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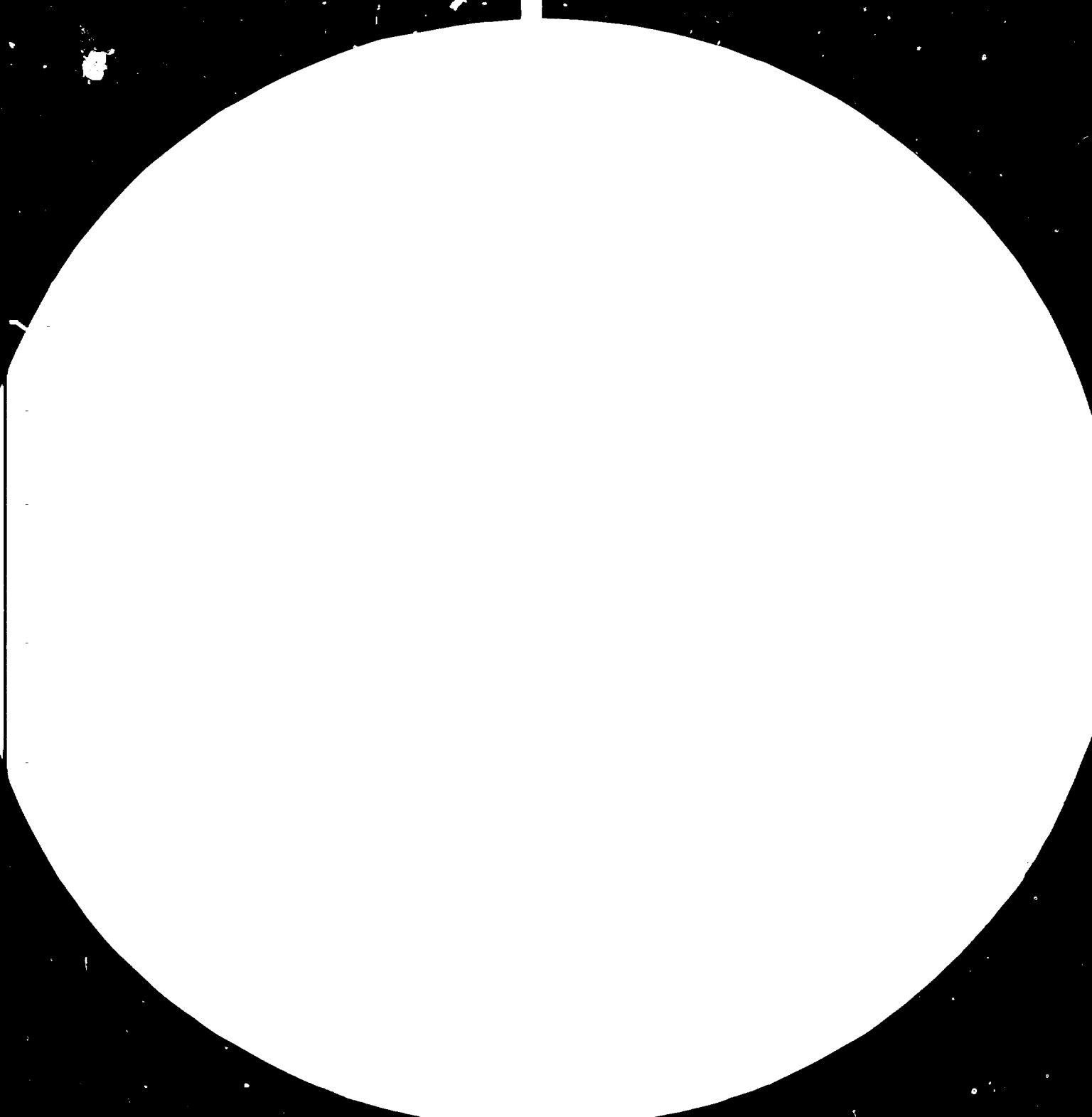
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Resolution Test Chart
1.0 1.1 1.25 1.4 1.6 1.8 2.0 2.2 2.5



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SOME CONSIDERATIONS ON REGISTRY INFORMATION
SYSTEMS

prepared by
the secretariat of UNIDO

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Introduction

In recent years developing countries became increasingly aware of the need to regulate the overall flow of technology, the need to protect the local business community from the unfair business practices of technology suppliers, to promote technology towards priority sectors of industrial development, to reduce the overall cost of importing technology, to obtain detailed information on the status of technology transfer in the country, to co-ordinate technology inflow with local R+D efforts, to promote the effective use of the imported technology and to promote technology exports. To execute such policies, many countries established technology transfer registries. The co-ordinating and promotional functions have not been included in this overview as separate activities. With respect to promotional activities it is assumed that the information necessary for this activity is compatible to the information requirements for evaluation. A detailed description of the organization, functions and activities of National Technology Transfer Regulatory Agencies can be found in UNIDO document UNIDO/IS.236.

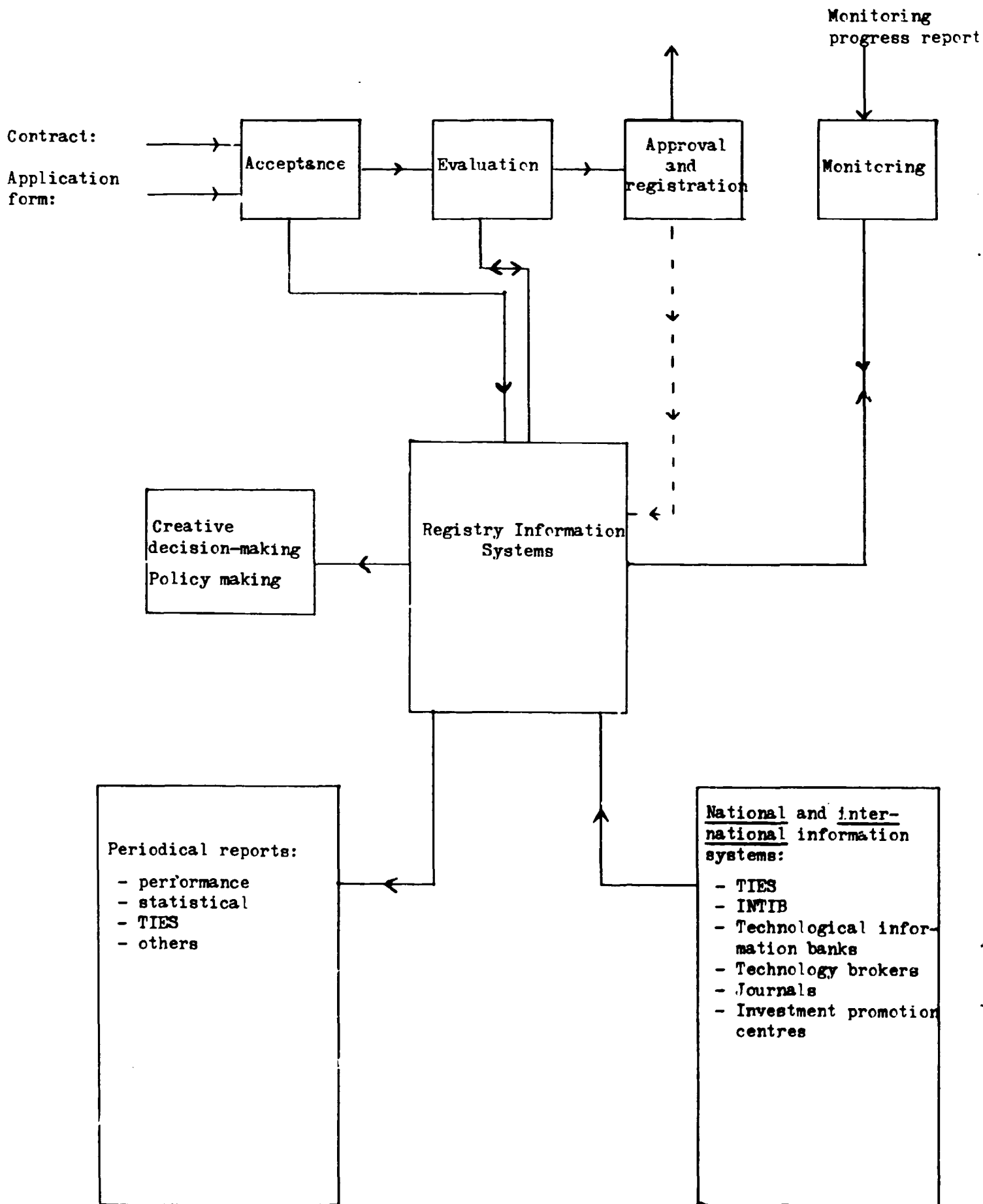
A salient activity, common to all registries, is the authority to approve technology transfer contracts. In order to perform the functions assigned to a registry in the optimum way, information systems have been designed. The TIES information exchange system is in many cases part of the system.

This paper will briefly describe the information flow in a registry and based on a global input/output model of such an information system, will briefly touch upon the possibility of computerization.

Information Flow in a Technology Transfer Registry

Figure I is a schematic overview of the data flow in a technology transfer registry. This flow is based on the principal operational steps involved, namely application, evaluation (technical, economical and legal), approval, registering and monitoring of technology transfer contracts. In addition, several functions of a support nature can be identified, like periodic reporting, studies and performance evaluation.

INFORMATION FLOW IN A TECHNOLOGY TRANSFER REGISTRY



In some registries, certain operational functions such as technical evaluation are performed by other governmental offices. However, in this schematic overview it has been assumed that all operations are performed by the registry.

Generally speaking there are three levels of activity in a registry:

- (a) routine operations and reflex actions
- (b) well-defined management operations
- (c) strategic planning and creative decision-making.

Data required for these three levels are likely to differ in their structure. The data for routine processing, like periodic reporting, may be in files tightly designed for these operations while the data for well defined human operations will be organized for specific human inquiry or dialogue. What is much more difficult to determine is the information needed for strategic planning and creative decision-making. It may be best defined as that being specific information which is required upon a special request and will depend a great deal on the individual decision-maker.

Routine Operations and Reflex Actions

In figure I can be observed that in this category fall periodic reporting, including such items as data for:

- (1) trends and characteristics of contractual inflow
- (2) efficiency and results of intervention
- (3) information reports for the national business community
- (4) economic technology reports for the national scientific community and
- (5) information on technology inflow for international organizations (TIES). Data requirements for these activities are of a standard routine nature. A more detailed listing of these activities is annexed (annex I).

Well Defined Management Operations

There are basically two well-defined management operations which require information on a day by day basis, namely evaluation and monitoring of technology transfer contracts. Both evaluation and monitoring of technology

transfer contracts are usually guided by internal guidelines which will clearly determine the evaluation criteria. These criteria will depend on the national legislation and technology policy and will therefore differ from country to country.

However, it can be argued that for a proper evaluation a minimum of information is required with respect to:

- a. recipient company (including capital structure)
- b. supplier company
- c. supplier-recipient equity links
- d. product
- e. technology process
- f. collaboration type
- g. form and amount of payments
- h. project economics (sales estimates, cost of production, technology turnover (TTF), licensor share of Enterprise profit (LSEP) etc)
- i. conditions (restrictions, guarantees, warrentees, etc.)

In addition the evaluator may require information on:

1. other contracts of supplier company (both national or other countries)
2. average royalty of industrial sector (national, regional and global)
3. contractual conditions by sector
4. general economic data of industrial sector
5. average TTF factor by sector
6. average LSEP factor by sector
7. local technological capabilities by sector
8. alternative technology suppliers

Such information should be supplied on a case by case basis. Similar breakdown of the information requirements while monitoring a technology transfer contract would read:

- a. actual payments to technology supplier
- b. economics of the enterprise (real
 - production
 - turnover
 - profits
 - exports
 - employees
 - others
- c. technology absorbtions

In addition, a monitoring would require information on:

1. actual contract in force
2. all information collected during evaluation process

Strategic Planning and Creative Decision Making

The information obtained through the five operational steps is of great importance for the top management of the registry. The experience will guide the top management in areas like: technology policy planning, development of appropriate evaluation and monitoring criteria, administrative policies etc.

To guide this planning and creative decision-making certain information needs may become apparent in the course of the operational activities. As no general guidelines are available for information needs it can be at best defined as ad-hoc information.

Information Sources

In order to comply with the defined information needs, a registry has at its disposition three regular and unique information sources, namely:

1. the technology transfer contract which is subject to approval
2. application form
3. monitoring form

(A breakdown of the information usually obtained is annexed as an example.)

In addition to these sources a registry has the disposition of national and international information systems. With respect to international systems particularly relevant are, inter alia:

Contractual conditions

1. UNIDO's Technological Information Exchange System (TIES)

Alternative technologies

2. UNIDO's Industrial Technological Information Bank (INTIB)
3. Other industrial technological banks like:
National Research Development Corporation (UK)
National Research Development Council (India)
INFOTEC (Mexico)
4. Private technological brokers like:
World Tech Division of Control Data Corporations (USA)
Dr. Dvorkovitz and Associates (USA)
5. Investment Promotion Centres
6. Journals

Information Processing

As can be observed from this scheme, it has been assumed that there exists one central unit in a registry where information is collected, processed and disseminated.

Generally speaking there are two ways of approach towards the information organization of such a unit.

1. manual
2. automatic

A manual operated data base will require a file data storage and a detailed index system to provide the right information at the right time.

An automatic organized data base in principle has the same function but has the advantage of handling data at a much higher speed and with greater accuracy, and can provide information almost immediately upon request.

Computerized Handling of a Registry Data Bank

It is clear that a computerized data handling system has a great advantage over a manual data processing system, as it can provide management with information which would otherwise not be available because of the physical limitations. However, the change from manual to automatically operated information systems is a complex operation. Firstly, the computer itself is a complex electronic device which requires special skills in order to set it up and operate. Secondly, the application of a computer to information systems is difficult and requires considerable expertise and ability in systems analysis.

For example, the simple input/output presented on the previous pages has to be prepared in a much more detailed way and tailored to the particular registry's needs. The selection of hardware and software will greatly depend on this exercise and several decisions with respect to the data base organization (file structure, cross linkages, etc.) should be taken.

A third important factor is that the introduction of a computer represents a challenge to the management, in particular with respect to a smooth integration of the system into the day-to-day operation of a registry. The introduction of a computer system will initiate a large number of changes if maximum benefits are to be gained.

Conclusion

As can be observed, a registry's information system may take many forms, but will within limits be compatible with those of other registries since the objectives of registries in developing countries are the same.

One of the first efforts to standardize the various information systems used has been attempted through TIES. However, the TIES system exchanges only a limited part of the total information needs of a registry. It may therefore be useful if a common approach towards the development of information systems for registries is developed, in particular when an automatization of data handling is contemplated. Such a common approach would enhance the individual information systems as it could make use of complementary information sources located in other countries.

Annex I

1. Trends and characteristics of contractual inflows:
 - (i) sectoral (ISIC) analysis of foreign holdings, recipient supplied relationships, technological items, duration, type of payment, royalty basis, royalty net sales, royalty net profit, royalty L.V.A.;
 - (ii) technology supplier country analysis of industry, product, foreign holding relationship, technological item, type of payments, royalty basis, royalty net sale;
 - (iii) analysis of selected sectors/ technological items/ royalty restrictive clauses;
 - (iv) analysis of selected sectors/ technological items/ restrictive clauses;
 - (v) analysis of selected sectors/type of agreement/royalty rate.

2. Efficiency and results of intervention:
 - (i) analysis of duration of approval process;
 - (ii) analysis of changes introduced, such as estimated foreign exchange savings, tax revenues, etc.;
 - (iii) estimated foreign exchange savings per contract - This may include useful ratios such as savings, requested foreign exchange outflow, etc.

3. Information reports for the business community:
 - trends in terms and conditions of technology transfer flow
 - technologies available
 - international trends

4. Information reports for the scientific community:
 - technological information about technologies imported
 - trends in technology transfer

5. Information on technology inflow for international organizations:

Annex II

The following is a general description of these information inputs:

(A) Contract breakdown

1. Parties
2. Date of agreement
3. Whereas
4. Definitions
 - licensed patents
 - licensed knowhow
 - licensed product
 - licensed field
 - licensed territory
5. Patent rights and knowhow granted
 - exclusive
 - non-exclusive
 - limited on right to make use or sell
 - sub-licencing rights
6. Duration of agreement and renewal provisions
7. Improvements
 - by licensor
 - by licensee
 - compensation
 - nature of rights
 - duration of requirements
 - duty and expense of seeking patent protection
8. Remuneration for licence
 - royalty
 - initial down payment
 - currency
 - exchange rate
 - minimum amount payment
 - lump sum
 - definition of basis for calculating royalties
 - invoicing and payments
 - interest rates for delay of payments
 - maximum royalties

9. Reporting
 - record to be maintained
 - inspection of accounts
 - periodic reports
10. Infringement of licensor patents
 - obligation to stop infringements
 - distribution of damages
 - continuation of infringement
11. Infringement of other patents
 - litigation costs
 - payment of damages
 - consequences of invalidation of licensed patents
12. Best efforts by licensee
 - specific efforts required
 - timetable
 - effect of failure to company
13. Technical personnel
 - purpose
 - access to facilities
 - who pays expenses
 - technical fees
 - payment of travel
 - duration of technical services
 - training
14. Subcontraction
 - matters that can be subcontracted
 - rules of arbitration
 - appeal
15. Termination
 - reason for termination
 - disposition of technology and rights upon termination
16. Force majeure
 - who is excused from performance

17. Assignment of agreement and licence
18. Most favoured licence
 - determination of favoured licences
 - notice of subsequent licences
 - exceptions
 - resolution of disputes
19. Notices and addresses
20. Integration
 - entire agreement
 - modifications
21. Languages
22. Law applicable
23. Extraction of restrictive practices from a body of a contract.

(B) Application form breakdown

Registration forms correspond with the objectives of the Registry and hence varies from country to country. In general, information on the following items is requested.

- Detailed information on recipient company, includes often capital structure;
- detailed information on supplier company;
- information about former ties between recipient and supplier;
- detailed information about the product (1) of the contract;
- information about the process object of the contract;
- information about the collaboration type including patent registration, etc.;
- detailed information about the service to be rendered by supplier company, if any;
- form and amount of payment;
- detailed information about the economics of the contract like
 - a. employment
 - b. production (projected)
 - c. exports
 - d. sales
 - e. imports
 - f. profits
- detailed information on R and D facilities.

