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GUIDELINES FOR THE DIFFUSION OF INFORMATICS
IN SMALL AND MEDIUM COMPANIES (SMC)*

Prepared by

Carlos Maria Correa
UNIDO consultant

* The views expressed in this document are those of the author and do not necessarily reflect the views of the Secretariat of UNIDO. This document has not been edited.

Introduction

The aim of this work is to provide guidelines, based on Argentinian experience, for drawing up a programme for the diffusion of informatics in small and medium companies (SMC). Developments in hardware and software and the economic and social importance of the SMC's explain the opportuneness and advisability of establishing policies on this subject.

Section I provides a methodological approximation for evaluating the state of the art in computer applications in SMC's. It includes suggestions for determining the potential demand, the use of computers in SMC's and an analysis of various modes of diffusion policies and their possible advantages and disadvantages.

Section II includes suggestions in regard to specific applications for informatics in SMC's and provides examples of the way in which to undertake the training of Users in the SMC's. Guidelines relating to the acquisition of hardware and software are briefly described: the work has been primarily developed on the basis of experience with the Dinfopyme Programme in Argentina.

Section III proposes lines of action for a programme for the diffusion of Informatics, based on the concept of the Microelectronics Application Programme in Great Britain.

1. Informatics in small and medium industries

1. Evaluation of the demand

Informatics is a powerful tool for transforming management and production activities; however its diffusion is only in an early stage in the developing countries. Such countries account for scarcely 2% of the total number of computers in the world.

Various factors, including those relating to access to knowledge and those of an economic type, particularly of scale, have so far favoured the diffusion of informatics in larger companies. With the appearance of micro-computers and the rapid progress in their cost/performance ratio, together with the general availability of software 'packets', new and vast opportunities for the application of this technology in small and medium companies (SMC's) are opening up.

Table 1 shows the annual reduction in the prices of various items of hardware; in the period between 1957 and 1978 this has been between 12% for card readers and 'punches' and 37% for internal memories. For an entire computer system the annual mean has been 28%. This marked trend continued into the present decade. It is only recently that the evolution of the micro-electronics market, and the demand for computers, seems to have stabilised prices in the sector (but for how long?).

Projections of the price trend are of particular importance when estimating the potential demand for computers, particularly in those sectors such as the SMC's where the cost factor could be decisive in the incorporation of informatics. In the United States it has been estimated that the price elasticity of the demand for 'computer power' is between 1.4 and 1.5. This means that for every 1% by which the price is reduced the demand for computer power increases by 1.4% to 1.5% (*)

(*) See Kenneth Flamm : Targeting the computer. Government support and international competition. The Brookings Institution, Washington D.C., 1987. p.30.

Table 1

The fall in hardware prices : 1957-78

Component of the system	Percentage reduction in real corrected costs
Central processing unit	32
Internal memory	37
Disc storage	28
Tape storage	28
Printers	16
Card readers and 'punches'	12
Complete computer systems	28

Given the diversity of factors which are involved in the demand for computing services it is difficult to construct a predictive model for this demand. It may be assumed that there is a direct relationship with the gross domestic product in the light of the participation of computers in capital goods and also in the productive cycle.

The projection of requirements for hardware (and for software) would be of the greatest value in establishing objectives and when determining the instruments for an informatics policy. Technological change and falling prices make an exercise of this type difficult, since the demand expands on the basis of the entry onto the market of new users. It is possible to carry out an approximate estimation by means of the analysis, over a given period t , of the relationships resulting from an equation of the following type :

$$C_t = C_t (P_t, Y_t, Z_t)$$

where :

C_t = demand for computing services

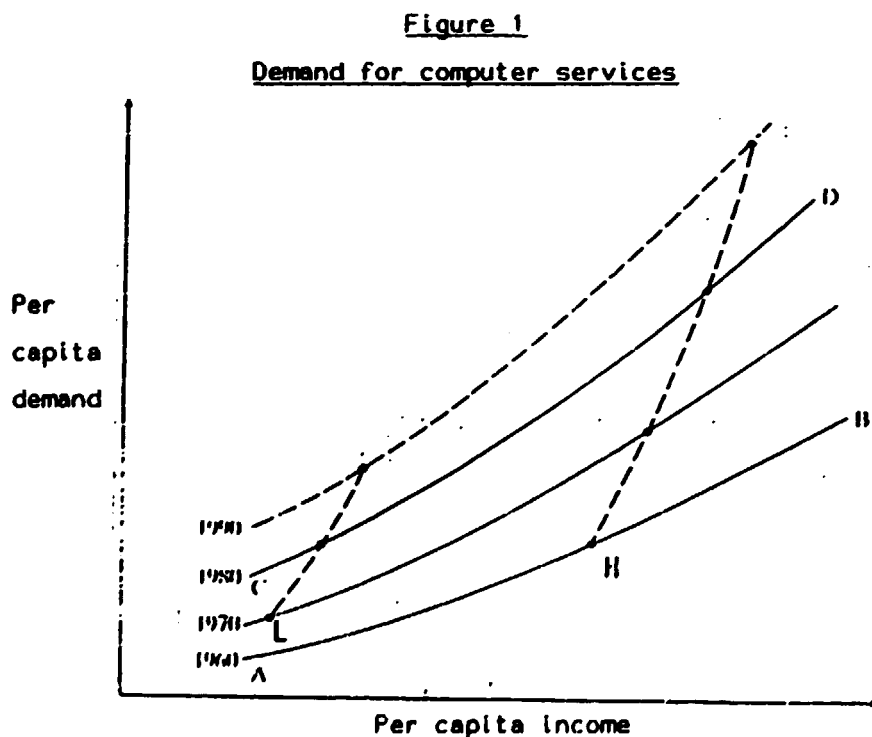
P_t = unit price

Y_t = level of economic activity or income

Z_t = other explanatory variables (very large population) (*)

(*) See M. Munasinghe : Computer and Informatics Issues and Policy for Third World Development. Information Technology for Development, Vol.2 No.4, Oxford, 1987, p.309.

It is reasonable to suppose that the size of the market is related to the level of incomes by a function, as is indicated in Figure 1. The line AB represents the relationship between the demand and per capita incomes for given costs and state of the technology. To the extent that costs are reduced and the technology advances the line is shifted upwards (eg to become CD). Another implication of the scheme set out here is that a country with low incomes (point L) can achieve progress in satisfying the demand comparatively more rapidly than a country with high incomes (point H) due to the way in which the demand-income curve rises with time.



2. Diffusion policies

The diffusion of informatics as a tool for increasing productivity is, as has already been pointed out, one of the commonest motivations for the design of informatics policies.

Policies which tend to disseminate informatics are based on the concept that an acceleration in the rate of diffusion is desirable. Whilst the truth of this statement can, in general, be maintained it is not necessarily generalisable. Very rapid or extensive diffusion may lead to an unnecessary squandering of resources and to applications where costs outrun the benefits. In fact the lack of adequate preparation, in particular of information systems, has resulted, in many countries (including those of Latin America), in capital investments which are difficult to justify and to meagre results in the light of the marginal efficiency which has been achieved. Various national plans and reports provide illustrations of this limitation (*). For example the Statutes of the Conference of Latin-American Informatics Authorities (Conferencia de Autoridades Latinoamericanas de Informatica) include amongst its objectives that of "utilising the installed infrastructure of informatics resources in a rational and efficient form...", thus implicitly recognising the accumulated deficiencies in the installation and usage of the existing computer systems. Furthermore in certain applications sectors it is necessary to bring together certain conditions if the informatisation process is to become viable. This is the case with the introduction of informatics into education, where teacher training is the key. (**)

(*) See Comisión Nacional de Informática (Argentina) : Informe, Buenos Aires, May 1985

(**) See Subsecretaría de Informática y Desarrollo (Argentina) : Informática y Educación SID Document No. 27.

Three main types of diffusion policies can be identified :

a) Improving the diffusion of information

One of the commonest theoretical premises in regard to diffusion actions is linked to the lack of knowledge on the part of potential users. It is assumed that diffusion constitutes "a process based on an imperfect spreading of information and a hesitant environment. Diffusion is not instantaneous since the information is limited, and the adoption of new technologies involves risks and uncertainty." (*)

Various countries have implemented policies of this type. One of the most interesting of these is the Microprocessor Application Project (MAP) in Great Britain. With a budget of £55m and a duration of ten years the programme is centred on the creation of incentives so that companies can analyse the introduction of microelectronics applications. The incentive takes the form of payment (of up to US\$4000) for a consultant and a subsidy of 25% on the cost of developing the products involved in such applications (**).

Similarly in the Federal Republic of Germany various programmes have been implemented since 1975 to favour the diffusion of electronics into small and medium companies, principally by way of cooperative R & D activities, by the shared use of technologies or by support to individual companies.

(*) See UNIDO : Survey of government policies in informatics op.cit., p.36.

(**) OECD : Information technology and economic prospects, Paris, 1987, p.56.

The Technology Centre of Berlin, created in 1978, is an example of such an approach, as is also the Kernforschungszentrum of Karlsruhe in the area of CAD/CAM and FMS (*). In Italy the National Applied Energy Organisation has promoted centres for the diffusion of CAD/CAM technologies in the textiles field.

Some approaches of this type have been made in Latin America. The DINFOPYME and AUTOMAT programmes in Argentina are directed towards extending knowledge of the technologies of informatics management and automation in small and medium companies. In Venezuela, based on the British MAP and with the support of the Board of the Cartagena Agreement, a programme for training consultants to assist in the introduction of informatics into SMC's has been initiated. The government - through the FIM Productividad - finances the consultancy studies necessary for this programme (**).

b) Incentives for investment

Another form of promoting diffusion includes financing for new informatics applications. Such financing can be offered both to the supplier company and also to the client. The option between both schemes raises complex questions of public policy (***)

(*) Computer Aided Design/Computer Aided Manufacture; Flexible Manufacturing Systems. About 50 consultancy companies have been preselected within the framework of this programme.

(**) Op. cit., p.29.

(***) See OECD, Information technology...., op.cit. p.59.

Incentives granted to the user have been operated in various countries. In Japan, for example, the Japan Electronic Computer Company (JECC) has financed the sale of computing equipment in order to favour the expansion of informatics applications and, at the same time, the demand for nationally produced equipment. In Brazil the "Software Law" of December 1987 established incentives for purchasers of national software.

c) Training of the users

The creation of capabilities for the use of informatics systems is one of the central objectives of the policies applied in various developing countries. Such training can be found, outside the educational ambit (*), at at least three principal levels :

i) General awareness : Aimed at familiarising the population with informatics, so facilitating their access to computers and simple software. The installation of systems based on micro-computers in further education centres, municipal centres, public libraries and clubs or centres for young people has been carried out in various ways in both developed countries (such as France) and in developing countries (Cuba, Uruguay, Colombia, etc.).

The fundamental objective of such actions is to facilitate the transition to an informatics-based society, promoting the understanding of the technology and of its multiple applications, particularly amongst the young. In any programme of this type it is essential that care be taken to ensure that the technological change is directed towards an increasing simplification in the use of informatics systems. Education in languages, which once seemed to be the basic condition for access to informatics, is clearly unnecessary for this purpose today.

(*) See OECD, Information technology, op.cit. p.59.

(1) Moving towards informatics : Actually achieving the advantages attributed to informatics technology involves much more than the simple installation of computers. It requires such preparation of the user as will enable the latter to extract all the potential which the computer offers. Notwithstanding the magnitude of the technological advances which have been made during the last decade only a slight improvement in productivity has been observed, even in the industrialised countries.

One of the causes of the so-called 'productivity paradox' (*) seems to be precisely located in the obstacles which have to be overcome during the absorption of the new technology. Not only has the rate of diffusion of the technology been slower than was hoped in both factories (**) and in offices (***) but also the actual results of its introduction have been a considerable disappointment in some cases. According to one estimate no less than US\$ 160 billion invested since 1985 in the acquisition of computing and communications equipment since 1985 for the services sector of the United States has not resulted in any relevant improvement in productivity (****)

(*) See OECD, Seminar on the contribution of Science and Technology to Economic Growth. Note by the Secretariat, 9.6.88

(**) See UNCTAD, The diffusion of electronics technology in the capital goods sector in the industrialized countries, 1985, p. 1.

(***) See "Office Automation - Special Report", Herald Tribune, 11.3.86.

(****) See Business Week, 27.4.87.

As has been seen the training of users in the production sector forms a part of broader diffusion policies. Whatever the method employed it is clear that its objective is not to train computer specialists and, for that reason, it would make no sense to include formal training in aspects linked either with the hardware or with the software. The operation of the computer and of basic programs, and the ability to select them and to negotiate their acquisition, are the fundamental elements in any scheme for assisting a potential user in moving towards informatics.

(iii) Training the user Once the user has opted for the acquisition of an informatics system he faces specific problems of training in the use of the hardware and the software involved

This form of training is typically provided by the supplier of the hardware (or software), and is found amongst his contractual obligations. The predominant position of the major firms supplying hardware has had a considerable effect on the characteristics of the introduction of informatics, at least in the developing countries. This position has systematically given priority to the operation of the hardware itself and has neglected the design and instrumentation of the informatics systems concerned. In many countries this has resulted in modern equipment supporting inefficient systems which are poorly adapted to the user's real needs.

ii. Guidelines for the diffusion of informatics in small and medium companies (SMC's)

1. Applications in specific areas

Informatics can be profitably employed in the management of various areas in SMC's. In the following pages an indication is given of the main applications which are possible (*).

The benefits of such an introduction can be seen quite clearly if the informatics have been correctly targetted; informatics can :

- assist in improving productivity,
- make it possible to automate repetitive and boring tasks,
- improve the capacity for taking decisions and for controlling the performance of the company,
- facilitate participation in networks and access to data banks.

The ideal field of action of micro-informatics in SMC's is either in the routine tasks of collecting and processing information or to provide assistance in all the activities involved in company management such as decision-making, modelling and simulating various activities, planning, programming and controlling production, etc.

The use of informatics in specific areas makes it possible to achieve quite clear benefits, as indicated in Table 1.

(*) This section is essentially based on the proposals drawn up for the Dinfopyme Programme (see Annex).

Despite these advantages of using computerised systems SMC's run greater risks in installing them than is the case in larger firms. In practice the cost of introducing informatics is similar for all companies, but only companies of a certain size can accept, without major problems, the cost in terms of time and effort of installing them. SMC's have limited resources, especially in regard to finance and personnel, when faced with errors in the choice and/or installation of such systems.

Reductions in the cost of microcomputers is one of the key factors which favour the access of SMC's to informatics. A similar situation obtains in the area of software where increasing competence on the part of the producers has led to a considerable fall in market prices.

PERSONNEL

One of the first applications for micro-informatics in SMC's is personnel management. The work is based on the recording of personnel files to calculate wages and salaries and, starting from this point, to move on to other activities such as :

- a) Making out employees' pay cheques,
- b) Filing payrolls,
- c) Producing reports on wages paid,
- d) Calculating the payment of contributions, divided up by purpose.

The majority of systems for calculating wages and salaries which have been produced for use on microcomputers can carry out the above tasks with speed, accuracy and confidentiality. Other micro-informatics applications in this sector involve producing inventories of human resources, maintaining registers of the capabilities, training and advancement within the company of every employee.

PRODUCTION CONTROL

In the production sphere micro-informatics provides a wide range of possibilities which can be of value in company management, such as :

- a) Calculating, analysing and controlling production costs,
- b) Using simulations to optimise production processes,
- c) Producing diagrams showing machine loads,
- d) Drawing up production reports,
- e) Carrying out the statistical analysis of yields,
- f) Computer Aided Design (CAD) systems,
- g) Quality Control (by interlinking the microcomputer with appropriate peripherals),
- n/ Production Planning, Management and Control systems.

PROGRAMMING PRODUCTION

The use of personal computers (PC's) for solving problems relating to Operational Research makes it possible to exercise better control over the available resources and their allocation by the company management. The techniques of Lineal programming make it possible to determine what quantities of workers and materials are needed, where and when. Amongst those techniques which are strongly dependent on micro-informatics for large quantities of data are the following :

- Lineal Programming,
- Non-lineal Programming,
- Dynamic Programming,
- PERT-CPM methods,
- Monte Carlo simulation,
- Makarov chains, etc.

MARKETING

Micro-informatics systems applied to the sales area can provide the information needed for customer service in a more effective form, furnishing data which makes it possible to take decisions on prices, promotion and distribution.

A system responsible for allocating prices must take into consideration the volume of sales, possible competitors in the various markets in which the company operates and the levels of production costs. Such data is then used by the directors of SMC's to decide what the prices of the products should be, the promotion to be employed and the distribution channels to be used.

Micro-informatics can also be of great value in evaluating promotional activities and distribution channels. In the case of the first the directors must be in a position to decide whether their publicity mix is the optimal one, that is to say if the present level and type of publicity results in the maximum possible sales. The operation of testing various alternative forms of publicity and the evaluation of the corresponding results requires a substantial analysis of data, and this may be difficult to carry out without the aid of a computer. Other mathematical models have been developed to assist in the selection of new products or in expanding into new markets. The majority of these models are based on a statistical analysis of the data provided by the sales information system.

Market investigation models are used to produce mailing lists and to carry out statistical studies on the introduction of new products.

FINANCE AND ACCOUNTING

The principal applications for microcomputers in the financial field assist in the accounting process and in the development of its planning, that is to say in the recording of data and the preparation of financial statements. This includes :

a) **OUTGOING PAYMENTS** : The automatic processing of invoices from suppliers and the issuing of cheques are, generally speaking, one of the first applications of micro-informatics in SMC's. The system of accounts to be paid involves, in the majority of cases :

- Paying invoices within their due date,
- Calculating discounts or financial charges,
- Producing credit or debit notes.

b) **INCOMING PAYMENTS** : The application of micro-informatics to operations related to payments received from customers includes the preparation of invoices when customers have purchased against credit .

The system also provides valuable information on the current situation regarding payments. For example a report termed the list of payments due can be produced, starting from the invoices and other data relating to the customer. This report shows the sum outstanding against each client, according to the date on which payment is due.

Generally, and coupled with these procedures, micro-informatics can be used to produce statements of account and record cards which are then sent to the customers.

c) BUDGETS : Budgets and forward planning are usually based on models which simulate the future operations of the company.

These models utilise simple equations to represent the demand for products, production, sales, operating costs and other factors involved in SNC's.

The directors make various assumptions concerning each of these areas and introduce the data into an informatics model created in this way; once the data have been processed the microcomputer produces the possible results from each alternative which has been utilised.

d) FINANCIAL SIMULATION : The models for financial simulation are mathematical models, basically consisting of a combination of mathematical relationships which describe the relationships existing between the individual variables which influence the financial conduct of the company.

This type of simulation is very useful when no analytical solution of the equations which form the model is possible, or when the importance of the results justifies the cost of obtaining them.

Financial simulation generally seeks to understand how the possible changes which can be imposed on the system are associated with various types of dynamic behaviour.

Electronic computing generally makes it very easy to develop a simulation model from a simple mathematical model. This facility can be extended to run simulations without the use of specific tools (direct utilisation of the microcomputer by the directors).

2. Training

In order to face the problem of training the users the following methods could be considered :

a) Computerised systems in SMC's

Objects :

To set out, for those involved, those points which have to be taken into account and to evaluate how computers are to be incorporated into some of the areas of the company.

Directed towards :

Directors and executives who are not informatics specialists but who wish to be in a position to evaluate the offers made to them on the market concerning informatics systems, hardware, software and consultancy.

Duration :

Twelve (12) hours.

Programme :

1. The application of Informatics; advantages and limitations of its application.
2. Information systems and systems for the operation and control of various areas of the company.
3. The use of informatics in a company; the rôles of the systems analyst, the company executive and the operator of the hardware.
4. Computing equipment, the components which constitute it, its functions and applications.

5. Choosing the hardware (the equipment).

Evaluating present and future needs.

Configuration of the hardware, the computer and peripheral equipment : VDU's, printers, filing and communications systems, etc.

Compatibility between makes and the importance of this.

6. Choosing the software (the programs).

Types of programs and languages.

Design and evaluation of software packages.

Description and analysis of software packages available on the market: word processors, electronic planning and spreadsheets, data bases, accounting applications, production planning, etc.

7. Evaluating solutions to cases put forward by those concerned, the analysis of possibilities, advantages and disadvantages and the estimation of costs.

8. Fields of application.

Administrative systems.

Management systems.

Systems directed towards design and production/manufacture (CAD-CAM).

Expert systems.

Industrial control systems.

b) Micro-informatics applied in SMC's

Directed towards :

Directors and executives who are not specialists in informatics.

Objects :

To make known to the Directors the importance of Micro-informatics as a tool in company development, supporting this view with concrete examples of its use within SMC's.

Duration :

Twelve (12) hours.

Programme :

1. MICRO-INFORMATICS and PMC's

The need to introduce informatics into the COMPANY.

Company applications of MICRO-INFORMATICS.

MICRO-INFORMATICS management, its advantages and disadvantages

The utilisation of the MICROCOMPUTER by the DIRECTOR.

Security in management using MICROCOMPUTERS.

2. MICRO-INFORMATICS in various areas of the COMPANY.

Personnel.

Production and stock control.

Production programming.

Marketing.

Financial and Accounting.

Design.

Quality control.

3. MICRO-INFORMATICS TOOLS

The Electronic Spreadsheet.

Statistical Graphics.

Data Bases.

4. COMMUNICATIONS

c) Computer Assisted Production Management

Directed towards :

Directors, executives and senior production personnel who are not specialists in informatics, and who wish to be in a position to evaluate the proposals available on the market.

Objectives :

To familiarise the Directors with Computer Assisted Production Management Systems.

To provide guidelines for the choice of System for COMPUTER ASSISTED PRODUCTION PLANNING AND CONTROL.

Duration :

Nine (9) hours.

Programme :

1. Production problems; a complex subject.
2. What is a production system?
Production engineering.
Costs.
Planning.
Supplies.
3. Guidelines for choosing a Computer Assisted Production System.
Advantages over the traditional systems.
Integrated Systems compared with Integratable Systems.
Standard, customised and pre-planned systems.
4. Their introduction into the Company.
The costs of the system.
Its impact on the company organigram and structure.
Installation strategies.

d) The Electronic Spreadsheet as a tool for assisting in the Financial Planning of SMC's.

Directed towards :

Directors, executives and personnel who are specialists in the Administrative and Accounting areas.

Objects :

To facilitate the Financial Planning of SMC's by making use of modern tools for the simulation of real situations.

Duration :

Fifteen (15) hours.

Programme :

1. Introduction.
2. Financial Planning.
3. Financial Models.
4. Financial Simulation Models.
5. The design of a Financial Simulation Model.
6. The Electronic Spreadsheet.
7. AN example of programming a Financial Planning Model on an Electronic Spreadsheet.

e) Industrial Costs using an Electronic Spreadsheet

Directed towards :

Directors, executives and personnel specialising in the area who wish to utilise computing to carry out analyses of costs.

Objects :

To provide companies with highly efficient and simple to use tools for industrial costing.

Duration :

Twelve (12) hours.

Programme :

1. Introduction.
2. Industrial costs.
3. Costing strategies.
4. Costs using the Electronic Spreadsheet.
5. Examples of costs on an Electronic Spreadsheet.
6. Conclusions.

f) Personnel Management : Computer Calculation of Wages and Salaries

Directed towards :

Specialist personnel in the Administrative-Accounting field.

Objects :

To set out guidelines to facilitate the selection of Wages and Salaries Payment Systems available on the market in accordance with the characteristics of the company in order to make the fullest and most efficient use of these systems.

Duration :

Nine (9) hours.

Programme :

1. The reasons for an Informatics System.
2. Selection criteria.
3. Utilisation strategies.
4. Points to be taken into account when deciding on its installation.

3. The acquisition of hardware and software

The operations involved in the acquisition of the hardware and software required for an informatics project require some care in the case of companies with limited experience of this subject.

When deciding on suitable hardware the following aspects(*) need to be taken into consideration :

i) Type of hardware

The fundamental aspects to be considered are :

- a) Size of the principal memory.
- b) Disk storage capacity.
- c) Type of printer.
- d) Possibility of growth (eg: capacity to add VDU's or to form networks).
- e) The use, if necessary, of additional devices for the copying and back-up of files on diskettes or tape back-ups.
- f) Ease of connection to other equipment.

ii) Characteristics of the installation

This must cover, inter alia, the following aspects :

- a) Auxiliary electrical installations.
- b) Responsibilities for the installation of the equipment.
- c) Maintenance services.

(*) See Subsecretaría de Informática y Desarrollo (Argentina) : "Guía para la adquisición de microcomputadores" (Guide to the acquisition of microcomputers), Buenos Aires, June 1987.

iii) Compatibility

- a) Possibility of establishing a network.
- b) Possibility of transferring files to other items of equipment.
- c) Possibility of connection to other items of equipment.

iv) Characteristics of the contract

- a) Purchase.
- b) Leasing.
- c) Leasing with the option to purchase.
- d) Technical maintenance.

v) Requirements to be demanded from the supplier

The possible suppliers are obviously those who can, a priori, comply with the requirements which have been set out, fully or partially; however there are other aspects which must be taken into account :

- a) History of the supplier company.
- b) Local production.
- c) Technical assistance.
- d) Services offered.

In regard to the software one fundamental decision concerns that of opting for programs developed in-house or by third-parties. Under the circumstances under consideration here it is the second option which is recommended: this may involve one of the following alternatives :

i) Customised programs :

These are normally made-to-measure and must satisfy the conditions which have been set out and for which the program has been produced. The user will try to forecast the modifications which may prove necessary with the passage of time; or

ii) The use of existing 'packages' :

These can be either standard or pre-planned programs which will need to be adapted to meet specific requirements (see points 1 and 2 in this section).

Having regard to the difficulties which generally occur when concluding informatics contracts it is important to lay down guidelines for drafting the principal clauses. A model contract, which can be adapted to the needs of SMC's, is given as an annex; this is based on the illustrative clauses drawn up by the Permanent Secretariat of CALAI, the Conference of Latin-American Informatics Authorities (Conferencia de Autoridades Latinoamericanas de Informática).

III - AN INTEGRATED DIFFUSION PROGRAMME

The actions to which reference has been made in the previous sections assume an interaction between potential or existing users in SMC's and the body responsible for the diffusion. In some cases, such as the Dinfopyme Programme to which reference has already been made, diffusion may be the responsibility of public and private bodies (professional associations, chambers of commerce, etc.). However such action can not go into the specific needs of each company in depth but it can set out the methodologies whereby each company can identify its own informatics needs and can then act accordingly. The measure of success which the chosen program achieves will depend on the decision arrived at and the capabilities of the company.

Identifying the requirements is one of the most difficult problems for those who lack knowledge or previous knowledge. In many cases the apparent complexity of the system generates fears of costly errors and major complications.

Support given to the company in defining its own informatics needs with reliable consultancy on suitable hardware and software is one of the major contributions which a diffusion programme can supply. From this point of view mention has already been made of the British Microelectronics Application Programme (MAP). The possibility of providing a consultant specialising in informatics applications, to work in close liaison with each company, can to a large extent ensure that the objectives of the diffusion programme will be put into concrete form.

Operating a programme of the MAP type in a developing country would seem to be possible providing that it can count on a minimum number of trained professionals and on the resources needed to finance the initial stages of the necessary consultations.

A possible strategy for implementation would include the following steps :

a) The identification of consultants/consultancy firms capable of providing the initial technical assistance

The task of such consultants would be to determine the demand for informatics in a particular company and thence to draw up a preliminary 'systems plan'. In the absence of suitable and experienced professionals it will be necessary to consider a mechanism of ad hoc training of consultants, based fundamentally on the analysis and solving of practical cases. The identification of suitable persons for training as consultants can be carried out in cooperation with the professional associations, universities and other specialist educational bodies.

The process of introducing informatics should be parallel to, or should assist in, improving the organisation and forms of company management. To this end the consultants need to have a solid basic training in management methodologies rather than exclusively in computer sciences.

b) Providing assistance

The trained consultants, after selection on the basis of their past history and experience, should be added to the Programme register. Interested companies could nominate from the appropriate list, within certain limits (eg taxes to ensure that requests for assistance are not excessively concentrated on a small number of consultants) the professional or firm of their choice.

The body responsible for diffusion should take charge of the financing of the initial stage. In the MAP a sum of US\$ 4000 was made available for each case of consultancy; in Latin-American countries, however, this sum could reasonably be reduced to half.

c) Content of the consultancy

The activity of the consultant should, as has already been pointed out, be fundamentally directed towards specifying the informatics needs of the company concerned, suggesting reforms in its management and organisation and supplying a 'preliminary systems plan'. This plan should include, as a minimum, the following aspects :

1. Analysis of the data which has been collected:

The sectors involved;

Volumes;

Frequencies;

Type of Information;

Executives and their responsibilities;

Internal organisation.

2. Analysis of the shortcomings detected:

Possible solutions;

Description of alternatives.

3. Description of the proposed solution :

Information to be contained in the system - information flows : sources/destinations - supports required for the proposed system.

4. Description of the new manual and/or automated procedures -
Analysis of the changes to be introduced.

5. Personnel resources required for the development and operation of the new system :

- Profile of the staff;

- Numbers of each type;

- Existing staff and staff to be taken on.

6. Preliminary analysis of costs :

- Hardware;
- Software;
- Personnel;
- Installation and physical location;
- Other costs.

d) Complementary actions

The success of the programme will depend, to a large extent, on work carried out prior to the consultancy and also on the work subsequent to that stage.

In regard to the first the approximation of the company to the fundamental concepts of informatics is a condition which, if not essential, is at least advisable. Courses of the type of those described in Section II should give advice on this. Direct knowledge of successful experience in other companies is of special relevance here.

In regard to the subsequent work it is clear that the execution of the programme will require adequate follow-up activities and also, as far as is possible, such activities as will make it easier for the company to take the steps which follow consultancy. In particular it will be important to simplify access to credit for the acquisition of the hardware and software.

The Programme must also include advisory units to provide speedy and efficacious advice. Such units could consist of :

- general or sectorial bodies;
- professional associations;
- the central body responsible for the Programme.

e) Scope of the action

When defining the sectors of operation of a proposed programme full account must be taken of the results of the findings and studies indicated in section 1 of this document. It is recommended that the action take place in specific sectors of industry, trade and services, so that an in-depth understanding of the sector is created, thus possibly promoting operations or even general solutions acceptable to a multiplicity of users (eg the development of software for sectorial use, the creation of data banks or networks, etc.).

f) Participating bodies

In addition to the executive body for the programme and the selected consultants it will be important to count on the active participation of the chambers of trade representing the various sectors of activity. Such chambers could assist the programme through concrete actions - which would make its proposals more acceptable - whilst at the same time the support from their structures could be extremely valuable, in particular in regard to the activities described under point d) above.

ANNEX

THE ACQUISITION OF INFORMATICS EQUIPMENT

ILLUSTRATIVE CLAUSES

1. OBJECT

The object of this contract is the purchase of the hardware and its appliances as listed in Annex I. The SUPPLIER sells and the PURCHASER buys the components detailed in the above-cited annex, in regard to which the parties accept all the obligations governed by the clauses which follow. The SUPPLIER will ensure that the hardware and appliances are maintained in accordance with Clauses 17 and 18 and other provisions of the present document. The software contracted for is governed by Clause 10 and other provisions of the present document.

Commentary

The object of contracts covering informatics equipment is generally a complex one. In the selling and buying of equipment various appliances form part of the operation : the central processing unit, the communications processor, terminals, printers, etc. In addition to this the programs may be included in the same contract as that covering the hardware.

In addition to this the same contract may include clauses relating to maintenance, and this complicates the services: there is the selling and buying of the equipment and all the components forming it, together with the selling and buying or the licensing of the basic programs and the provision of maintenance and training services.

All these aspects mean that special care must be taken in the description of the object and in formulating the relationship between the various component parts forming it when a contract is drawn up to cover these aspects or for some of them in a separate form.

2. PROVISION OF INFORMATION TO THE PARTIES

The PARTIES declare that the SUPPLIER has been informed regarding the needs of the PURCHASER and that the SUPPLIER has informed the PURCHASER as to the characteristics and properties of the components forming the object of the contract. The SUPPLIER will be responsible for any loss or damage that the PURCHASER may suffer as a result of any lack of information to which this clause makes reference. The SUPPLIER will not, however, be responsible for the operational or commercial results of the utilisation of the equipment by the PURCHASER.

Commentary

The supplier of informatics equipment is a professional in this subject, whereas the purchaser - unless he has previous experience or can count on technical consultancy - will often be ignorant of many aspects of what he is buying.

For this reason the supplier must be informed as to the needs of his client and must provide information on what he is selling.

The principal inconveniences which the purchaser may suffer as a consequence of the failure of the informatics supplier to provide the necessary information are the acquisition of equipment which is over-dimensioned with regard to his needs, or which is inadequate in regard to the same.

Notwithstanding the above-stated obligation regarding information the Supplier will not be answerable to the purchaser for the effects of the utilisation of the equipment during the commercial activity of the user.

3. PREPARATION OF THE PREMISES

The PURCHASER will prepare the premises, within which the hardware forming the object of the present contract will operate, under the responsibility of and in agreement with the specifications provided by the SUPPLIER in respect of the physical installation and the air conditioning of the said premises. If the SUPPLIER does not submit specifications to the PURCHASER in regard to the preparation of the premises within which the hardware will operate it will be assumed that no special arrangements are necessary. In such a case no responsibility may be imputed to the PURCHASER for any damage, faults or breakages in respect of the hardware and resulting from the conditions in the premises in which the same operates.

Recompense for any costs or damage suffered by the PURCHASER which, in the opinion of experts, has been caused directly by incomplete or erroneous specifications supplied by the SUPPLIER in regard to the preparation of the premises will be made by the SUPPLIER.

Commentary

Some informatics hardware, generally that of larger size, requires specific air conditioning precautions, adaptation of the electrical systems, cabling, false floors, etc.

The supplier must give the purchaser the necessary information for the adequate preparation of the premises, with the object of ensuring the installation and commissioning of the hardware in good time and in efficient operation.

Ensuring the suitability of the premises is the responsibility of the purchaser, but his fulfilment of this requirement depends on the supplier having duly informed him as to the necessary preparation of the premises and all that is involved in this. The supplier's failure to comply with these requirements, or to comply correctly with them, relieves the user from his obligations in regard to the preparation of the premises.

The opinion of experts will generally be heard in court in regard to any litigation which may arise between the parties in respect of this point. Nevertheless it may be advisable to make express provision for the intervention of experts, thus emphasizing the importance of such proofs for the parties.

4. DELIVERY OF THE HARDWARE

4.1 At the time of signing the contract the SUPPLIER will deliver to the PURCHASER the technical specifications and all references concerning its physical and electrical installation.

4.2 The SUPPLIER will deliver all the components which form the object of this contract within a period of calendar days from the date of signing the contract.

4.3 The hardware will be regarded as delivered when the same is found to be installed together with all its appliances in the physical location in the which the same is to function. For the purposes of this contract it will be considered that the hardware has been installed when the same is found to be in operation and ready to be subjected to the acceptance tests set out in Clause 6.

Commentary

The process of transferring ownership is initiated by the physical delivery of the hardware; its installation - the following step - implies that it is found to be operating and ready for the acceptance tests. Point 4.2 lays down that all the components covered by the contract are to be delivered; it is considered to be disadvantageous to agree to part deliveries in the face of the risks which could arise from any reason - imports, etc. - in respect of the supply of any component contracted for.

Delivery does not complete the obligations of the supplier. In the formulation which has been chosen this physical delivery may be conceptualised as being provisional, only converted into definitive form when the acceptance tests have been completed.

The date of delivery should not be indicated, as this would lead to a state of uncertainty on the part of the purchaser in regard to the principal service of the seller, as would also dates for carrying out the acceptance tests and, definitively, in regard to the time at which the hardware can be used in the management of the company.

5. LATE DELIVERY

5.1. If delivery of the hardware cannot be effected by the SUPPLIER within the period set out in Clause 3 the PURCHASER may opt for : a) declaring the contract resiled, in full right and without the need for any interpellation whatsoever, in the which case the SUPPLIER must pay the PURCHASER by virtue of a penal clause the total value of the contract plus those sums which have been paid up to that time; or b) requiring the completion of the obligation to deliver, in the which case the PURCHASER has the right by virtue of a penal clause to a sum of to be paid daily by the SUPPLIER until delivery has been effected.

5.2 If delivery of the hardware cannot be effected by the SUPPLIER by the due date, due to the failure of the PURCHASER to carry out his obligations duly contracted under Clause 3, the SUPPLIER will incur no responsibility and for this reason the provisions of point 5.1. above will not apply.

The SUPPLIER is not held responsible in cases involving Acts of God or force majeure.

Commentary

As has been pointed out above delivery initiates the process of the definitive transfer of ownership. With this act the period for the acceptance tests begins to run.

This clause establishes the option in favour of the purchaser to resile the contract or to require its completion in the event of delays by the supplier in regard to delivery, under the express stipulation of a penal clause in order to recover all the losses which may be suffered by the user.

The present clause makes provision for the fact that, in the event of failure to deliver on time, the delay may render the hardware unnecessary or may occasion major losses. In the event that the purchaser requires completion it may be agreed that, if delivery is not effected within a stated period, the contract may be resiled; in this case the sums indicated in 5.2. a) become due plus the daily fines which the supplier then owes. The supplier is deemed to be relieved of responsibility in cases involving Acts of God or force majeure, together with those cases in which the purchaser has failed to fulfil his obligations in regard to the preparation of the premises.

6. ACCEPTANCE TESTS

6.1. Once the delivery, to which reference has been made in previous clauses, has been effected, the SUPPLIER will certify in writing to the PURCHASER that the hardware is now prepared for the acceptance tests.

6.2 The acceptance tests are those which the PURCHASER is to make in regard to the compliance of the hardware with the specifications of the SUPPLIER and in regard to the satisfactory operation of the hardware without faults during the period which is established under the following point, when the hardware must work with a minimum efficiency level of 90%.

6.3 The period of the test will be days after the SUPPLIER has provided the PURCHASER with the certification indicated under point 6.1 above. The following formula will be used to calculate the level of efficiency :

$$NE = (TP / (TP + TF)) \times 100$$

where :

TP = Productive time of the system

TF = Failure time of the system

NE = Level of efficiency.

6.4 If, during the period established as above, the conditions set out in point 6.2. are adequately fulfilled then the parties will sign the acceptance agreement as set out in Annex II to the present document.

6.5 If, during the same period, the hardware and the program do not demonstrate the required efficiencies, capabilities and qualities the tests will continue day by day until the efficiency is satisfactory over a period of working days.

6.6 The acceptance test for the hardware and the program require a minimum of hours productive time from the system with real or simulated work; the latter may include the reprocessing of the qualification tests which were utilised in selecting the equipment.

6.7 If, after carrying out the above procedure, and if when days have elapsed since certification under point 6.1, the conditions for acceptance have not been fulfilled the PURCHASER may opt for : a) declaring the contract resiled, in full right and without the need for any interpellation whatsoever, in the which case the SUPPLIER must pay the PURCHASER by virtue of a penal clause a sum equivalent to the value of the contract plus those sums which the PURCHASER may have received up to that time; or b) requiring the SUPPLIER to comply with the specifications, in the which case the PURCHASER has the right by virtue of a penal clause to a sum of to be paid daily by the SUPPLIER until the time of acceptance.

Commentary

It is essential to establish at a contractual level the express acceptance of the hardware on the part of the PURCHASER, when the pre-determined technical and operational tests have been complied with.

The tests on the hardware are carried out using the software with which it is to function. The option should be established of carrying out these tests under real or simulated conditions. During the period of test which the parties have established the supplier must correct any faults notified to him by the purchaser.

No transfer of ownership may be considered as having taken place until these tests have been carried out.

In the same way as applies to failures to comply with the obligation for physical delivery of the hardware the same consequences are established for the case in which there is a failure to pass the tests.

7. QUALITY STANDARDS

The hardware forming the object of this contract must comply adequately with the specifications provided by the SUPPLIER in regard to the characteristics and functions of the hardware. The SUPPLIER guarantees that all the parts to be acquired are manufactured in accordance with the best techniques in regard to computing equipment and he also guarantees them against all faults in design or materials.

Commentary

The term specifications covers plans, diagrams, guides or models and, in general, the totality of the indications and information concerning the characteristics and functioning of the physical and non-material components of a machine or a system for the processing of data, or concerning the services which are the object of the contractual relationship.

The specifications are the benchmark for determining compliance with the obligations on the SUPPLIER to maintain certain quality standards.

8. CONNECTIONS TO AND MODIFICATIONS OF THE EQUIPMENT

8.1 The PURCHASER may connect to the equipment any other equipment which may be supplied by another SUPPLIER. He may also modify the equipment at his own cost.

8.2 The PURCHASER must bring to the attention of the SUPPLIER his intention to carry out those acts cited in the previous point. The SUPPLIER must inform him within a period of days concerning the negative consequences of such acts. In the event that the SUPPLIER fails to reply within the period indicated above it will be assumed that, in his opinion, there will be no adverse effects in regard to the connections and/or modifications which the PURCHASER intends to carry out.

8.3 If the SUPPLIER does not inform the PURCHASER or fails to inform him fully in respect of the consequences aluded to in the previous point then he must make reparations to the PURCHASER for the damage which may result.

8.4 If the PURCHASER does not inform the SUPPLIER concerning the acts to which this clause refers he will have no right to any reparations in regard to the adverse consequences to the equipment which may arise from the connections and/or modifications which he makes to the same.

Commentary

As from the operation of the transfer of ownership of the equipment there must be no impediment in regard to its use by the purchaser, in accordance with his necessities and interests: there must be no restriction on his rights nor any limitation whereby he may only connect the equipment he has purchased to equipment from the same supplier.

Nevertheless, and taking into account the complex technical aspects and the specificity which may appertain to the equipment forming the object of the selling and buying operations, it is advisable to seek the professional opinion of the supplier.

The failure to observe the obligation to communicate the connections to and modifications of the equipment means that the purchaser accepts the risks and any possible damage; similarly the supplier must inform him fully concerning his responsibility.

9. PRICES

The price of the equipment covered by this contract and the form of payment is detailed in Annex I.

Commentary

In regard to price and form of payment the purpose of this reference to the annex relating to the object of the contract is to make specific the details of the matter, and to set out the unit costs for each of the components covered by the contract.

10. THE PROVISION OF COMPUTING PROGRAMS

10.1 The SUPPLIER undertakes to deliver to the PURCHASER a perpetual licence for the use, unlimited in terms of time, of the programs cited in Annex III and at the prices indicated there, for exclusive use on the hardware which forms the object of this selling and buying operation. The programs are to be delivered to the PURCHASER conjointly with the hardware.

10.2 The PURCHASER may use, with the hardware, programs provided by other suppliers.

10.3 The SUPPLIER is obliged to inform the PURCHASER concerning all future development of the programs covered by the contract.

10.4 The SUPPLIER may not disrupt the use and peaceful enjoyment of the programs which have been granted to the PURCHASER under licence except when carrying out his maintenance obligation. Connections must be effected at the request of the PURCHASER.

10.5 All versions of the licenced programs are to be guaranteed to comply with the specifications. The PURCHASER agrees that, in the event that a Licenced Program covered by the present guarantee is not in accordance with the applicable specifications, he will notify the SUPPLIER of the said circumstance in writing during the period of validity of the guarantee. The SUPPLIER will provide his programming services to remedy any existing defect within a period of 72 hours.

10.6 The SUPPLIER is responsible to the PURCHASER for any failure to fulfil the obligations resulting from this clause, and will be responsible for any damage or loss. The PURCHASER is obliged not to have any copies made of the licenced programs.

10.7 If the SUPPLIER does not supply the programs covered by the contract with the hardware it will be considered that they have not been delivered. In this case the provisions of Clause 5 become applicable.

Commentary

If the software is covered by the same contract as the hardware then it is necessary to specify what legal process (purchase, licensing) is involved in regard to the former. Notwithstanding the fact that contracting for the software includes aspects which distinguish it from the hardware this clause establishes the minimum content and this will have to be amplified in many cases and according to the various situations which may arise. Frequently the software forms the object of a separate contract; if this is so it would be advisable to check the compatibility and concordance of the respective contracts.

11. GUARANTEE OF AVAILABILITY

The SUPPLIER guarantees that, at the time of signature of the present contract, he has available all the components which make up its object. No claim of Acts of God or of force majeure can therefore be made that the non-availability of any of the components which form the subject of the contract is the cause of a failure to deliver within the period of time laid down in Clause 5.

Commentary

It can happen that the supplier signs a sales contract without having all the hardware actually in his hands. Frequently, as a result of import or customs policy, or because of any difficulty which the seller may have in obtaining the hardware, the seller is not able to deliver by the date which has been laid down.

This delay may occasion serious losses for the user. The guarantee of availability, as set out in this clause, assures the buyer that the seller actually possesses all the hardware.

12. GUARANTEE OF EFFICIENT OPERATION

12.1 The SUPPLIER guarantees that the hardware is in accordance with the specifications and is free of defects of materials or workmanship. During a period of months the SUPPLIER guarantees that he will provide parts free of charge and will also carry out for the PURCHASER, without charge, the maintenance and repair necessary for the efficient functioning of the hardware.

12.2 The SUPPLIER undertakes to supply all the spares necessary for the appropriate and timely maintenance and repair of the hardware during a period of years as from the signing of the present contract.

12.3 In the event of the failure on the part of the SUPPLIER to fulfil the obligations set out in the previous sections 12.1 and 12.2 there will be imposed a penalty of for each day of delay.

12.4 At the termination of the guarantee period for the efficient operation of the hardware, as established by this clause, the regime of maintenance charged to the PURCHASER commences.

Commentary

The guarantee of efficient functioning must be concordant with what has been agreed in regard to maintenance.

During the guarantee period no charges are to be made against the purchaser for maintenance, repairs or spares. Point 12.4 is added to this contract since the latter provides for the maintenance being charged to the supplier.

This clause ensures the availability of spares for a pre-determined period and also for adequate maintenance.

13. EVICTION AND HIDDEN FAULTS

The SUPPLIER guarantees the PURCHASER against eviction and against hidden faults in accordance with common law.

Commentary

'Eviction' is deemed to exist when, by virtue of a sentence or an action prior to or contemporaneous with the acquisition, the purchaser is deprived of all or part of the rights which he has acquired or when he suffers a disturbance in his rights.

Hidden faults are those which exist at the moment of acquisition of the equipment and which make it unsuited for its intended use and which diminish in any way the use of it; had the purchaser been aware of them he would not have acquired the equipment or would have given less for it.

The supplier must guarantee the purchaser against such faults, in accordance with the applicable law (Clause 23).

14. INTERFACES

The PURCHASER may authorise the SUPPLIER to alter the interfaces of the hardware and the software. The SUPPLIER may not effect such alterations without the written authorisation of the PURCHASER .

Commentary

An interface is the zone of union which allows the inter-connection of the physical components of an informatics system.

Taking into account the constraints which relate to the characteristics of compatability and adaptability of informatics systems it would be inconvenient for the user if the supplier were to be free to alter certain connections in an arbitrary manner.

This clause conforms to the assumption of maintenance chargable to the supplier.

15. COMPATABILITY

It is expressly established that the hardware and the programs are compatible amongst themselves.

Commentary

Compatability is essential in informatics systems, both between the various components which form it and also with the programs with which it is to operate. For this reason the present clause provides for an absolute guarantee on the part of the supplier.

16. TRANSFER OF OWNERSHIP

Ownership is transferred when the hardware has been accepted and the price has been paid.

Commentary

A form of transfer of ownership must be considered; this coincides with the carrying out of the acceptance tests, and the payment of the price fulfils this requirement (Clauses 9 and 10).

17. PREVENTIVE MAINTENANCE

The SUPPLIER must maintain the hardware and all the components which form it in conditions which are appropriate to its use and in conformity with the published specification. This service requires the periodical checking of the functioning of the hardware and, where necessary, changing spare parts.

Commentary

The character of an obligation to achieve results must be attributed to maintenance; it is not the responsibility of the purchaser to prove the fault of the supplier in the event of defective maintenance. It is the responsibility of the supplier to ensure that the hardware is always found to be in a suitable condition for use.

With the object of providing security and certainty to the obligations which emanate from the maintenance contract the relationship with the technical specifications is put forward as the best interpretive guideline.

18. FAILURE TO FULFIL THE MAINTENANCE OBLIGATION

The failure on the part of the SUPPLIER to fulfil the maintenance obligation as set out in the previous clauses makes the SUPPLIER responsible for the immediate damage and loss occasioned to the PURCHASER by such failure.

Commentary

The problems arising from the defective maintenance of the hardware may result in immediate damage or loss for the purchaser which obviously stem from faults which prevent its efficient functioning; more serious losses for the user may result from the fact that it is impossible to use the hardware until it is repaired. The supplier involved in this case must make reparation under such circumstances.

19. COPYRIGHT AND PATENT RIGHTS

19.1 It is the responsibility of the SUPPLIER to meet the costs of defence against such actions as may be instituted for the infringement of copyright, patent rights, author's rights, designs, industrial secrets, etc. Without prejudice to the PURCHASER's rights the SUPPLIER must indemnify the latter against all costs in any action whatsoever which infringements of the type indicated in this clause may occasion. If the SUPPLIER does not proceed to defend the above-cited patent rights the PURCHASER may do so at the SUPPLIER's cost.

19.2 If the PURCHASER is found to be deprived of the use of the equipment forming the object of this contract due to any action founded in copyright and patent rights the SUPPLIER will immediately replace the hardware at his cost, thus procuring continuity and the maintenance of efficiency in the use of the hardware.

Commentary

This clause determines the indemnification of the user in respect of such actions which may be instituted by third parties on the basis of patent rights.

It provides an absolute guarantee by the seller who is responsible for the defence and its costs.

In the event of the failure of the supplier to enter his defence in good time provision is made for the purchaser to take such action as he can, within the limit of his possibilities.

It also envisages a case in which an infringement is probable or proven and in the which case there is a probability that the cessation of use of the equipment by the purchaser will be ordered by the courts. The latter case must not make it impossible for the user to operate the equipment, with the serious consequences which this could occasion, and the supplier is obliged to avoid such a situation.

20. CONFIDENTIALITY

The parties are obliged not to divulge any information which they may obtain for the purposes of the contract, and in respect of which they agree expressly that this is to be confidential. The PURCHASER will not communicate the antecedents and information derived from this contract except to responsible employees under his responsibility and who will themselves respect the said confidentiality.

Commentary

This clause must include the case where there is a transfer of any technology. The purchaser assumes responsibility for any infringement occasioned by his staff in respect of this clause.

21. RESPONSIBILITIES AND PENALTIES

Without prejudice to the penalties expressly provided for in Clauses 5, 6 and 12 of this contract any failure on the part of the parties to fulfil the obligations assumed under the present contract will make the party concerned responsible for the damage and losses suffered by the other party as a result of such a failure.

22. INSURANCE

22.1 With the exception of what has been set out in the previous clause the SUPPLIER accepts all the risks which the equipment could be exposed to up to the time of its installation, up to this time it is the responsibility of the SUPPLIER to cover all insurance for all types of risk to which the equipment may be exposed.

22.2 After the date of definitive installation the responsibilities and insurance to which the previous point refers become the responsibility of the PURCHASER.

Commentary

Taking into account the fact that the transport and installation of the equipment requires care and specialised attention it is advisable to allocate the responsibility for any damage which could be caused to the equipment to the supplier, who is to accept as his contractual obligation that of insuring the equipment against damage.

Obviously taking care to avoid damage to the equipment falls to the purchaser after the installation of the equipment; consequently the insurance now falls to his charge.

23. APPLICABLE LAW

This contract is determined by the law of the domicile of the PURCHASER.

Commentary

If the contract is an international one then establishing the applicable law becomes of fundamental importance, being mindful of the executability of the obligations of the parties.

24. RESOLUTION OF CONFLICTS

Any difference which may arise in the interpretation or application of the contract is to be resolved by mutual agreement. If this does not lead to a solution, and if recourse to arbitration cannot be agreed to, the conflict is to be resolved legally under the jurisdiction within which is located the head office of the PURCHASER.

ANNEX I (*)

MODEL & DESCRIPTION	QUANTITY	PRICE	DELIVERY DATE
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TOTAL

- The prices quoted above include customs' duties and all taxes.
- The total price quoted above will be paid in the following manner :

..% on signature of the contract

..% on the installation of the equipment

50% on acceptance of the equipment.

(*) Corresponding to the equipment and its appliances.

ANNEX II

CERTIFICATE OF ACCEPTANCE

In the town of, between and, being the SUPPLIER and the PURCHASER of the hardware, its ancillary appliances and its programs as described in ANNEX I of the contract signed by both parties on it is certified that the merchandise forming the object of the said contract complies adequately with the conditions and specifications and that it has functioned without faults during a period of days after the date on which certification was made that the equipment was found to be prepared for the acceptance tests.

ANNEX III

DELIVERY OF THE SOFTWARE

On theth day of in the year and in accordance with the terms and conditions of the contract to purchase the equipment and of which this annex forms part the following software services were provided :

Quantity	Programs	Price	Delivery
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