Perez Guerrero Trust Fund and UNIDO. It was attended by 25 participants from 7 developing countries, regional institutions and representatives of international organizations (see Annex I.).
2. The purpose of the Meeting was:
  - to assess the draft prefeasibility report, prepared by CICD on Information System on Technologies and Projects, as requested by the project outline,
  - to agree on development of the international network among the national centres for ISTP in different countries,
  - to prepare the institutional framework for practical approach to the implementation of the pilot stage of the ISTP, including the preparation of the project proposal.

## II. Background

3. Lack of information is one of the most serious obstacles to the selection acquisition and application of appropriate technology options in developing countries. Some of the newly industrialized countries among the developing countries have in their process of industrialization achieved the level of technological capability at which they are able not only to adapt imported technologies to their own local conditions and develop appropriate technologies but also transfer them (or projects embodying them) to other developing countries. Yet exchange of knowledge on available appropriate technologies/projects is not adequately developed.
4. There is a number of difficulties encountered in collecting and processing of information at the national level and/or in dissemination of collected information both nationally and internationally. There is a need for permanent flow of information, based on systematic, standardized collection, processing and dissemination of information on technologies and projects.
5. The Centre for International Cooperation and Development (previously known as Research Centre for Cooperation with Developing Countries - RCCDC) designed a computer-based system for gathering, processing, filling and transmission of information on technologies available in Yugoslavia for transfer to other developing countries. While the initial orientation of CICD was to promote technical cooperation among developing countries with providing more information on possibilities



for such cooperation, the system also enables the creation of a national inventory of available technologies.

6. The Centre for International Cooperation and Development and UNIDO have jointly organized an Expert Group Meeting on Exchange of Information on Available Technologies in the Field of Small and Medium Scale Industries in Ljubljana, Yugoslavia, from 12-14 April, 1988. The participants from nine countries discussed the existing international information systems and the system developed by CICD. It was strongly felt that there is a need for a more business-oriented, user-friendly international information system on suitable technologies/projects available for transfer among developing countries. Particular attention should be given to such information appropriate for small and medium sized enterprises in developing countries.

7. CICD has already undertaken a number of activities in further development of ISTP international network as well as of national centres in a number of developing countries. Under UNIDO support, consultancy to Technology Transfer Centre, Ghana, on the establishment of a national centre has already been carried out, while others are in preparatory stages. With the assistance of Perez Guerrero Fund, CICD has engaged in the preparation of a feasibility study which concentrates on detailed elaboration of an international network, with attention to the necessary institutional arrangements.

8. Within the project, coordinated by the Chairman of the Group of 77 and financially supported through Perez Guerrero Fund, this expert group meeting with objective to validate the feasibility study and set the timetable for the ISTP pilot stage is organized.

### III. Opening of the Meeting

9. The Meeting was opened by Ms. Maja Košak, CICD Director, who welcomed the participating experts, observers and guests on behalf of CICD. The representative of the Federal Secretariat of Foreign Affairs, Mr. V. Srečkovič greeted the participants and stressed the importance of such meetings for the South-South co-operation. On behalf of Committee for Science and Technology of Republic of Slovenia, Mr. B. Pretnar welcomed the Expert Group Meeting and pointed out the importance of technology transfer among developing countries in the light of current developments in the field of technology. Both speakers wished the participants successful and constructive work.

10. The participants acknowledged the message sent to the EGM by the Chairman of the Group of 77, who wished the EGM a complete success. Also, they were informed of the keen interest of the Special Unit TCDC/INRES-SOUTH in ISTP project and its willingness to collaborate with the proposed network, as conveyed to the participants by the Head of the UNDP/TCDC Special Unit, Mr. Chada.

11. The participants adopted the proposed Programme of the EGM and elected Chairmen of each session (Annex 2). It was also agreed that the Report of the Meeting is to be prepared by CICD.

#### IV. Presentation of papers

12. During the Meeting, the draft prefeasibility study on Information System on Technologies and Projects was presented by CICD. The representatives of regional institutions (Asian and Pacific Center for Technology Transfer, African Regional Center for Technology and SELA) shared with the experts their experience in gathering information on technologies and presented their views on ISTP. Experts from individual countries presented their papers ( Annex 3).

13. The representative of UNIDO referred in his presentation to UNIDO's activities related to the promotion of economic and technical co-operation among developing countries. These activities enjoy a high priority in UNIDO's programme. Through its action-oriented programmes, UNIDO has been assisting developing countries in identifying and making greater use of the technologies and know-how originated in other developing countries. UNIDO's cooperation with CICD on development of ISTP goes back to 1988, when UNIDO and CICD held first workshop to discuss ISTP's potential to become an international system. Within its overall programme on support to South - South cooperation UNIDO is willing to contribute to the implementation of the ISTP with its orientation on TCDC and SMEs.

14. The CICD proposal on the development of ISTP into an international network was extensively discussed. CICD also presented its experience in organizing the ISTP in Yugoslavia. A detailed presentation was given of the methodology used in the process of gathering and processing information as well as of the software, supporting this methodology.

15. The basic principle of ISTP, i.e. its orientation towards identification, selection and processing of information suitable to the environment found in developing countries, in particular for small and medium-sized enterprises, was supported by the experts.

#### V. Conclusions and Recommendations

16. As a result of thorough discussion of all contributors, the following Conclusions and Recommendations were reached:

17. The participants felt that there is a need to further strengthen, develop and diversify the cooperation among developing countries in the field of exchange of information on technologies and projects available for transfer. The meeting also noted a number of difficulties encountered in collecting and processing of information on one hand and of successful dissemination of collected information to the business enterprises. The need for permanent flow of information on technologies and projects, gathered by national centres and based on commercial interest of all parties was thus stressed.

18. Experts pointed out that small and medium scale enterprises play an important role in the national economies of developing countries, but need special assistance in identification of proper technology

information. Successful transfer of technology to small and medium enterprises requires a national center to play also an important consultancy role, both in the process of identifying the information on technologies available as well as in the process of selecting the most appropriate one.

19. The Meeting recognized that the establishment of a successful information system on technologies and projects is a very complex task with a number of issues to be addressed in its preparation. However, the experts felt that step-by-step approach can be the most viable way of moving from the initial idea to the implementation of the system. In this regard, it was felt that more complex and newly raised questions should be addressed as the development of ISTP progresses.

20. ISTP should benefit from the existing UN specialized information systems, especially those within UNIDO and UNDP. There is a need for coordination between ISTP and the mentioned information systems in order to ensure the most appropriate and efficient South-South flow of information on technologies and projects and avoid eventual duplication.

21. In the light of the conclusions reached at the Meeting, the experts agreed to recommend that the pilot stage as envisaged in the prefeasibility study, prepared by CICD for the implementation of the ISTP at the international level, is to be launched. To this purpose, a project proposal on Information System on Technologies and Projects of selected developing countries (pilot stage) is put forward by the experts. (Annex IV)

Annex I

LIST OF PARTICIPANTS\*

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Annex II

EXPERT GROUP MEETING

on

INFORMATION SYSTEM ON TECHNOLOGIES AND PROJECTS

April 18-20, 1990, Bled, Yugoslavia

PROGRAM

Tuesday, April 17

Arrival of guests to Hotel TOPLICE, Bled.

From 17.00 on: Registration of participants

Wednesday, April 18

8.00 - 9.00: Registration

9.00: Opening of the meeting:

- adoption of agenda
- election of the chairman and rapporteurs

9.45 - 10.00: Coffee, tea break

10.00 - 12.30: Working session:

Chairman: Sogut Atilla, Turkey

- ISTP presentation by CICD
- Presentation by UNIDO, Mr. Constantin
  - Presentation by Asian and Pacific Centre for Transfer of Technology
  - Presentation by African Regional Center for Technology
  - Presentation by Sistema Economica Latino-americana

12.30 - 15.30: Lunch

15.30 - 18.30: Country presentations by experts

Chairman: S. K. Kinra, India

- Zimbabwe
- India
- Argentina
- Turkey
- Indonesia

Comments by observers:

- IFC
- WASME
- Indian Industrial Bank
- INSTRAW
- UN Center for Science and Technology

19.30: Reception

Thursday, April 19

9.00 - 10.30: Working session: discussion of draft feasibility study

Chairman: Mike Humphrey, Zimbabwe

10.30 - 11.00: Coffee break

11.00 - 12.30: Working session

12.30 - 15.30: Lunch

15.30: Visit to the "ELAN" factory

19.00: Dinner

Friday, April 20

9.30 - 10.30: Adoption of feasibility study

10.30 - 11.00: Closing of the Meeting





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Annex III

EXPERT GROUP MEETING  
on  
INFORMATION SYSTEM ON TECHNOLOGIES AND PROJECTS  
April 18-20, 1990, Bled, Yugoslavia

LIST OF THE PRESENTED DOCUMENTS

1. Technology Information: An Integrated Approach in Asia and the Pacific, S. M. Juanid Zaidi
2. SME Related Services Through Management Information System, Mehmet Atilla Sogut
3. Small Industry Development Organization, General Directorate, SIDO
4. General Information List According to the Firm Namr, SIDO
5. Presentation of India, S. K. Kinra
6. Industrial Information Centre, Ministry of Industry - Indonesia
7. INTIB Programme - An Overview, Prepared by the UNIDO Secretariat
8. Presentation by World Assembly of Small & Medium Enterprises (WASME), Brigarier G. S. Ahuja
9. Draft Prefeasibility Study, Information System on Technologies and Projects, Maja Košak
10. ARCT's Activities in the Field of Industrial and Technological Information

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CICD expresses its gratitude to the following sponsors of the Expert Group Meeting: Group of 77, UNIDO, and from Yugoslavia: A-banka (general sponsor), Institut Jožef Štefan, Pliva, Slovenske železarne for their support and cooperation in preparation of the workshop.



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Annex IV

EXPERT GROUP MEETING  
on  
INFORMATION SYSTEM ON TECHNOLOGIES AND PROJECTS  
April 18-20, 1990, Bled, Yugoslavia

PROJECT PROPOSAL FOR PILOT STAGE OF ISTP

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## 1. Title

Information System on Technologies and Projects of selected developing countries - Pilot Stage

## 2. Development Objective

To develop a mechanism of information exchange on technologies and projects available for transfer in the participating developing countries.

## 3. Immediate Objectives

- a) To identify appropriate institutions in developing countries which would serve as national centres for identification, processing and exchange of information;
- b) To stimulate collection of indigenously developed technologies and projects available for transfer in each of the participating countries and thus creating national inventories of such technologies and projects and making it available to SMEs;
- c) To provide necessary training to the staff at the national centres;
- d) To create linkages among the identified national centres so as to catalyze the process of technology transfer among the developing countries.

## 4. Background and justification

Lack of information is one of the most serious obstacles to selection, acquisition and application of appropriate technology options in developing countries. Some of the newly industrialized countries in their process of industrialization have achieved the level of technological capability at which they are able not only to adapt imported technologies to their own local conditions and develop appropriate technologies but also transfer them (or projects embodying them) to other developing countries. Yet exchange of knowledge on available appropriate technologies/projects is not adequately developed.

Realizing the importance of such information, CICD established a system for gathering, processing, analysing and distributing of information on technologies and projects, available for transfer to other developing countries.

Building up ISTP meant to CICD a new, original way to promote enterprise to enterprise South-South cooperation based on selected commercially available technologies and projects in Yugoslavia and linking them with potential needs and technological requirements in other developing countries. Experience of the CICD in working of this system had so far been very satisfactory.

CICD and UNIDO organized an expert group meeting on the exchange of information between developing countries on available technologies in the field of small- and medium- sized industries, which was held at

Ljubljana from 12 to 14 April, 1988. The meeting aimed at identifying appropriate national system in developing countries to ensure a permanent flow of information on locally available technologies, particularly within small- and medium- sized industries.

After intensive discussion, the experts, who came from Algeria, Argentina, China, Egypt, India, Pakistan, Romania, Turkey and Yugoslavia, supported the proposal of CICD to establish an international information system on technologies and projects (ISTP). This network of national centres would aim at identifying, selecting and processing information existing in developing countries available for transfer to other developing countries.

It was recognized that a considerable reservoir of technologies existed in developing countries regardless of their different levels of industrial development, and that considerable progress had been made in collecting information in different national institutions. What was needed, however, was a more business-oriented and user-friendly international information system, which would enable information on those technologies to be exchanged.

Then CICD got the mandate of the Group of 77 to carry out the prefeasibility study on implementing ISTP in other selected developing countries. Therefore CICD in collaboration with other regional and international institutions and with the financial assistance from Perez Guerrero Fund, UNIDO Fund of Solidarity for Nonaligned and other Developing Countries (Yugoslavia) organized an expert group meeting at Bled, from April 18 - 20, 1990. The meeting unionously agreed to set up the network and prepared the project document for obtaining fundings from the possible donors.

## 5. Proposed network

### a) duration

Two years from the day of securing financial support - tentatively to start by January, 1991.

### b) participants and headquarter

In the pilot stage the network will compsize of CICD (as coordinator), the regional centres from Asia (APCTT), Africa (ARCT) and Latin America (to be decided later on) and "national centres" from the developing countries. The membership will be extended later on. CICD will be the headquarters of the network.

### c) programme of activities with expected dates of completion

#### 1. Identification of National Centres

March 91

CICD in collaboration with the regional centres will identify national centres in the countries. The participants of the expert group meeting will assist in identification of the national centres.

2. Preparation of Training Course Material April 91

CICD in consultation with the regional centres and with the help of independent consultants and international organizations (like UNIDO and TIPS) will prepare course material for the training of staff.

3. Meeting of the Heads of National Centres (2 days) May 91

CICD will call a meeting of the heads of the identified national centres to chalk out a programme of action and to get a firm commitment. Representative of regional and international organization will also be invited /8 heads + 2 Representatives of Regional Institutions + 4 from International organizations would be expected to participate/.

4. Training of Information Collectors June 91

At the regional centres the information collectors (2 from each centre) will be provided comprehensive hands on training based on the material prepared earlier.

5. First stage of collection of Information October 91

On the basis of training provided at the regional centres, information will be collected at the national centres.

6. Follow up training at the National Centres December 91

At the second stage, training will be provided at the national centres. The information collectors who get the training at the regional centres, representative of the CICD and of corresponding regional centre will serve as resource persons for the national level training.

7. Second stage of collection of information June 92

Information collections at the national level will be intensified and a survey will be carried out on the status of technologies and projects collected so far.

8. Workshop to share the experiences of information collectors (2-day) September 92

An interactive workshop will be organized at a common place where the information collectors will share experiences with their counterparts. In this workshop a working paper will be prepared for the meeting of the heads of the centres.

9. Final meeting of the heads of centres October 92

The 2-day meeting will analyse in detail the implementation status of the project and prepare a future course of action. Furthermore the meeting will also review final report.

10. Final Report of the project November 92

The CICD, regional centres and the national centres will jointly prepare the final report and would be circulated by the CICD.

11. Follow up activities December 92

CICD on the recommendation of the meeting of the heads of the national centres and on the basis of findings of the final report will prepare a follow up programme.

d) Budget

Host facilities to carry out the above mentioned activities will be provided by CICD, the regional centres and the national centres. CICD will be the headquarters of the network. Under the pilot stage of the project the national centres would get training course material; two representatives from each of the national centres would be given 2-week training at the regional centres, seed money would be provided for information collection, and follow-up training will be conducted at the national centres. For the implementation of the pilot stage of the project an estimated contribution of US\$ 250.000 will be requested from the donors.



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EXPERT GROUP MEETING

on

INFORMATION SYSTEM ON TECHNOLOGIES AND PROJECTS

April 18-20, 1990, Bled, Yugoslavia

TECHNOLOGY INFORMATION:

AN INTEGRATED APPROACH IN ASIA AND THE PACIFIC

S. M. Juanid Zaidi

Asian and Pacific Centre for Transfer of Technology

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## INTRODUCTION

The Asia and Pacific region has a long and distinguished history of scientific and technological achievements. Until the industrial revolution, technological development in some countries of the region were at a level comparable with that of West European countries. But over the period of time, for one reason or the other, these countries were relegated to the position of mere suppliers of raw materials and consumers of finished products. The manufacturing activities slowly dinished.

Then the last two decades saw the emergence of first Japan and then Republic of Korea. Both these countries realised the importance of technology in their national socio-economic development. Looking at the success of Japan, Korea and some other countries, integration of technological consideration into national development planning process is now being considered more vigorously by many countries of the region. Most of the countries now have specific, implicit or explicit S&T policies and are trying to achieve the targets for R&D set in the Vienna Programme of Action. But the overall situation is not yet that encouraging.

In the last few years there has been a growing awareness in the countries of ESCAP region regarding the stock-taking of their S&T resources. J.D. Bernal, the founder of Science Policy Studies has opined that the problem of raising the standard of living is a problem of essentially of learning to use the resources, both the natural resources and, even more important, the human resources. In order to assess the availability of S&T resources at national level, countries need to have adequate and reliable information. Unfortunately this information is not readily available in the format and media it is required, in a manner most people understand and in a way it can be used.

## INFORMATION

The electronic revolution coupled with advances in communication technology and fibre optics, has made processing, production and transmission of information the fulcrum of national and international economic and social life. The present day world has become increasingly dependent on information for the productive management of its economy, smooth functioning of its institutions at all levels and quality of individual lives. Information has become a commodity to be produced and marketed.

Information technology is poised to become a widely used technology in decades to come. The term Information Technology in its simplest form encompasses the world of computers, microelectronics and telecommunications to process, store and transfer data in the form of pictures, words or numbers. As more sophistication is ushered in, the term can be extended to concepts such as informatics - a rational and systematic application of information to economic, social and political development; telematics - a merger of telecommunications and data processing technologies or teleinformatics - the pervasive economic, social and political impact of telematics.



Information technology has now developed into an industry and is being treated by economists not only like any other sector of the economy, but is the leading sector in the industrialised countries. The continuing developments in this sector has lead to significant transformation of the present society to information society.

Developing countries, by and large, have long been aware of the importance of information to their development. In fact, if one were to look for a common theme underlying all the regional and international conferences in the past twenty five years or so, it could be summed up in one word: Information. All such gatherings, in their final declarations, plans of action and resolutions have ended up irrespective of the item on the agenda, calling for either reinforcement, or creation of new system of information exchange, particularly among developing countries. This common action-denominator reflects the strong desire of the developing countries not to be left outside the Information Revolution which, at an ever-accelerating pace, is transforming technology, restructuring the world economy and trade, and recasting the negotiating and decision making process. It underlines the assessment that information is the dynamo which fuels national and international economic, political and social interaction.

Although it has been recognised that information plays a vital role in technology transfer and development, yet developing countries, have not been able to establish adequate infrastructure for the collection, processing, storage and dissemination of information that is useful for productive purposes.

### TECHNOLOGY INFORMATION

Everyday, a large volume of information is being generated in different languages, in different fields and in different forms all over the world. Though the information technology has increased the capability of the human being in handling much more information than he did before, yet it is difficult for any individual or single organisation to keep track of all such information.

Recent studies and experience have shown that there is an all round urge for information, for information is both an input as well as an output in the development process. Of the three inputs to the development process, viz; material, energy, and information, the first two had played dominant roles in the development of the earlier societies i.e, land in the agricultural society and power equipment in the industrialised society respectively. Till the turn of the 19th century, information available was not sizeable enough or significant to be acclaimed as an input. In the last forty years, with the tremendous growth in scientific and technical knowledge, information is playing a dominant role in the development process.

The generation of technologies today is so profuse and consequently the growth of information on technologies is so rapid that we have reached a point where being informed of a particular technology is as important as the technology itself, hence the need of technology information.

In the last few years, like the definition of technology itself, technology information has been defined in many ways. But simply one can define technology Information (TI) as information on technology. TI encompasses the techno-economic aspects of products, processes, equipment and technical services. It looks both at the hardware and the software aspects. Since mostly technology operates in the context of trade and industry, TI also takes care of other activities such as trends in trade and industry, organisational structures, policies, plans and regulations which have an impact on the technology.

### **TECHNOLOGY INFORMATION: AN ESSENTIAL PREREQUISITE**

Information on technological inputs is required both at the micro-economic level for economic activities undertaken by individuals or enterprises, and at the macro-economic level for technology planning, policy formulation, the management of technology acquisition and related domestic capacity generation.

At the micro-economic level, technology information is required at each stage of the decision-making process leading to a productive activity. The information requirements vary in nature, content and degree of detail and comprise the following elements:

- i) planning and formulation of programmes and projects - general information is required on economic and trade aspects and technological options with respect to scale, type (standard or modern) and accessibility in order to determine the scope, size and potential viability of the project;
- ii) preparation of pre-feasibility and feasibility studies, including tendering documents - detailed information is required on alternative sources of technologies not only with respect to technological specifications but also with regard to cost of capital goods, machinery, equipment, related services, experience and skills, as well as other economic and legal aspects enabling the potential user to determine the real cost and possibilities of utilising, adapting or upgrading the technology concerned;
- iii) evaluation and negotiation of technology contracts - specific information is required on terms and conditions of contracts and experience of other licensees in order to strengthen the bargaining position of buyers and to enable them to assess the techno-economic impact of technology;
- iv) implementation and monitoring of the project - information is required on available technical services and training possibilities, and ways and means of maximising the utilisation of the acquired technology and correcting errors, etc;
- v) research and development activities - whether carried out at the enterprise level or in R&D institutions, scientific and technological information is required at each step of the chain from basic research, experimental research, prototype development and diffusion and utilisation of the research results.

A large part of the above information is also required at the macro-economic level for the formulation of technology policies and short-term and long-term technology strategies both at the national level and in the key sectors selected for priority action. These relate, inter alia, to national technological capabilities and technology profiles of industries, technological requirements to meet developmental objectives, human resources development and skill formation, R&D programmes, etc. Furthermore, information is required by those responsible for the control, monitoring and promotion of technology transfer and by those who are involved in techno-economic and legal evaluation of the projects which fall under the scope of foreign investment and transfer of technology legislation or regulations.

### **TECHNOLOGY INFORMATION SERVICE**

Technology Information Service (TIS) envelops all activities starting from sourcing, gathering, collecting, storing, processing, retrieving, communicating, transferring, disseminating and networking.

In the past, technological information and documentation services throughout the world were largely restricted to library services attached to R&D institutes. Technical publication, similarly, was restricted to a few well known periodicals. Today's rapid pace of technological innovation and high degree of specialisation are responsible for the "information explosion" or the availability of a large mass of technological data. Decision-makers, particularly at higher levels, need up-to-date information to choose between the alternatives before them. In fact, information has been described as data of value for decision making.

Technology information services are meant to provide the right information to the right person at the right time at a reasonable cost. This implies the need for identification of the users, their information seeking behaviour patterns, capability of assimilation and application of information, the different tasks in which they are involved whose efficiency can be improved by information supply. Technology information service is an accepted reality and better appreciated in developed countries, where they need all the information on the latest state-of-the-art technology to stay ahead.

This service sector has also attracted private enterprises which employ significant number of information specialists and spend huge amount on technology information activities. Besides the initiative of the private sector, governments in developed countries have also invested and evolved policies to boost technology information services, whereas the situation in the developing countries is other way round.

## TECHNOLOGY INFORMATION SERVICE IN ASIA & PACIFIC

Viewing the situation of technology information in this context in Asia and the Pacific region, it appears that this service is not well developed in most developing countries. With the exception of a few countries, generally the region does not have much of technology information service. Elements of technology information service do surface in some agencies but they are not yet organised as part of a defined technology information programme.

In theory, technology information service should help end-users to locate technology suppliers, equipment & machinery suppliers, evaluate the techno-economic aspects of new ventures, make investment decisions, modify or diversify production and expand market. It should also open up new job opportunities, help generate income and improve services. In contrast, most of the S&T information agencies in the region are oriented to focus only on science information and they have not really geared themselves to offer technology information services. Due to the tendency to emphasise science, the structure and techniques for S&T information deal mainly with science information.

In the developing countries of Asia and the Pacific the technology information activities are mostly carried out by public sector information agencies. These agencies pay more attention to collect and store research and development result which are of little interest to most of the end-users. Their contacts are limited to the sources with similar R&D interest. They put more effort in expanding and organising the supply side through the standardization of documentation, computerisation and on-line linkage. As the outreach of these organisations are limited to its own clientele (i.e. science information users), the entrepreneurs and enterprises find very little use of these services. It has been a common perception that improvement in the demand side will naturally follow with the improvement in supply side; networking will speed up effective technology information exchange -- which in the normal practice do not happen. It has been observed that the public sector S&T information agencies do not sufficiently interact, do not maintain regular contacts and do not assist each other in servicing technical queries.

Besides the problems mentioned above, it has been found that developing countries of the region also face difficulties in organising an information service, which include:

- i) the apparent lack of a technology mass culture
- ii) poor communication infrastructure
- iii) lack of trained personnel for dealing with technology information
- iv) dearth of users of technology information service and
- v) inadequate information handling capabilities
- vi) absence of information exchange mechanism

## TECHNOLOGY INFORMATION SERVICES AT APCTT

The technology information service in APCTT started in 1982 when vigorous programme on information sharing and referral services was initiated. The task before APCTT was rather difficult because it has to cater to the needs of individuals and organisations which were scattered all over the Asia Pacific region. Each country had its own priorities and problems. Their needs differed, so did their natural, social, cultural and economic conditions.

Technology information, when it started by APCTT, was a new field altogether. Therefore techniques for organising the various components of the technology information had to be evolved refined and popularised. Uptill now, APCTT has been able to function successfully in both advisory and operational roles in areas such as strengthening of institutional capacity at the national level and packaging and dissemination of information at the regional level. Technology information activities progressed steadily through the years. APCTT has succeeded in evolving and testing a workable low-budget technology information system which is now being passed on and infact adopted by many national agencies in Asia and Pacific region.

In the past APCTT had an extensive programme of releasing information packages - 'Asia-Tech', 'Tech-World', 'Tech-Trends' and 'Tech-Policy Alert'- through print media. These packages were disseminated at the rate of five per week, among nearly 80 newspapers, magazines and press services spread over more than 30 countries in the region. The information packages generated about 2,000 technology queries, which certainly is an indication of the need of information by entrepreneurs and enterprises which is not easily accessible or not available. Dissemination of these packages have now been discontinued. It is now envisaged that the dissemination to mass media will be taken up by the national TI agencies. APCTT is now publishing only a bimonthly periodical, 'Asia-Pacific Tech Monitor', for decision-makers in the public and private sectors. The Asia-Pacific Tech Monitor is a 40-44 page bimonthly periodical. It covers news on trends in technology transfer and development around the world, update on technology policies, views of leading technologists on current issues, briefs on new processes, technology offers and requests, and technology events/fairs. Tech Monitor is considered as highly useful magazine and most of the developing countries of the region are using it as a source of information in their dissemination programme.

## APCTT's ENDEAVOUR TO STRENGTHEN NATIONAL CAPABILITIES

### a) **Training of Personnel:**

As mentioned above, APCTT was actively involved in collecting information from various sources, in disseminating information through communicators, in servicing queries from the end users. The main purpose of this exercise was to build up methodologies for sourcing, processing, packaging, disseminating, servicing of queries and networking, so that these techniques could be passed on to national agencies. APCTT is currently using the technology information system developed by it for training information personals from its national counterparts. The training is now given prominence and the emphasis has been laid on the people involved in technology information activities at the national level. The target group of the APCTT's training programme is mainly users of technology and/information. In this regard, APCTT has implemented a comprehensive programme of in-house hands-on training on technology information. Forty two information officers from fifteen countries of the region made use of these programmes upto December 1987. The feedback from the participants of the course underscored the necessity of organising more courses. Also keeping "Networking" into consideration, two hands-on training courses were organised in 1988 which were attended by twenty five participants from 14 countries. APCTT plans to enlarge its hands-on training programme in the future. It is hoped that these courses will upgrade the information handling capabilities of information professional at the organizational level and of small and medium industry at the user level.

### b) **Increasing Technology Information Users in Member Countries:**

Developing countries of the Asia and Pacific region have developed many indigenous technologies that can help in their national development. However, the existence of these technologies are less known among users of technologies. Apart from being comparable to their foreign counterparts these technologies are appropriate and cheaper. APCTT has received a number of queries from the countries asking for information on technologies developed in their own country. This is mainly due to completely absence of programmes to create corporate identity and unattractive packaging and dissemination of information.

Packaging and dissemination are specialised activities of technology information which requires full time attention. Care has to be taken in identifying the target clients and attending to their requirements. It has been found that institutions involved in dissemination of S&T information mostly concentrate on science information rather than on technology information. The language which normally used in the dissemination packages is too-technical and sometimes these packages are published in a foreign (second) language which is normally not understood by the ultimate user of information - SMIs. This limits the target audience of technology information. The main task of technology information dissemination is to reach technology information end-users, who could make use of the information in taking

a decision on investment or technology application. APCTT has tried to link up the S&T agencies and sources of technology information with facilitators/ communicators such as the mass media, trade-fair organisers, trade and industry associations, development finance institutions and promoters of small and medium scale enterprises. These communicators re-disseminate the information to their respective clientele, and top-decision makers who affect the flow of technology transfer and development. This has enabled the Centre to reach a much wider audience.

By providing training to the national staff, APCTT is trying to help the national agencies to launch a programme of useful dissemination of technology information at the national level. This has enabled the concerned agencies to increase their outreach and users of information. APCTT's bimonthly publication, Asia-Pacific Tech Monitor is being widely used in the information packages disseminated by many national information agencies not only in the Asia-Pacific region but also outside the region.

The Asia-Pacific Tech-Monitor is APCTT's prime in-house tech-information package in print. It is divided into two complimentary halves: (i) Tech-mart and (ii) News, briefs and updates.

Until a few issues ago, the Tech Monitor used to carry the match-matching section under the tag 'Tech-Market'. The items used to be featured very briefly then. The in 1987, 'Tech-Market' was expanded to 'Tech-Mart' to carry the techno-economic details of commercially proven technologies.

For technology information to have a high chance of usage, the supply side must be linked closely to the demand side. The tech-mart is thus a match-making section. It is intended to be a vehicle to promote and facilitate exchange of selected commercially proven technologies among the countries of the Asia Pacific region. It aims at matching suitable suppliers of technology with their potential users and bringing them together for negotiations for industrial collaboration. The section also includes requests for and offers of consultancy services and the profile of a successful national technology promotion organisation in the region. Normally, each issue carries 10 offers, 8-10 demands, two consultancy offers and consultancy demands. Between September 1987 and March 1990, the Tech-Monitor thus carried nearly 300 Technology demands and offers.

The Tech Monitor in its present form is being published for the last two and a half years. The representatives from the member countries in various fora, members of the Technical Advisory Committee and the Governing Board in all the meetings and sessions and the SME/SMIs in their direct communications with APCTT has appreciated and strongly urged to continue the publication of Tech Monitor. Looking at the demands APCTT is now planning to put more emphasis on the Tech Mart section which has been more popular. It is planned to enlarge this section by including few technology offers and requests from the developing countries which would have high potential for absorption in the ESCAP member countries. Inclusion of technologies from the developed countries will also help in transferring the latest

technology in this region. This would also provide an opportunity to the SME/SMIs of the region to upgrade their technologies and have a close interaction with their counterparts from the developed world.

c) **Inculcating a Technology Mass Cultures:**

Technology culture, which nurtures an innovative environment refers to the existence of a mass of middle and lower echelon of technical and managerial staff down to and including skilled workmen trained for specific jobs. Creation of such a human resources is a pre-requisite for the dissemination of knowledge regarding innovation and techniques being or to be developed. Trained manpower of higher calibre and skill can perform and produce only when such a general base of trained manpower exists. The absence of technology culture in most developing countries makes it imperative that all segments of the population must be encouraged to develop a habit of applying technical knowledge to everyday life. In this respect APCTT's mass media releases proved to be very useful. They not only created awareness among the people but also generated a number of queries. During the course of this exercise, it was felt that due to the present low literacy level and lack of access to television, radio could still be the best means of reaching the masses in most developing countries of Asia and the Pacific. Some countries of the region like the Philippines are exploiting this medium whereas other countries have not used it to that extent. There seems to be a great potential for turning this medium into a tool for creating a general technology mass culture. APCTT in collaboration with the national information agencies in its member countries are planning to start a general awareness creation programme which would not only disseminate information but will focus on promotion of technology utilization as well. It is hoped that media will play an active role in this programme.

d) **Forum to Exchange Information and Share Experiences:**

The Centre has formulated, introduced and popularized quite a few methodologies, orientation and schemes to enhance technology development, transfer and utilization in the region. It has also evolved new frameworks and popularization of technology related activities and upgradation of technological human resources in the developing countries of the region.

Organization of seminars and training workshops is also an important activity of APCTT. These workshops/seminars provide a regional forum to exchange ideas and share experiences. Actually all the methodologies, orientations and schemes developed at APCTT were conceived, evolved, tested, refined and disseminated through this forum. The national and regional workshops organized by APCTT have been instrumental in bringing the policy makers at one platform wherein they considered various ways and means to integrate technological consideration in the national development planning process - technology based development.



e) **Technological Expositions/Exhibitions:**

Another activity in which APCTT has been involved is the organisation of technological expositions/exhibitions in the countries of the region. These expositions provide opportunities for potential technology sellers and buyers to come face to face and negotiate any transactions for transfer at mutually agreed terms. In the last two years APCTT organized three expositions. These expositions provided the participants with a forum to communicate freely with counterparts from other countries. A large number of people including entrepreneurs, technical professionals, research and development groups and academics visited these expositions. It is expected that quite a few transactions would take place as a result of these expositions.

e) **Provision of Hardware:**

The use of information technology for the collection, storage and distribution of information has a profound influence on the flow of information in the industrialised world. Computers, micro-fische reader printer and facsimiles have become necessary prerequisites. With the aid of information technology, literature searching has been converted from a rather tedious task involving sorting through card, catalogues or printed indexes to a stimulating, interactive process using an on-line connection to large central data bases dealing with specific topics.

The situation in the developing countries of the Asia and Pacific region is rather different. Most of the agencies dealing with S&T information do not have adequate facilities for storing, processing and retrieving information. They rely on outdated ways of storing, processing and analysing information. These methods are time consuming and cumbersome and lead to monotony and inefficiency.

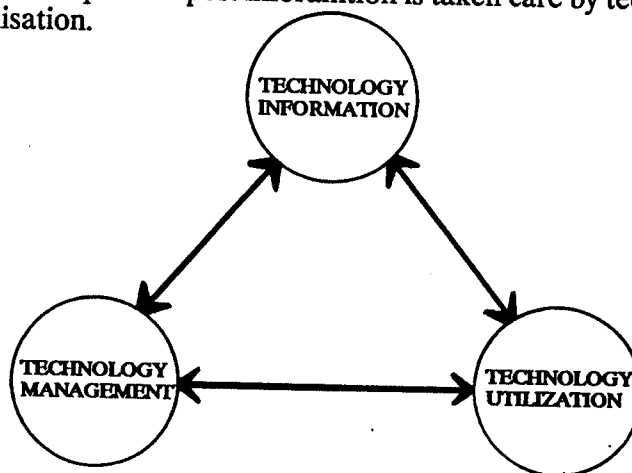
APCTT has therefore started a programme of assisting selected countries in augmenting their information handling capabilities, which has now almost been completed. Under this programme selected organisations have been provided with computer equipments which was selected on the basis of their needs. The hardware was intended to help the recipient organisation start or strengthen a technology information unit. These facilities has helped in effective sourcing, efficient and unified methods of processing, storing and retrieving, easy packaging, dynamic dissemination of information and efficient servicing of queries at micro level.

g) **Publication:**

APCTT has regularly been bringing out specialised publications of interest to the member countries. APCTT's earlier publication "A Guide to Technology Information Services" had been very popular. Last year, APCTT with the active collaboration of various national organisations has been able to bring out two specialised directoros: "Directory of Technology Promotion Institutions in Asia and the Pacific" and "100 Slected Technologies in Asia and Pacific". These two compilation has really catalysed the information exchange among the countries of the region.

## PRE AND POST INFORMATION

Right from the beginning APCTT has realised that the value of information lies in its utility. If the information gathered is not used or the information gathered is of no use then the whole purpose of information service fails. Therefore in order to achieve its overall objective (i.e. strengthening the capabilities of developing countries of Asia and the Pacific in the development transfer and utilization of technology) APCTT is broadly organized into three complimentary programme area - technology information, technology utilization and technology management. The technology information programme gets feedback and guidance from the other two programme. All the three programmes interact with each other closely. From the interaction, APCTT's technology information service now stands on the basis of demand pull rather than supply push. Technology utilization on one hand generates the demand for information and on other services the queries and ultimately facilitates technology syndication. Technology management provides guidance and prioritize broad areas of operation, identifies target clientele and monitors the utility of technology information. It is very difficult to draw a sharp line dividing the area of operation of these three program. However, one can say casually that technology information takes care of only information whereas pre and post information is taken care by technology management and technology utilisation.



## CONCLUSION

To sum up, in the last few years, APCTT has been implementing such programmes in the area of technology information which could strengthen the national capabilities in information handling and augmenting other technology related programmes. APCTT's specialized technical publication and the mass media disseminated packages have generated a lot of interest in technology information. The hands-on training courses organised by APCTT was the first step in developing a mechanism for developing the human resources for effective exchange of information. The provision of hardware and software was another step to have a unified and efficient methods for sourcing, processing, storing and retrieving information. The organisation of national and sub-regional workshops have created enough desire to have a common platform through which one can share information. All these meetings have strongly recommended to device a mechanism for information exchange - Asia Pacific Technology Information Network (APTIN). APCTT's information service is now geared towards APTIN.

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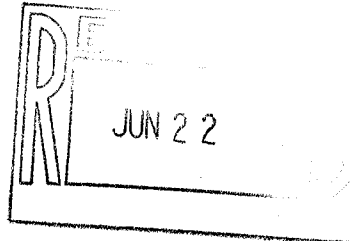
CENTRE FOR INTERNATIONAL  
COOPERATION AND  
DEVELOPMENT - CICD  
LJUBLJANA, YUGOSLAVIA



CENTER ZA MEDNARODNO  
SODELOVANJE IN  
RAZVOJ - CMSR  
LJUBLJANA, JUGOSLAVIJA

61109 LJUBLJANA  
Kardeljeva ploščad 1  
P. O. B. 97  
Telephone: (061) 347-597, 343-672  
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Telefax: 061/343-696

Mr. Hugo Navayas - Mogro  
Chairman of the Group of 77  
New York  
Office of the Chairman  
P.O.B. 20, New York  
N.Y. 10017  
U.S.A.



Številka / Number:  
669/90-mč

Datum / Date:  
31 May, 1990

Dear Mr. Navayas - Mogro,

Project INT/89/K01/A/95/99 - Feasibility Study  
on Information System on Technologies and Projects (ISTP)

We would like to inform you that the above project, financed through Perez Guererro Fund has been successfully implemented according to the project document and the work plan, submitted by CICD.

We are sending you by mail the following papers:

1. Prefeasibility Study - Information System on Technologies and Projects, prepared by CICD;
2. Final Report on Expert Group Meeting on ISTP, held at Bled in April, 1990 which assessed the Prefeasibility Study; and
3. three papers prepared as background material for the Prefeasibility Study:
  - "Yugoslav Experience with ISTP", prepared by CICD
  - "ARCT's Activities in the Field of Industrial and Technological Information", prepared by Mr. M. Timoulali, ARCT and
  - "Technology Information: an Integrated Approach in Asia and the Pacific", prepared by Mr. J. Zaidi, APCTT.

All above documents I delivered personally also to Mr. Erwin Ortiz - Gandarillas, Minister Counsellor - Group of 77 and to Ms. Joanne Archer, Programme Officer - Special Unit TCDC/UNDP.

The Meeting pointed out that identification of proper technology information is a necessity for developing countries' national economies and also recognized that the establishment of a successful information system on technologies and projects could be a valuable support mechanism in their development efforts.

Consequently experts from seven countries present at the Meeting supported the basic principle of ISTP, i.e. its orientation towards identification, selection and processing of information suitable to the environment found in developing countries. They agreed to recommend that the pilot stage as envisaged in the prefeasibility study prepared by

CICD for the implementation of the ISTP at the international level, is to be launched. To this purpose, a project proposal on establishment of ISTP in selected developing countries which expressed interest to participate in such network (pilot stage) was prepared by the experts during the Meeting.

Two regional centres - Asian and Pacific Centre for Transfer of Technology and African Regional Center for Technology have expressed their readiness to cooperate in the implementation of the pilot project and their letters confirming above are included. The representative of SELA has also expressed interest to participate, but will inform of appropriate institution through which cooperation on ISTP will be coordinated.

The experts requested that CICD presents the project proposal to the Perez Guerrerro Trust Fund and other multilateral and international organizations to secure the necessary financial assistance for the implementation of the pilot stage.

With best regards,

Yours sincerely,

  
Ms. Maja Košak  
Director

UNITED NATIONS  NATIONS UNIES

**ASIAN AND PACIFIC CENTRE FOR TRANSFER OF TECHNOLOGY**

OF THE ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC

49 Palace Road, P.O. Box 115 Bangalore-560 052, India

Telex: 6452119 APCT IN Telephone: 266930-33

Fax No: 81 812 263105

16 May 1990

Dear Ms Kosak,

After a long, tiring but useful trip I am now back in office. I am trying to recollect what had happened during the course of the mission. Definitely participation in the Expert Group Meeting (EGM) held in Bled from 18-20 April 1990 is the highlight of the whole trip. Bled was just beautiful, arrangements of the meetings were excellent and so was your hospitality. My sincere thanks to you and to your staff.

By now you must have received some feedback from other participants of EGM. I found the idea of "Information System for Technologies and Projects" (ISTP) quite promising and unique. I am sure that ISTP will help in strengthening the technological and industrial information handling capabilities of the developing countries at the global level. I feel confident that many countries would like to join ISTP. On one hand, ISTP will supplement the existing technological and industrial information system and on the other hand accelerate the flow of technological and industrial information. You can be rest assured of APCTT's full cooperation, active participation and strong support in ISTP. We are sure that you will be able to find finances for the implementation of the project.

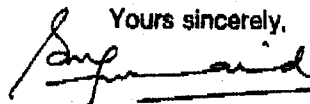
As you know that APCTT is a Regional Institute of ESCAP dealing with technology transfer. We have been involved in technology information activities since 1980. Our experiences show that most of the developing countries (especially in our region) either do not have specialized technology information system, or if they have it is very weak. With the creation of system like ISTP, technology information system in some developing countries surely be strengthened.

In the last couple of years we have been able to develop and test a low-budgeted technology information model which has now been adopted by many developing countries of the Asian and Pacific region. Our hands-on training programme on technology information has also been very successful and popular. If you so desire, we will be very pleased to pass on APCTT's technology information model and provide hands-on training to the information specialists of ISTP participants.

I wish you all success in your endeavour to lift the ISTP off the ground. I look forward to hearing from you soon.

With best wishes and good luck.

Yours sincerely,



S.M. Junaid Zaidi  
Adviser Technology Information

Ms. Maja Kosak  
Director  
Centre for International Cooperation  
and Development CICD  
61109 Ljubljana  
Kardeljeva Ploščad 1  
Ljubljana

The African Regional Centre for Technology



Le Centre Régional Africain de Technologie

Tél. Bureau 25-77-12  
Phone Office

B. P. 2435  
Avenue CHEIKH ANTA DIOP  
Dakar (Sénégal)

Télex 61282 CRATEC SG  
Fax 221-25-77-13

CRAT/INFO/556/90

Le 02 Mai 1990

SENTER ZA MEDNARODNO  
SODILOVANJE IN RAZVOJ  
CMOR  
CMOR Ljubljana  
Kardeljeva placad 1  
Prejeto: 10-05-1990  
Številka: 636

Madame la Directrice,

Je vous remercie pour votre invitation au Centre à participer à la réunion d'experts sur le Système d'Information sur les Technologies et projets, réunion à laquelle a pris part le Directeur de la Division de l'Information et de la Documentation du Centre.

A cette occasion, nous vous confirmons à nouveau le grand intérêt que le Centre accorde à ce projet et notre volonté d'y participer activement, en vue de sa réalisation dans la région africain.

En attendant de nouveaux développements dans ce sens, je vous prie d'agréer, Madame la Directrice, l'expression de ma considération distinguée.

  
Dr. Ousmane KANE  
Directeur Exécutif Adjoint

Ms. Maja KOSAK  
Director  
ISTP Project Coordinator  
Centre for International Cooperation  
and Development (CICD)  
61109 Ljubljana  
Kardeljeva Placad 1  
P.O BOX 91  
YUGOSLAVIE



# THE GROUP OF 77

New York  
Office of the Chairman

L-0533/90

28 December 1990

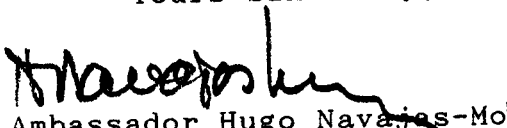
Dear Mr. Chadha:

Ref: Project INT/89/K01/A/95/99 "Feasibility Study on Information System on Technologies and Projects (ISTP)."

With reference to the above project, I have pleasure in forwarding the Project Delivery Report for the period 1990, submitted in according to the Project Budget Document, section miscellaneous for translation, reproduction and dissemination of the Feasibility Report by the Office of the Chairman of the Group of 77

Please accept the assurances of my highest consideration.

Yours sincerely,

  
Ambassador Hugo Navajas-Mogro  
Permanent Representative of Bolivia  
to the United Nations  
Chairman of the Group of 77  
New York

Mr. S.M.S. Chadha  
Director  
Special Unit for TCDC  
United Nations Development Programme  
New York

OFFICE OF THE CHAIRMAN OF THE GROUP OF 77

PROJECT TITLE: Feasibility Study on Information System on Technologies and Projects (ISTP)  
(INT/89/K01/A/95/99)

PROJECT DELIVERY REPORT  
for funds provided by United Nations Development Programme (UNDP)  
for the period 1990  
(in US Dollars)

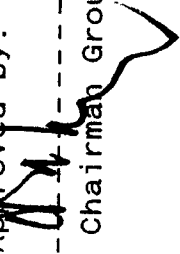
Budget Line	Description	Budget for year	Government	UNDP direct payments	Co-operat. agency	Total
51	Miscellaneous Reproduction and Dissemination of Final Report by G-77	3.000				3.000
						3.000

Certified correct by



Accountant

Approved by:



Chairman Group of 77





# THE GROUP OF 77

New York

Office of the Chairman

L-0415/90

20 July 1990

Dear Mr. Chadha:

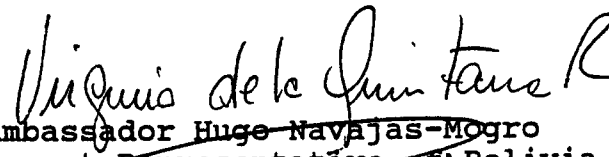
Ref.: Project INT/89/KO1/A/95/99 - Feasibility Study on Information System on Technologies and Projects (ISTP)

I have the honour to inform you that the Centre for International Cooperation and Development (CICD) has, under the terms of the sub-contract agreement concluded with the Office of the Chairman of the Group of 77, completed the feasibility study on ISTP which the Office of the Chairman will very soon proceed to reproduce and disseminate to all the member States of the Group of 77.

To this end and in conformity with the relevant provisions of the project document and the sub-contract agreement, may I request that the stipulated amount of USD3,000 be transferred to the Group of 77 Account for ECDC (Acc. #121029-0001, State Bank of India, 460 Park Avenue, New York, NY 10022), to cover the costs to be incurred in reproducing and disseminating the feasibility report.

Please accept, Mr. Chadha, the assurances of my highest consideration and esteem.

Sincerely,

*for* 

Ambassador ~~Hugo Navajas-Mogro~~  
Permanent Representative of Bolivia  
to the United Nations  
Chairman of the Group of 77  
New York

Mr. S.M.S. Chadha  
Director  
Special Unit for TCDC  
United Nations Development Programme  
New York. N.Y.

1006.2



THE PERMANENT REPRESENTATIVE  
OF PAPUA NEW GUINEA  
TO THE UNITED NATIONS

866 UNITED NATIONS PLAZA, SUITE 322  
NEW YORK, N.Y. 10017

31 October 1990

Office of the Chairman  
The Group of 77  
P.O. Box 20  
New York, New York 10017

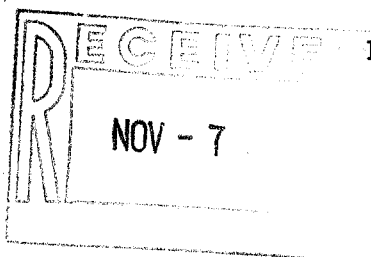
Dear Mr. Chairman,

I have the honour to acknowledge with thanks receipt of your Note No. N-0358/90 dated 24 October 1990 and a copy of the Prefeasibility Study on Information System on Technologies and Projects prepared by the Centre for International Cooperation and Development (CICD) from Ljubljana, Yugoslavia under the terms of the Perez-Guerrero Trust Fund.

The above study by your Centre is very much appreciated, and it is being transmitted to the relevant authorities in Papua New Guinea for their information and purposes.

I avail myself of this opportunity to renew to the Office of the Chairman of the Group of 77 the assurances of my highest consideration.

RENAGI RENAGI LOHIA, OBE  
Ambassador  
Permanent Representative





# THE GROUP OF 77

New York  
Office of the Chairman

N-0358/90

The Office of the Chairman of the Group of 77 in New York presents its compliments to the Permanent and Observer Missions of the Member States of the Group of 77 to the United Nations and has the honour to transmit herewith, in compliance with the guidelines of the Perez-Guerrero Trust Fund for ECDC/TCDC of the Group of 77 adopted by the Cairo High-level Meeting on ECDC in August 1986, the Prefeasibility Study on Information System on Technologies and Projects prepared by the Centre for International Cooperation and Development (CICD) from Ljubljana, Yugoslavia under the terms of project INT/89/K01/A/95/99 of the Perez-Guerrero Trust Fund.

The Office of the Chairman wishes to recall that the Twelfth Annual Meeting of the Ministers for Foreign Affairs of the Group of 77 held in New York from 28 to 30 September 1988 approved the preparation of the prefeasibility study on recommendation of the Second Meeting of the Committee of Experts of the Perez-Guerrero Trust Fund held in New York in August 1988.

The Office of the Chairman of the Group of 77 avails itself of this opportunity to renew to the Permanent and Observer Missions of the Member States of the Group of 77 to the United Nations the assurances of its highest consideration.

New York, 24 October 1990.

Permanent and Observer Missions  
of the Member States of the Group of 77  
to the United Nations  
New York, N.Y.



# THE GROUP OF 77

New York  
Office of the Chairman

N-0358/90

The Office of the Chairman of the Group of 77 in New York presents its compliments to the Permanent and Observer Missions of the Member States of the Group of 77 to the United Nations and has the honour to transmit herewith, in compliance with the guidelines of the Perez-Guerrero Trust Fund for ECDC/TCDC of the Group of 77 adopted by the Cairo High-level Meeting on ECDC in August 1986, the Prefeasibility Study on Information System on Technologies and Projects prepared by the Centre for International Cooperation and Development (CICD) from Ljubljana, Yugoslavia under the terms of project INT/89/K01/A/95/99 of the Perez-Guerrero Trust Fund.

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The Office of the Chairman of the Group of 77 avails itself of this opportunity to renew to the Permanent and Observer Missions of the Member States of the Group of 77 to the United Nations the assurances of its highest consideration.

New York, 24 October 1990.

Permanent and Observer Missions  
of the Member States of the Group of 77  
to the United Nations  
New York, N.Y.



PEREZ-GUERRERO TRUST FUND  
FOR ECONOMIC AND TECHNICAL COOPERATION  
AMONG DEVELOPING COUNTRIES

PROJECT INT/89/K01/A/95/99

INFORMATION SYSTEM ON TECHNOLOGIES AND PROJECTS

Ms. Maja Košak

Prefeasibility study  
prepared by the Centre for International Cooperation  
and Development from Ljubljana, Yugoslavia  
with the financial support of the Perez-Guerrero Trust Fund

1990

OFFICE OF THE CHAIRMAN OF THE GROUP OF 77  
NEW YORK



**CENTER ZA MEDNARODNO SODELOVANJE IN RAZVOJ, LJUBLJANA**  
**Centre for International Cooperation and Development**  
Yugoslavia • 61109 Ljubljana • Kardeljeva ploščad 1 • P.O.B. 97

**Prefeasibility Study**

**INFORMATION SYSTEM ON TECHNOLOGIES AND PROJECTS**

**Ms. Maja Košak\***

\* Senior Research Fellow, CICD.

Paper was prepared with extensive comments and suggestions by  
Marko Verbič and Franc Tramte.

-----  
This Prefeasibility Study was prepared under the sub-contract agreement  
between the Group of 77 and the Centre for International Cooperation and  
Development on the Implementation of the Project INT/89/K01/A/95/99.

## 1. Summary

Lack of information is one of the most serious obstacles to selection, acquisition and application of appropriate technology options in developing countries. Some of the newly industrialized countries among developing countries have in their process of industrialization achieved the level of technological capability at which they are able not only to adapt imported technologies to their own local conditions and develop appropriate technologies but also transfer them (or projects embodying them) to other developing countries. Yet exchange of knowledge on available appropriate technologies/projects is not adequately developed.

Therefore it is proposed that an international network for exchange of information on appropriate technologies and projects (the word "project" is used to describe the combination of both technology and know-how for the production process of a specific product) available for transfer among developing countries be established. Such an information system would be based on national centres, where an inventory of technologies and projects an individual country has to offer will be collected. The data gathered will be processed according to an agreed standard format and disseminated through the network. The concept of ISTP at the national level and its potential to be developed into international network was the main topic of the expert group meeting on "Exchange of Information among Developing Countries on Available Technologies in the Field of Small and Medium Industries", Ljubljana, Yugoslavia, 12-14 April 1988 which was organised by CICD and UNIDO.

The basic principle as well as orientation of the system for identification, selection and processing of information should be the suitability of the technology/project to the environment found in developing countries, in particular suitability for small and medium-sized enterprises.

The objective of the development of the information system is to promote technical and thus also economic cooperation among developing countries, foster national technological capability and assist developing countries in their development process through identification and fulfillment of their needs.

On the national level, CICD has already established a system for gathering, processing and distribution of information on technologies and projects, available for transfer to other developing countries. Their experience and methodology could be used in developing ISTP internationally. At the same time, the experiences and principles of already established international networks, like UNIDO's INTIB, of various regional organizations (ARCT, APCTT), INRES-South of UNDP, etc. should be closely examined both to avoid unnecessary duplication and to incorporate their valid experiences in development of international network. Cooperation should be sought with all of the named institutions, particularly in the field of network and institution building. The concept and the working protocol of Multisectoral Information Network (MSIN), accepted by the Group of 77, should serve as the base for ISTP network.

## 2. Definition, background and justification of ISTP

In the process of industrialization, developing countries encounter a number of very complex problems. Since industrial development is closely connected with a process of acquiring technological capability, many developing countries have been highly dependent in the first stages of industrialization on technologies imported from developed countries.

If we define technological capability as the application of existing knowledge to evaluate and choose technology, to acquire and operate processes and produce products, and eventually create new technologies, it becomes obvious that a low level of technological capability leads to the import of inappropriate technologies and also fails to enable the country to modify these technologies to indigenous needs. Successful industrialization of developing countries will only be attainable once these countries reach a sufficiently high degree of technological capability.

A number of newly industrialized developing countries (NICs) have made significant advances in the field of adaptation, modification and development of specific technical and technological solutions. These "appropriate" technologies can be much more suitable for other developing countries and can help them increase their technological capability much faster. In general, technical change originating in developing countries will tend to be more appropriate than technical change originating in developed countries, since the local environment influences the area of research as well as the results that will prove economically efficient.

Here it needs to be stressed that appropriate technology is by no means always simple technology: it may be highly sophisticated. Appropriate technology is characterized mainly by the following:

1. Adjustment of production technology to local factor supplies and prices in order to minimize costs.
2. Adjustment to the use of local materials. This differs from number 1 in that it involves the substitution of a different input rather than a change in input proportions. For instance, shoe soles may be made out of rubber instead of leather.



3. Adjustment of the scale of plant to local market size, for example, downsizing a plant.
4. Economizing of foreign exchange, that is, on imports of materials and equipment, this being one of the most serious problems in the majority of developing countries.
5. Adjustment of the product to local market conditions, for example, high transport and utility costs, difficulty with repairs and maintenance, lack of replacement parts, as well as lower income of consumers, specific standards existing in a country, customs, etc.

Appropriate technology may be defined as the set of techniques which make optimum use of available resources in a given environment. Very often appropriate technology is also less capital intensive and less dependent on skilled labor, and thus particularly suitable for small-scale enterprises.

Despite widespread agreement among developing countries on the need for appropriate technology, progress in achieving appropriate technology on a significant scale is generally acknowledged to have been disappointing. This type of technology, because it has not been developed or used by multinational corporations, is much less known, and less accessible, than the standard technology of industrialized nations. When technology is developed in a developing country, the problem of information and its dissemination is seriously aggravated.

A major area for development, identification and promotion of dissemination of appropriate technology consists in the establishment of appropriate information channels. The present systems of information transfer tend to be systematically biased towards recently developed, advanced country technologies. Sources of technology - both as to information and the development of new technology - have been heavily biased towards the modern sector, and within the modern sector towards the relatively large-scale. These biases arise because in the main, R & D is carried out in developed countries by larger-scale firms.

To overcome this bias, there is a need to promote a network of institutions - nationally and internationally - for the development and dissemination of appropriate technology through the establishment of special information

channels. Existing information channels among developing countries are often weak and need improvement both nationally and internationally. Lack of information is one of the most serious obstacles to development, acquisition and use of appropriate technology options.

Being aware of this and possessing an increasing number of technologies which are potentially transferable, the more advanced developing countries have by now succeeded in creating national inventories of available technologies and projects. Although these inventories are based on various methodologies, they are all intended to serve the same purpose: to inform potential partners of the specific possibilities of technological cooperation.

What these inventories lack, besides a more standardized methodology in gathering information on available technologies and projects, is a network for transmission of this highly relevant information to other developing countries. Such a network would not only make information on available appropriate technologies easily accessible, but could also stimulate both development and dissemination of appropriate technologies.

### 3. Objectives of the ISTP

#### a. Immediate objectives:

- to stimulate identification of appropriate technologies and projects available for transfer in each of the participating countries and thus create national inventories of such technologies and projects;
- to identify appropriate national institutions in developing countries which could serve as national centres for identification, processing and exchange of information;
- new techniques frequently require considerable modification before they can function successfully in a new environment. This process of modification often involves a high order of skill and ability, which is typically underestimated or ignored. Yet the capacity to achieve these modifications

and adaptations is critical to the successful transfer of technology. In the selection of technology special attention will be paid to potential modifications and adaptations of these technologies to make them most appropriate to a particular environment. This would increase the success of transfer of technology;

- to provide the interested national centres with the training to qualify the manpower necessary to perform the task of gathering, processing and exchange of information;
- to set up ways and means for the linkage of national centres to ensure a permanent flow of information among developing countries in the field of appropriate technologies and projects, collected within ISTP.

b. Development objectives:

- an international information system on technologies and projects available for transfer among developing countries could significantly promote and facilitate information flows and strengthen technological and economic cooperation among developing countries;
- a basic rationale of collective self-reliance and South-South cooperation as a development instrument is better utilization and mobilization of internal human, material and all other necessary resources and - by pooling them collectively - acquiring economies of scale, tailored to the authentic needs of developing countries. ISTP, with its stimuli to promote development and dissemination of appropriate technologies could thus become one of the major instruments of collective self-reliance;
- a major effort needs to be made to promote technical change in developing countries, starting with a careful look at the analysis of what promotes or inhibits such change. Deficiency in quantity and quality of R & D and in the dissemination of resources devoted to suitable technology is one of the major obstacles to faster technological change. The increased viability of appropriate technology through ISTP should be an important contribution to overcoming this obstacle;

- with its data on available appropriate technologies and projects for developing countries, ISTP should become a major instrument in assisting less developed developing countries in meeting their technology needs. The methodology used for identification of available technologies and projects should be used also for the identification of the needs, particularly in less developed developing countries;
- technology transfer is not an end in itself. Its general objective is economic development and growth. With improved technology transfer among developing countries through ISTP, economic development could be significantly stimulated.

#### 4. Basic Principles of ISTP

Presentation of the basic principles of ISTP is divided into two parts: part one describes the characteristics and principles of collection, processing and storing information on appropriate technologies and projects on the national level, while part two presents the prerequisites for the establishment of the national centres.

##### 4.1 National system on technology/project information

The development of a national system on basic technology/project information should be based on the following principles:

- the system should be simple to operate, flexible and should include all sectors of the national economy in order to open doors to all potential exporters or buyers of technology;
- identification and selection of the project/technology should take into account its quality/performance, and suitability to local requirements and needs of a given country;
- special attention is given to the selection of appropriate technologies (modern or traditional) for small and medium-sized industry taking into account technical, environmental, financial and commercial aspects;

- the system should be built according to the needs, technical and financial possibilities of ISTP promoters, i.e. national centres and enterprises as suppliers or buyers of the technology in question;
- the system should be developed gradually and it should prove its viability through eventual self-financing based on special agreements between national centres and interested enterprises;
- national centres should be capable of collecting, storing and disseminating information on available projects/technologies and at the same time they should be able to field inquiries received by mail, telex or computer and provide additional information if necessary;
- national standardization of collected data and its transparency within the international information systems, particularly those of the UN special agencies, is to be required; a methodology/work sheet prepared by CICD could be taken as a good initial approach to standard format;
- special priority should be given to projects/ technologies with in-built flexibility, meaning that they can be easily adapted to smaller/ larger scale of production;
- the national centre should, in the process of identification of technologies/projects, stimulate the owner of the technology to assist the potential buyer in the process of adaptation and modification of the offered technology on the basis of his past experience with developing this particular technology in his own environment (i.e. acceptance of a complete transfer of technology is assumed, if such should be required from the potential buyer).

#### 4.2. The role of and prerequisites for the establishment of national centres

National centres should be primarily institutions with close links with business enterprises (Chambers of Commerce, Investment Centres, independent commercial or research institutions, engaged in promoting trade or technology transfer, i.e. different types of institutions depending on the economic system in each participating country). They should have strong commercial

interest in participating in the system. For the proper functioning of ISTP, it is essential that an institution decides by itself that it wants to act as a national center and sees its engagement in the network as something yielding a financially attractive activity. Even in countries, where such activity is government-sponsored, national centre should in the long run commercialise ISTP. Only commercialisation guarantees that the national centre's interest in being active both nationally and internationally will stay alive.

They should be in a position to:

- identify appropriate technologies/projects within the national economy: i.e. they should be able to motivate companies in their national economy to chose and prepare information on technologies/projects available for transfer to other developing countries according to the basic principles of the system for gathering and processing the information on appropriate technology/projects and supplying them into the international network;
- assess a particular technology/project for its suitability for developing countries' small and medium size enterprises, since they bear full responsibility for data passed on to the network.

Arrangements between the supplier of technology and the national centre should be left to the national centre and will not be coordinated at the level of the international network.

Also, the financing of identification, assessment and processing of information on available appropriate technologies/projects at the national level is organized by the national centre independently. Seed money for the establishment and operation of the international network will be sought jointly from international sources according to previous agreement among all participating national centres.

National centres may be linked to chambers of industry, commerce and economy, to business associations of small and medium-sized industry, research institutes, universities, innovation centres and other relevant information sources within their countries and international information systems as well.

## 5. Organizational structure of ISTP

ISTP is conceived as a network of national centres. National centres will act as coordinators of the network within a given country and they will be responsible for a smooth flow of information from/to enterprises and particularly to small and medium -sized industry.

In the process of identifying, selecting and processing data, the following elements will be observed:

- a) basic technology/project information should be identified with close cooperation between the business enterprises offering the technology/project for transfer and the national centre. Experts of the centre have to examine the offered technology/project, assess its suitability and suggest eventual modifications or additional data a company should provide.
- b) information on a technology/project should be organized according to a common format (the CICD work sheet could be a basis for discussion):
  - additional information may be supplied to the experts of the national centre, but should not be incorporated in the basic information on the technology/project which goes into the system, in order to assure clarity of data processed through the network,
  - for easier communication, information processed through the network should be given in English, but with further development of the system, other languages should also be used,
- c) as the system develops, all gathered information should be gradually computerized. The software should be portable, user-friendly and inexpensive. (CICD has created its ISTP data base on dBase III plus running on an IBM PC XT/AT comp.). In designing the software, it is important to bear in mind the software used by various UN agencies, to secure maximal complementarity.

The required hardware configuration at the level of the national center is an IBM or IBM-compatible personal computer with a minimum 20 Mb (single hard disk) memory, in order to have sufficient room for cross-referencing of information.

The existing software developed by CICD and used in the preparation of the Yugoslav catalogue of available appropriate technologies/projects for transfer enables easy processing of information, quick access to data and elementary cross-searching of data. As such it can be used in the beginning stages of setting up the international system. It can be developed further according to the identified needs of the system.

#### 6. Main conclusions of expert group meeting

CICD and UNIDO organized an expert group meeting on the exchange of information between developing countries on available technologies in the field of small- and medium- sized industries, which was held at Ljubljana from 12 to 14 April 1988. The meeting aimed at identifying appropriate national systems in developing countries to ensure a permanent flow of information on locally available technologies, particularly within small- and medium- sized industries.

After intensive discussion, the experts, who came from Algeria, Argentina, China, Egypt, India, Pakistan, Romania, Turkey and Yugoslavia, supported the proposal of CICD to establish an international information system on technologies and projects (ISTP). This would consist of a network of national centres, which should aim at identifying, selecting and processing information existing in developing countries suitable for transfer to other developing countries.

It was recognized that a considerable reserve of indigenously developed or adopted imported technologies existed in developing countries regardless of their different levels of industrial development, and that considerable progress had been made in collecting information in different national institutions. What was needed, however, was a more business-oriented and user-friendly international information system, which would enable information on those technologies to be exchanged.



The main recommendations of the meeting were:

- That unified national systems for collecting, processing and disseminating technology information should be established and strengthened;
- That national information centres should maintain close links with technological enterprises with a view to collecting and disseminating information on them;
- That technologies that were to be transferred should be carefully evaluated, selected and acquired according to needs and adapted to the existing human and material resources in order that they could be integrated fully into the industrial and economic structure of the country;
- That a common format should be used for the preparation of information on technologies and projects using computer applications and a unified international product code;
- That CICD should act as a co-ordinating centre for the proposed information centre, assisting national centres by training and advice.

#### 7. CICD experience on the national level

At the beginning of the 1980s the CICD decided to begin the elaboration of a permanent program of promotion of Yugoslav technologies, suitable for transfer to other developing countries and interested developed countries, based on the selection of quality technologies, already adapted or able to be adapted to the needs of developing countries with regard to their technical and economic level, existing infrastructure, quality of inputs, local customs, standards, etc.

Building up ISTP means to CICD a new, original way to promote enterprise to enterprise South-South cooperation based on selected commercially available technologies and projects in Yugoslavia and linking them with potential needs and technological requirements in other developing countries.

### 7.1. Objectives of Yugoslav firms

At the outset, most firms in Slovenia contacted by CICD were not very enthusiastic about a new project on the promotion of technology transfer. However, they thought it worth trying an innovative approach offered by the CICD's ISTP programme. So they supported the idea that CICD should get financial support from the Slovene Government.

In general, the major objectives of the participating firms are the following:

Firstly, they see in ISTP an opportunity for the inventory work on their own technological potentials for export and systematic search and collection of basic data on economic, legal, financial and technical aspects of the technology transfer;

Secondly, an independent research and information center like CICD can provide them with a wide dissemination of information on available technologies to all relevant addresses in the developing as well as developed countries and international organizations, and

Thirdly, being among the selected technology exporters represented in the ISTP data base and the catalogue, means to them also a valuable reference for future marketing of their know how, technologies or complex projects.

### 7.2. Methodological issues

The implementations of the ISTP project was divided into several phases. First of all, a coding manual and a work sheet for collection of relevant data and information on identified and selected technologies/projects were prepared.

After extensive consultations with a number of enterprises and leading engineering firms in Slovenia (one of the republics in Yugoslavia), the working team decided that ISTP coding system for Yugoslavia would be based on National Standard Classification of Economic Activities. It is widely used by Yugoslav statistics and is obligatory to all economic entities in Yugoslavia according to the Federal Law.

There is a considerable similarity between the Yugoslav classification of economic activities and the International Standard Industrial Classification of all Economic Activities (ISIC) which is used in UNIDO technological data base INTIB, and from the very beginning it was planned that Yugoslav code would be accompanied by the ISIC code in order to enable a compatibility between ISTP and any other international information system, including INTIB on the first place. All technologies projects are now classified according to ISIC.

### Coding

The ISTP coding system represents a mix of the classification code (first 6 digits) and of the project current number ( four digits).

The classification code is introducing the divisions (two-digit code), groups (five-digit code) and subgroups (six-digit code):

XX XXXX

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I I I _____ (01) Industry and Mining
  I T
  I I _____ (01 030) Coal Processing
    I
    I _____ (01 0301) Manufacture of coke
                          and semi-coke
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### Work sheet\*

The ISTP work sheet is divided into three major parts:

Part one: includes basic data or codes on the owner of the technology, economic sector, code number of the identified and selected technology or project and the year of last issue or updating.

Title of the project/technology

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\* A sample is included at the end of the paper.

Part two: presents a short description of the technology or the process with a separate sketch of the product or production facilities lay-out.

Part three: presents all other relevant data and information needed for initial decision making: total investment cost, value of the equipment, required area, number of personnel, type of commercial arrangements, financial and ecological aspects.

Having in mind the problem of getting additional information on other relevant matters in time, the team suggested that contractors should add any relevant data or information which might be useful for the clients concerning the mode of transfer of technology, standards, references, licence or patent information, etc., under the separate item at the end of the working sheet.

While the first two parts of the work sheet correspond to technical-technological type of information and can be found in other relevant information systems on technologies (INTIB), the third part includes economic, financial and ecological aspects and more detailed explanations in Additional Information.

This kind of information makes ISTP more commercially oriented system in comparison to other information systems on technologies and science.

### 7.3. Dissemination of information to interested partners abroad

A very important question had to be solved in the first, pilot phase of ISTP implementation: how to make ISTP known among the potential users and buyers of appropriate technologies in developing countries.

In March 1987 the first issue of the catalogue of the first 200 technologies/projects was published and mailed to all UNDP national offices in developing countries, to Yugoslav embassies abroad and the embassies of developing countries in Yugoslavia, to UNIDO, the Chambers of Economy in Yugoslavia and given to the participants of the international conferences on small and medium enterprises in Belgrade, on Information Systems Development at Nova Gorica, of Business weeks of Yugoslavia in Jordan and in China and to the members of the Slovene Fund for Promotion of Cooperation with developing

countries. More than 2000 copies, out of 2500, have already been distributed by the end of 1987. Several representative offices in Yugoslavia and some embassies had asked for additional copies.

The catalogue proved to be a very successful strategic decision. A number of requests for additional information and data on specific technologies have already been received and replies of the technology owners sent back in a relatively short time. There have been also proposals for direct contacts and business talks between potential partners from Argentina, India, Nigeria, Cyprus, Jordan, etc.

Due to rapidly growing number of information on technologies and projects in ISTP data base, CICD decided to publish sectoral and company catalogues instead of a general one. This way, a catalogue on agricultural technologies and 6 company catalogues were published so far.

#### 7.4. Past Experience and results of ISTP

Although it is very difficult to make a final assessment of this stage of the ISTP project at the moment, it is more than evident that most of the goals were fulfilled:

- there is a growing interest among Yugoslav enterprises to make their inventory work on technologies in their possession according to ISTP methodology in order to find out whether these technologies are suitable for certain conditions (climate, technical, legal, financial, environmental, etc.) in interested developing or developed countries;
- CICD has succeeded in inspiring interest among Yugoslav enterprises for such kind of permanent promotion of their capabilities and technological potentials either through a modern sophisticated information system or through traditional communication links. Some larger firms have chosen the ISTP methodology as a way to better organize more efficient service for their companies at home and abroad;
- some engineering firms have found the ISTP methodology as a very appropriate solution for their own marketing activities on new markets in developing countries and are now preparing firm's catalogues according to ISTP;

- dissemination of the catalogue stimulated a number of SMEs in developing countries to become interested in Yugoslav export and technological capabilities not only for buying specific technologies in Yugoslavia but also in potential cooperation, joint ventures and joint bidding in third countries;
- CIGD exchange of information and promotion of South-South cooperation got a new, very practical push on different levels: at the enterprise level, regional and national level and at the international or interregional level as well. It is expected that ISTP will become a part of the international information systems on technologies and as such enlarge South-South information flows in the future using traditional and modern information technologies, as backbone infrastructure.

Of course, there are still many problems to be solved. Many smaller enterprises need assistance in collecting of data and preparation of production processes lay-outs. CIGD has reached an agreement with some interested engineering firms to offer such assistance based on their rich experience in transfer of technology and marketing of the investment projects in developing countries.

So far CIGD has received about 150 different requests and letters from a number of developing countries, asking for more detailed data and information including the breakdown of the investment costs, possible scale down of the particular technology/project, financial conditions, etc. All these requests were sent to the owners of the desired technologies. Relatively short time was needed to get back the replies and additional explanations.

#### 8. International network for information system on technologies and projects

The system should be open-ended, not only with respect to the number of national centres participating, but also in its functional mechanisms, coordination activities and linkages. Any mechanism which the participating centres shall identify as beneficial for the improved functioning of the system, should be integrated. The common goal, that is, promotion of exchange of information on appropriate technology/projects among developing countries, should represent the basic principle in development and upgrading of the system.

An international system should be built gradually, with the use of a step-by-step approach. In the first stage, a pilot network of a limited number of countries at a sufficiently high development level (NICs), should be established to test the potentials of such a system. If the system proves itself, it should be opened to any developing country willing to participate in the exchange of information on available appropriate technologies/projects. ISTP can also be used as a means of development assistance to the least developed developing countries. The national centres of the participating countries should pay special attention also to meeting the needs of the less developed countries for appropriate technology/ projects to foster their development.

The participating national centres are responsible to process information according to commonly agreed methodology. All gathered information should be supplied into the system as soon as it is processed so as to be available to all other national centres. To facilitate the functioning of the system, contacts between national centres can be establish directly. Each national centre is responsible for the information supplied to the system.

National centres assist in establishment of contacts between suppliers and potential buyers of technology/ project. Other support services can, but need not be offered by national centres, depending on their own policies and abilities to provide such assistance.

If request arises for the technology/ project currently not available in the system, all national centres should be notified. They should try to identify proper solution. This way, assistance to least developed developing countries could be provided through the system. Also, the role of the system in promoting R & D in the field of appropriate technology should be fulfilled.

CICD could, in the initial, pilot, phase act as a coordinating centre of ISTP, assisting national centres in training of personnel, in advising the national centres in implementing the methodology of gathering, assessing and processing data and information on available technologies and projects and holding seminars for users of ISTP, both on the demand and the supply side. It could also assist national centres in information services development as well as in establishing other relevant data bases on economic, legal and other relevant business aspects under which a transfer of technology or joint investment can be undertaken in respective countries.

CICD should be responsible for the continuous upgrading of the methodology of the system; suggestions for such further development are expected from all participating national centres.

### 8.1. Exchange of information

Transfer of information between the national centres should be organized in stages. Initially, each national focal point should prepare a national inventory of about 100 different appropriate technologies/projects available for transfer. These data should then be made available to each of the participating national centres both in written form (loose leaf printed catalogue) as well as computer-processed (diskettes) form for their use.

Those national centres which might already possess adequate telecommunication means (telex, telefax) or could use public networks may test these possibilities, particularly for the transmission of data at the regional level. In cooperation with UNIDO, their network established for exchange of information gathered within INTIB, could be used also for ISTP. Similar cooperation with other established international networks should be explored as well.

### 8.2. Coordinating Advisory Committee

The supervision of the functioning of the network should be carried out through a special committee, made up of representative from each national centre.

ISTP Advisory Committee will monitor the work and assist national centres in management and technical aspects of the system. It is proposed that Advisory Board meets bi-annually. Secretarial services for the Board, which should be kept at the minimum, should be carried out by a coordinator of the ISTP in its initial stage. Financial resources to cover expenses will have to be provided either from various multilateral agencies, including UN or by the participating national centres themselves.

### 8.3. Financing

Each national centre's budget should be covered by its respective participating member. Besides local costs the national centres should also



cover part of the common pilot project costs. At the initial stage, some assistance from multilateral institutions is expected to cover part of the common project costs.

As already mentioned, it would be advisable that the system first be established among a limited number( 6-8) of more developed developing countries. These countries already have the technological capability to develop appropriate technology, and also have experience in transfer of technology. Thus the set-up process could be simpler and quicker than in cases of less developed countries. Once the system becomes operational at the pilot stage, its upgrading and opening up to new members can be envisaged.

Even though the national centres need not be connected with the local government, strong government support of the system could contribute constructively to its functioning. Through supportive policies, governments could facilitate the flow of appropriate technology/projects and create an additionally stimulating economic environment for South-South cooperation.

One of the tasks of the participating national centres, but in particularly of the initiator of the system, CICD, should be continuous monitoring of the functioning of the system, with identification of measures and instruments with which the governments could contribute to a more successful operation of the system. In view of the so often stressed dedication to closer economic and technical cooperation among developing countries at governmental level, it is believed that such suggestions could be promptly implemented.

#### 9. Coordination with existing UN information systems

ISTP should benefit from existing UN specialized information systems like INTIB, TIPS, etc. and link its national centres to them in order to enlarge its potential for servicing SMEs. There is a need for coordination between ISTP and the mentioned information systems in order to ensure the most appropriate and efficient flow of information from/to enterprises and SMEs.

Cooperation with UNIDO/INTIB is to be focused especially on possibilities that ISTP network uses, where appropriate, the communication facilities established by INTIB for the linkage between its focal points. Also, some of the dimensions of INTIB and ISTP are rather similar: the efforts in developing ISTP should be coordinated to avoid duplication.

## 10. Future possibilities


It is expected that ISTP will, due to its business-oriented information services, have a satisfactory number of potential users in developing as well as in developed countries, particularly among the promoters of SMEs and technological cooperation, and become an economically and technically viable enterprise. With the dynamic development of communications software and hardware, the system will have new options in its further development.

Developments in decision support systems are bringing new challenges. Here we are thinking particularly of eventual development of expert systems which could assist not only the experts of the centres in evaluating specific technologies/projects available for transfer, but also help the potential investor to choose an appropriate technology/project from the system's inventory according to his original needs and local economic, legal and infrastructure conditions.

Such an expert system could compare the requirements of the investor with the conditions required for successful implementation of the transfer of particular technology or conditions required for setting up a specific project. Even modifications of offered technologies/projects could be simulated with the use of proper computer programs.

Another field where the world is making tremendous progress and where developing countries should strive to fully participate is telecommunications, particularly dissemination of information via satellite. Once an infrastructure for telecommunications between developing countries is established, the communications within the ISTP would be dramatically facilitated and much faster contacts between national centres could be established. Here, the national experiences of participating countries in satellite communications could be beneficial. Improved communication links would also enable the processing of broader and more detailed information, as well as even simpler and more flexible use of the information already stored in the systems.

From the very beginning onwards the system should be treated as living organism, which should and must continuously adapt themselves to its surroundings in order to fulfill their basic objective: to serve developing countries in their development process.

Year	Edition	Origin	Contractor	Code YU	ISIC
<b>© BASIC INFORMATION ON TECHNOLOGY - PROJECT</b>					
<b>Description</b>					
Estimated Project Cost				USD	
Estimated Technological Plant Cost				USD	
Capacity in (m,m <sup>2</sup> ,m <sup>3</sup> ,t,pcs) per year at      Shifts					
Floor Space (m <sup>2</sup> )			Production		
			Storage		
			Other		
N <sup>o</sup> of Employees				Unskilled	Skilled
				Tech.Staff	Other
Contacting Mode		Engineering <input type="checkbox"/>		Turn - key <input type="checkbox"/>	Others <input type="checkbox"/>
Financial Aspects					
Ecological Aspects					
Additional Information					
Project code registered within the Information System on Technologies and Projects (ISTP) developed by CIGD Yugoslavia - tix: 32139 YUJCS/CIGD					

Basic Information on Technology - Project is not an Offer but merely an Invitation to Treat

Year 1989	Edition 1	Origin YU	Contractor SL 049 - NNV	Code YU 011320 - 0364	ISIC 3813
<b>© BASIC INFORMATION ON TECHNOLOGY - PROJECT</b>					
Project		FIREPROOF DOOR PRODUCTION			
<p>Description</p> <p>PRODUCT: 60', 90', 120' fireproof single and double doors.</p> <p>APPLICATION: apartment houses, administrative and public buildings.</p> <p>TECHNICAL DESCRIPTION: Basic material is a fireproof board of required technical characteristics and thickness, laminated or veneered according to customer's order. Door frame is made of stainless or varnished sheet metal. Metal parts of door post are executed like those for the corresponding joinery. Other parts include standard products for wooden doors, except the keyhole which must not be made of a casting whose melting point is below 1000° C.</p>					
Estimated Project Cost			USD	800,000	
Estimated Technological Plant Cost			USD	250,000	
Capacity in (m, m <sup>2</sup> , m <sup>3</sup> , t, pcs) per year at 1 Shifts			3000 pcs. mod. 800 x 2000		
Floor Space (m <sup>2</sup> )		Production	440		
		Storage	105		
		Other	80		
N <sup>o</sup> of Employees			Unskilled	Skilled	Tech. Staff
			5	4	3
Contacting Mode			Engineering x	Turn-key	Others
Financial Aspects		As agreed			
Ecological Aspects		Cleaning device is necessary			
<p>Additional Information</p> <ul style="list-style-type: none"> <li>- The equipment and liquid waste treatment plant for the varnishing shop are not included in the Project Cost Estimate.</li> <li>- In the framework of consultancy we offer designing services and know-how.</li> </ul> <p>Liquid waste treatment plant in the varnishing shop is necessary</p>					
<p>Project code registered within the Information System on Technologies and Projects (ISTP) developed by CIGD Yugoslavia - ttx: 32139 YUJCS/CIGD</p>					



Basic Information on Technology - Project is not an Offer but merely an Invitation to Treat



<b>Year</b> 1989	<b>Edition</b> 1	<b>Origin</b> YU	<b>Contractor</b> SL 037 - IMP
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**© BASIC INFORMATION ON TECHNOLOGY-PROJECT**

**Description**

**PRODUCT:** Circulating pump GHN-R  
 Hydraulic flow range of the GHN-R circulating pumps with three speeds is  $0,5 \times 10^{-3}$  to  $14 \times 10^{-3} \text{ m}^3/\text{s}$  (1,8 to 50,4  $\text{m}^3/\text{h}$ ) at the pressure up to  $1,2 \times 10^5 \text{ Pa}$  (1,2 bar).  
**APPLICATION:** The GHN-R group circulating pumps are used for flow of hot and cold water in heating and cooling systems, where forced water circulation is required. These circulating pumps are used for system - operational pressure of 6 bar. Temperature of fluid should not exceed 120°C (393K).  
**PRODUCT DESCRIPTION:** The pumps are of single-step design, centrifugal with spiral casing. The pump and a built-in motor constitute a unit. Impeller is of closed performance and is made of stainless steel. Metal construction of the impeller prevents accumulation of residues contained in flow medium. Carefully designed vanes of impeller and the spiral construction of the casing provide smooth work of the pump and optimum hydraulic efficiency.

<b>Project Cost Estimate</b>	<b>US \$</b>	-
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<b>Technology &amp; Production Equipment Cost Estimate</b>	<b>US \$</b>	4,000,000
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<b>Capacity in (m, m<sup>2</sup>, m<sup>3</sup>, t, pcs) per Year at ...1.... Shifts</b>	20,000 pcs
--	------------

<b>Floor Space (m<sup>2</sup>)</b>	<b>Production</b>	1,500
	<b>Storage</b>	400
	<b>Other</b>	200

<b>N° of Employees</b>	<b>Unskilled</b>	<b>Skilled</b>	<b>Tech. Staff</b>	<b>Other</b>
	68	8	10	4

<b>Contracting Mode</b>	<b>Engineering</b> <input checked="" type="checkbox"/>	<b>Turn-key</b> <input checked="" type="checkbox"/>	<b>Others</b> <input checked="" type="checkbox"/>
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**Financial Aspects** As agreed.

**Ecological Aspects** There are no negative influences on environment.

**Additional information**

Complete know-how is offered for production of these pumps

- complete technology with required mechanical equipment and tools
- designs for complete factory (production, energy supply and administration part)
- maintenance, instructions and technological assistance

Project code registered within the  
**Information System on Technologies and Projects (ISTP)** developed by **CICD**  
 Yugoslavia - tlx: 32139 YUJCS/CICD



Basic Information on Technology-Project is not an Offer but merely and invitation to Treat

<b>Year</b> 88	<b>Edition</b> 2	<b>Origin</b> YU	<b>Contractor</b> SL 027 - UMG
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**© BASIC INFORMATION ON TECHNOLOGY-PROJECT**

**Spring Mattress Production**


**Description**

Production program: spring mattress of 90 - 180 cm width, and 100 - 200 length. Construction: spring core, basic filling (coir fibre), supplementary filling (natural or synthetic wadding, foam). Technological process includes manufacture of spring core, and cover sewing while filling materials are purchased in the market for direct use in production. Technology for preparation of filling materials (basic and supplementary) is available as well, however the cost of machinery and equipment will be increased accordingly. Selected machinery and equipment are made by European manufacturers, proven in practice. Modifications are available, whereby the total investment cost varies accordingly.

<b>Project Cost Estimate</b>	<b>US \$</b>	approx. 500,000 (cost of infrastructure not included)			
<b>Technology &amp; Production Equipment Cost Estimate</b>	<b>US \$</b>	approx. 250,000			
<b>Capacity in (m, m<sup>2</sup>, m<sup>3</sup>, t, pcs) per Year at one Shifts</b>		30,000 pcs (dim. 190 x 90 cm)			
<b>Floor Space (m<sup>2</sup>)</b>	<b>Production</b>	700			
	<b>Storage</b>	640			
	<b>Other</b>	300			
<b>N° of Employees</b>	20	<b>Unskilled</b>	<b>Skilled</b>	<b>Tech. Staff</b>	<b>Other</b>
<b>Contracting Mode</b>	<b>Engineering</b>	<input type="checkbox"/>	<b>Turn-key</b>	<input checked="" type="checkbox"/>	<b>Others</b>
<b>Financial Aspects</b>	To be agreed upon.				
<b>Ecological Aspects</b>	No pollution side effects.				
<b>Additional Information</b>					
The output capacity highly depends on the workers' skill, work organization and adequate production series.					
Project code registered within the Information System on Technologies and Projects (ISTP) developed by RCCDC, Yugoslavia - tlx: 32139 YUJCS/DVR					



Basic Information on Technology-Project is not an Offer but merely an Invitation to Treat

Year 1989	Edition 1	Origin YU	Contractor SL 048 - JD	Code YU 011930 - 0363	ISIC 3521	
<b>© BASIC INFORMATION ON TECHNOLOGY - PROJECT</b>						
<b>Project</b>		<b>PLASTIFIED MINERAL PLASTERS PRODUCTION</b>				
<b>Description</b>						
<p><b>PRODUCT:</b> Plastified Mineral Coarse Package Plasters, based on hydraulic binders, quartz aggregates and acrylic emulsion.</p> <p><b>APPLICATION:</b> Plasters are intended for the protection and decoration of the usual exterior and interior wall surfaces: cement or cement - lime plasters, concretes, asbestos - cement panels (houses, hospitals, hotels, schools, banks, public places).</p> <p><b>MANUFACTURING PROCESS:</b> Large batch (over 10.000 t.p.y.) process which includes:</p> <ul style="list-style-type: none"> <li>- Automatic raw materials preparing</li> <li>- Automatic preparing of additives mixtures</li> <li>- Programmed mixing of compounds</li> <li>- Packing and palletizing of product</li> <li>- Product storage</li> </ul> <p>The total process is computer aided.</p>						
Estimated Project Cost			USD	3,000,000		
Estimated Technological Plant Cost			USD	2,700,000		
Capacity in (m,m <sup>2</sup> ,m <sup>3</sup> ,t,pcs) per year at 2 Shifts			10.000 t.p.y.			
Floor Space (m <sup>2</sup> )		Production	500			
		Storage	1,000			
		Other	150			
N <sup>o</sup> of Employees			Unskilled	Skilled	Tech.Staff	Other
			-	2	4	-
Contacting Mode		Enginnering <input checked="" type="checkbox"/> Turn - key <input type="checkbox"/> Others <input checked="" type="checkbox"/>				
Financial Aspects		As agreed				
Ecological Aspects		Clear process				
<b>Additional Information</b>						
<p>The above mentioned capacity is a technological one and depends from the monthly season oscillations. In two shifts a monthly capacity of 2000 t is possible.</p> <p>For the realisation of the transfer of the technology and know-how our estimate includes also training of personnel, supervision of the test run and the necessary technical assistance. Partial supply of the raw materials for the start-up of production is possible.</p>						
Project code registred within the Information System on Technologies and Projects (ISTP) developed by CIGD Yugoslavia - tix: 32139 YUJCS/CIGD 						

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**CENTER ZA MEDNARODNO SODELOVANJE IN RAZVOJ, LJUBLJANA**  
**Centre for International Cooperation and Development**

Yugoslavia • 61109 Ljubljana • Kardeljeva ploščad 1 • P.O.B. 97

EXPERT GROUP MEETING

on

INFORMATION SYSTEM ON TECHNOLOGIES AND PROJECTS

April 18-20, 1990, Bled, Yugoslavia

R E P O R T

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CICD expresses its gratitude to the following sponsors of the Expert Group Meeting: Group of 77, UNIDO, and from Yugoslavia: A-banka (general sponsor), Institut Jožef Štefan, Pliva, Slovenske železarne for their support and cooperation in preparation of the workshop.



## C O N T E N T S

- I. Introduction
- II. Background
- III. Opening of the Meeting
- IV. Presentation of papers
- V. Conclusions and Recommendations

### Annexes

- I. List of participants
- II. Program
- III. List of documents
- IV. Project proposal for pilot stage of ISTP

## I. Introduction

1. The Expert Group Meeting on Information System on Technologies and Projects was held in Bled, Yugoslavia, from 18-20 April, 1990. The Meeting was organized by the Centre for International Cooperation (CICD) in cooperation with Group of 77 - Perez Guerrero Trust Fund and UNIDO. It was attended by 25 participants from 7 developing countries, regional institutions and representatives of international organizations (see Annex I.).

2. The purpose of the Meeting was:

- to assess the draft prefeasibility report, prepared by CICD on Information System on Technologies and Projects, as requested by the project outline,
- to agree on development of the international network among the national centres for ISTP in different countries,
- to prepare the institutional framework for practical approach to the implementation of the pilot stage of the ISTP, including the preparation of the project proposal.

## II. Background

3. Lack of information is one of the most serious obstacles to the selection, acquisition and application of appropriate technology options in developing countries. Some of the newly industrialized countries among the developing countries have in their process of industrialization achieved the level of technological capability at which they are able not only to adapt imported technologies to their own local conditions and develop appropriate technologies but also transfer them (or projects embodying them) to other developing countries. Yet exchange of knowledge on available appropriate technologies/projects is not adequately developed.

4. There is a number of difficulties encountered in collecting and processing of information at the national level and/or in dissemination of collected information both nationally and internationally. There is a need for permanent flow of information, based on systematic, standardized collection, processing and dissemination of information on technologies and projects.

5. The Centre for International Cooperation and Development (previously known as Research Centre for Cooperation with Developing Countries - RCCDC) designed a computer-based system for gathering, processing, filling and transmission of information on technologies available in Yugoslavia for transfer to other developing countries. While the initial orientation of CICD was to promote technical cooperation among developing countries with providing more information on possibilities

for such cooperation, the system also enables the creation of a national inventory of available technologies.

6. The Centre for International Cooperation and Development and UNIDO have jointly organized an Expert Group Meeting on Exchange of Information on Available Technologies in the Field of Small and Medium Scale Industries in Ljubljana, Yugoslavia, from 12-14 April, 1988. The participants from nine countries discussed the existing international information systems and the system developed by CICD. It was strongly felt that there is a need for a more business-oriented, user-friendly international information system on suitable technologies/projects available for transfer among developing countries. Particular attention should be given to such information appropriate for small and medium sized enterprises in developing countries.

7. CICD has already undertaken a number of activities in further development of ISTP international network as well as of national centres in a number of developing countries. Under UNIDO support, consultancy to Technology Transfer Centre, Ghana, on the establishment of a national centre has already been carried out, while others are in preparatory stages. With the assistance of Perez Guerrero Fund, CICD has engaged in the preparation of a feasibility study which concentrates on detailed elaboration of an international network, with attention to the necessary institutional arrangements.

8. Within the project, coordinated by the Chairman of the Group of 77 and financially supported through Perez Guerrero Fund, this expert group meeting with objective to validate the feasibility study and set the timetable for the ISTP pilot stage is organized.

### III. Opening of the Meeting

9. The Meeting was opened by Ms. Maja Košak, CICD Director, who welcomed the participating experts, observers and guests on behalf of CICD. The representative of the Federal Secretariat of Foreign Affairs, Mr. V. Srečkovič greeted the participants and stressed the importance of such meetings for the South-South co-operation. On behalf of Committee for Science and Technology of Republic of Slovenia, Mr. B. Pretnar welcomed the Expert Group Meeting and pointed out the importance of technology transfer among developing countries in the light of current developments in the field of technology. Both speakers wished the participants successful and constructive work.

10. The participants acknowledged the message sent to the EGM by the Chairman of the Group of 77, who wished the EGM a complete success. Also, they were informed of the keen interest of the Special Unit TCDC/INRES- SOUTH in ISTP project and its willingness to collaborate with the proposed network, as conveyed to the participants by the Head of the UNDP/TCDC Special Unit, Mr. Chada.

11. The participants adopted the proposed Programme of the EGM and elected Chairmen of each session (Annex 2). It was also agreed that the Report of the Meeting is to be prepared by CICD.

#### IV. Presentation of papers

12. During the Meeting, the draft prefeasibility study on Information System on Technologies and Projects was presented by CICD. The representatives of regional institutions ( Asian and Pacific Center for Technology Transfer, African Regional Center for Technology and SELA) shared with the experts their experience in gathering information on technologies and presented their views on ISTP. Experts from individual countries presented their papers ( Annex 3).

13. The representative of UNIDO referred in his presentation to UNIDO's activities related to the promotion of economic and technical cooperation among developing countries. These activities enjoy a high priority in UNIDO's programme. Through its action-oriented programmes, UNIDO has been assisting developing countries in identifying and making greater use of the technologies and know-how originated in other developing countries. UNIDO's cooperation with CICD on development of ISTP goes back to 1988, when UNIDO and CICD held first workshop to discuss ISTP's potential to become an international system. Within its overall programme on support to South - South cooperation UNIDO is willing to contribute to the implementation of the ISTP with its orientation on TCDC and SMEs.

14. The CICD proposal on the development of ISTP into an international network was extensively discussed. CICD also presented its experience in organizing the ISTP in Yugoslavia. A detailed presentation was given of the methodology used in the process of gathering and processing information as well as of the software, supporting this methodology.

15. The basic principle of ISTP, i.e. its orientation towards identification, selection and processing of information suitable to the environment found in developing countries, in particular for small and medium-sized enterprises, was supported by the experts.

#### V. Conclusions and Recommendations

16. As a result of thorough discussion of all contributors, the following Conclusions and Recommendations were reached:

17. The participants felt that there is a need to further strengthen, develop and diversify the cooperation among developing countries in the field of exchange of information on technologies and projects available for transfer. The meeting also noted a number of difficulties encountered in collecting and processing of information on one hand and of successful dissemination of collected information to the business enterprises. The need for permanent flow of information on technologies and projects, gathered by national centres and based on commercial interest of all parties was thus stressed.

18. Experts pointed out that small and medium scale enterprises play an important role in the national economies of developing countries, but need special assistance in identification of proper technology

information. Successful transfer of technology to small and medium enterprises requires a national center to play also an important consultancy role, both in the process of identifying the information on technologies available as well as in the process of selecting the most appropriate one.

19. The Meeting recognized that the establishment of a successful information system on technologies and projects is a very complex task with a number of issues to be addressed in its preparation. However, the experts felt that step-by-step approach can be the most viable way of moving from the initial idea to the implementation of the system. In this regard, it was felt that more complex and newly raised questions should be addressed as the development of ISTP progresses.

20. ISTP should benefit from the existing UN specialized information systems, especially those within UNIDO and UNDP. There is a need for coordination between ISTP and the mentioned information systems in order to ensure the most appropriate and efficient South-South flow of information on technologies and projects and avoid eventual duplication.

21. In the light of the conclusions reached at the Meeting, the experts agreed to recommend that the pilot stage as envisaged in the prefeasibility study, prepared by CICD for the implementation of the ISTP at the international level, is to be launched. To this purpose, a project proposal on Information System on Technologies and Projects of selected developing countries (pilot stage) is put forward by the experts. (Annex IV)

Annex I

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Annex II

EXPERT GROUP MEETING

on

INFORMATION SYSTEM ON TECHNOLOGIES AND PROJECTS

April 18-20, 1990, Bled, Yugoslavia

PROGRAM

Tuesday, April 17

Arrival of guests to Hotel TOPLICE, Bled.

From 17.00 on: Registration of participants

Wednesday, April 18

8.00 - 9.00: Registration

9.00: Opening of the meeting:

- adoption of agenda
- election of the chairman and rapporteurs

9.45 - 10.00: Coffee, tea break

10.00 - 12.30: Working session:

Chairman: Sogut Atilla, Turkey

- ISTP presentation by CICD
- Presentation by UNIDO, Mr. Constantin
- Presentation by Asian and Pacific Centre for Transfer of Technology
- Presentation by African Regional Center for Technology
- Presentation by Sistema Economica Latino-americana

12.30 - 15.30: Lunch

15.30 - 18.30: Country presentations by experts

Chairman: S. K. Kinra, India

- Zimbabwe
- India
- Argentina
- Turkey
- Indonesia

Comments by observers:

- IFC
- WASME
- Indian Industrial Bank
- INSTRAW
- UN Center for Science and Technology

19.30: Reception

Thursday, April 19

9.00 - 10.30: Working session: discussion of draft feasibility study

Chairman: Mike Humphrey, Zimbabwe

10.30 - 11.00: Coffee break

11.00 - 12.30: Working session

12.30 - 15.30: Lunch

15.30: Visit to the "ELAN" factory

19.00: Dinner

Friday, April 20

9.30 - 10.30: Adoption of feasibility study

10.30 - 11.00: Closing of the Meeting



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Annex III

EXPERT GROUP MEETING  
on  
INFORMATION SYSTEM ON TECHNOLOGIES AND PROJECTS  
April 18-20, 1990, Bled, Yugoslavia

LIST OF THE PRESENTED DOCUMENTS

1. Technology Information: An Integrated Approach in Asia and the Pacific, S. M. Juanid Zaidi
2. SME Related Services Through Management Information System, Mehmet Atilla Sogut
3. Small Industry Development Organization, General Directorate, SIDO
4. General Information List According to the Firm Namr, SIDO
5. Presentation of India, S. K. Kinra
6. Industrial Information Centre, Ministry of Industry - Indonesia
7. INTIB Programme - An Overview, Prepared by the UNIDO Secretariat
8. Presentation by World Assembly of Small & Medium Enterprises (WASME), Brigarier G. S. Ahuja
9. Draft Prefeasibility Study, Information System on Technologies and Projects, Maja Košak
10. ARCT's Activities in the Field of Industrial and Technological Information

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Annex IV

EXPERT GROUP MEETING  
ON  
INFORMATION SYSTEM ON TECHNOLOGIES AND PROJECTS  
April 18-20, 1990, Bled, Yugoslavia

PROJECT PROPOSAL FOR PILOT STAGE OF ISTP

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### 1. Title

Information System on Technologies and Projects of selected developing countries - Pilot Stage

### 2. Development Objective

To develop a mechanism of information exchange on technologies and projects available for transfer in the participating developing countries.

### 3. Immediate Objectives

a) To identify appropriate institutions in developing countries which would serve as national centres for identification, processing and exchange of information;

b) To stimulate collection of indigenously developed technologies and projects available for transfer in each of the participating countries and thus creating national inventories of such technologies and projects and making it available to SMEs;

c) To provide necessary training to the staff at the national centres;

d) To create linkages among the identified national centres so as to catalyze the process of technology transfer among the developing countries.

### 4. Background and justification

Lack of information is one of the most serious obstacles to selection, acquisition and application of appropriate technology options in developing countries. Some of the newly industrialized countries in their process of industrialization have achieved the level of technological capability at which they are able not only to adapt imported technologies to their own local conditions and develop appropriate technologies but also transfer them (or projects embodying them) to other developing countries. Yet exchange of knowledge on available appropriate technologies/projects is not adequately developed.

Realizing the importance of such information, CIGD established a system for gathering, processing, analysing and distributing of information on technologies and projects, available for transfer to other developing countries.

Building up ISTP meant to CIGD a new, original way to promote enterprise to enterprise South-South cooperation based on selected commercially available technologies and projects in Yugoslavia and linking them with potential needs and technological requirements in other developing countries. Experience of the CIGD in working of this system had so far been very satisfactory.

CIGD and UNIDO organized an expert group meeting on the exchange of information between developing countries on available technologies in the field of small- and medium- sized industries, which was held at

Ljubljana from 12 to 14 April, 1988. The meeting aimed at identifying appropriate national system in developing countries to ensure a permanent flow of information on locally available technologies, particularly within small- and medium- sized industries.

After intensive discussion, the experts, who came from Algeria, Argentina, China, Egypt, India, Pakistan, Romania, Turkey and Yugoslavia, supported the proposal of CICD to establish an international information system on technologies and projects (ISTP). This network of national centres would aim at identifying, selecting and processing information existing in developing countries available for transfer to other developing countries.

It was recognized that a considerable reservoir of technologies existed in developing countries regardless of their different levels of industrial development, and that considerable progress had been made in collecting information in different national institutions. What was needed, however, was a more business-oriented and user-friendly international information system, which would enable information on those technologies to be exchanged.

Then CICD got the mandate of the Group of 77 to carry out the prefeasibility study on implementing ISTP in other selected developing countries. Therefore CICD in collaboration with other regional and international institutions and with the financial assistance from Perez Guerrero Fund, UNIDO Fund of Solidarity for Nonaligned and other Developing Countries (Yugoslavia) organized an expert group meeting at Bled, from April 18 - 20, 1990. The meeting unionously agreed to set up the network and prepared the project document for obtaining fundings from the possible donors.

## 5. Proposed network

### a) duration

Two years from the day of securing financial support - tentatively to start by January, 1991.

### b) participants and headquarter

In the pilot stage the network will compsize of CICD (as coordinator), the regional centres from Asia (APCTT), Africa (ARCT) and Latin America (to be decided later on) and "national centres" from the developing countries. The membership will be extended later on. CICD will be the headquarters of the network.

### c) programme of activities with expected dates of completion

#### 1. Identification of National Centres

March 91

CICD in collaboration with the regional centres will identify national centres in the countries. The participants of the expert group meeting will assist in identification of the national centres.

2. Preparation of Training Course Material April 91

CICD in consultation with the regional centres and with the help of independent consultants and international organizations (like UNIDO and TIPS) will prepare course material for the training of staff.

3. Meeting of the Heads of National Centres (2 days) May 91

CICD will call a meeting of the heads of the identified national centres to chalk out a programme of action and to get a firm commitment. Representative of regional and international organization will also be invited /8 heads + 2 Representatives of Regional Institutions + 4 from International organizations would be expected to participate/.

4. Training of Information Collectors June 91

At the regional centres the information collectors (2 from each centre) will be provided comprehensive hands on training based on the material prepared earlier.

5. First stage of collection of Information October 91

On the basis of training provided at the regional centres, information will be collected at the national centres.

6. Follow up training at the National Centres December 91

At the second stage, training will be provided at the national centres. The information collectors who get the training at the regional centres, representative of the CICD and of corresponding regional centre will serve as resource persons for the national level training.

7. Second stage of collection of information June 92

Information collections at the national level will be intensified and a survey will be carried out on the status of technologies and projects collected so far.

8. Workshop to share the experiences of information collectors (2-day) September 92

An interactive workshop will be organized at a common place where the information collectors will share experiences with their counterparts. In this workshop a working paper will be prepared for the meeting of the heads of the centres.

9. Final meeting of the heads of centres October 92

The 2-day meeting will analyse in detail the implementation status of the project and prepare a future course of action. Furthermore the meeting will also review final report.

10. Final Report of the project November 92

The CICD, regional centres and the national centres will jointly prepare the final report and would be circulated by the CICD.

11. Follow up activities December 92

CICD on the recommendation of the meeting of the heads of the national centres and on the basis of findings of the final report will prepare a follow up programme.

d) Budget

Host facilities to carry out the above mentioned activities will be provided by CICD, the regional centres and the national centres. CICD will be the headquarters of the network. Under the pilot stage of the project the national centres would get training course material; two representatives from each of the national centres would be given 2-week training at the regional centres, seed money would be provided for information collection, and follow-up training will be conducted at the national centres. For the implementation of the pilot stage of the project an estimated contribution of US\$ 250.000 will be requested from the donors.