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University Grant Program Research Report

INFORMATION AND DECISION SYSTEMS
MODEL FOR PAIT PROGRAM

by

F. Zabransky and J. Legg

School of Business Administration
University of Western Ontario
October, 1971

Rapport de recherche sur le Programme de subventions aux universités

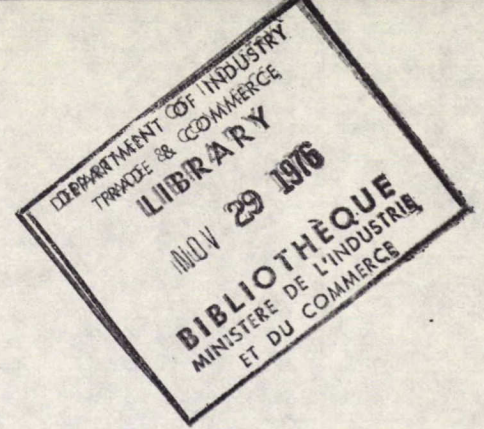


Industry, Trade
and Commerce

Industrie
et Commerce

Office of Science
and Technology
Ottawa, Canada

Direction des sciences
et de la technologie
Ottawa, Canada



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The views and opinions expressed in this report are those of the authors and are not necessarily endorsed by the Department of Industry, Trade and Commerce.

INFORMATION AND DECISION SYSTEMS

MODEL FOR THE PAIT PROGRAM

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TRADE AND COMMERCE.

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INTRODUCTION

This report concerns itself with the information and Decision System used in the Department of Industry, Trade and Commerce (DITC) for the Program for the Advancement of Industrial Technology (PAIT).

The Department's goal broadly speaking is to assist Canadian industry and to ensure Canadian long-term employment and export success. In specific it is to ensure the development of new products or processes incorporating new technology. The PAIT directive states that: "The basic purpose of the PAIT Program is to promote the growth and efficiency of industry in Canada by providing financial assistance for selected projects concerned with the development of new or improved products and processes which incorporate new technology and offer good prospects for commercial exploitation in domestic and international markets. Specific objectives of the Program are to:

- obtain a net gain to Canada;
- encourage both large and small companies toward innovative programs and well thought out product lines with strong future market potential;
- assist companies to strengthen their operations in Canada through product specialization and rationalization;
- increase the level of productivity in Canadian manufacturing industry;
- improve the technological and design capability of Canadian manufacturing industry and reduce its dependence on foreign technology and design;
- reduce imports and expand exports of manufactured products on a competitive basis;
- encourage innovation in order to promote and exploit unique Canadian capabilities;
- provide new employment opportunities in industry which are attractive to highly trained scientific, technical and managerial personnel".

The PAIT directive further states;

"It is intended that the Program be administered on a selective basis, having regard to PAIT eligibility criterion and evolving Government strategy for industrial development in such matters as specialization and consolidation of product lines. Only research and development which is directed at well-defined commercial objectives is eligible for PAIT support. Typically, an eligible project will represent a commitment by an operating company to a promising new product line for which there is an expanding domestic and international market, and the company will have the technical, financial, managerial, and marketing capability to achieve its stated objectives. The applicant is not automatically entitled to PAIT assistance".

Up to 1971, there have been sufficient PAIT funds available to make awards to all applicants with eligible projects. However, indications are that there will soon be more eligible projects put forward than there are funds available to meet them. Assistance will then have to be offered on a selective basis. The questions then raised are: What are the criteria to be used in this selection? What are the cost/benefits? What critical factors make a project successful? How are the applicants to be informed of this change? etc. Any one of these questions can be studied independently. However, taking them independently may not be the optimum method for the Department as many of the questions asked are interrelated. It may be more advantageous to look at the overall process of the information system used (or to be used), identify certain key areas, and then develop them in light of the overall model. This is referred to as the modular approach to systems.

PURPOSE AND OBJECTIVE OF STUDY

In general, the purpose was to study the information systems model and to establish the relationships (interaction) between external and internal factors generating information

for the decision making process. The research project was considered only to be a pilot study and may be used as a further reference for developing an information system for the whole Department.

The objective of the research thus was to:

1. Develop a Model showing the activity areas and the major flow of information amongst them.
2. Expand these activity areas in terms of information flow and Management Decision making.
3. Analyse the form and type of information received.
4. Suggest methods, format and type of data gathering for use in quantitative models.

METHODOLOGY OF RESEARCH

Information can be considered as a resource to be used for effective decision making. The present understanding of Management Information System (MIS) is usually taken as computer-based report or data retrieval system. However, in the context of this research, we shall look at a broader definition of MIS. That is, "as a system of people, equipment, procedures, documents, and communications that collects, validates operates on, transforms, stores, retrieves, and presents data for use in planning, budgeting, accounting, controlling, and other management processes for various management purposes."

To determine the information system used in the PAIT program the following steps were carried out:

1. The research assistant; Mr. J. Legg, was given an office on the 21st floor in the Office of Science and Technology.
2. He interviewed and discussed information used by decision makers and various officers involved in the PAIT program.
3. Follow through two or three new PAIT applications starting from the initial contact until final approval.

4. Identify the critical activity areas within the PAIT program.
5. Draw a model of the information used in the various activities and point out the relationship to other areas.
6. Determine the decision model for a PAIT application.
7. Develop a case for a company applying for PAIT assistance and show the decision making process.
8. Make recommendations to improve the system.

EXISTING INFORMATION SYSTEM

The operation of the Program for the Advancement of Industrial Technology has an outline of an information system for parts of its procedure. However, built into this is an informal and people oriented operational network.

The individual decision maker is normally well informed about a particular industry and if not, he knows whom to contact or where to look up the information.

In studying the existing information system several major areas of interest were determined. These were:

- Policy
- Degree of significant technical advance
- Technical feasibility
- Commercial potential
- Information on the applicant
- Financial resources
- Scrutiny by the PAIT Advisory Committee
- Monitoring of the project after it has been approved

The sequence of these areas as shown in Exhibit I by no means indicate the sequence of decision making or use of the information. This will change from application to application and with different project officers. Exhibit II depicts each of these areas in more detail. It shows the information that

may be used in the evaluation of a PAIT application. It does not necessarily show the original source of the information but rather the medium through which it is obtained or can be obtained. Exhibits II-1 to II-8 show a duplication of each activity for the purpose of better legibility. Exhibit III shows a typical process a PAIT application will go through for approval.

ANALYSIS OF THE FORM AND TYPE OF INFORMATION RECEIVED

This section describes the sheets in Exhibit IV, and V, and this information description should be related to Exhibit II.

Areas of Information and Sources

The information description is developed directly from the areas of information and it includes detail on the type, quality etc. of the information. Refer also to Exhibit IV, which describes the column headings and notes of Exhibit V. A matrix form of description of all activity areas is provided in Appendix I.

This development of the form and type of information received is limited by two factors:

- 1) The individual PAIT projects vary so widely (from shoes to airplanes) that the resulting diversity of information defies easy classification.
- 2) The individual project officer has different approaches to their work. Some rely heavily on verbal input while others want more formal hard data.

For these reasons, the form and type of information is described as it is in Exhibit IV and V.

By way of an example, the following study is made with respect to the Minor Area of Interest, 'Research and Development in Canada and Abroad', which is a sub-area of the Major Area of Interest, of 'Degree of Significant Technical Advance.' Refer to Exhibit II-2.

As the real purpose of this minor area of interest is to provide the Project Officer with enough information to ensure that PAIT development money is not being spent on a project which may duplicate effort done elsewhere by others with a possible result that the PAIT development money is financing a development that will have no competition advantage.

This area of interest also provides confirmation that the PAIT development project is not for a product or process which is available elsewhere at a lower cost.

The form of information is usually verbal in this particular Minor Area of Interests. One source of information the Branch's or Project Officer's industrial contacts are readily accessible by phone. Often the industrial source, usually a personal contact developed earlier under other circumstances, is regarded as highly reliable as, if properly selected, he himself may be immersed in the state-of-the-art of the project's area.

A second source is Government technical experts in Departments other than Industry, Trade and Commerce. They could provide very useful input but the officers in the DITC claim they are not readily locatable unless they have been contacted recently. One example of those experts could be the staff in the Department of Energy Mines and Resources. This staff is large, technically expert and has a high awareness of events in Canadian industry.

The remaining sources listed in Exhibit II are similarly described in Appendix I to illustrate the vast store of information potentially available to the Project Officer. And also to illustrate the restriction placed upon his access to this information.

SUMMARY OF THE PRESENT INFORMATION SYSTEM

For a more detailed description of the system refer to the appended case study on the Maple Manufacturing Company which applied for PAIT assistance.

At the present, there is no conscious effort within the Department to isolate the flow of information relating to the PAIT program. This reflects the attitude in the Department that PAIT is only one of the tools available to, and used by, the operations group in furthering the broad Departmental goals of ensuring and assisting the technological advance of Canadian industry.

There is, however, a formal step-by-step procedure that is described in the PAIT directive which gives certain formal decision making functions to groups in the Department and also elsewhere in the Federal Government.¹

Essentially the procedure in effect now is:

- i. The company approaches the Department (Branch or PAIT Program Office) with a proposal that may be developed into an application. There are also frequent occasions when the Branch has been the instigator of the application because it is being made aware that a company is anxious to undertake a project. The Branch officers then may recommend that the company apply for PAIT as a means of making the project viable.

¹ Reference the flow diagram in the PAIT Directive.

- ii. In any case, the PAIT Program Office is informed either by the Company or the Branch that a Company intends to apply for assistance under PAIT.

Throughout the processing of the application (and the monitoring of the projects of successful applicants) the PAIT Program Office monitors and takes action as necessary on all projects.

- iii. The Branch assigns one man, the project officer to be responsible for the project. 'Responsible' means to compile and prepare the Composite Submission and to justify its statements before the PAIT Committee.

- iv. This project officer develops the Composite Submission in close relationship with the applicant and the help of the Office of Science and Technology, Scientific Consultants, the experts at the NRC, officers in other Branches, the PAIT Program office and others as he sees fit.

- v. While preparing the Composite Submission, the project officer provides the Financial Services Branch with the relevant financial information about the applicant so that the Financial Services Branch can provide a written statement of assurance that the Company has enough additional financial resources to carry out the project.

- vi. Meanwhile, the Policy group in the Office of Science and Technology has an opportunity to see whether or not the applicant meets the PAIT criteria laid down in the PAIT directive.

- vii. When all the parties above are satisfied on their areas of interest, the Branch completes the Compo-

site Submission which is distributed by the PAIT Program Office, in advance of the meeting, to all the members of the PAIT Advisory Committee.

viii. The various members of the PAIT Advisory Committee examine the submission, consult with their own experts as necessary and prepare for the meeting with conclusions, issues or requests for clarification.

ix. The PAIT Advisory Committee meeting is then held. Usually, the Committee passes most, if not all, of the projects put before it at the meeting.

A more detailed procedure of the above process is depicted in Exhibit III.

STRENGTHS OF THE PRESENT SYSTEM

The focal point of most applications, and most steps in the application processing, centers on the Branch project officers. These officers are vitally important to PAIT and have, for the most part, had industrial experience - many of them very recently. They rely heavily on (and correctly so) their recent industrial experience in their evaluation of an application. In addition to their experience, the officers also rely heavily on their contacts in the industry.

The present program has functioned adequately for several years. Well presented literature is available to industry describing the program. All other Government incentive programs are also presented in the same literature thus any company is in the position of making a good judgment as to whether their particular needs are met by any one of the programs.

The application is expedited reasonably quickly, taking from two to three months on the average. Delays beyond this are usually a result of the applicant's delay in providing information.

SHORTCOMINGS OF EXISTING SYSTEM

- 1) It is difficult for an officer to judge whether or not a company's proposal would go ahead or not without the PAIT award.
- 2) A heavy reliance is placed, by the project officer, on the information he receives from the applicant. While this has obvious advantages, it is highly dependent on a good initial assessment of the applicant.
- 3) A major determinant in the assessment of a PAIT application is the project officer's industrial experience. The Department is relatively new and many of its officers are recently from industry. However, as they stay in the job for a longer time, they will gradually lose the value of this first-hand knowledge. Unless there is a constant infusion of new blood, how will this industry experience be retained throughout the Department?
- 4) The secrecy involved is necessary under the existing ground rules, but is this in the best interests of the Country? Can a flow of information be developed that disseminates some of the useful technological and corporate information in the hands of the Department. An example is that there is no book in Canada that lists, as an American publication does for the United States, the name of venture capitalists and their conditions for loans etc.

- 5) The facilities of the computing centre do not seem to be well known, nor are they used, although there are plans to increase its use.
- 6) Some members of the PAIT committee do not undertake an analysis to a depth compatible with a deciding vote. This may be because they usually receive only the Composite Submission which, despite the best intentions of the branches, is often a supporting document rather than an objective impartial assessment. Also, the projects put before the committee are virtually all approved. This includes the marginal-plus projects, but marginal-minus projects are turned back at lower pre-PAIT meeting levels. Thus, the committee does not itself establish the boundaries - or precedents.
- 7) As the money available becomes less than the amount applied for, a cost/benefit system will have to be introduced. (Presently work is being done on this system). Thus, some true adjudication will be necessary by someone or some group. That group could be the PAIT Advisory Committee or the PAIT program office. There is of course, the possibility the Branches will not make such adjudication necessary if they cut off projects on their own.
- 8) The Branches do not now, at the time of their preparation of the Composite Submission, nor at their presentation before the PAIT Committee, link closely together the project and their own long-term plan for their industry sector.

- 9) The detailed flow of information at the Branch level is difficult to assess. There are no criteria that are specific (such as sales, deliveries, inventory and production) that are quantitative and for which an analogy can be found in a private organization. The landmarks for activities are the PAIT meetings themselves and certain pre-PAIT activities. The flow of information is unstructured. That is, for example, the PAIT Program Office receives some of the paper work generated by the project officer, but not all.

RECOMMENDATIONS

A. BROAD RECOMMENDATIONS FOR FAR REACHING CHANGES

1. Channel Information to the Branch Division for the Making of Industrial Policy and Strategy.

Annually, the Branch Directors must present (to the Programs and Policy Planning Group) a statement on their Branch's program and policy for the coming year. In order to prepare this statement, the Branch Director must have all information reasonably available to him and summarized so that he can:

- a) Gauge the performance of his industry sector and his specific programs over the past year.
- b) Set a new strategy in the light of the result of a).

Each Director should draw up a definition of just what this information should be for his particular use and present this requirement to such information centres

in the Department as are required. For example, the computing centre, the programs offices, the library, maybe the Department of Finance, and Statistics Canada.

These bodies, in turn, should provide him with whatever information is available by a certain date (set by the Director) and if this information is not available by that time, the Director must proceed with the planning regardless.

2. Award PAIT Assistance on the Basis of Needs.

Consider examining how an information system could be used to provide data that could be processed to enable awards for development to be made on a basis other than the present 50% of an eligible project. On the basis of need, for example.

One obvious need is for the system to produce information that may enable an officer to judge whether or not the project under consideration would be carried out by the applicant regardless of the availability of PAIT funds.

3. Appoint a Body to Judge the Validity of Projects Applied for and Then Rate Them on a Cost/Benefit Scale.

It is inevitable, at least as expressed by the members of the Department who are closely concerned with PAIT, that the program's funds soon will be exceeded by 'eligible' applications. In such a case, a cost/benefit model must be used to assess the relative worth of projects. However, such a cost benefit model would have

weaknesses even though it may be well conceived to include as much relevant quantitative data as possible. These weaknesses may be divided into two groups:

- 1) There will always be certain parameters which cannot be quantified
- 2) There will always be certain parameters which although quantifiable, include a large amount of subjectiveness, judgement or insecurity in the choice of actual figures.

For these reasons, it is obvious that even cost/benefit figures for different projects must have a subjective evaluation.

The question then naturally arises, (given that those most familiar with the projects, i.e. the branch project officers, make the cost/benefit analysis), "Who will verify and compare the relative projects?"

The Department must consider this question in parallel with the development of the cost/benefit model.

MEDIUM RANGE RECOMMENDATIONS (BETWEEN LONG RANGE AND DETAILED)

1. Ensure that the Project Officers do not Lose Touch with Industry.

A most valuable asset, insofar as the information and decision-making system is concerned, is the experience and contacts the project officers have with industry. With time, an officer may lose some of this advantage. Ways that could be considered to prevent this loss are:

- 1) an apprentice program where officers work for a company for a few weeks from time to time.
 - 2) act as consultants to companies, especially small ones who may be in greater need of this advice. Such a task could fall within their regular workload,
2. Consider the Role the Officer from the Office of Industrial Policy Advisor Play in the PAIT Committee.

This member usually receives as information only the Composite Submission. It appears that his actual responsibility is difficult to define. For example, in the PAIT directive, there is not task or responsibility assigned to this voting member.

3. Define Clearly the Area of Responsibility for each Participant in the PAIT Process.

In an effort to reduce the apparent redundant examination of the project, it is suggested that there be a more defined role for each of the participants to play. This would include limiting the preparation of the Composite Submission to the project officer, making the PAIT Program Office responsible for less client contact thus freeing them to concentrate more on the cost/benefit analysis mentioned earlier.

4. Expose the Project Officers to Management Training Courses.

These officers are called upon to undertake a very thorough evaluation of each applicant and, even though the major emphasis is the technical side of the project, the corporate health and quality of the applicant is equally as important as the particular innovation being

developed.

Thus, it would be advantageous if these officers, most of whom have engineering backgrounds, were to be given assistance in other areas of their evaluation, particularly marketing.

SOME DETAILED RECOMMENDATIONS

1. Publish, and Distribute to the Branch Officers, the Case Study that was Prepared as Part of this Information System Project.

This may be of limited use to officers already having some experience with PAIT, but it may be particularly useful to new officers or those who have not done a PAIT project before.

It is true that it is generalized, but that will give it some usefulness to project officers in all branches, particularly as it describes areas (such as the role played by the members of the PAIT committee) with which the project officer is not likely to come in contact during his normal duties.

2. Develop a Project Failure/Framework and Analysis.

A form of information that may be of considerable use to those analyzing a PAIT application would be a list of the reasons for the lack of success of those projects which have not resulted in a successfully marketed product. Recognizing that it is not the purpose of PAIT to withhold awards just because there is some element of risk involved, nevertheless, if certain more common reasons

for failure can be highlighted, then these may be examined more carefully.

3. Prepare a System for Predicting the Probable Demand on the PAIT Funds Available for an Accounting Period.

As the funds applied for by industry increase until they overtake the funds available from the PAIT budget, it will prove invaluable to those processing PAIT to be able to predict the applications for the accounting period in which they are operating. By preparing an analysis of trends, since the inception of the all-grant PAIT scheme (PAIT II), such predictions may be made with some degree of confidence.

4. Assign One Officer to Monitor the Progress of the Work for Several Projects.

One of the statements frequently made by the project officers was that time constraints prevented them from paying as much follow-up attention to a project as they would have liked to. It is easy to see how, under the pressure of new applications (both for PAIT and other programs), they do not feel free to leave their desk.

If indeed the project officers suffer a lack of information in not keeping abreast of their projects, the remedy could be simply to hire more officers or, to relieve the pressure on those analyzing the projects by appointing officers to exclusively visit companies undertaking PAIT work.

The problem with 'exclusive officers' is that they prevent the project officers from keeping up what contact he can with industry. Furthermore the project officer is,

presumably, an expert in the technology in the Branch and is therefore most suited for the appraisal. Also it may be difficult to motivate officers to spend virtually all their time on the road.

The other method may be to assign to each officer a number of companies. It would be his responsibility to see that he maintains contact with these companies.

5. Delay Substantial Computerization of an Information System until a Cost/Benefit Model has been Developed.

Although a considerable data could be put into a computer data bank, the form of the data should be determined by the needs of a cost/benefit model.

SUGGESTIONS FOR FURTHER STUDY

The development of the information flow model involves the cooperation of the user of the information. Because an information system is highly people oriented progress to develop an operational system is often slower than anticipated. For this reason we were not able to address the format and type of data gathering for use in quantitative models.

Before collecting hard data the models themselves must be first developed to determine the input and output requirements.

It is suggested that in order to develop a framework for data gathering -

- 1) A careful study should be undertaken to see which of the information represented in the matrix form in Appendix I can be used in quantitative models.

2) A relative importance of the information should be established. This must be done in conjunction with the project officers.

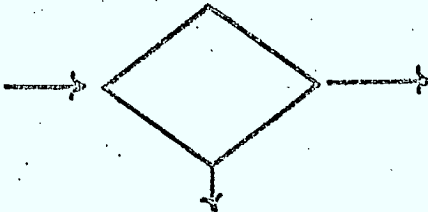
3) What type of data base should be designed?

It is recommended that for this purpose an employee should be assigned to liason and integrate information for the quantitative model builders, project officers and data base design.

Legend for Exhibit III



Direction flow of process.



Decision box:
Means alternative options can be taken depending on the result of either an enquiry or comparison

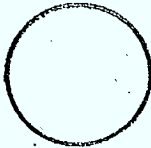


Action box:
The descriptions within the boxes are self-explanatory

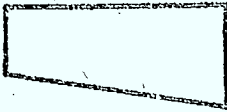


Connecting Symbol:
i.e. A connects to A

Legend for Exhibit II



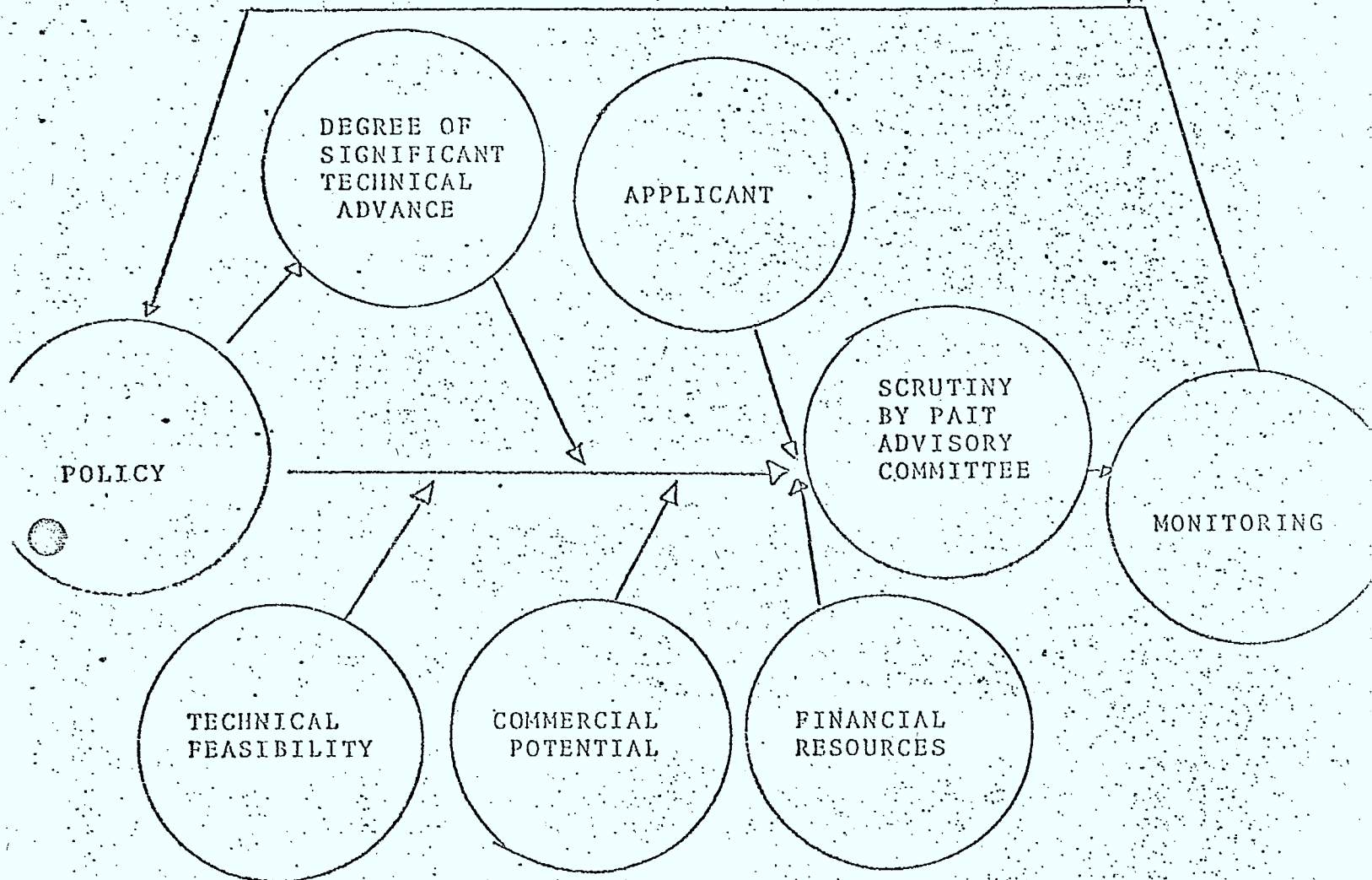
An area of activity or interest.
i.e. center of data gathering



Verbal communication such as advice or information.



Memos, reports, journals or any other hard copy of information



MAJOR AREAS OF INTEREST

EXHIBIT I

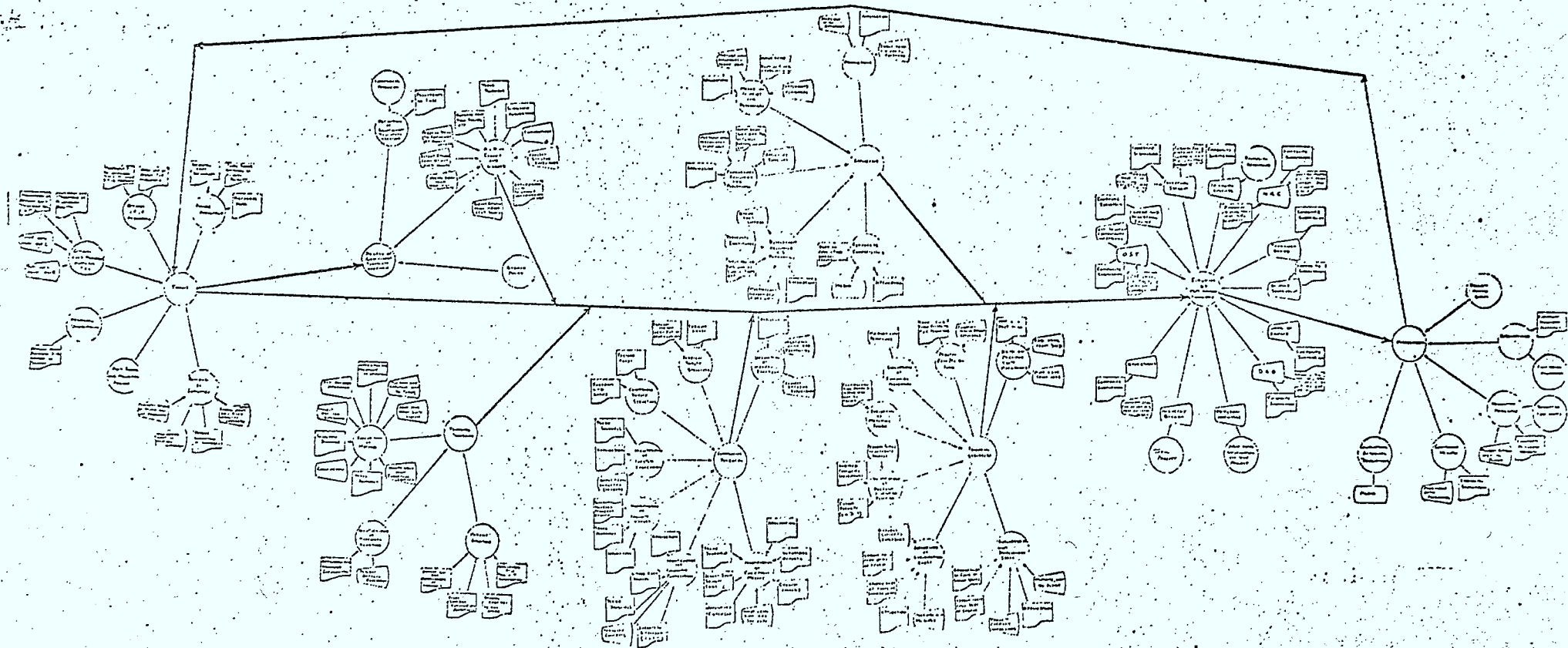


Exhibit II

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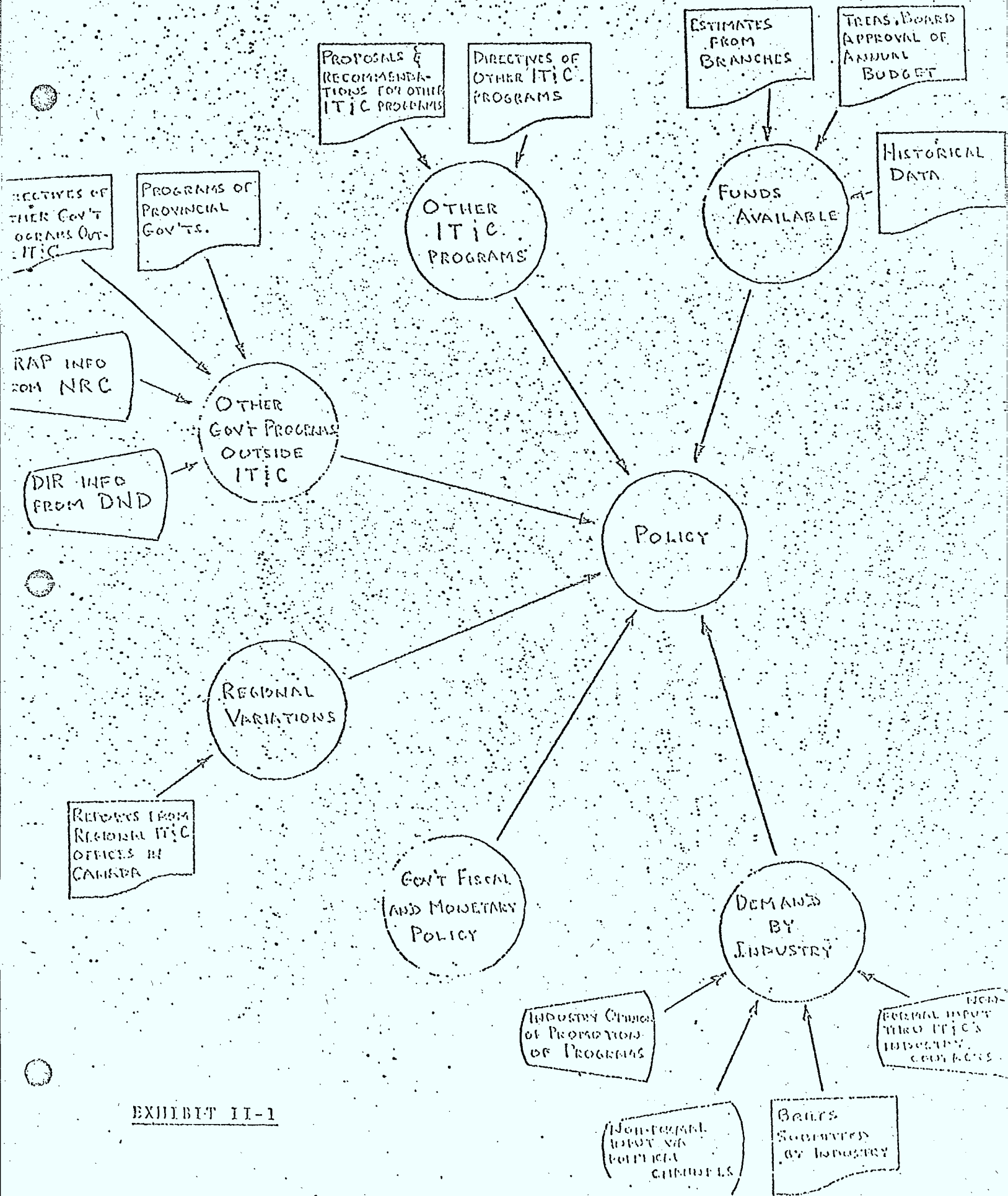
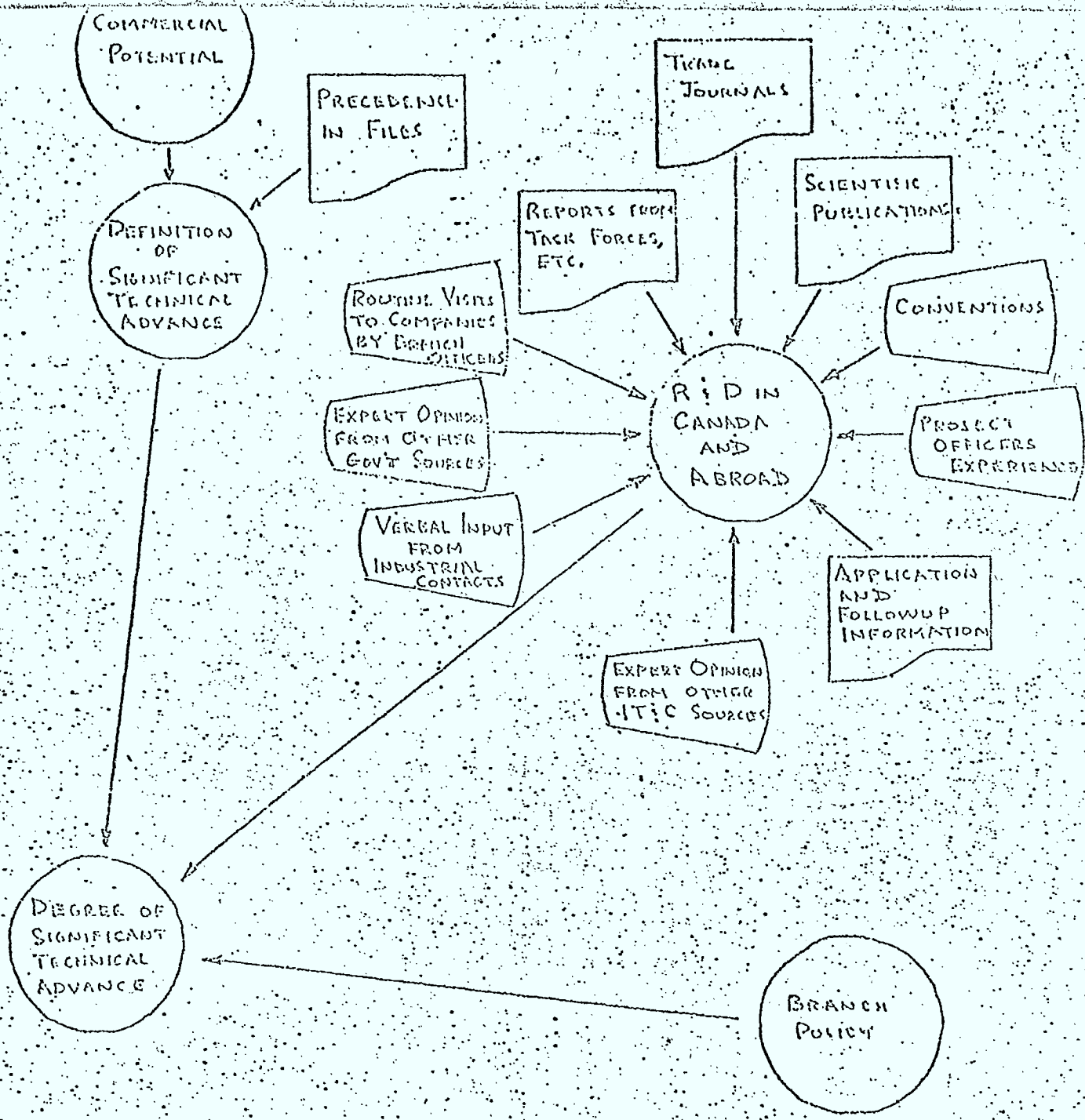
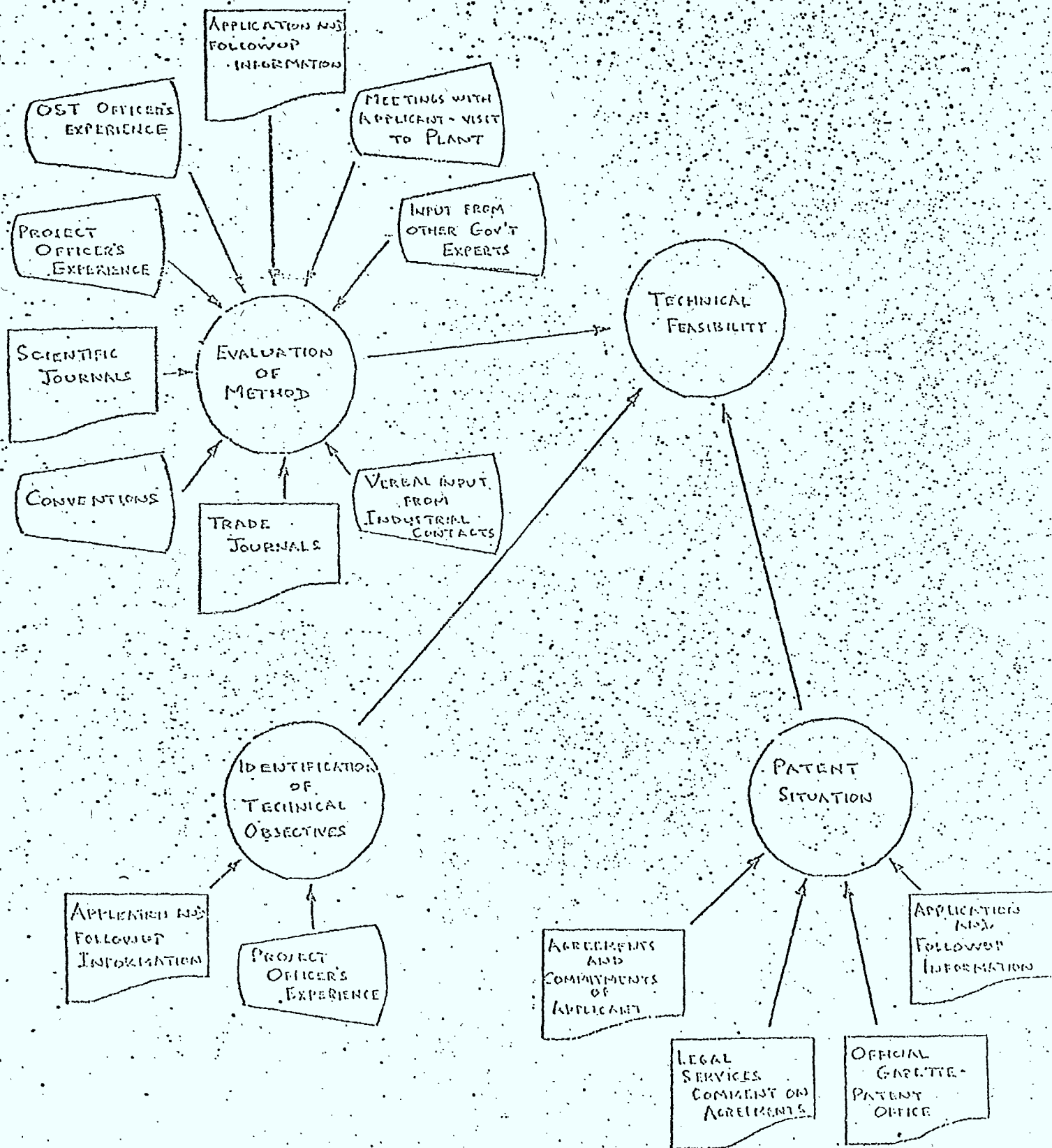


EXHIBIT II-1





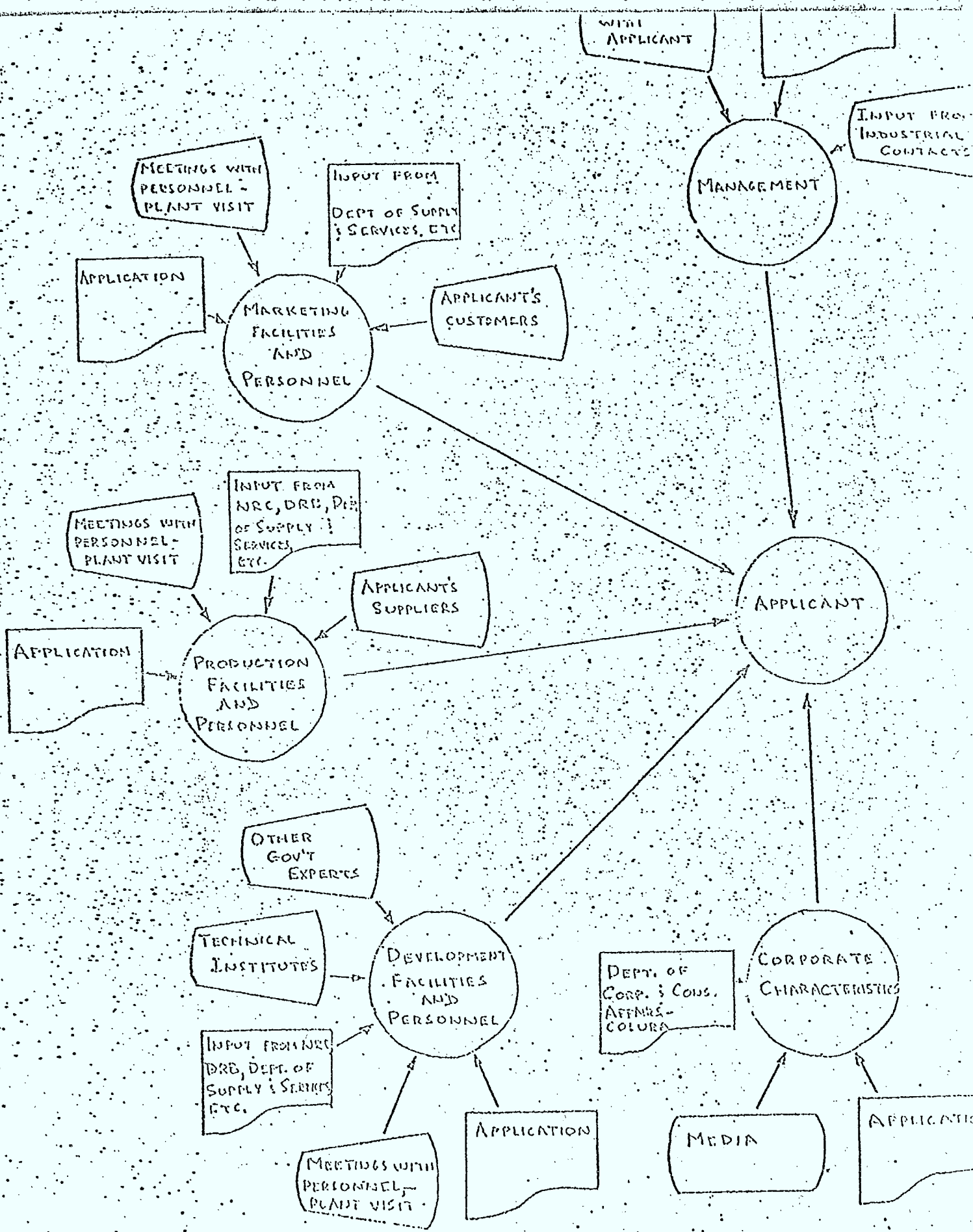


EXHIBIT II-4

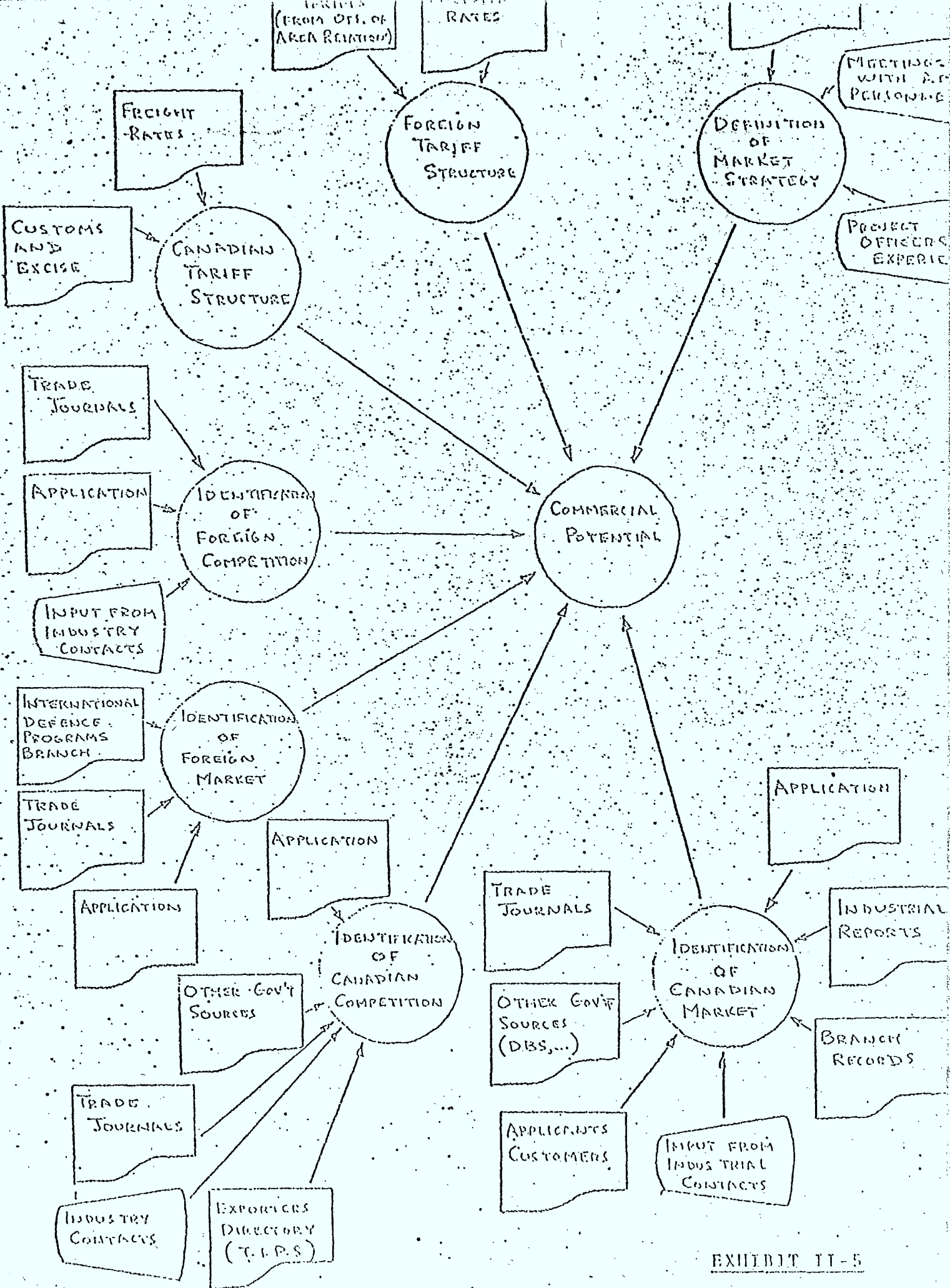
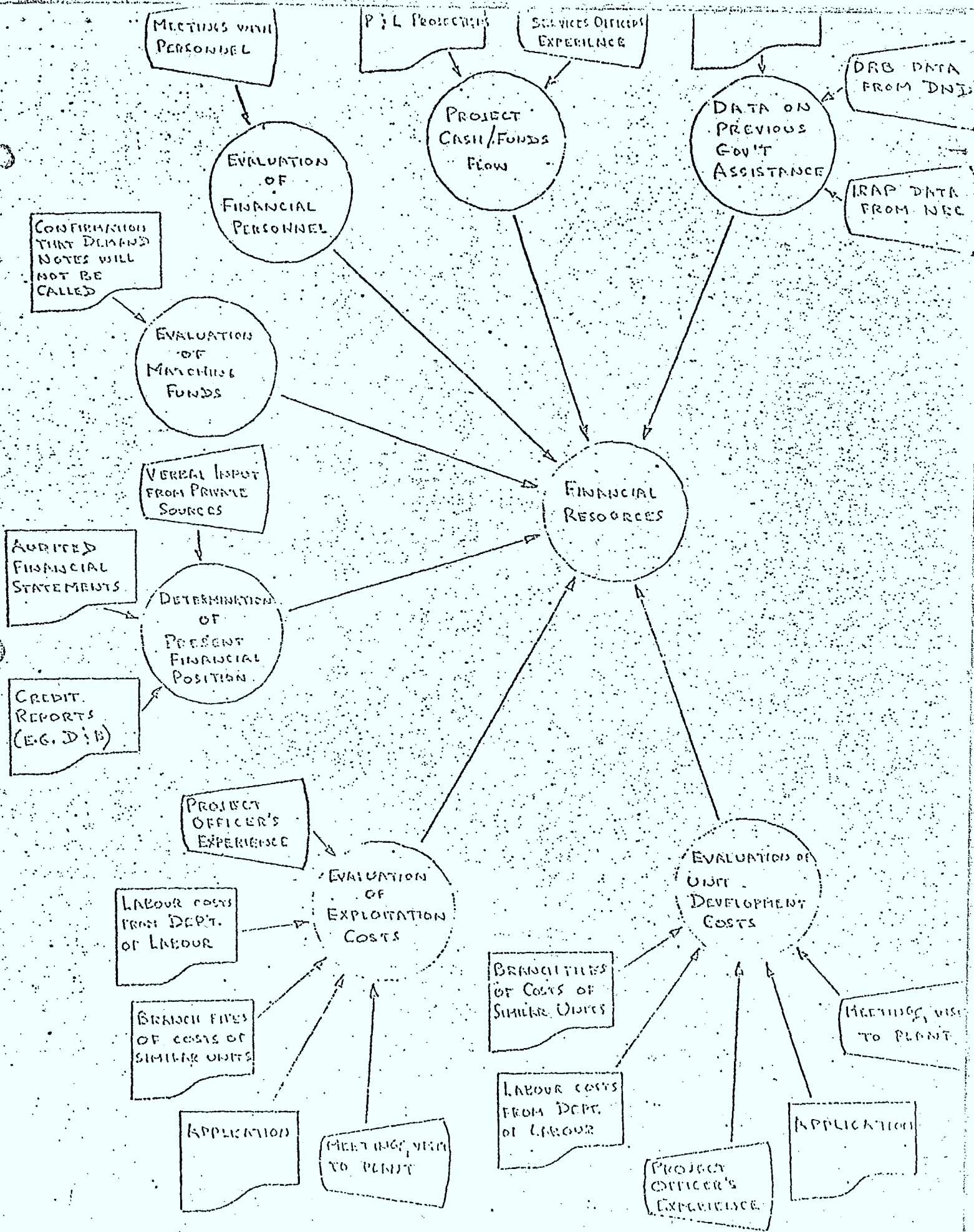
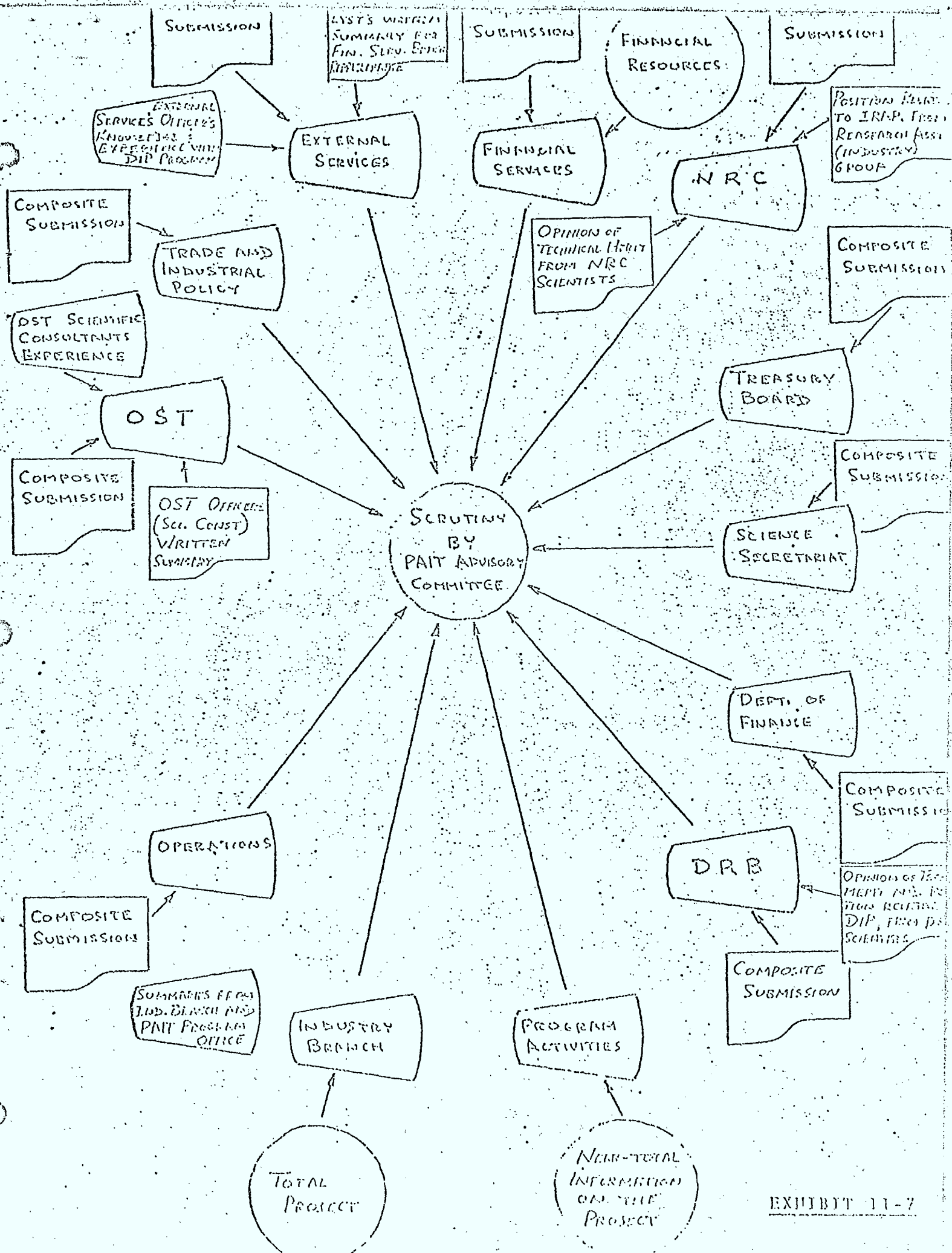
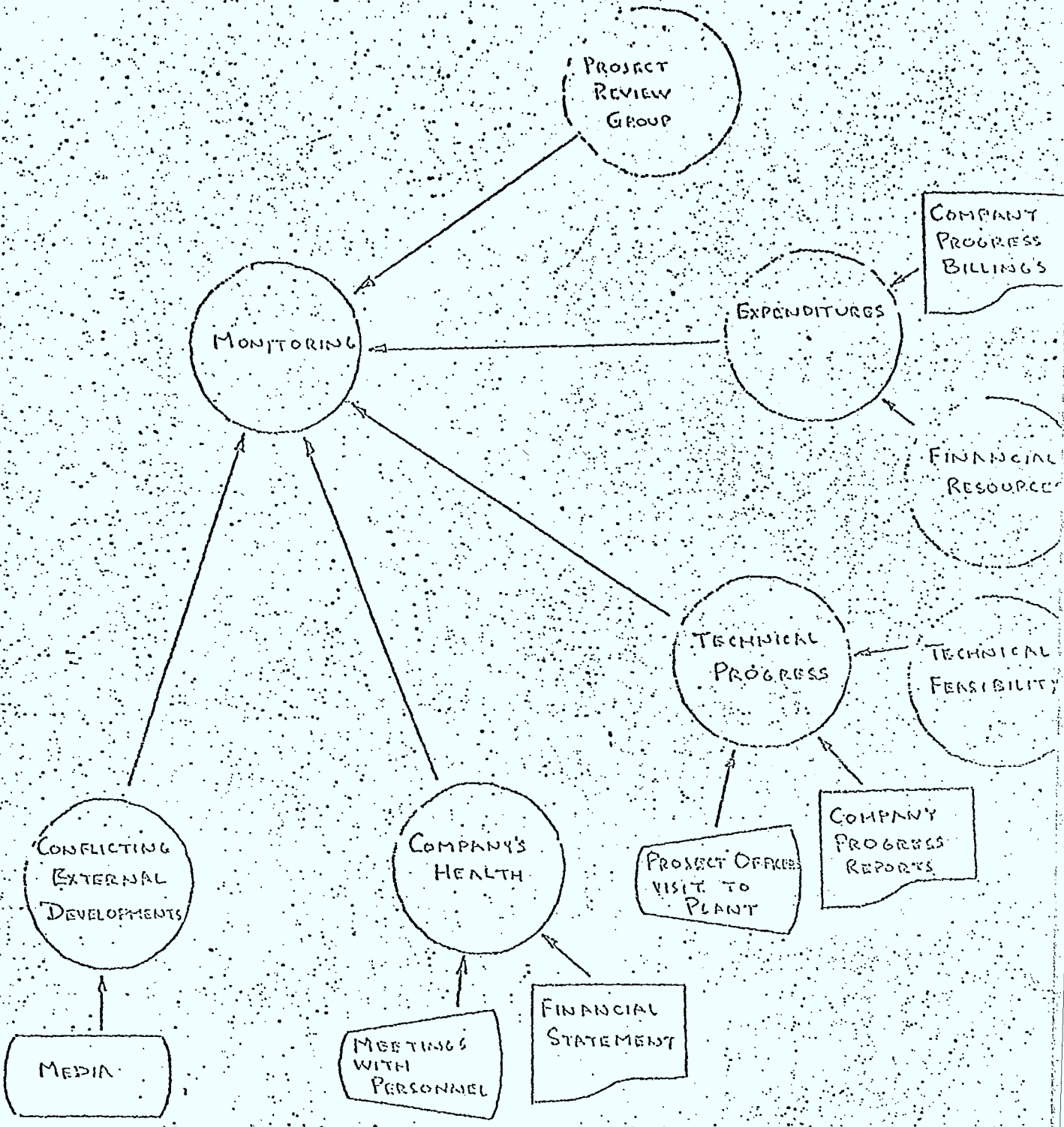
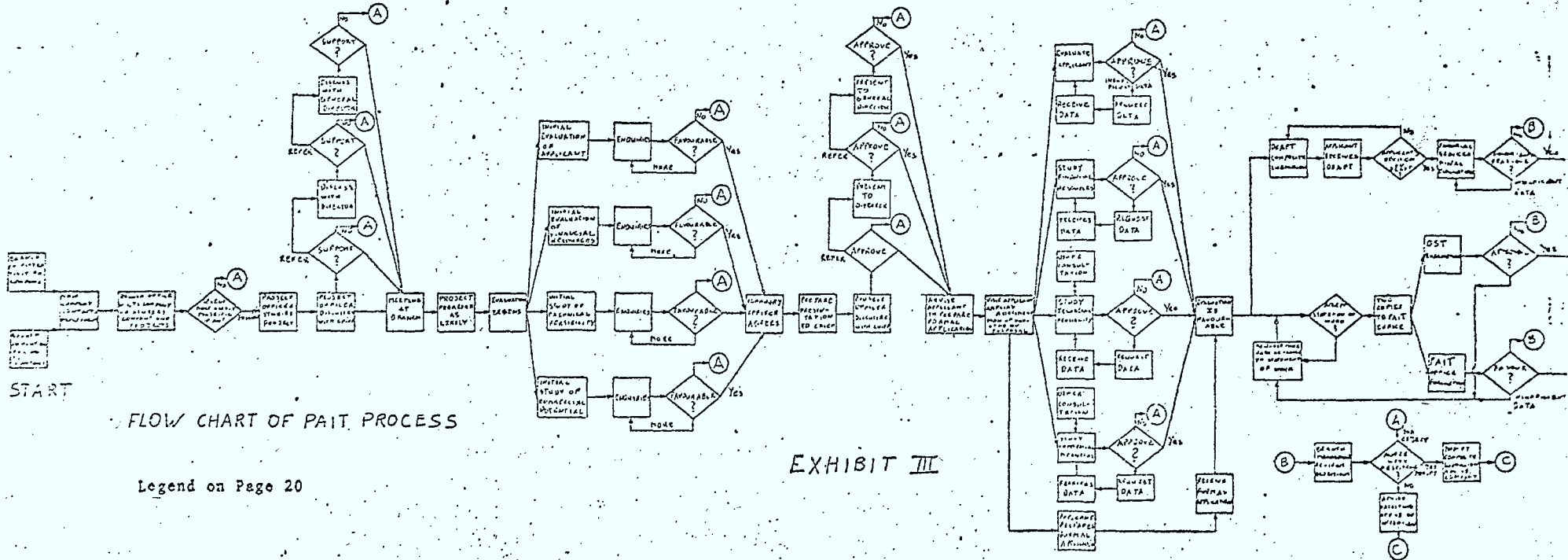
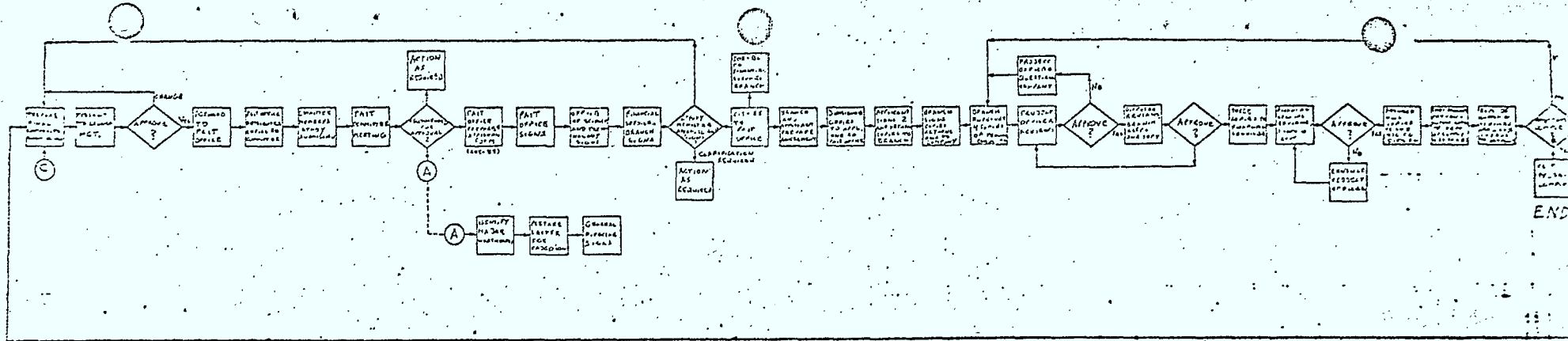


EXHIBIT II-5









FLOW CHART OF PAIT PROCESS

Legend on Page 20

EXHIBIT III

Major Area	Minor Area	Who is interested	Name of information	Form of Information	Source	Frequency of Use	Effort (Mandays)	Completeness Credibility Objectivity	Can it be Stored	Where to Store	Any Complementary Information
		Purpose						Delay	Value	Is it Worth Storing	
From Diagram	" "	Decision maker	Description of information/data	Verbal, experience, report, files, etc.	Source contacted by the decision maker (or given, with contact unnecessary). Not necessarily the original source of data.	L < 20% of projects M 20% - 80% of projects H > 80% of projects	L Negligible effort to get information-by decision maker M Up to half a man-day H Half man-day or greater	- not significant. H usually not acceptable notes for other situations. L: Decision maker usually has low confidence in data, even though he may be forced to use it (none other available) M Decision maker usually places high reliance on data Sum of delay & effort < cost: Decision maker regards it as having L,M or H value Decision maker's L,M, or H value.	Can it presently be stored (or is it stored) in existing system? Y or N If previous column is N, is it worth effort to store? Y or N	Where is it now stored or where would it be stored.	

Exhibit IV

Degree of Significant Technical Advance

Research and Development in Canada: Abroad

Project Officer

To determine if, where and to what degree similar RGD is being done

Major Area	Minor Area	Who is Interested	Purpose	Name of Information	Form of Information	Source	Frequency of Use	Effort (Man-Days)	Delay	Completeness creditability Objectivity	Value N P C O W T	Can It Be Stored	Is It Worth Storing	Where to Store	Any Complementary Information
				General input plus assessment by industry	Usually verbal	Branch's industrial contacts	M	L	-	H	H H	N	-	Reaccessible & updated	-
				Assessment/summary of field	Usually verbal	Other gov't experts outside IT&C	L*	L	-	H	H H*	-	-	" "	*There is difficulty in locating these experts. The need for them is 80%(H) (E*E branch)
				Personal observation of industry facilities	Verbal, usually trip reports	Compares in field	L	H	-	H	H H	Y	-	Branch Files	-
				Formalized data	Written reports, sometimes confidential	e.g. Computer task force	L	L	H	-	- -	-	-	-	This information is used more in formulating branch policy.
				General data on new products & developments	Trade journals	Industry	L	L	H	M	L L	Y	-	Library & Branch library	-
				Data on scientific research	Periodicals	Science community	L	L	H	H	L L	Y	-	"	-
				General Input on state-of-art	Usually verbal	Industry, science, gov't at conventions	L	H	L	M-H	L H	N	-	-	Time constraint prevents more of this
				Framework for assessment	-	Project officers experience	H	-	-	-	- -	-	-	-	-
				Specific, pertinent data	Written	Applicant	H	L	-	H	H H	Y	-	Branch files	-
				Assessment/summary of field	Usually verbal	Other experts in IT&C	H	L	-	M	M M	N	-	Reaccessible	Often OST scientific consultant.

Exhibit V

APPENDIX I

INFORMATION MATRIX FOR ACTIVITY AREAS

CASE FOR STUDY OF INFORMATION SYSTEMS

MAPLE MANUFACTURING COMPANY

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(Program for the Advancement of Industrial Technology)

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MAPLE MANUFACTURING COMPANY

Introduction

On May 1, 1971 Mr. Allen, President of Maple Manufacturing Co., Toronto, held a review meeting with Mr. Baker, his production manager, to discuss development plans for a proposed new product. Both men were of the opinion that the product, if it could be developed and produced at a reasonable cost, would be commercially successful. However, there were uncertainties in the manufacturing process that had to be resolved before the company committed itself to the high costs of a regular production setup. They felt it best to produce at a pilot level as the next development step. Their discussion had reached the point of how to finance this development cost when the president remembered a visit paid to Maple about two years earlier by an officer from the Federal Government's Department of Industry. The officer had told Mr. Allen that the Government offered various incentive programs to Canadian industry, including financial assistance for the development of new products. The next contact from the Government had been in January of 1971 when Maple received a letter and brochure¹ from the Department of Industry Trade and Commerce outlining Government assistance available to Canadian Industry.

This literature had been sent from the Department's Branch² that concerned itself with the same industry as that of the Maple Manufacturing Company. The President assumed the letter had been sent to many companies operating in his industry. The brochures described several programs. One, the Program for the Advancement of Industrial Technology (PAIT), seemed the most suitable for their present project.

The PAIT brochure contained a description of how to

1 Appendices I

2 Appendices II

apply for assistance under PAIT, a list of what an application must contain and a sample of the Contract that would be signed by the Company and the Government. Despite the brochure, however, the President wanted further advice before beginning the obviously large job of preparing an application. Accordingly, he placed a phone call to the Government official¹ who had signed the letter. This was his first move toward his request for Government assistance.

A Description of the Department of Industry, Trade and Commerce

The Department was established on April 1, 1969, and given the responsibility for "stimulating the establishment, growth and efficiency of the manufacturing, processing and tourist industries in Canada, and also for the development of export trade and external trade policies. To achieve these goals, the Department is equipped and ready to help with expert advice and information and even with financial assistance."²

The Department employs about two thousand people. Its headquarters are in Ottawa, it has eight Regional Offices in Canada, offices in about 30 countries, and 14 offices in major American cities.³

The structure of the Department is shown in Appendix II. By way of an analogy to industry, the industrial sector Branches (e.g. Chemicals Branch, Electrical and Electronics Branch), are equivalent to line groups while other groups (e.g. Office of Science and Technology, Financial Services Branch), could be regarded as fulfilling staff functions.

The Department uses the Branches to be the working contact with industry. The individuals within the Branches who carry out the day-to-day liason with industry are project officers

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- 1 The letter had been signed by the General Director of the Industry Branch.
 - 2 Brochure-Industry, Trade & Commerce at Your Service (Jan. 1971)
 - 3 Office in foreign countries are operated by the Department's Trade Commissioner Service.

or commodity officers. It is these officers who handle the majority of the program work.

Some other officers are involved exclusively in PAIT program work. These include the members of the PAIT Program Office in the Operations groups, and the members of the PAIT Policy group in the Office of Science and Technology.

Notes on the Program for the Advancement of Industrial Technology
(PAIT)

In a broad sense, the Department's objective is to assist Canadian industry to ensure Canadian long-term employment and export success.

A more specific goal, falling under the preceding, is to ensure the development of new or improved products or processes incorporating new technology.

The PAIT Directive, (or 'charter') states:

"The basic purpose of the PAIT Program is to promote the growth and efficiency of industry in Canada by providing financial assistance for selected projects concerned with the development of new or improved products and processes which incorporate new technology and offer good prospects for commercial exploitation in domestic and international markets. Specific objectives of the Program are to:

- obtain a net gain to Canada;
- encourage both large and small companies toward innovative programs and well thought out product lines with strong future market potential;
- assist companies to strengthen their operations in Canada through product specialization and rationalization;
- increase the level of productivity in Canadian manufacturing industry;
- improve the technological and design capability of Canadian manufacturing industry and reduce its dependence on foreign technology and design;
- reduce imports and expand exports of manufactured products on a competitive basis;
- encourage innovation in order to promote and exploit unique Canadian capabilities;
- provide new employment opportunities in industry which are attractive to highly trained scientific, technical and managerial personnel."

The PAIT directive further states:

"It is intended that the Program be administered on a selective basis, having regard to PAIT eligibility criteria and evolving government strategy for industrial development in such matters as specialization and consolidation of product lines. Only research and development which is directed at well-defined commercial objectives is eligible for PAIT support. Typically, an eligible project will represent a commitment by an operating company to a promising new product line for which there is an expanding domestic and international market, and the company will have the technical, financial, managerial, and marketing capability to achieve its stated objectives. The applicant is not automatically entitled to PAIT assistance."

Notes on the Major Participants in a PAIT Project

Apart from the applying company, all the major participants are usually in the Department of Industry Trade and Commerce.

Branches

There are nine Operation's Branches in the Department covering different industry sectors. Each Branch is headed by a General-Director, one or more Directors and, under the Directors, a number of officers grouped into Divisions.¹ Each Division is headed by a Chief. Each Branch also has a secretarial staff. The role of the Divisions is not common among all Branches. For example, in some Branches the officers in a Division will do project work (e.g. analysis of a PAIT application) exclusively while members of another Division in the same Branch are responsible for monitoring in detail the state of the industry. In another Branch, the functions of monitoring and project work may both be done by the same officers.

A descriptive name frequently given to an officer who keeps abreast of an industry is 'commodity officer', a term that

¹ Appendice II and III.

comes from the days when the Department of Trade and Commerce was independent of the Department of Industry and some of the former's personnel were given the task of keeping aware of the commodities available for export by Canadian industry. This information on the products was, and is, passed on to the overseas Trade Commissioners who are, in a sense, salesmen for Canadian products.

Project Officers in Branches

Regardless of the practice, one thing common to all Branches is that the burden of a PAIT project falls onto one person, the project officer (although he may be called the commodity officer, the program officer or other name).

Once a company contacts the Department, the responsibility for further work with that company on that project rapidly passes to this project officer who then undertakes the complete project. Should a very large and involved project arise, such as the development of a new aircraft, several people may become heavily involved in the project, but this is the exception rather than the rule.

Program Officers in Branches¹

These officers, in some branches, will work with the project officer in ensuring that all administrative details are covered and in acting as the liason between the project officer and the PAIT Program Office.² In three Branches, however, a Program Officer will undertake the complete project.

PAIT Program Office²

This office supervises the overall running of PAIT. It offers advice, independent of the Branches, to the PAIT Advisory

1 Appendix III

2 Appendix II, see Program Office under ADM Operation

Committee members on specific projects. It acts as a double check that all the required paper work is completed; it prepares the agenda for the monthly meeting of the PAIT Advisory Committee and it may be the first point of contact for companies approaching the Department for the first time. This office may detect or reflect a need, felt through the Branches industrial contacts, to modify the existing PAIT directive.

This group provides judgement, early in the PAIT process, as to whether or not an application meets the PAIT criteria. The officers also are responsible for the collection of PAIT data for later statistical analysis.

The Research and Development Analysis Program Policy Coordination Group within the Office of Science and Technology

The officers in this group are aware of all PAIT projects and pass judgement on whether or not a particular application meets the PAIT criteria.

They are also responsible for the writing up and dissemination of PAIT policy and for the analysis of statistics relating to PAIT. This analysis includes the assessment of the effectiveness of the program.

The results of this assessment, in turn, are used by the officers in making broad judgements of the program which may be translated into policy.

Scientific Consultants in the Office of Science and Technology

These consultants provide an advisory service to the pro-

ject officer on an as-requested basis. Also, they brief the Chairman of the PAIT Advisory Committee, who is the General Director of the Office of Science and Technology, on projects coming before the Advisory Committee.

Financial Services Branch

One officer in this Branch is given responsibility for the analysis of the financial position of the applicant. Written approval from this analysis is required before the agreement¹ is signed between the applicant and the Department.

Legal Services

This group, in the Professional and Administrative Services Branch, is called upon by the project officer to approve any variations from the Standard Agreement.²

Maple's First Move to Apply for Assistance³

The President's phone call put him in touch with Mr. Nelson, the General Director of the Branch related to the industrial sector in which Maple operated. The call was brief - Mr. Nelson felt the project, as explained briefly, may be eligible for some form of Government assistance. The General Director then put the President's call over to Mr. Oliver, who was the Chief of the particular Division with the product under consideration. The President then had a short conversation with Mr. Oliver during which Mr. Oliver also gave the opinion that the project may be eligible for some assistance.

It was evident to Mr. Oliver that, although the project sounded suitable for assistance, specifically PAIT, it was sufficiently complex to justify a careful start in which the Depart-

1 Appendix XII
2 Appendix XII
3 Appendix IV

ment had some input. Accordingly, he told the President that Mr. Peters, one of his project officers, would be down to visit Maple within a few days. He advised the President to wait until after this visit before making the first formal contact by letter with the Department.

Mr. Oliver, aware that Mr. Peters had to take a trip to the Toronto area on other projects, called Mr. Peters and explained what he knew of the project, and asked Mr. Peters to include a visit to Maple.

Mr. Peters, an engineering graduate in 1963, had worked in industry as both a sales and a production engineer until 1967 when he joined the Department of Trade and Commerce as a commodity officer. In this latter position, his job had been to keep aware of the current and planned Canadian industrial products in a fairly narrow part of one industry sector. When the Department of Industry and the Department of Trade and Commerce were combined in 1969, Mr. Peter's was given responsibility for specific projects, including the appraisal and award of Government assistance to various companies producing in the area of his previous commodity activities. With this background, then, Mr. Peters was confident that he was well aware of activities in his area or at least knew enough people on whom he could rely, as the occasion arose, to provide him with information.

Mr. Peters' planned trip to Toronto was for two reasons. First, he wanted to visit a company that had applied to the Department for assistance under the Industrial Research and Development Incentive Act (IRDIA).¹ Second, he hoped to attend a convention of manufacturers in his field. This latter activity was useful but the pressure of the project work made such events infrequent.

1 IRDIA provides funds for general research expenses and capital equipment. PAIT provides funds for specific projects.

Although Mr. Peters had heard of the Maple Manufacturing Company before, he had never included them in his systematic efforts to keep up with the industry. This was because he had a limited time to spend in this effort and, in his opinion, he had to concern himself primarily with the major companies.¹

Mr. Peters' first move on this project was to refer to the Department's Exporter Directory which provided him with a brief outline of the company.²

First Meeting of Mr. Peters and the Maple Manufacturing Co.³

On May 10, Mr. Peters was to meet with officers of the Maple Manufacturing Company. In preparation for the meeting he had referred to the Export Directory. Information had been supplied by Maple two years earlier but had not been updated. He also contacted the Regional Office of the Department in Toronto, but they could supply no new information on Maple. Mr. Peters had then called up an acquaintance in the Department of Consumer and Corporate Affairs. He was mailed a standard data sheet on Maple. It provided him with 1970 sales (\$500,000), the product line and names of corporate officers. In fact, it was less data than he received from the Exporter's Directory. He was aware that he could possibly have received similar data from the Department of Supply and Services, although he did not try to find out.

Mr. Peters travelled to Toronto for the meeting.

Present at the meeting on May 10th were Mr. Peters, Mr. Allen, Mr. Baker, the production manager and the engineer, Mr. Carlhoff who was working on the development of the new product.

Mr. Peters was given 1970's Annual Report⁴ (Maple is not a public company) and a recent internal memorandum on the feasibility

1 Appendix VII-5

2 Appendix XIV

3 Appendix IV

4 Appendix VII-7

of producing the new product. Other than these, the company had no formal data to present to Mr. Peters. However, they did discuss the project at some length. Mr. Peters was also taken on a tour of the plant. He was impressed with the efficiency of the operation. The plant, in general, looked well run. The company had done a little development work on the new project but had slowed down the pace because a new piece of equipment was needed.

It was the expense of this new equipment, plus the other anticipated expenses with this development that had prompted Maple to seek outside assistance. The President told Mr. Peters that, without Government assistance there was a good chance Maple would have to decide not to undertake the project. Mr. Peters had no way of telling whether or not this was the case as it was a company policy decision involving many variables.

Before he left Maple, Mr. Peters and the company drew up a list of contents he recommended should be in a first-contact letter sent to the Department.

On the return to his office, Mr. Peters wrote out a two-page report on his visit concluding that the project looked reasonable for support. He also had a talk for an hour or so with his Division Chief.¹

The Chief, in turn, at a meeting with the Branch Director, brought up this new project. The Director felt it was compatible with the long range policy of the Branch and, therefore, didn't feel any special effort should be made to modify the project.

Mr. Peters, meanwhile, pursued his other projects while waiting for the arrival of the first-contact letter from Maple. Also, he telephoned the Research Management Service (a staff function) and asked for a file and number for the Maple Project. The Re-

1. See Appendix IV

search Management Service prepared three file folders, complete with title and number, and sent one each to the Office of Science and Technology, the PAIT Program Office, and Mr. Peters' industry Branch.

The President of the Maple Company, meanwhile, prepared the first-contact letter using as a guide the information he had received from Mr. Peters. He phoned Mr. Peters several times during preparation to clarify some points. He did not make an effort to answer all criteria mentioned in the PAIT brochure received from the Department.

On May 25th the first contact letter,¹ addressed to the PAIT Program Officer, arrived and a copy was forwarded to the project officer. The project officer asked that a meeting be held between himself, his Chief and the Director. At this meeting, on the 28th, the project was reviewed and it was decided to regard the project as a likely PAIT contender.

However, before asking the applicant to prepare a formal application, the group felt the project officer should investigate several areas to confirm the initial favourable impression. These areas were the competence of the company, the possible prior existence of the product, the technical feasibility of the project and the market potential. The PAIT Directive offers guidelines for evaluation of a Company.²

The project officer attacked these four areas separately.³

The Competence of the Company⁴

Mr. Peters was not making a formal report at this time.

1 See Appendix IV VI

2 See Appendix V

3 See Appendix IV

4 See Appendix VII-5.

In his own words, he was "getting a feel" for the company. He already had a favourable impression of Maple and its personnel, but wanted to do a little further checking. On enquiry, it appeared that no one in his industry branch had had any dealings with Maple. His next step then was to consult a Dun and Bradstreet report. This gave Maple and its principal officers a good credit rating. Also, Mr. Peters placed one phone call to a customer of Maple whose name he had picked up during his plant visit. Over the phone, this customer gave a favourable description on the quality and deliveries of Maple's work. This was enough to satisfy Mr. Peters at this stage of the project.

Possibility of the Product Already in Existence¹

The Branch officers were of the opinion that Maple's proposed product was not yet produced in Canada, nor was there the threat of it being imported in the near future. Furthermore, they were not aware of a similar product under development elsewhere in Canada. Maple had given its assurance that the product was not under development elsewhere.

Mr. Peters did not undertake a patent search as that process would have been too lengthy. However, he had good contacts with the Ajax Company, a firm that he had once worked for and which purchased some products similar to those produced by Maple. He phoned this contact and asked whether there was available on the market any products with the properties of that proposed by Maple, although he did not mention Maple's name. His contact did not know offhand, but said he would try to find out and let Mr. Peters know. A couple of days later the contact phoned Mr. Peters and said he had been unable to find out about any similar product in Canada al-

¹ See Appendix VII-3

though he was told that a large U.S. corporation might be working on the development of such a product. This corporation was known to Mr. Peters to have a Canadian distributor whom he called to enquire whether such a product was available. The answer, by the Canadian representative, was no. Mr. Peters did not pursue this further as he felt it would be violating the confidence of Maple.

He let this part of his investigation rest for the time being, although he was largely convinced that the product would be unique, at least if it were marketed within a couple of years in Canada.

The Technical Feasibility of the Project¹

This was not a difficult area of analysis, Mr. Peters felt. The development project was straightforward, and the technical objectives were not stringent. The main unknowns were at what rate and at what cost the product could be produced. Maple had argued that the only way to determine these factors was to produce at a pilot level. Mr. Peters met and discussed this aspect with the scientific consultant in the Office of Science and Technology. This consultant was even less familiar with the product than Mr. Peters had been, but Mr. Peters found it was useful to engage in a discussion with a colleague who was objective and with whom he could discuss the project freely, which would not have been the case had he gone to one of his industrial contacts, even though such contacts might have a more intimate knowledge of the technology.

Mr. Peters concluded that at this stage there were no serious technological obstacles.

1. See Appendix VII-4

Market¹

Mr. Peters felt the least confident in arriving at an opinion of the potential market. He had discussions with the commodity officer in his industry branch, whose responsibilities included observing and predicting the performance of the specific companies that Maple was most likely to sell its product to. (Maple's product was for industrial consumption only). There was only a handful of Canadian companies who would have a use for Maple's product. The President of Maple had assured Mr. Peters that these companies were very interested in the product and would use it if given the opportunity at a reasonable price. The President had not quoted any figures to Mr. Peters. The commodity officer was able to tell Mr. Peters that the total opportunity in Canada for Maple's product would be about 1,000 units per year for at least five years. But he was unwilling to predict the market share until he knew more about the product.

Mr. Peters did not pursue this further except to telephone Maple and ask that the names of the companies which would purchase the new product be given to the Department.

Mr. Peters then passed on his summary of these conclusions to his Chief, Mr. Oliver, stating that the project looked suitable at this stage but that they should wait until the arrival of the applicant's letter regarding the market before doing further work.

Necessity for PAIT Funds

One thing that had concerned Mr. Peters from the start was his own uncertainty as to whether Maple really needed the PAIT funding for the project. In his own words "If PAIT money goes to-

1 See Appendix VII-6

wards a project that would go ahead anyway, then it is of assistance only to the recipient. On the other hand, if PAIT money is indispensable for the project, then the funds truly buy a chance to increase Canadian jobs, productivity or exports." It was not the first time he had felt this way about a project but, with the information available to him he could make no such judgement. Furthermore, the PAIT directive did not empower him to turn down applications on these grounds although, because the number of applications was growing rapidly, he felt the time would soon come when such a judgement would have to be considered.

Marketing Letter

On June 4th, Mr. Peters received the marketing letter from Maple. He had advised the President that this letter, if it contained sufficient detail, would be useful in advancing the date from which the project's PAIT assistance would be established.¹

Mr. Peters made a copy of this letter and forwarded it to the PAIT Program Office.

On June 6th, Mr. Peters and Mr. Oliver met and again discussed the project. They concluded that the project was worth pursuing and, upon advising the Branch director, made the decision to ask the applicant to provide the Department with a complete, formal application.

Preparation of Formal Application

On June 7th, Mr. Peters telephoned Maple's project engineer, Mr. Carloff and said that he advised Maple to file a formal ap-

¹ The guideline for setting the date of PAIT assistance is three months prior to the date of approval of the application or the date the formal application is registered.

plication with the Department. He mentioned that this application would have to conform to the requirements listed in the PAIT brochure and that he was especially anxious that an expanded market analysis be included.

Mr. Carloff said that they were doing a little work on the project at the time but that he would take time out to proceed with the application. Mr. Peters said he expected to be in Toronto in the middle of the month and that he would drop in and discuss the preparation of the application at that time.

Until his trip to Toronto, Mr. Peters did no further work on the Maple project.

On June 15th,¹ Mr. Peters made his scheduled visit to Maple. Prepared for his examination was Maple's draft of the application. It contained enough data, he felt, to make an adequate assessment of the project. On leaving Maple, he took a copy of the draft to Ottawa with the suggestion that the Company delay final presentation of the application for a few days. This would give him a chance to look at the draft in detail and discuss it with others in his office.

The material collected by Mr. Peters on this visit is listed in the Appendices.²

Mr. Peters next undertook to examine carefully the draft of the application. He examined each of the areas that he had looked at before in greater depth.

At this point he felt a commitment to the project and, as his assessment to date had been that it was favourable, he now

1 Ref. Appendix IV

2 See Appendix VIII

undertook to build up a positive case for senior management. He was prepared of course to turn the project off if adverse information turned up, but he didn't anticipate this event.

Detailed Examination of Degree of Significant Technical Advance¹

Mr. Peter's concern here was the acceptance of the project by The Policy Group in the Office of Science and Technology and by the PAIT Program Office. From his experience, the project was similar in this regard with several others that had successfully passed the committee.

As insurance, however, he phoned the OST officers to check. The OST policy officer agreed that the project did not appear to violate the PAIT directive.

Mr. Peters also contacted the PAIT Program Office as he knew the value of their support in having a project approved. The officer he contacted had no objection to the project on these grounds of 'Significant Technical Advance'.

Detailed Examination of Technical Feasibility²

As a first step, Mr. Peters asked the OST scientific consultant to discuss the technical aspects with him. At a discussion that included Mr. Peters, Mr. Peter's chief and the scientific consultant, they discussed the technical merits of the proposal. At the end of this meeting it was agreed that several points should be examined. Over the next few days, Mr. Peters contacted Maple for clarification. He also placed two telephone calls to his industrial contacts to assure himself the technical qualities of the product were acceptable to the user and one telephone call to an expert he had known before and who worked in another government department. He also had several conversations with the

1 See Appendix VII-3

2 See Appendix VII-4

commodity officer in his branch.

Detailed Examination of Applicant¹

At this time Mr. Peters gave a copy of all the financial data to the appropriate officer in the Financial Services Branch for analysis.

As for other non-financial aspects of the Company, he did not feel any need to pursue them further as his first impression had been so favourable and all further information substantiated this. However, when Mr. Peters discussed the project with the OST officer, they both decided it would be worthwhile if the latter visited the Company in order to gain a first hand impression. Accordingly, on June 20th, Mr. Peters and the OST scientific consultant flew to Toronto and spent half a day with the Company.

This proved to be a worthwhile visit. As well as collecting an impression and further data, the two Government employees discussed several technical aspects of the project. They suggested ways in which the proposed work could be improved and even recommended that Maple discuss the project with the Government expert² that Mr. Peters had contacted a few days earlier. Mr. Carloff agreed to this.

The day after the return to Ottawa, Mr. Peters contacted the expert and told him of Mr. Carloff's agreement to discuss the project. Later, Mr. Carloff contacted the expert and met with him in Ottawa on July 1st.

As a result of this meeting, and the earlier ones with the Department of Industry, Trade and Commerce personnel, Mr. Carloff rewrote parts of the application. Before doing this re-

1 See Appendix VII-5

2 See the last paragraph of preceding page

writing, he phoned Mr. Peters, with whom he had now formed a close association, and checked that the changes would not present any problems. Mr. Peters agreed with the changes and then urged that Mr. Carloff submit the formal application as soon as possible as he, Mr. Peters, had to prepare the Composite Submission (for the PAIT Advisory Committee) by the 3rd of August.

At this point, Mr. Peters was of the opinion that the study of the applicant was complete, except for the financial evaluation.

Detailed Examination of Commercial Potential¹

Mr. Peters further confirmed the sales in discussions with the commodities officer in his branch.

Detailed Examination of Financial Resources²

On receipt of the financial statement and the cost estimates (provided by Maple) for the project, the financial analyst in the Financial Services Branch undertook to see whether "... the company's financial resources should enable it to carry out the project on a sound financial basis".

The financial officer took the financial data, assumed the per unit costs of the project were correct, and prepared a cash flow for the duration of the development project. He concluded Maple would generate sufficient internal funds to finance the project. However, he was concerned that Maple's balance sheet had a large current liability in the form of a demand note held by the President. He therefore contacted Mr. Peters and asked that the President be advised to sign a statement that he would not call this demand note under any circumstances that would jeopardize the project.

This statement was received by the Department on July 15th.

1 See Appendix VII-6

2 See Appendix VII-7

Upon receipt of the statement, the financial analyst recommended to his Director that a letter be forwarded to the Branch stating that the financial position of the company was satisfactory.

On receipt of this letter, Mr. Peters was satisfied with the company's financial resources.

Preparation of Composite Submission

On July 20th, Mr. Peters received the Applicant's formal proposal. Mr. Peters did not give it careful scrutiny as the contents were essentially already known to him and he was more concerned with preparing the Composite Submission.

He did this during the next week by summarizing the data collected in his files over the past two months and building it on to the formal proposal.

An outline of his Composite Submission is appended.¹

The Composite Submission was forwarded to the PAIT Program Office who checked it for completeness and adherence to the PAIT Directive and ordered 30 copies for reproduction. These 30 copies were mailed out on August 3rd to all members of the PAIT Committee.

After August 3rd, the OST scientific consultant wrote a brief critique² of the project to the Director of OST. On August 10th, all these scientific consultants, the PAIT Program officer, the R & D policy assessor (from OST) met to brief the OST General Director, who is also Chairman of the PAIT Advisory Committee, on

1 See Appendix X

2 See Appendix IX

the various applications, including Maple's, due to be considered at the PAIT meeting.

PAIT ADVISORY COMMITTEE MEMBERS¹

Chairman - General Director, Office of Science and Technology. Briefed by OST's scientific consultants and PAIT Program Officers who are familiar with the projects, six days before the formal PAIT meeting. Also advising at this meeting is the Policy Group from the OST. This six day interval permits resolution of problems that may be discovered at the briefing session.

Members - Department of Finance. The representative receives the Composite Submission and generally attends the meeting with this as his only data.

Operations, Department of Industry, Trade and Commerce. The Head of Operations is the representative from this group. He is in charge of all the Branches and receives verbal input as volunteered or required from those Branches, as well as receiving the Composite Submission. Also received is information from the PAIT Program Office, particularly if the Office is of a different opinion from the Branch on the merits of a project. This latter item is carried out because both the Program Office and the Branches report to the Head of Operations. The Program Office is free to comment on any aspect of the project.

Policy, Department of Industry, Trade and Commerce. This group, on receiving the Composite Submission, examines the financial, marketing and management aspects. A summary of important points are made for each application and this summary is used as a guide for the representative on the PAIT committee.

External Services, Department of Industry, Trade & Commerce. The officer, who works on defence industry programs, receives the Composite Submission. He is also in touch

1. See Appendix VII-8

with the branches on defence programs and uses this position to advise the branches on any conflicts that may arise between the two programs.

National Research Council. The NRC receives the Composite Submission which is then distributed to:

- a) NRC scientists in the specific field of the project, and
- b) officers in the NRC's own Industrial Assistance Program (IRAP). The results of the studies of these people are summarized briefly on paper for the NRC representative who attends the PAIT Advisory Committee meeting.

Defence Research Board. The Defence Industrial Research office of the DRB, on receipt of the Composite Submission, vis the DRB Scientific Staff Officers, breaks out the individual projects and gives them to appropriate DRB experts for comment. Their written summarized comments are appended to the Composite Submission and returned to the Defence Industrial Branch after being assessed by the DRB Scientific Staff Officers. The Scientific Staff Officer subsequently attends the PAIT meeting.

Observers - Treasury Board. The officer (from the Industrial and Natural Resources Division) receives the Composite Submission, reviews it, and makes notes of questionable items, usually in the area of finance, commercial potential or corporate strategy. These items he raises at the meetings.

- Science Secretariat. The science advisor from the Secretariat receives only the Composite Submission. His role at the meetings is largely that of observing to keep the Secretariat abreast of events.

-Financial Services Branch, Department of Industry, Trade and Commerce. The officer from the Branch receives, in addition to the Composite Submission, a resume of each application prepared by the particular officer who earlier had done the detailed evaluation of the financial resources. As the Branch will earlier have written a statement that the financial resources are acceptable, the role of the Financial Services Branch representative is one of support of the Industry Branch presenting the application to the PAIT Advisory Committee.

Secretary -Director of Program Activities, Department of Industry, Trade and Commerce. The Secretary is, like the observer, a non-voting member. He is, however, in a position to be intimately aware of the projects as his group does all the PAIT administration. In addition, members of his group, the PAIT Program Office, are in attendance at each meeting.

PAIT Advisory Committee Meeting¹

On August 16th, the PAIT Committee met and considered Maple's application, Mr. Peters and his Chief were present. Mr. Peters spoke for about three minutes, summarizing the project, explaining that it met the Branch's industry sector goals and asking that the Committee approve it.

Three questions were then asked by Committee members, two technical ones and one related to markets. The technical questions were readily answered and the question on marketing, which was whether the potential customers had formally stated they would purchase the product if available, was answered in the negative. This negative answer was not regarded as serious as the project officer explained that it did not reflect on Maple's proposed project but was rather a natural move for these Companies to make as there was no need for them to commit themselves.

The Committee then voted on and approved unanimously the project.

Post Meeting Activity²

The day following the meeting, the PAIT Program Office prepared a form, describing the project and cost, to be forwarded to the Deputy Minister. This form was signed by the PAIT Program Office, the Office of Science and Technology and the Financial Services Branch. The form was then forwarded to the Deputy Minister's Office where it was signed without comment and returned to the PAIT Office who passed it on to the Branch.

The Branch (Mr. Peters) then prepared the Agreement³, which consisted of the PAIT Contract and the Statement of Work, and forwarded three copies to Maple who signed two and returned them. The Branch also signed both copies and returned one to Maple and kept one in the Department.

¹ See Appendix IV

² See Appendix IV

³ See Appendix XII

⁴ See Appendix VII-9

Project Monitoring¹

As the duration of the project passed, Maple sent in progress reports and billings periodically (but not monthly). Mr. Peters visited Maple three times in the next eighteen months to check their progress. At the end of that time, Maple had nearly finished the project but required about three more months, to which the Branch agreed. At the end of this time the project was complete and Maple was awarded their final payment together with a 10% holdback reserved by the Department under the terms of the Agreement.

For Mr. Peters this was the end of the project.

¹ See Appendix VII-9

APPENDICES

- I Brochure Describing PAIT
- II Organization Chart - Department of Industry Trade & Commerce
- III Organization Charts - Industry Branch
- IV Flow Chart of PAIT Process
- V Appraisal Criteria
- VI First-Contact Letter from Company
- VII 1-9 Areas of Interest and Information Sources
- VIII List of Material Collected on June 15th
- X Outline of Composite Submission
- XI Memorandum from Scientific Consultant (OST)
- XII Agreement
- XIII Claim for Progress Payment
- XIV Information Provided in the Exporter's Directory

Program Principles

The basic purpose of the PAIT Program is to promote the growth and efficiency of industry in Canada by providing financial assistance for selected projects concerned with the development of new or improved products and processes which incorporate new technology and offer good prospects for commercial exploitation in domestic and international markets.

Financial assistance under the Program is available to companies incorporated in Canada for development projects to be carried out and exploited in Canada. Costs of an approved project are shared by the Department and the company concerned.

Consideration is given to applications for PAIT assistance from individual companies, or from groups of companies proposing to support jointly a development project. It is not the purpose of the Program to finance the acquisition of general purpose capital facilities. Companies are expected to have or to acquire the capabilities, facilities and other resources required not only to manufacture and market the resulting product or use the resulting process. However, companies may subcontract portions of the work to other companies, research institutes, universities, or consultants, where this is considered desirable.

Responsibility for proposing development projects and assessing their technical and commercial feasibility rests with industry, as does the responsibility for the subsequent direction and execution of the development work. The Department appraises applications against a number of selection criteria and monitors the progress of those projects which are approved for support. To qualify for support, projects should involve a substantial technical effort, i.e. normally, not less than one professional man-year.

Companies are required, within a reasonable time, to exploit the results of the development project in the domestic and export markets, from a manufacturing base in Canada, to the extent that it is not uneconomic to do so.

Title to patents, designs, technical data, and materials resulting from a project vests in and remains the property of the company. However, companies must undertake not to transfer technical data or inventions, methods or processes resulting from the development project to anyone for the purpose of producing or manufacturing outside Canada end products identical to or substantially the same as the products resulting from the development project without the consent of the Minister.

Financial Arrangements

Cost Sharing

As a rule the Department contributes on a grant basis up to 50 per cent of the total estimated cost of approved development projects, without profit or fee to the applicant, by making monthly progress payments as costs are incurred by the company, in accordance with the provisions of the Assistance Agreement, Appendix II.

If the company sells or transfers to commercial use any prototype, pilot plant or other equipment, the costs of which were charged to the PAIT project, the company may be required, at the discretion of the Minister, to repay to the Crown, in the ratio of their respective contributions, the proceeds of sale or the fair market value of the prototype, pilot plant or other equipment, whichever is greater, but the Crown's share shall not exceed the Crown's contribution to the project.

Eligible Activities

Financial assistance is provided under the Program for current expenses which are essential to the development of new or improved products or processes (e.g., direct labour, direct material, subcontracts and consultants, overhead) including industrial design services and the costs of constructing prototypes, pilot plants and special test equipment. In addition, the following preproduction expenses are eligible for support where they are related directly to the commercial exploitation of the results of the development project: the preparation of production drawings, process data, reports, specifications, instructions and bills of material, and the design of production tooling, inspection and test equipment, and other non-recurring pre-production activities of a similar nature.

Capital costs incurred for the acquisition of general purpose facilities and equipment, and expenses related to production and marketing activities are not eligible for support under the Program.

Treatment Under the Federal Income Tax Act and The Industrial Research and Development Incentives Act (IRDIA)

Section 72 of the federal Income Tax Act allows a taxpayer to deduct when computing income for tax purposes, all expenditures of a current nature made in Canada for scientific research; and all expenditures of a capital nature made in Canada (for the acquisition of property other than land) for scientific research, in the year in which they were incurred. Accordingly, a company may claim its share of the costs of the development portion of a PAIT project as a deduction from income under Section 72. Depending on the nature of the pre-production expenses related to a PAIT project, a company may claim its share of these costs under other Sections of the Income Tax Act.

Subject to the provisions of the Industrial Research and Development Incentives Act and Regulations, a company which has received assistance under PAIT may include that portion of its share of the costs which were incurred under the PAIT project in respect of scientific research and development in applying for a grant under IRDIA. Additional information with regard to this Act may be obtained by writing to the IRDIA Program Office, Department of Industry, Trade and Commerce, 112 Kent Street, Ottawa 4, Ontario.

Contractual Arrangements

Assistance Agreement

The provision of PAIT financial assistance for approved development projects is covered by a standard Assistance Agreement in the form set out in Appendix II. A Statement of Work agreed to by the company and the Department is appended to and forms part of the Assistance Agreement.

Commercial Secrecy

Recognizing that research and development plans and activities may have a vital bearing on a company's competitive position and information thereon is proprietary, the Department treats any information provided by the company in the strictest confidence. Accordingly all documents containing proprietary information should be marked "COMMERCIAL CONFIDENTIAL".

Method of Application

The following outline is intended as a general guide to the information which a company should provide in written form in its Application for PAIT Assistance.

However, prior to submission of its application, a company is encouraged to forward a three or four page letter, setting out the main technical features of the proposed development project, indicating the market potential for the resulting product, giving a brief statement of the company's capabilities and facilities for development and follow-on manufacturing and marketing, and estimating the development and pre-production costs. Following this, Departmental representatives will contact the company to provide additional information and guidance in the preparation of the application. Three copies of the letter should be forwarded to:

PAIT Program Office
Department of Industry, Trade and Commerce
112 Kent Street,
Ottawa 4, Ontario

The Application should consist of:

- Cover Sheet
- Summary
- Description of the Development Project
- Analysis of Commercial Feasibility
- Outline of Company Qualifications
- Statement of Work
- Cost Estimate

The Cover Sheet should include:

- the project title
- the date of the application
- the name, address and telephone number of the company
- the name and position of the company officer submitting the application
- a statement that the company accepts the terms of the PAIT Assistance Agreement (Appendix II of this brochure).

The Summary should be not more than two pages long and should include:

- the project title
- a concise description of the product or process to be developed (specify the area of technical innovation)
- a brief statement of the advantages to users of the end product or process, the market potential (domestic and export, units and dollars), and the share of the market the company expects to obtain
- a time schedule (start, major milestones, finish)
- an estimate of the total cost of the project and the PAIT assistance requested
- information about any other federal or provincial government R & D assistance received by the company (the title and cost).

The Description of the Development Project should include:

- an explanation of the nature of the technical advance, which should be sufficient to ensure that the product or process will be competitive by the time the marketing stage is reached
- an indication of whether the area of technical advance is expected to be patentable and, if so, in which countries the company plans to apply for a patent
- the technical features which should be set out in sufficient detail to permit evaluation by specialists competent in the field concerned
- an identification of the main technical problems and the technical risks which should be reduced to a practical minimum by the method of approach adopted (The project must be founded on a sound technical base.)
- an explanation of the method of approach to resolving the technical problems (The reasons for choosing the selected solution, and discarding alternative solutions, should be explained with supporting documentation, as appropriate.)
- the performance targets which should be attainable within the cost and time limits proposed
- the names of key personnel who will be assigned full-time to the project, with an outline of their qualifications and experience
- a list of major hardware requirements together with any special test and equipment which has to be fabricated
- plans, if any, for subcontracting and the use of consultants.

The Analysis of Commercial Feasibility should include:

- the market requirement for the end product or process in terms of the user's need for increased performance, reduced costs, simplicity of operation, or other demand factors
- a market analysis identifying the users, estimating the demand in units and dollars (domestic and export) and the rate of growth of the market
- a forecast of market penetration (the market potential must be adequate to yield a satisfactory return on investment)
- performance data or management plans which demonstrate that the marketing organization and management capability of the company will be adequate to attain the market objectives proposed
- an assessment of the company's marketing organization and management capability in relation to distribution problems, transportation costs, need for after-sales-servicing, competitive pricing requirements, the effect of tariffs on export performance, and other relevant factors
- an analysis of production and marketing costs particularly where price is a critical factor
- a statement that the company possesses full rights to proceed with the proposed development project and to manufacture and sell the results in all markets where the company anticipates making sales.

The Outline of Company Qualifications should include:

- a statement of the company's long term goals and the project's relevance to them
- an outline of the company's prior experience in the field
- information concerning the facilities to be employed during the conduct of the development project and follow-on manufacturing and marketing
- assurance that the financial resources are adequate to enable the project to be carried out on a sound financial basis. (If additional funds are required to undertake the project, *finalized arrangements* to raise these funds should be presented by the company.)
- audited financial statements for the past three years
- evidence that the company has or will have the financial resources required to cover the costs of commercial exploitation of the resulting product or process, as well as provide for other normal needs of the business such as repayment of term debt and the replacement of machinery and equipment. (If additional funds are required to produce and market the resulting product, *definite plans* to raise these funds should be presented by the company.)

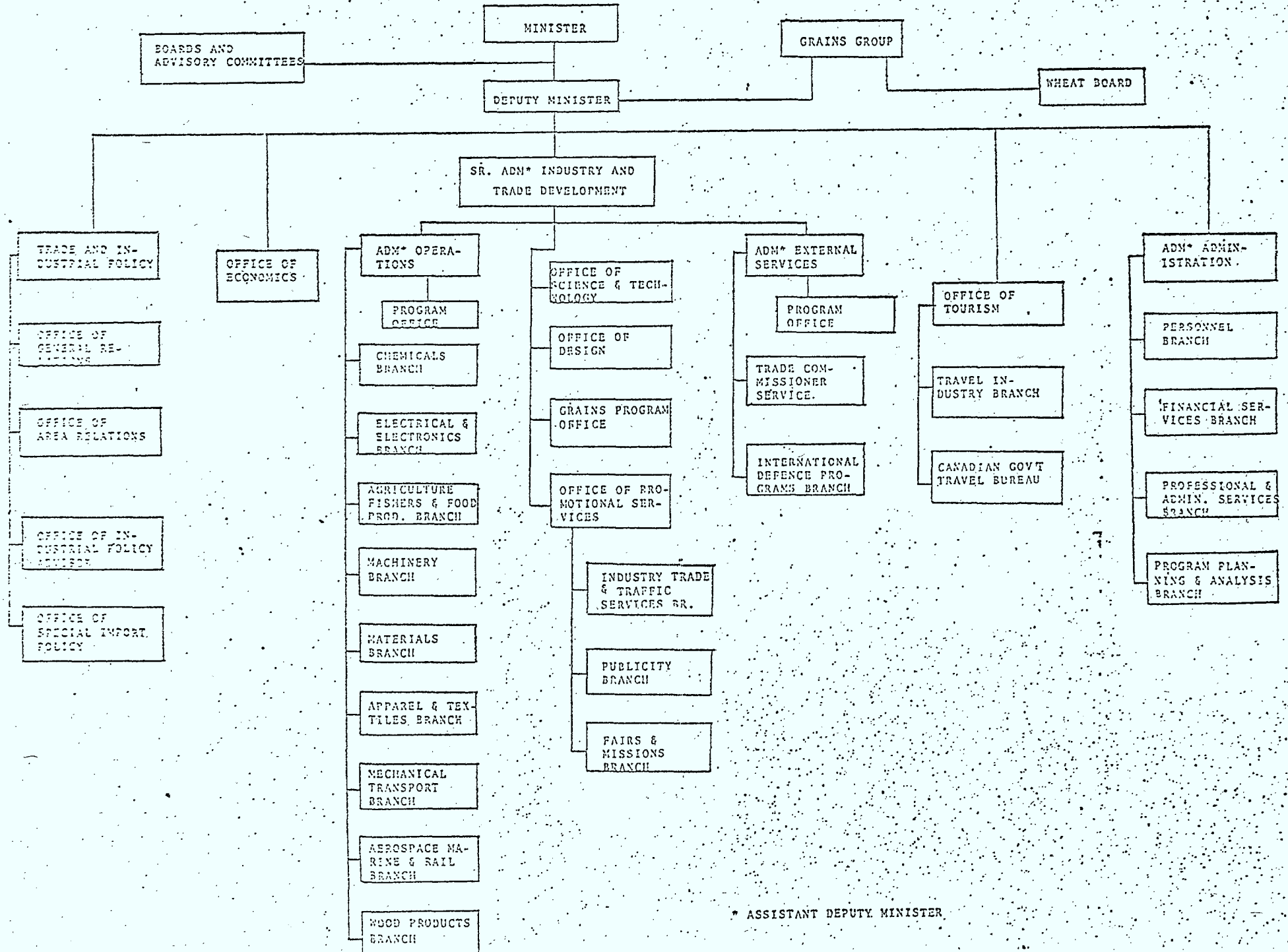
The Statement of Work which summarizes:

- the purpose of the project, including quantitative performance targets of the product or process to be developed
- the major tasks to be undertaken and the method of approach to resolving them
- the start, major milestones, and finish dates
- progress report requirements.

The Project Cost Estimate should follow the format in Appendix I.

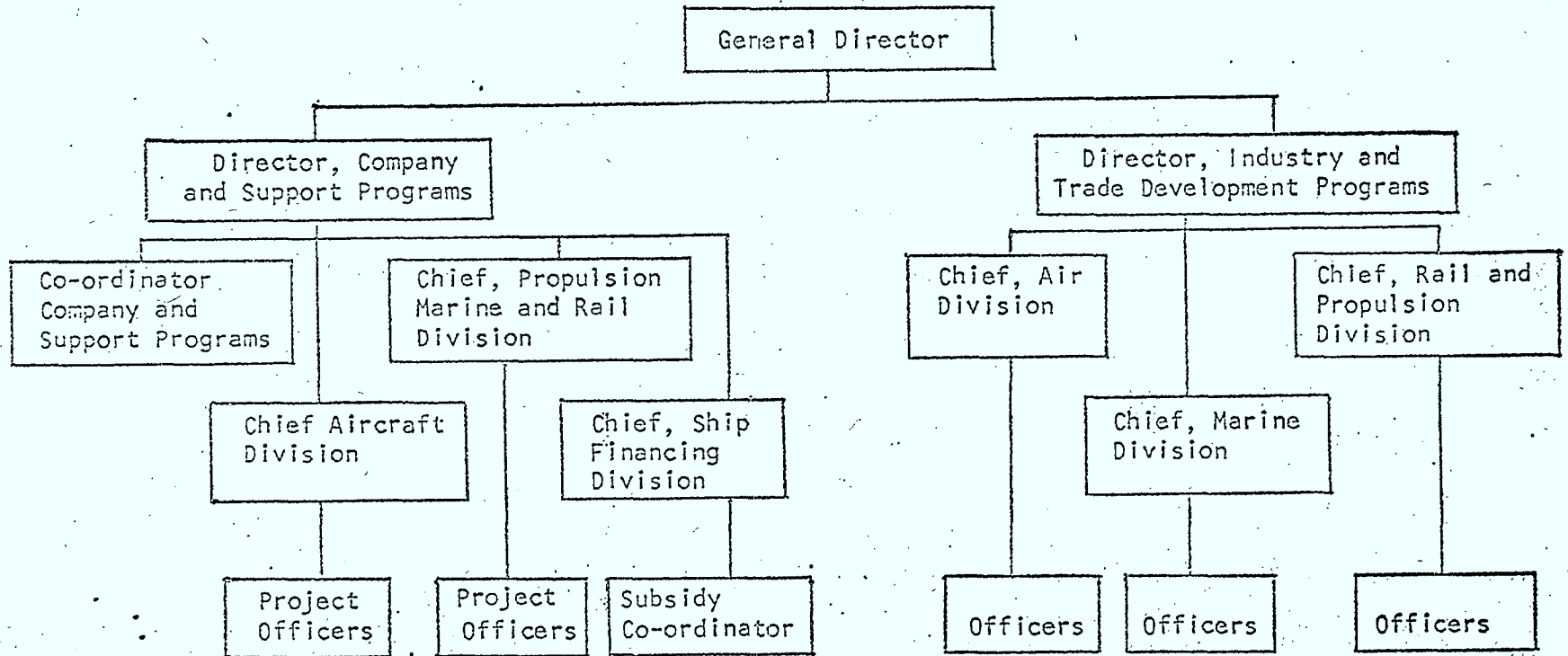
Appendix I
PAIT Project Cost Estimate
(Suggested Format)

Company:		Address:		
Project:		Company Officer:		
1 Direct Labour, (State type, i.e. Research, Development, Design, Pre-Production, etc.)				
Type	Dept. or Division Cost Centre	Estimated Hours	Rate/ Hours	Total Cost \$
Total Direct Labour Cost				
2 Direct Material, (Specify Major Items, e.g. Raw Material, Components)				
Major Items				Estimated Cost \$
Total Material Cost				
3 Special Test Equipment (Fabrication of)				
Equipment		Function		Estimated Cost \$
Total Equipment Cost				
4 Sub-Contracts, (Include Consultants)				
Name and address of Sub-Contractor	Type of Work	Type of Contract	Time Period	Value \$
Total Sub-Contracts				
5 Other Costs, (Travel, Patent Applications, etc.)				
Total Other Costs				
6 Overhead				
Dept. or Division Cost Centre		% of Direct Labour		Overhead Cost \$
Total Overhead Cost				
7 Total Cost, (1 to 6 inclusive)				
8 Estimated Expenditure by Fiscal Year Ending March 31				
1970-71				\$
1971-72				\$
1972-73				\$



* ASSISTANT DEPUTY MINISTER

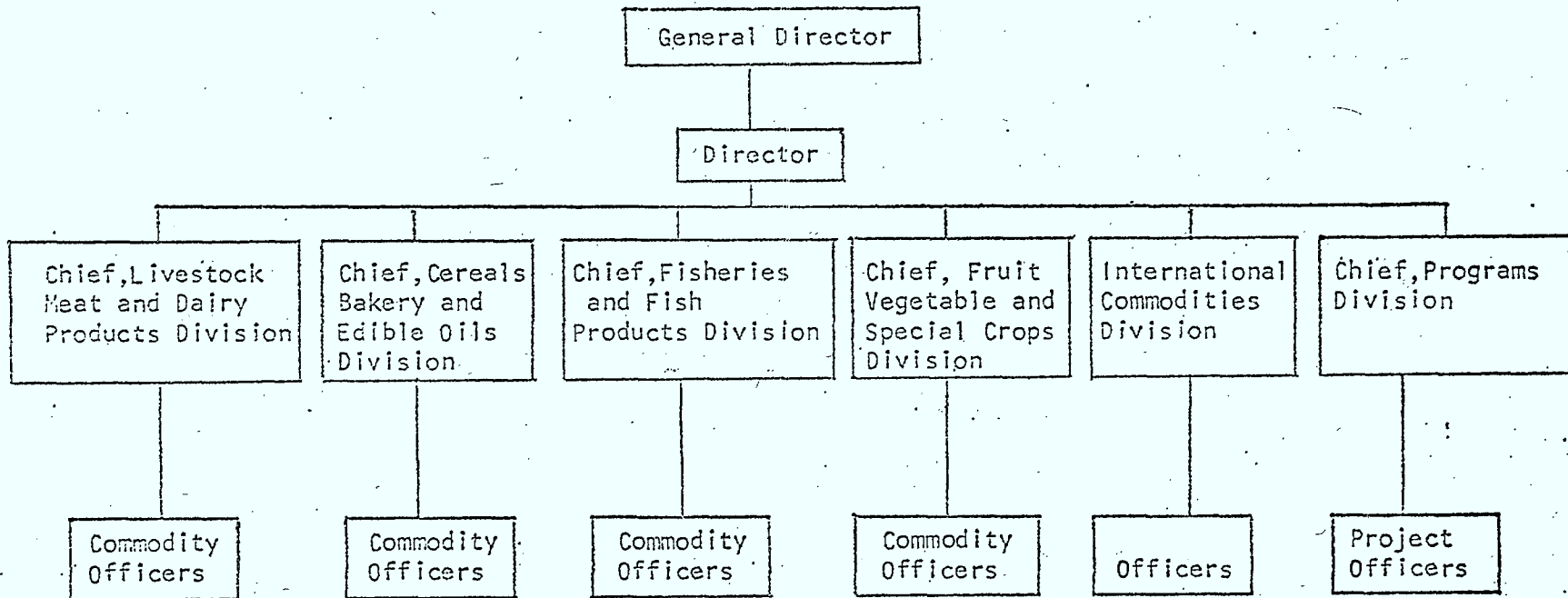
AEROSPACE MARINE AND RAIL BRANCH



Co-ordinator, C and SP,
responsible for liaison
with Program Office for
PAIT project

Project Officers responsible
for Composite Submission
and monitoring of PAIT
project.

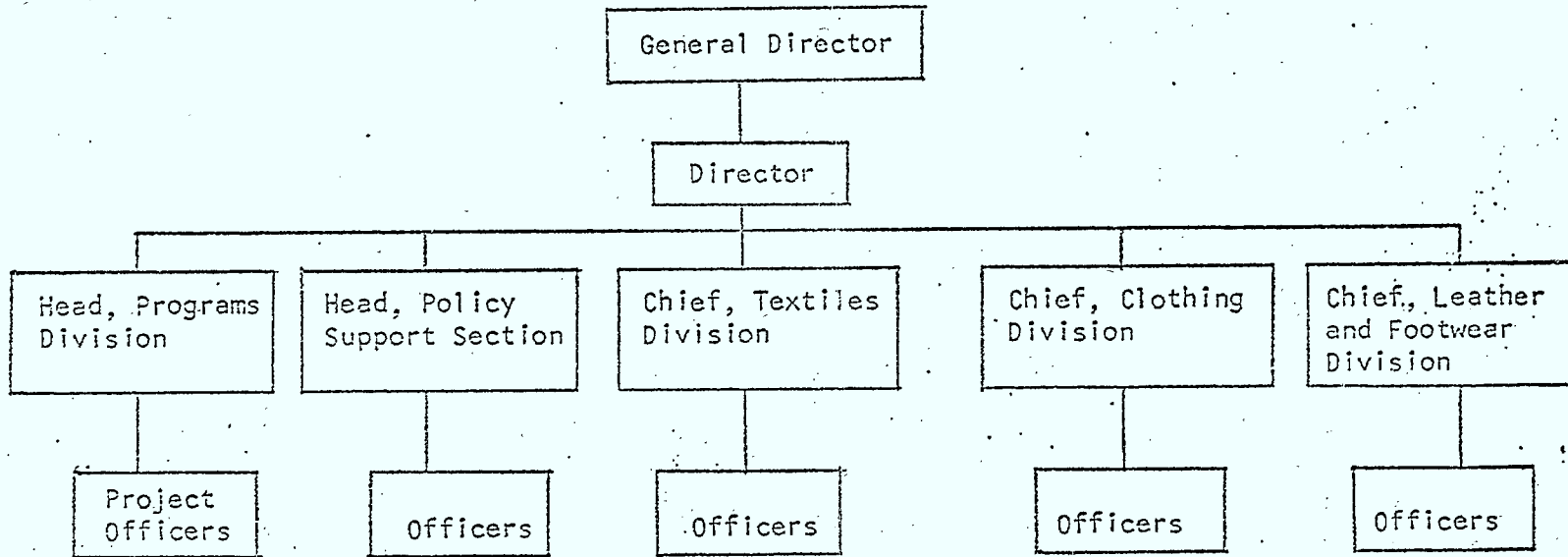
AGRICULTURE FISHERIES AND FOOD PRODUCTS BRANCH



Commodity Officer may initiate a PAIT application

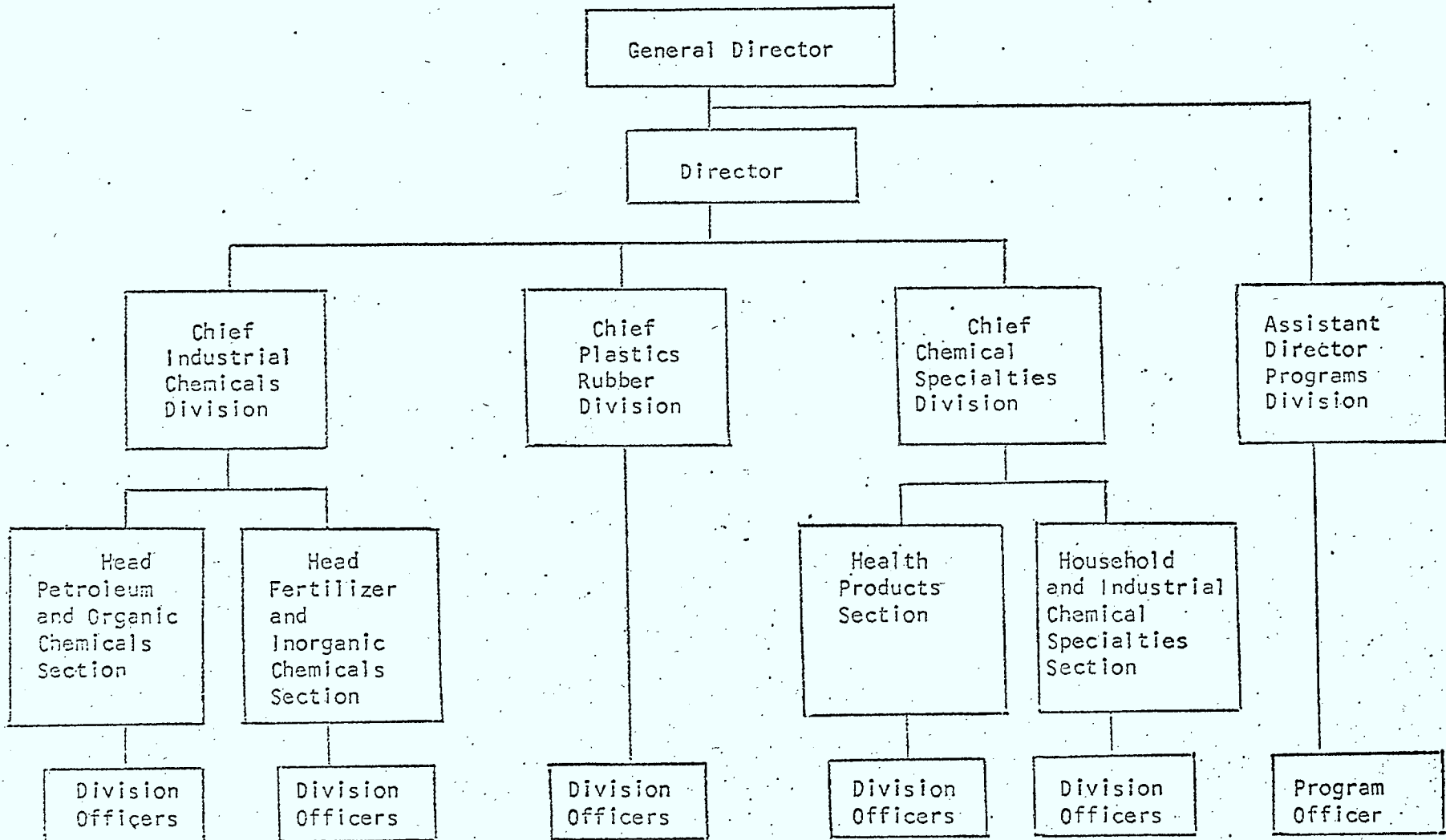
Project Officer responsible for PAIT project

APPAREL AND TEXTILES BRANCH



Project officer
responsible for
PAIT projects.

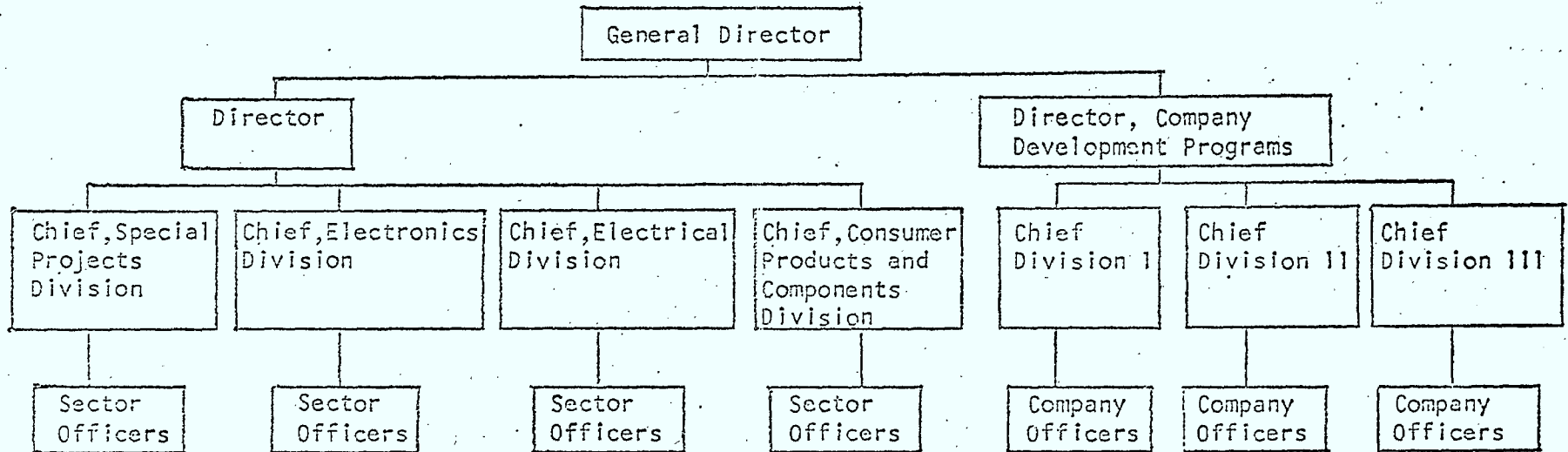
CHEMICALS BRANCH



Division Officers responsible for commodities and projects (e.g. PAIT)

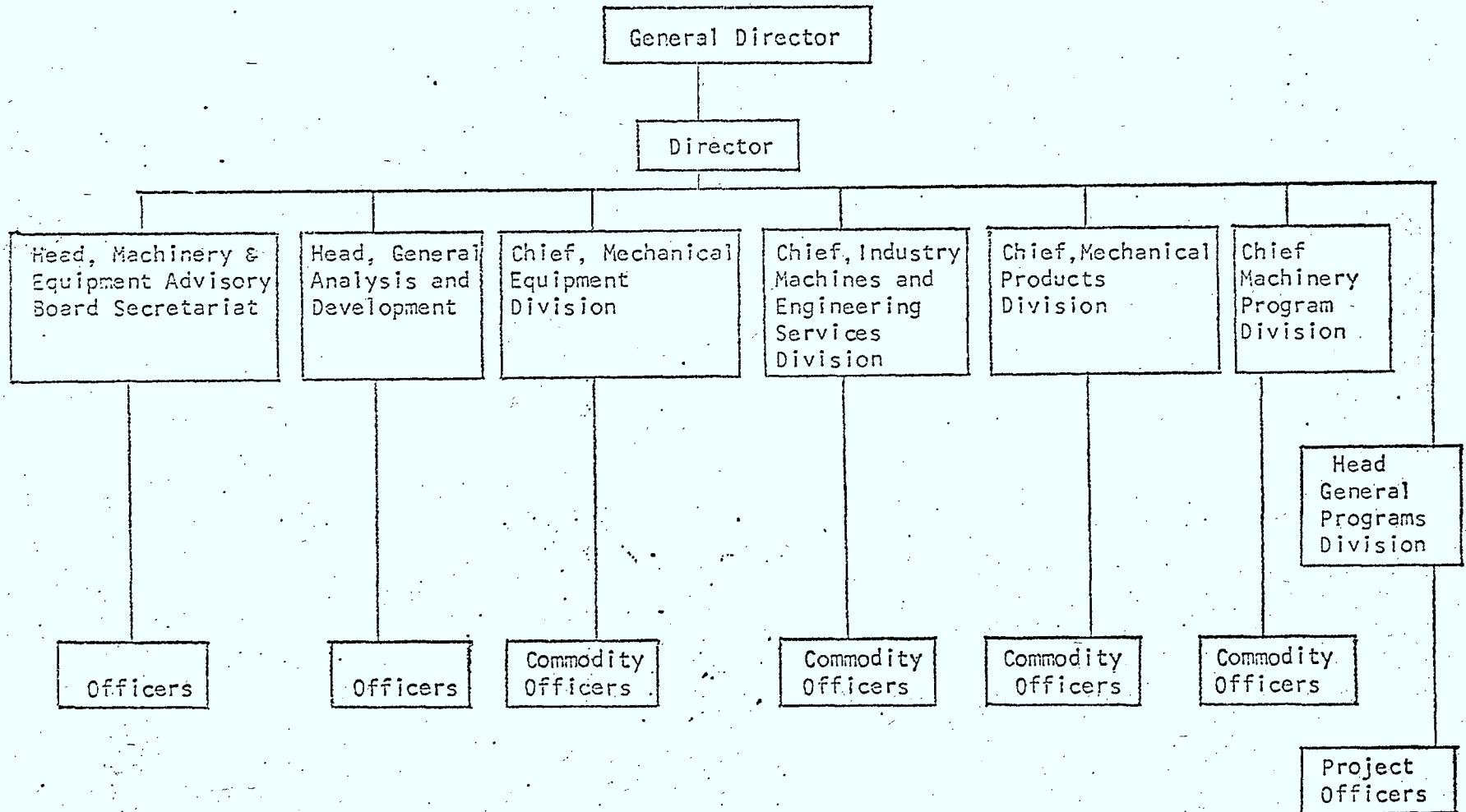
Program Division responsible for Program Administration, Agreement and non-technical monitoring.

ELECTRICAL AND ELECTRONICS BRANCH



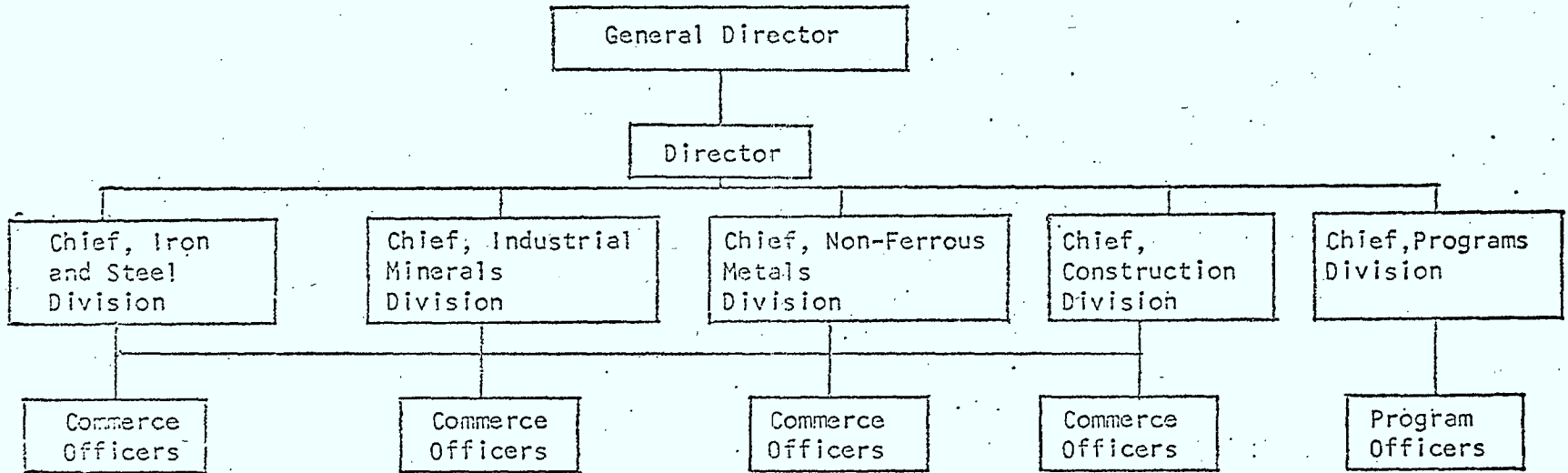
Company officer responsible for certain companies and for any projects (e.g. PAIT) connected with those companies.

MACHINERY BRANCH



Project officers
responsible for
PAIT project

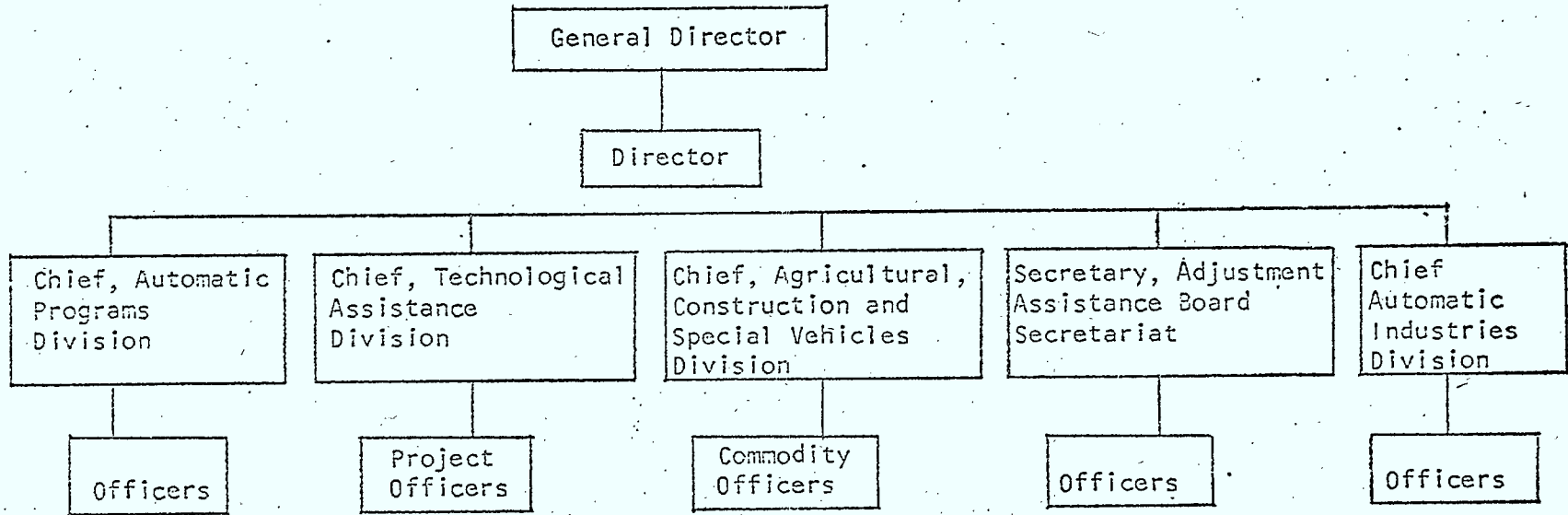
MATERIALS BRANCH



Commerce officer responsible for assessment of technical feasibility and commercial viability of PAIT project

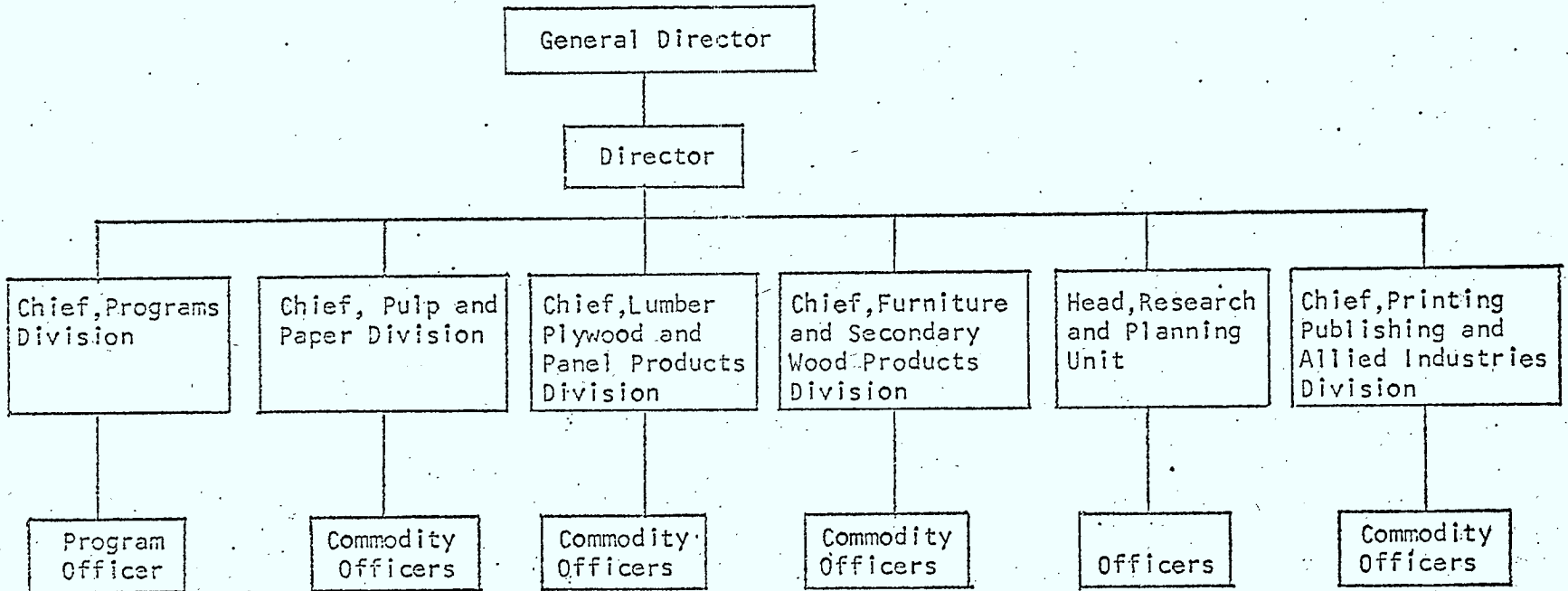
Program officer administers project and monitors progress of PAIT project

MECHANICAL TRANSPORT BRANCH



Project officer has responsibility for complete PAIT project.

WOOD PRODUCTS BRANCH



Program Officer responsible for PAIT project administration, for monitoring project and, occasionally for complete project

Commodity officers usually responsible for composite submission of PAIT

APPENDIX V

APPRAISAL CRITERIA

The project officers are advised by the PAIT Directive that, in the appraisal of an application, the following criteria should be satisfied.

The Project

The technical feasibility should include a competitive technical advance with the development problems identified and the risks minimized. The development objective should not infringe on existing patents.

The commercial feasibility should include a satisfactory return on investment based on a market analysis developed in some detail. The applicant must have development rights and also the rights to manufacture and sell the results in the anticipated export markets.

The Company

The applicant's organization and resources should be adequate for, and compatible with, the project. The applicant's long-term goals should be known.

The applicant should demonstrate it has satisfactory financial resources to cover costs of development up to and including commercial exploitation.

May 25, 1971

Department of Industry, Trade & Commerce,
Industry Branch,
Ottawa, Ontario.

Attn: Mr. Peters

Dear Mr. Peters:

We would like to have the assistance of PAIT in our development program aimed at producing the new product of the Maple Company.

As we have already explained in our earlier meeting and telephone conversation, we have every indication that we can successfully develop our new product. The product is to be used as a part in the following machines now in use in several Canadian factories

(machines listed)

- a)
- b)
- c)

The specifications of this product are

- a) (specifications listed)
- b)
- c)

The current equipment now in use has specifications that are considerably lower than those of our proposals. Also the existing units sell for a price of x dollars. If our projections

are correct, we should be able to make our new product for not more than 1.1x. The price increase however, will be negligible when compared with the superior performance that would be obtained from our product. After talking to the potential customers, we feel they will realize savings of 5-10% on their present production costs if our product is used in their machine. On this basis and considering the total potential market for this product in Canada, we expect to sell at least two thousand units in our first year of production with probable increases after that.

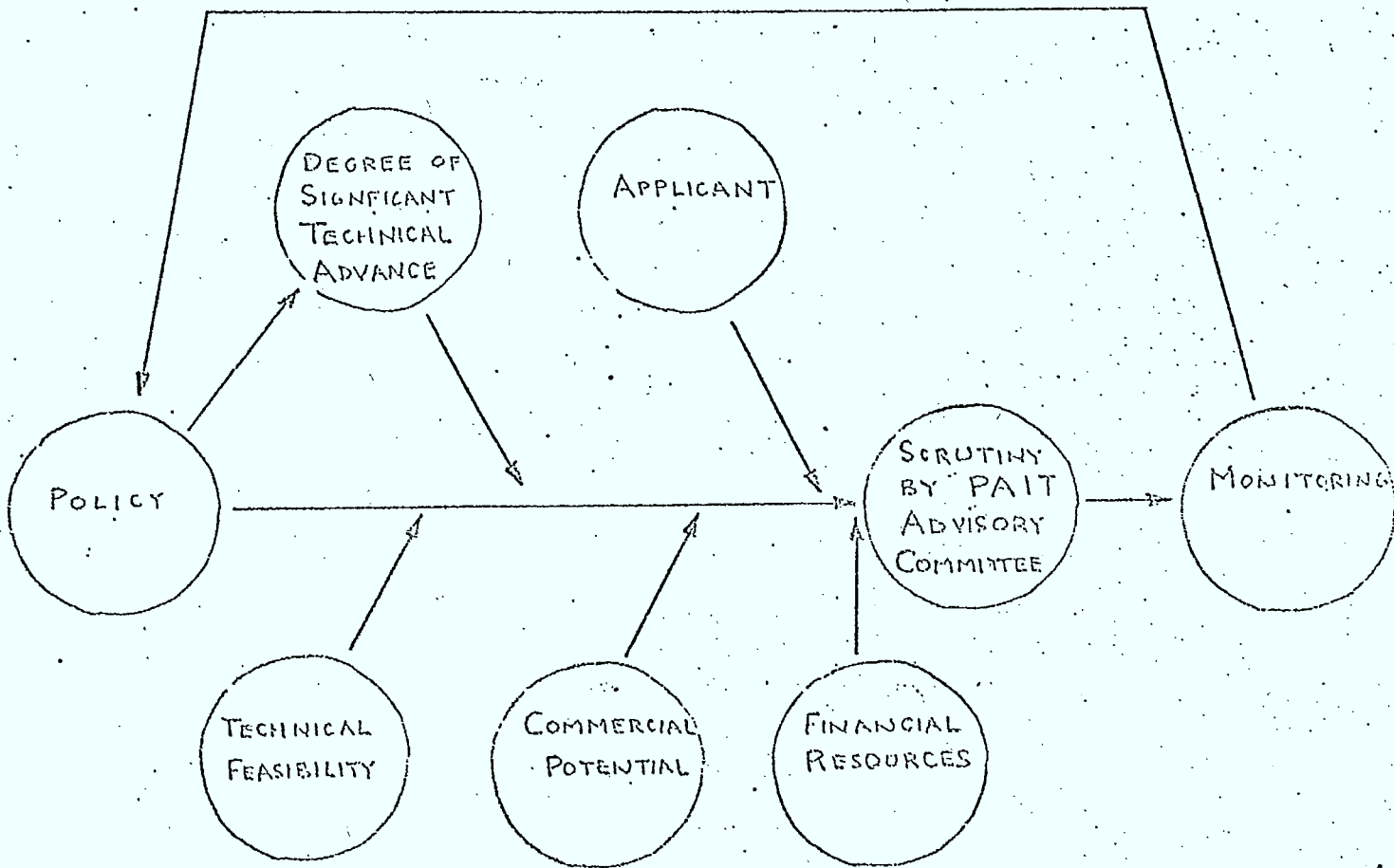
A prototype of our product has been used and this test substantiates the above.

We have developed a program which we would follow, given the proper financing, to enable us to produce a limited number of our units under conditions of approximately full production. In this manner we will be able to confirm that we can indeed mass produce our product with the desired quality and also correct for any production problem that could make full-scale production uneconomic.

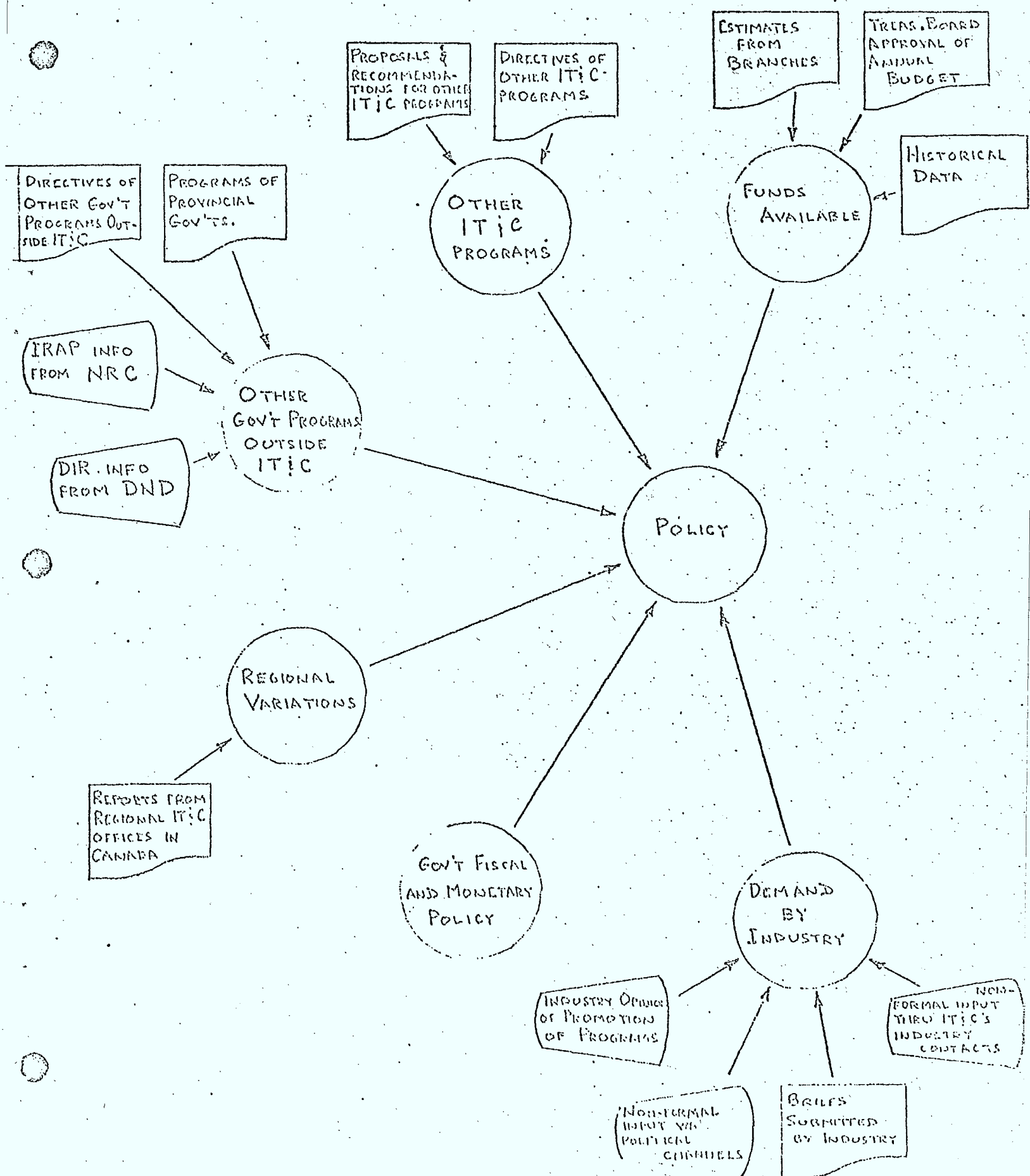
We estimate the development program will take a year and a half and that the total cost to be approximately \$150,000.00. This would cover time of the technicians involved, machine time for testing, rental of auxiliary equipment, materials and overhead.

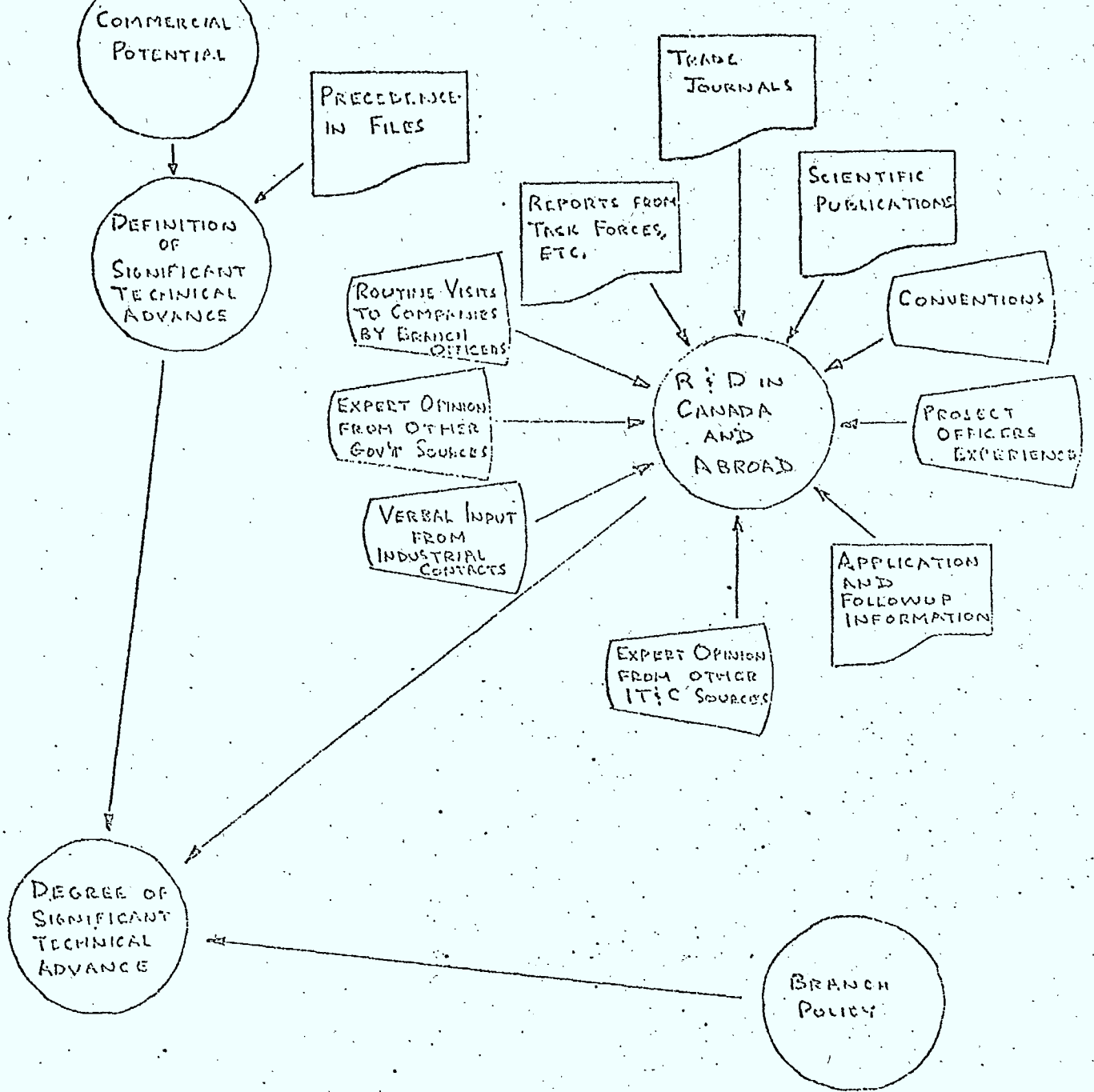
Maple Manufacturing Co.

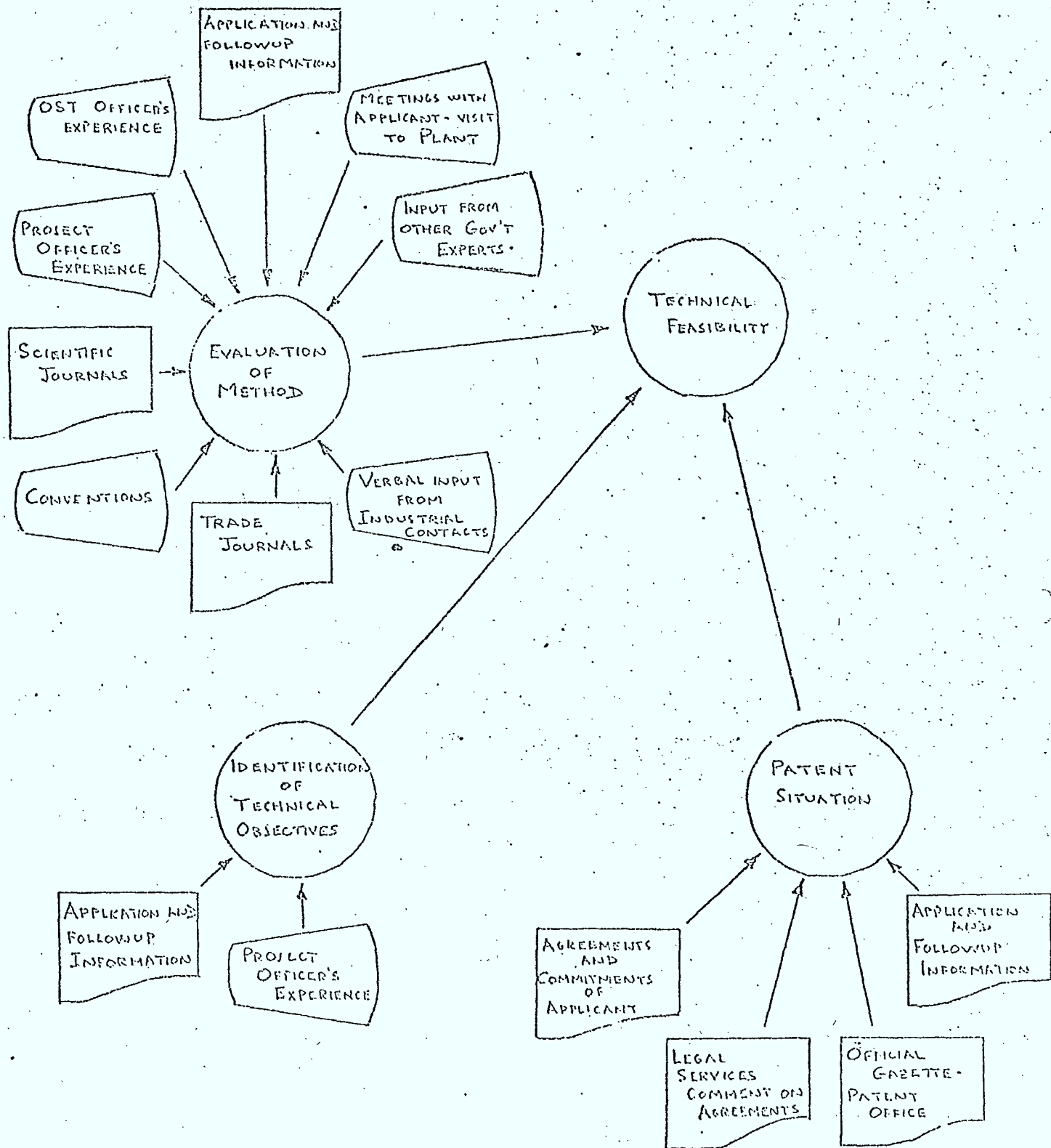
AREAS OF INTEREST AND INFORMATION SOURCES

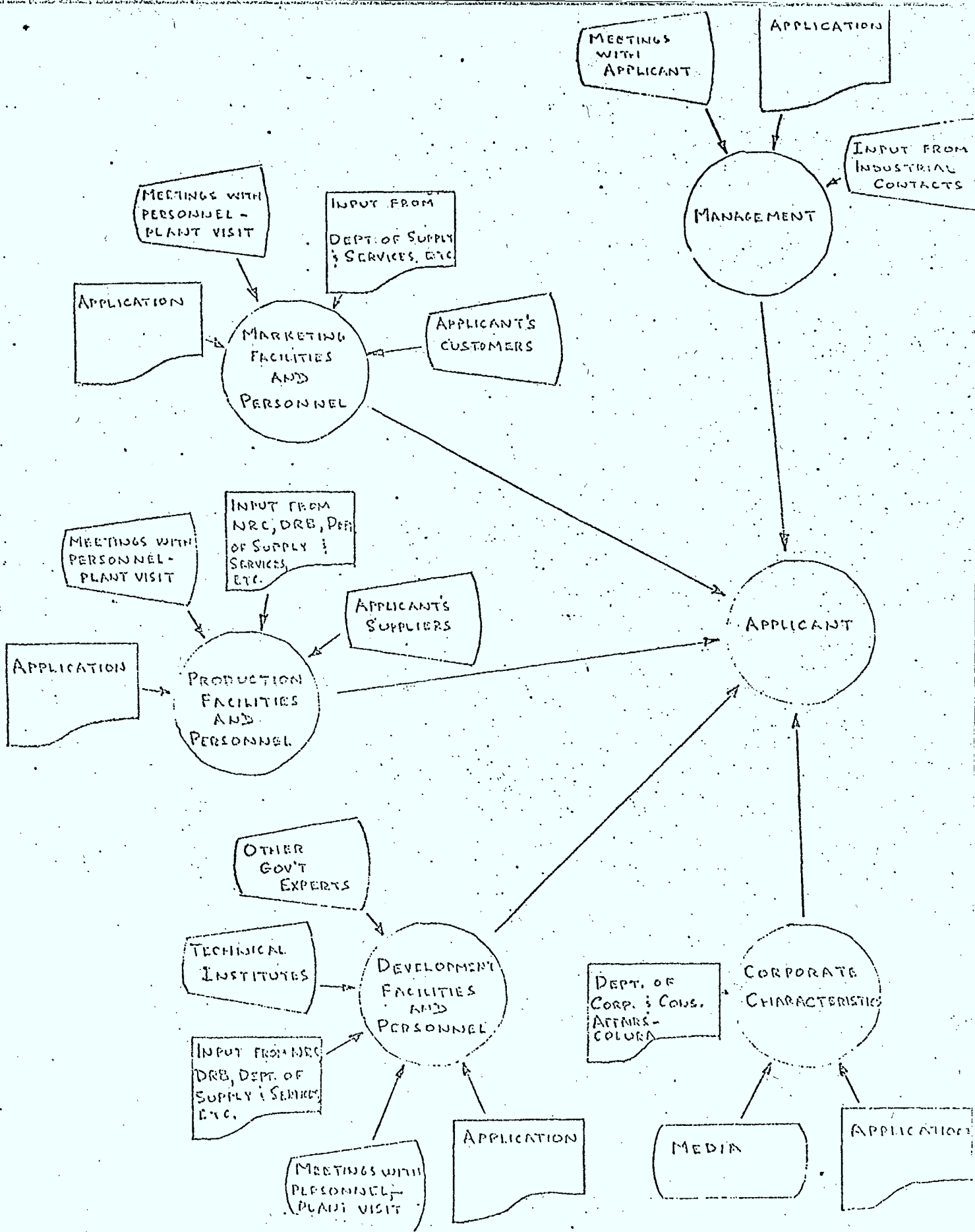


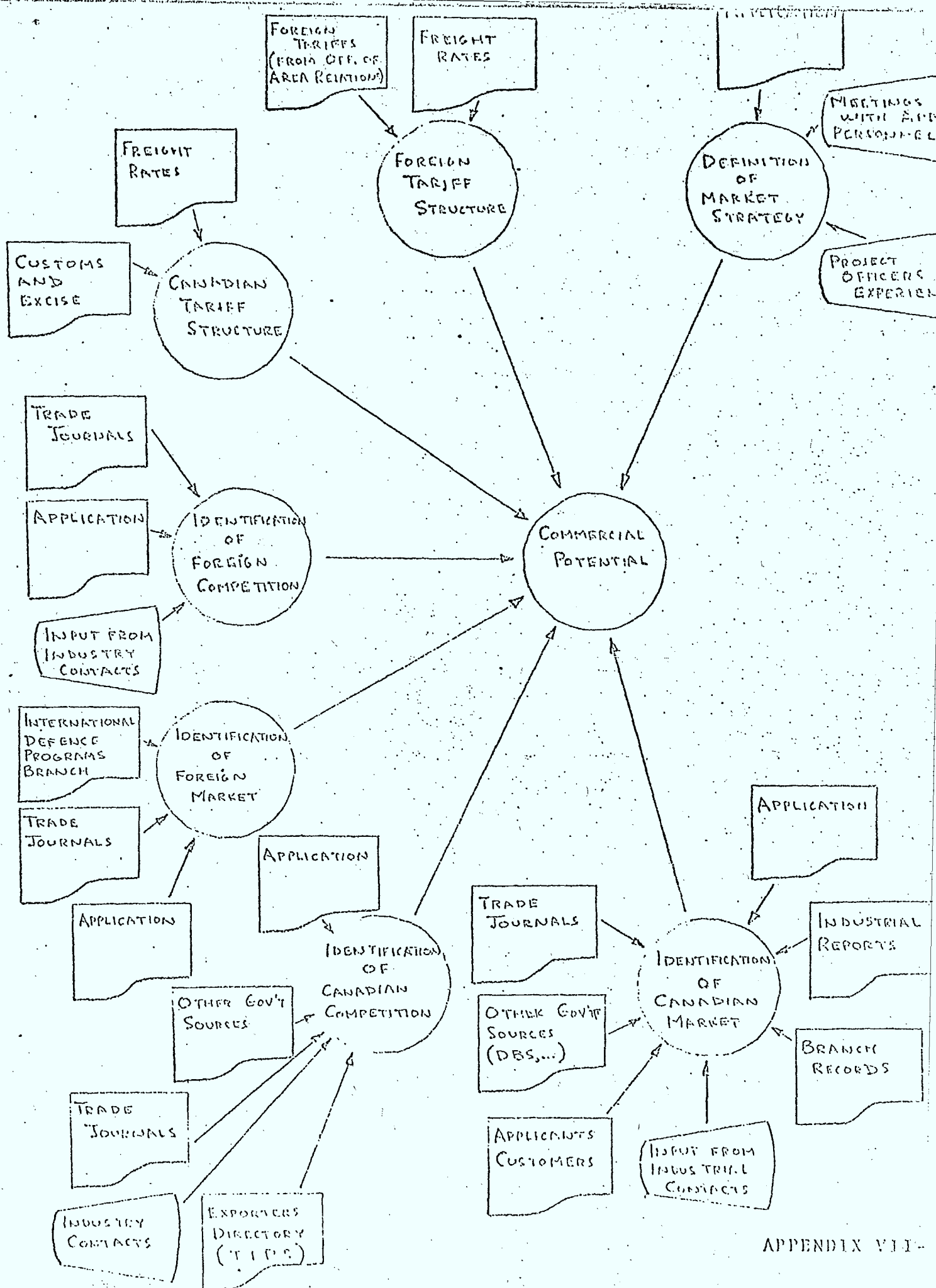
MAJOR AREAS OF INTEREST

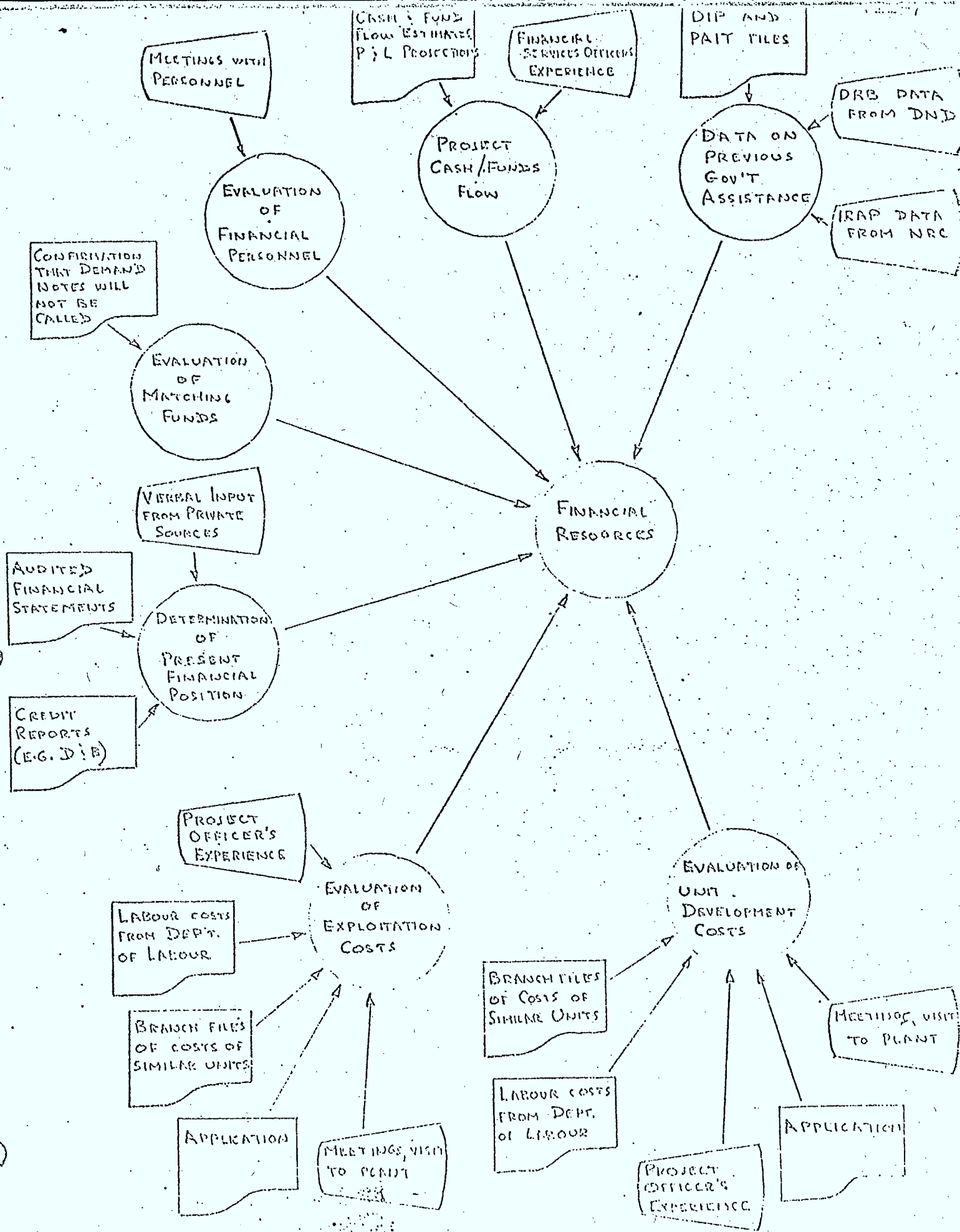


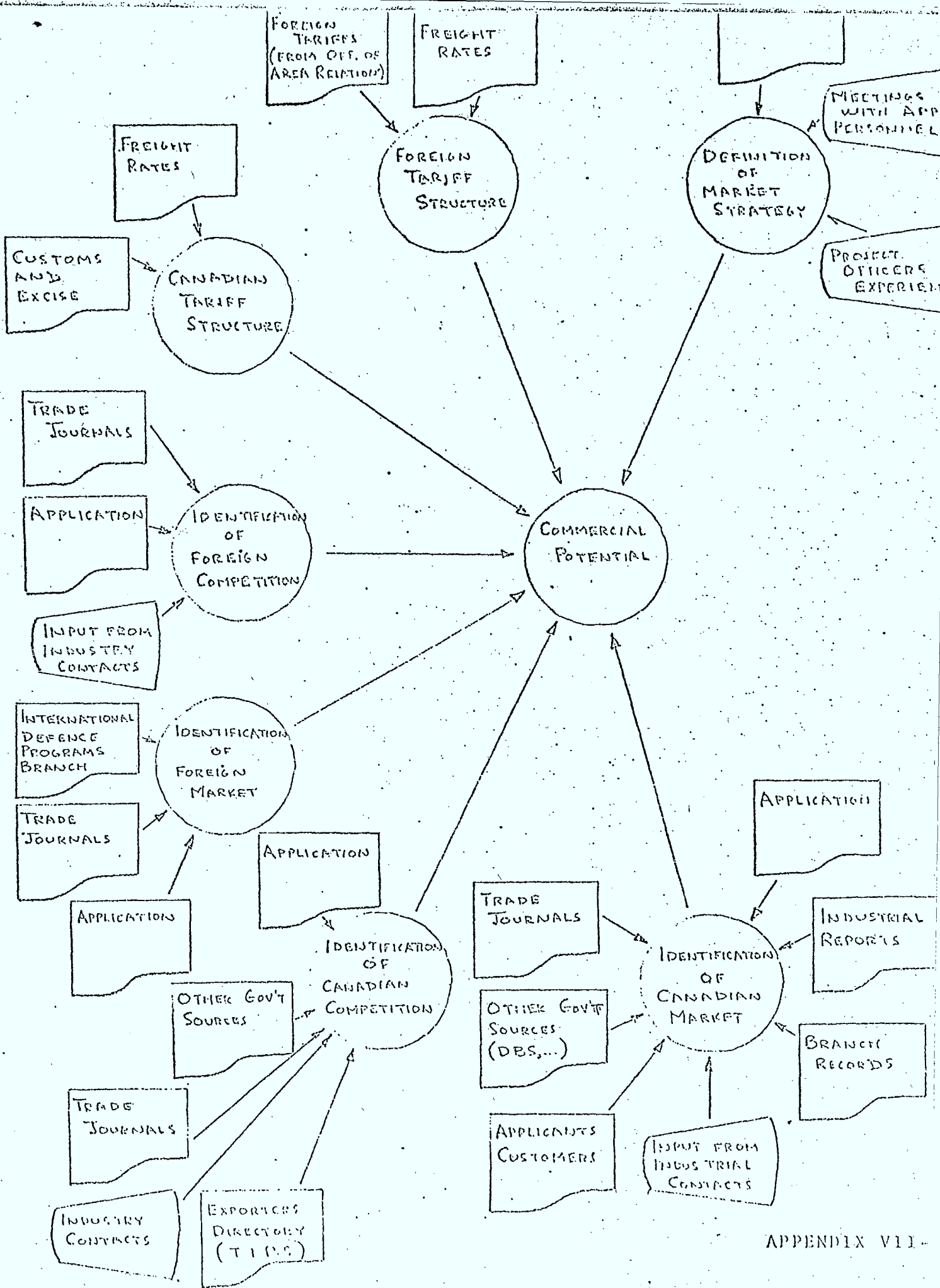


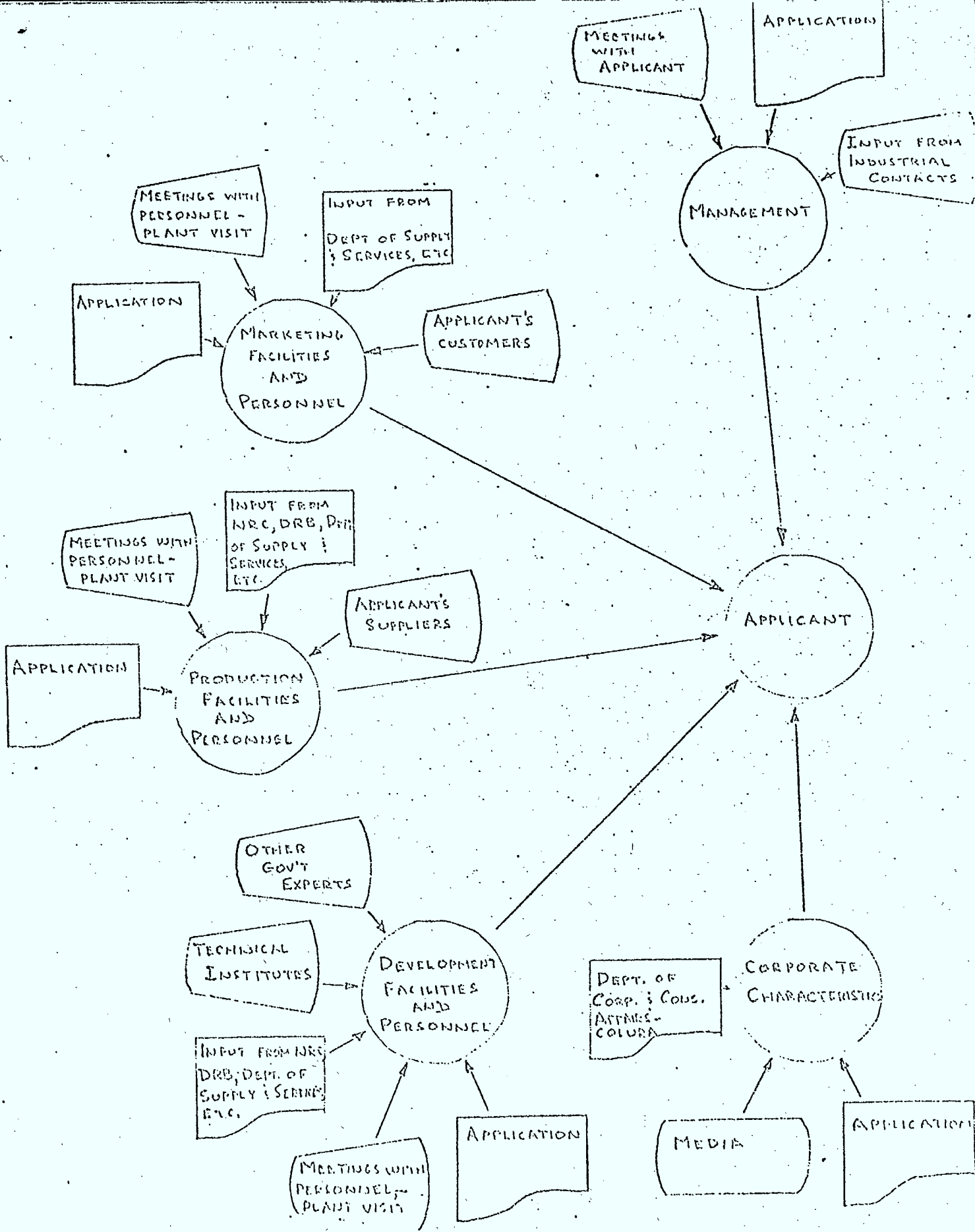


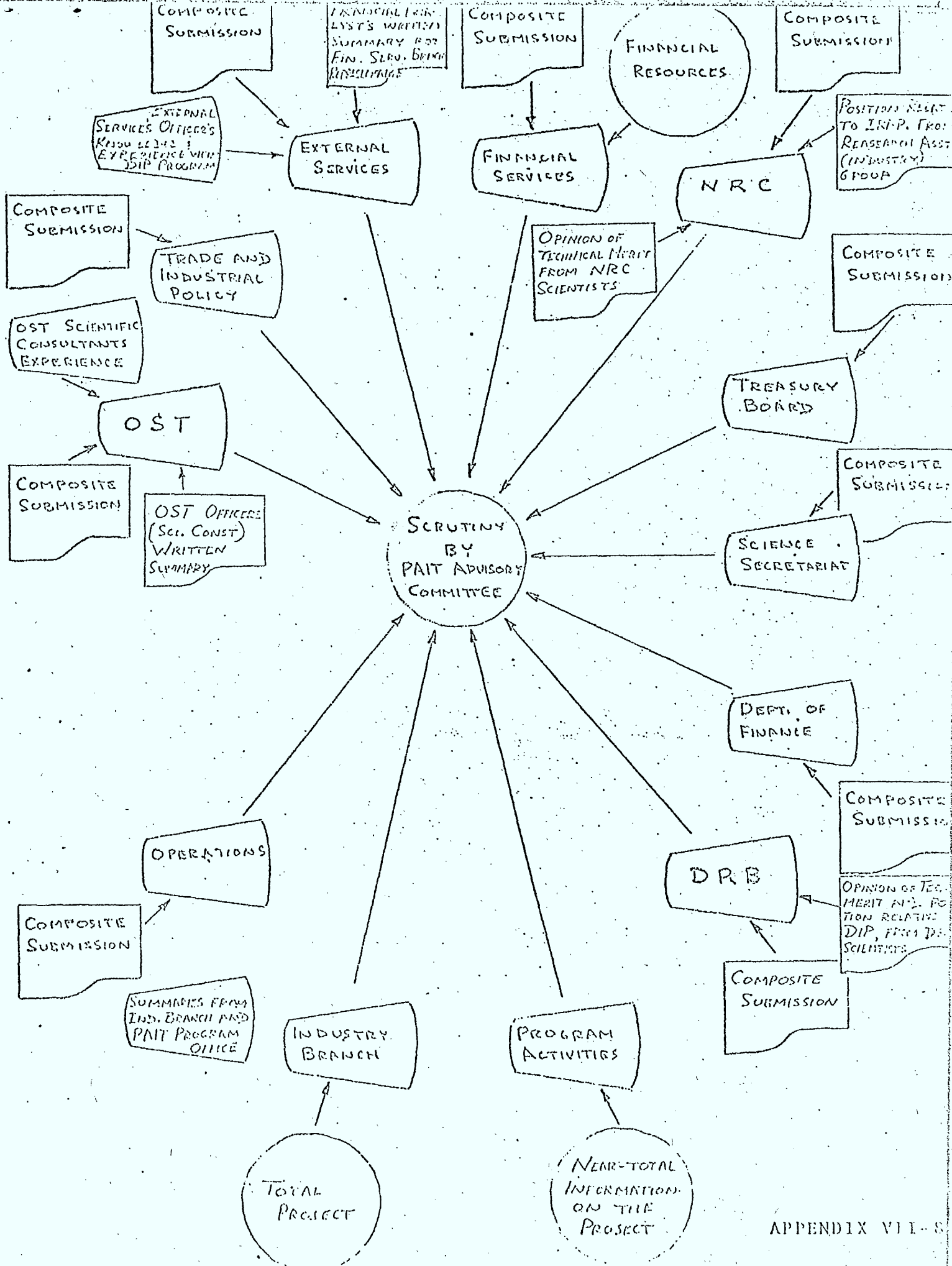


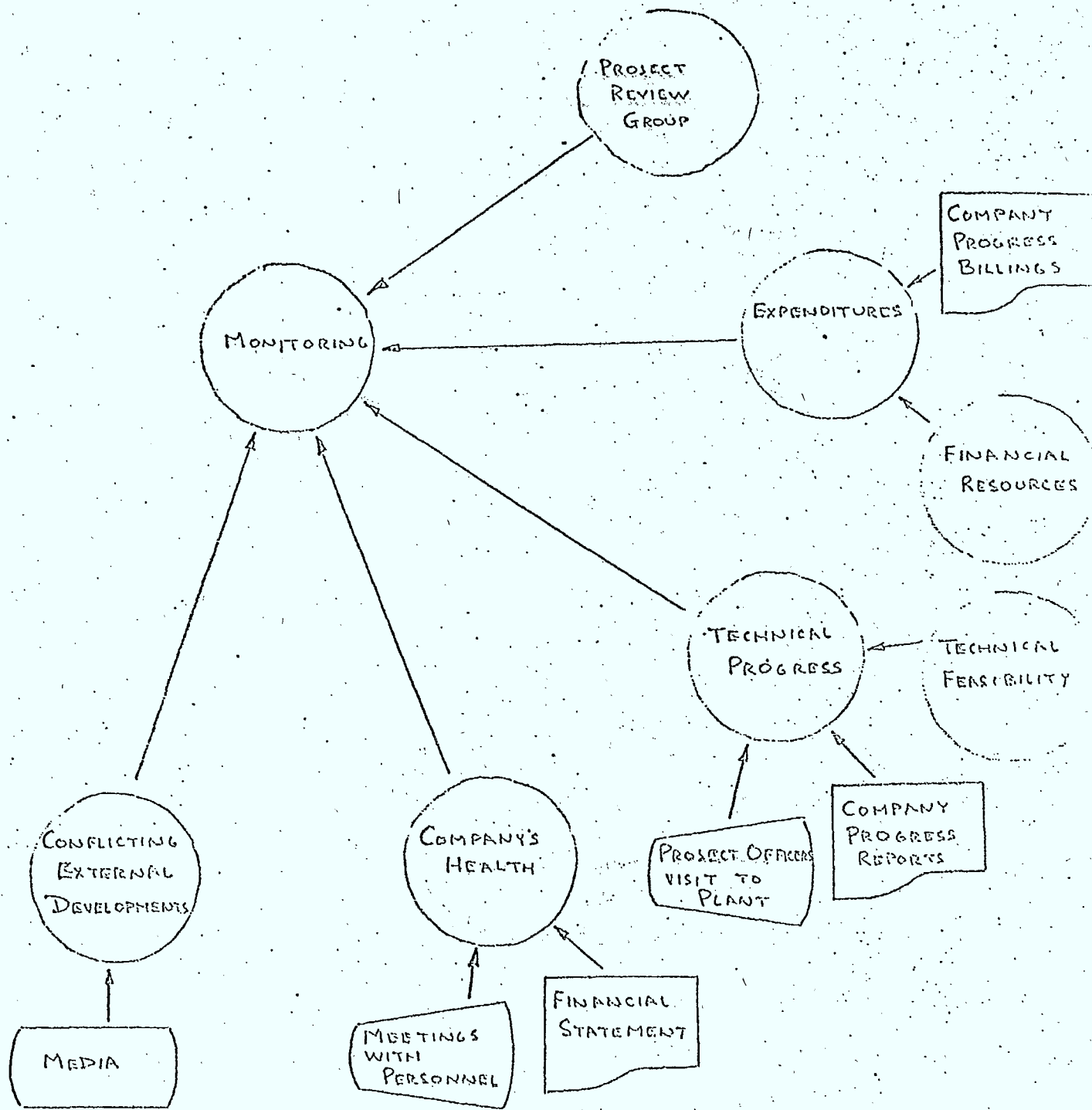












List of Material Collected on June 15th.
(and outline of formal application)

- A statement that the Company is familiar with the terms of PAIT and is willing to accept them.
- The Description of the Development Project.
- Technical outline (A general description).
- Patent Potential (We have applied for patents in Canada and the United States).
- Technical Features (The advantages of the new product are described, together with some data of the prototype's test results).
- Technical Problems (The difficulties encountered in making the prototype are listed and these are discussed in relation to a production run. It is noted these difficulties can be overcome, but how this can be done economically on a production run is uncertain and is the prime object of the development program. Photographs of the prototype are attached).
- Method of Approach (A description is given of the steps Maple will take to solve the problems. This involves purchase of equipment and setting it up to produce a few units. This setup will test the difficulties likely to occur on a production run).
- Performance Targets (A list of dates is provided together with the results expected as of each date).
- Personnel (The education and experience of the President, the production manager, the project engineer and a technician).

- The Analysis of Commercial Feasibility.
 - The Market Need (A subjective description of the value of the product and the use to which it will be put).
 - Market Analysis (A list of the major companies in Canada and the number of units each company would require each year. Next, an estimate of the number for each company, of Maple's new units that would be expected to be sold to each company. Also given was a rough estimate of the number of units bought each year in the U.S. No percentage of this market was estimated for Maple).
 - Marketing, Planning and Organization (A statement that the Company has an "aggressive" sales force. Also given is the name of the Company's marketing consultants. The company also stated that a positive plan will be available by the time the full production line is complete).
 - Pricing (A statement that the product is expected to cost about 10% more than existing units is made. The actual price is not given).
 - The Outline of Company Qualifications.
 - Corporate Objectives (The general objective was provided that "the Company intends to be at the technological forefront of its particular product lines consistent with quality and economy").

- The Company's Experience (A general statement of the Company's ten years in existence is made. Sales figures are provided that show an average growth in sales of 20% per year).
- The Facilities (Provided here are the floor space, the types and quality of manufacturing equipment. It is also said that the Company is aware of the types of equipment on the market from which it will have to select its production equipment).
- The Financial Planning (Enclosed are copies of audited financial statements for the preceding three years. Also a general statement that the Company will be able to raise its share of the project's funds out of internal revenue, but that both its bank and I.D.B. have expressed willingness to participate if necessary).
- Statement of Work
 - Under the title "Statement of Work", required by the PAIT brochure, Maple had repeated, in general terms, information already supplied in the application. Also, further general statements were made that summarized the first-contact letter of 15th May.

Outline of Composite Submission

Project Description (General introduction)

Technical Feasibility (A justification for the technical need of the product, the reasons why it is not yet available, and how Maple intends to overcome the present reasons for its lack of availability).

Market Potential (The name of the company likely to purchase the product, its total expected demand and the share Maple expects).

Time Schedule (The dates of landmark events).

Cost Estimate (Total cost, annual breakdown and PAIT share (50%).

Recommendation (A statement that the branch supports the project).

Statement of Work

Purpose (To produce the product on a pilot basis).

Performance Targets (Quantitative data taken from the formal application).

Major Tasks and Method of Approach (Outline of steps involved).

Schedule (Landmark dates).

Progress Reports (The statement "Progress reports will be submitted at monthly intervals").

Appraisal Summaries

Technical Feasibility (A verbal description of the process together with general statements "...it may be feasible to ...". No probabilities of success are included).

Commercial Potential (A repetition of the market, in general terms is provided. Figures are given with the prefix "...it is estimated that..." with no assignment of who is estimating).

Organization (A brief description of ownership and history of the company is given. Also given is a brief resume of the participants in the project).

Development, Production and Marketing Capability (A brief description of the plant, equipment and personnel is given).

Financial Resources (A resume of sales, profits, and net worth are given for each of the preceding three years. Also statements that the project can be funded internally, and that the Financial Services Branch has "verified the financial position of the applicant").

MEMORANDUM

APPENDIX XI

To: Office of Science and Technology

From: Scientific Consultant
Office of Science and Technology

PAIT Application - Maple Manufacturing Co. -
Development of New Project

The purpose of this project is to set up a pilot production system to permit the design of a full scale economic production line.

The current product in use has certain shortcomings which up to now have been accepted as inevitable by the industry. These shortcomings are

(shortcomings listed)

a)

b)

c)

The proposed product will reduce these shortcomings by offering the following qualities

a) (qualities or specifications listed)

b)

c)

There are a number of questions still to be resolved in the production process. Prominent among these are:

a) Can the product be produced at the company's estimated cost of about 10% above the cost of the current product?

b) Can the quality of the existing prototype be sustained on a production run?

The company has extensive experience in this field and has previously successfully developed and sold products in the same general area. For the size of the project, PAIT cost \$75,000, the technical advance and innovation is substantial. The branch considers the commercial prospects good, and I recommend it for PAIT support.

Scientific Consultant

c.c. Program Office
Branch Project Officer.

ITC PROJECT NO. _____

ITC SERIAL NO. _____

DEPARTMENT OF INDUSTRY, TRADE AND COMMERCE

PROGRAM FOR THE ADVANCEMENT OF INDUSTRIAL TECHNOLOGY

THIS AGREEMENT made this

day of

19

BETWEEN:

HER MAJESTY THE QUEEN in right of Canada
(hereinafter called "Her Majesty") herein represented
by and acting through the Minister of Industry, Trade
and Commerce (hereinafter called "the Minister")

OF THE FIRST PART

AND

(hereinafter called "the Company")

OF THE SECOND PART

WHEREAS the Company proposes to undertake the development project hereinafter described and has applied for financial assistance under the Program for the Advancement of Industrial Technology, and

WHEREAS Her Majesty wishes to promote and assist product and process development in Canadian industry and is prepared to make such financial assistance available to the Company, all in accordance with the provisions of this Agreement.

NOW THEREFORE THIS AGREEMENT WITNESSETH that in consideration of the premises and the covenants and agreements herein contained, the parties covenant and agree as follows:

1. (1) The Company will proceed diligently and in a good and workmanlike manner, using qualified personnel therefor, with a development project in Canada, in accordance with the Statement of Work described in Schedule "A" hereto, consisting of pages to inclusive, hereinafter called the "development project" and make every reasonable effort to complete the same on or before the day of 19

(2) The Company will not change or enlarge the general scope of the development project without the prior written approval of the Minister.

2. (1) Subject to subsection (2), Her Majesty will contribute to the Company an amount equal to % of the reasonable and proper costs of the development project incurred by the Company on and after the day of 19, being the effective date of this Agreement, such costs to be determined in accordance with generally accepted and consistently followed accounting practices and may, at the discretion of the Minister, be audited by a person authorized by the Minister.

(2) Her Majesty's liability for the payment of monies hereunder shall not exceed the sum of

(\$ _____)Dollars.

3. Her Majesty will make monthly progress payments to the Company. As soon as possible after the first day of each calendar month, the Company will complete and submit to the Department of Industry, Trade and Commerce, a certified progress claim on Form 2302-3 showing costs incurred in the preceding month accompanied by such relevant vouchers, invoices and other documents as the said Department may require. Upon certification of such claim on behalf of the said Department, Her Majesty will pay to the Company all of Her Majesty's share thereof, until 90% of the amount required to be paid by Her Majesty pursuant to section 2 shall have been paid. The balance of 10% will be paid upon receipt and approval by and on behalf of the said Department of the Company's final statement of such costs, certified by the external auditors of the

Company on Form 2302-3, or, in the discretion of the Minister, after such costs have been audited by a person authorized by the Minister.

4. If the Company determines that it is expedient to purchase any goods or services for the performance of the development project, the Company will use Canadian vendors and subcontractors to the extent that they are capable of performing the work in an economic and expeditious manner and will encourage Canadian suppliers to develop the necessary capabilities to support the manufacture of products resulting from the development project, or which contain results of the development project, or which are manufactured by means of processes or equipment resulting from the development project, hereinafter referred to as the "said products".

5. (1) Title to all designs, specifications, data, drawings, plans, reports, patterns, models, prototypes, shop practices, and other information (hereinafter collectively called "technical data") produced by the Company in carrying out the development project will vest in and remain the property of the Company.

(2) Title to all equipment, materials and supplies purchased for the purposes of the development project will vest in and remain the property of the Company.

(3) The Company may retain title to all inventions, methods and processes conceived or developed in carrying out the development project and may apply for patents therefor in Canada and other countries.

(4) If the Company elects not to retain title to or utilize any invention conceived or developed in carrying out the development project, the Company will advise the Minister of such election and will, if requested to do so by the Minister, assign the invention to Her Majesty who may apply for a patent therefor in the name of Her Majesty.

6. (1) The Company shall, within a reasonable time, and to the extent that it is not uneconomic in accordance with sound business judgement so to do, produce in Canada, and market in Canada and elsewhere than in Canada, the said products.

(2) Subject to subsections (3) and (4), the Company shall not transfer technical data or inventions (whether or not patented), methods or processes resulting from the development project to any government other than the Government of Canada, or to any person, company, partnership or firm for the purpose of producing or manufacturing outside Canada products resulting from the development project or which are manufactured by means of processes or equipment resulting from the development project, or products which are substantially the same as the said products, and shall place the same restrictions on any transfer it may make to any such other government, person, company, partnership or firm.

(3) In the event the Company determines that, according to sound business judgement and for reasons beyond its control, it would not be economic to market the said products in a specified country other than Canada if the said products were produced or manufactured only in Canada, or that additional benefits would accrue to the Company and to Canada if the said products were produced or manufactured in a country other than Canada, it may consult the Minister with respect to such determination and may request permission to transfer technical data, inventions, methods and processes resulting from the project to a government, person, company, partnership or firm for the purposes of producing or manufacturing the said products outside Canada and marketing them in that country.

(4) The Company may make such disclosure of technical data relating to any invention, method or process resulting from the development project as may be required by the laws of any country for the purpose of obtaining a patent in that country.

7. Any authorized representative of the Department of Industry, Trade and Commerce shall have access to the premises of the Company at all reasonable times, to inspect and assess the progress of the development project.

8. The Company shall keep proper books, accounts and records of the costs of the development project, and the Minister may cause the same to be examined and audited at any time to determine the cost of the development project. The Company shall cause such books, accounts and records to be preserved and kept available during the performance of the development project and for a period of at least five years following the completion thereof.

9. The Minister will maintain normal commercial security and privacy in respect to the development project and will not disclose any information relating to the scope of work encompassed by the development project to any person outside Canadian Government Departments and Agencies without the prior written consent of the Company.

10. If the Company, in the opinion of the Minister, fails to proceed diligently with the development project, or fails, in accordance with section 6, to produce and market the said products, or is otherwise in default under the Agreement, or if the Company becomes bankrupt or insolvent, or has a receiving order made against it (either under the Bankruptcy Act or otherwise), or makes an assignment for the benefit of creditors, or if an order is made or resolution passed for the winding up of the Company, or if the Company takes the benefit of any statute for the time being in force relating to bankrupt or insolvent debtors, the Minister may, by giving notice in writing to the Company, exercise one of the following remedies:

- (a) terminate the obligation on the part of Her Majesty to contribute or continue to contribute to the costs of the development project; or
- (b) terminate the obligation on the part of Her Majesty to contribute or continue to contribute to the costs of the development project; and
 - (i) direct the Company to, and the Company will, at no cost to Her Majesty, transfer and deliver to Her Majesty ownership and custody of all the technical data, inventions (whether or not patented) methods and processes arising out of or resulting from the development project; or
 - (ii) direct the Company to forthwith repay, and the Company will forthwith repay, to Her Majesty all of the contribution to the costs of the development project made by Her Majesty hereunder.

11. (1) If during the currency of this Agreement the Company determines on the basis of technical, marketing, financial or other considerations that the development project, or the production and marketing of the results thereof, should not be proceeded with, the Company will consult the Minister with respect to such determination, and may then request that the Agreement be terminated.

(2) The Minister may, in terminating the Agreement pursuant to subsection (1), require the Company to accept such terms and conditions not inconsistent with this Agreement as the Minister considers necessary.

12. If during the currency of this Agreement the Company wishes to make any arrangements for the purpose of raising funds either from the public or the private sector, the Company will submit to the Minister for his approval any prospectus, documents, or other instruments relating thereto in which a reference is made to Her Majesty but only if such reference relates to the development project and to Her Majesty's contribution thereto.

13. If during the currency of this Agreement the Company sells or otherwise disposes of, or transfers to commercial use within its own production capability or otherwise, any prototype, pilot plant, or other equipment acquired by it or manufactured by or for it for the purpose of carrying out the development project and the costs of such prototype, pilot plant or other equipment have been charged to the aggregate costs of the development project to which Her Majesty has contributed hereunder, the Company will notify the Minister in writing of such sale, transfer or other disposition and, if directed by the Minister, the Company will share with Her Majesty, in the same ratio as Her Majesty's contribution bears to the company's contribution hereunder, the proceeds of sale or the fair market value of such prototype, pilot plant or other equipment, whichever is the greater, but in no event shall Her Majesty's share exceed Her Majesty's contribution hereunder.

14. For so long as this Agreement is in force the Company shall, to the satisfaction of the Minister, submit to the Minister periodic reports on the progress being made by the Company with respect to the development project and the exploitation of the results thereof, including marketing information, the numbers of personnel and new facilities employed, the costs of materials used and their origin, and such other information as may be requested by the Minister.

15. Unless otherwise agreed to in writing by the Minister, this Agreement shall remain in full force and effect for a period of ten years commencing on the effective date hereof.

16. No member of the House of Commons shall be admitted to any share or part of this Agreement or to any benefit to arise therefrom.

17. This Agreement shall not be assigned by the Company without the prior written consent of the Minister.

18. Any notice to the Company hereunder shall be effectively given if sent by letter or by telegram, postage prepaid or with charges prepaid as the case may be addressed to the Company at its address as given in this Agreement or if no address is so given, at its address as shown by the records of the Department. Any notice so given shall be deemed to have been received by the Company at the time when in the ordinary course such letter or telegram should have reached its destination.

19. This Agreement and the Statement of Work constitutes the entire Agreement between the parties hereto with respect to the subject matter hereof and supersedes all previous negotiations and documents relating thereto.

IN WITNESS WHEREOF this Agreement has been executed on behalf of Her Majesty the Queen in right of Canada by an officer of the Department of Industry, Trade and Commerce duly authorized by the Minister of Industry, Trade and Commerce, and by the Company having its corporate seal affixed hereto attested by the hands of its proper officers duly authorized in that behalf.

SIGNED, SEALED AND DELIVERED
in the presence of:

Department of Industry, Trade and Commerce

Per _____

(CORPORATE SEAL)

(Name of Company)

Per _____

Per _____

FIG. 2A - COST DETAILS (If more space needed, use Side 2 of additional sheets.)

DIRECT LABOR AND OVERHEAD (Describe under the headings: Research, Development, Design, etc.)	HOURS	BASE RATE/HR.	O/TD.	TOTAL
<p>[Faint, illegible handwritten text describing labor and overhead costs]</p>	<p>[Faint, illegible handwritten numbers]</p>	<p>[Faint, illegible handwritten numbers]</p>	<p>[Faint, illegible handwritten numbers]</p>	<p>[Faint, illegible handwritten numbers]</p>
DIRECT MATERIALS (Give description and cost of each item under the headings: Raw Materials, Components, etc.)				
<p>[Faint, illegible handwritten text describing materials]</p>	<p>[Faint, illegible handwritten numbers]</p>			
TEST AND LABORATORY EQUIPMENT (Give description, name of supplier and cost of each item.)				
<p>[Faint, illegible handwritten text describing equipment]</p>	<p>[Faint, illegible handwritten numbers]</p>			
SUB-CONTRACTS AND CONSULTANTS (Give name, description and cost of each.)				
<p>[Faint, illegible handwritten text describing sub-contracts]</p>	<p>[Faint, illegible handwritten numbers]</p>			
OTHER COSTS (Give description and cost of each item.)				
<p>[Faint, illegible handwritten text describing other costs]</p>	<p>[Faint, illegible handwritten numbers]</p>			

GRAND TOTAL (Enter on Page 2B (reverse side))

DEPARTMENT OF INDUSTRY
CLAIM FOR PROGRESS PAYMENT

CLAIM NO.
FOR MONTH OF
CHECK <input type="checkbox"/> IF FINAL

INSTRUCTIONS: Make five typewritten copies of both sides.
Keep one copy and submit four copies to DOI project officer.

PART 1 - IDENTIFICATION (Refer to contract for details.)

NAME OF COMPANY	ADDRESS	TELEPHONE NO.
TITLE OF PROJECT		
COMPANY PROJECT NO.	ESTIMATED TOTAL COST	HER MAJESTY'S SHARE OF COST
		START DATE
		DOI PROJECT NO.
		SERIAL NO.
		F. E. NO.

PART 2B - CLAIM (Complete Part 2A (reverse side) before completing Part 2B. Enter Grand Total from Part 2A (reverse side) at * below.)

	PREVIOUS CLAIMS	CURRENT	TOTAL TO DATE	CONTROL POINT (FOR DOI USE ONLY)
TOTAL COST				
INDUCT COMPANY SHARE				%
HER MAJESTY'S SHARE				\$

REMARKS

PART 3 - CERTIFICATION

I certify that the costs described in this claim were incurred under the contract, that generally accepted and consistently followed accounting practices have been used, and that Her Majesty's payment will be applied to the project.

Date

Signature and Title of Authorized Company Officer

I have examined the cost records of this project and have made such tests as seemed necessary. To the best of my knowledge, the costs have been determined in accordance with generally accepted and consistently followed accounting practices, and all invoices claimed have been paid. In my opinion, the costs are a proper charge against the project.

APPEARS REASONABLE
FOR PAYMENT

Date

FOR DIRECTOR, FINANCIAL ANALYSIS

Signature and Title of External Auditor (Final Claim Only)

I certify that this claim arises out of work performed in conformity with the terms of the contract, that the work is satisfactory, and that payment of Her Majesty's share of costs is in accordance with Section 32 of the Financial Administration Act.

Date

Signature and Title of Authorized DOI Project Officer

INFORMATION PROVIDED IN THE EXPORTER'S DIRECTORY

Company name and address

Name of Chartered Accountants of company

Location of plant(s)

Names of chief executive and export correspondence officer

Names of other Canadian executives

Names of parent company, affiliates, associates and subsidiaries

List of products

List of trade marks and brand names

Names of countries to which company exports

Name of export agents

Name of company bank(s)

Total annual sales (\$)

Year incorporated

Length of time company has been exporting

Number of employees (production, sales, engineering, office)

Rating (a measure of the company's credit)

Status (date on which above information was collected)

Trade (speed with which accounts payable are met)

Worth of company (\$)

Remarks on responsibility of company, the growth trend, financing problems, if any, and other general remarks or warnings of value to a Trade commissioner.

UNIVERSITY GRANT PROGRAM RESEARCH REPORTS

RAPPORT DE RECHERCHE SUR LE PROGRAMME DE SUBVENTIONS AUX UNIVERSITES

AUTHOR(S)/AUTEUR(S)	UNIVERSITY/UNIVERSITÉ	REPORT TITLE/TITRE DE L'OUVRAGE
1. I.A. Litvak C.J. Maule	Department of Economics, Carleton University.	Canadian Entrepreneurship: A Study of Small Newly Established Firms, October, 1971.
2. Harold Crookell	School of Business Administration, University of Western Ontario.	The Transmission of Technology Across National Boundaries, February, 1973.
3. M.H.E. Atkinson	Faculty of Graduate Studies, University of Western Ontario.	Factors Discriminating Between Technological Spin-Offs and Research and-Development Personnel, August, 1972.
4. R.M. Knight	School of Business Administration, University of Western Ontario.	A Study of Venture Capital Financing in Canada, June, 1973.
5. Blair Little R.G. Cooper R.A. More	School of Business Administration, University of Western Ontario.	The Assessment of Markets for the Development of New Industrial Products in Canada, December, 1971.
6. F. Zabransky J. Legg	School of Business Administration, University of Western Ontario.	Information and Decision Systems Model for PAIT Program, October, 1971.
7. K.R. MacCrimmon W.T. Stanbury J. Bassler	Faculty of Commerce and Business Administration, University of British Columbia.	Risk Attitudes of U.S. and Canadian Top Managers, September, 1973.
8. James C.T. Mao	Faculty of Commerce and Business Administration, University of British Columbia.	Computer Assisted Cash Manage- ment in a Technology-Oriented Firm, March, 1973.
9. J.W.C. Tomlinson	Faculty of Commerce and Business Administration, University of British Columbia.	Foreign Trade and Investment Decisions of Canadian Companies, March, 1973.
10. G. Kardos	Faculty of Engineering, Carleton University.	Case History of Three Innovations: Webster Mfg. (London) Ltd; Spectrac Limited, and The Snotruk, 1973.
11. I.A. Litvak C.J. Maule	Department of Economics, Carleton University.	A Study of Successful Technical Entrepreneurs in Canada, September, 1972.
12. Y. Allaire, J.M. Toulouse	Faculty of Management Sciences, University of Ottawa.	Psychological Profile of French- Canadian M.B.A. Students: Consequences for a Selection Policy, December, 1972.
13. Carl Prézeau	Faculté d'administration, Université de Sherbrooke.	The Portfolio Effect in Canadian Exports, May, 1973.
14. M.R. Hecht J.P. Siegel	Faculty of Management Studies, University of Toronto.	A Study of Manufacturing Firms in Canada: With Special Emphasis on Small and Medium Sized Firms, December, 1973.
15. Blair Little	School of Business Administration, University of Western Ontario.	The Development of New Industrial Products in Canada. (A Summary Report of Preliminary Results, Phase I) April, 1972.
16. A.R. Wood J.R.M. Gordon R.P. Gillin	School of Business Administration, University of Western Ontario.	Comparative Managerial Problems in Early Versus Later Adoption of Innovative Manufacturing Technologies, (Six Case Studies), February, 1973.
17. S. Globerman	Faculty of Administrative Studies, York University.	Technological Diffusion in Canadian Manufacturing Industries, April, 1974.
18. M. James Dunn Boyd M. Harnden P. Michael Maher	Faculty of Business Administration and Commerce, University of Alberta.	An Investigation into the Climate for Technological Innovation in Canada, May, 1974.
19. K.R. MacCrimmon A. Kwong	Faculty of Commerce and Business Administration, University of British Columbia.	Measures of Risk Taking Propensity, July, 1972.
20. I.A. Litvak C.J. Maule	Department of Economics, Carleton University.	Climate for Entrepreneurs: A Comparative Study, January, 1974.

AUTHOR(S)/AUTEUR(S)	UNIVERSITY/UNIVERSITE	REPORT TITLE/TITRE DE L'OUVRAGE
21. J. Robidoux Gerard Garnier	Faculte d'administration, Université de Sherbrooke.	Factors of Success and Weakness Affecting Small and Medium-Sized Manufacturing Businesses In Quebec, Particularly those Businesses using Advanced Production Techniques, December, 1973. Facteurs de Succes et Faiblesses des Petites et Moyennes Entreprises Manufacturieres au Québec, Specialement des Entreprises Utilisant des Techniques de Production Avancees, decembre, 1973.
22. I. Vertinsky K. Hartley	Faculty of Commerce and Business Administration, University of British Columbia.	Project Selection in Monolithic Organizations, August, 1974.
23. Yvan Allaire J.M. Toulouse	Faculty of Management Sciences, University of Ottawa.	A Comparative Study of the Values and Needs of French-Speaking and English-Speaking M.B.A. Students, August, 1973.
24. Jean Robidoux	Faculte d'administration, Université de Sherbrooke.	Analytical Study of Significant Traits Observed Among a Particular Group of Inventors in Quebec, August, 1974. Etude Analytique de Traits Significatifs Observes Chez un Groupe Particulier D'Inventeurs au Québec, Août, 1974.
25. Blair Little	School of Business Administration, University of Western Ontario.	Risks in New Product Development, June, 1972.
26. Blair Little R.G. Cooper	School of Business Administration, University of Western Ontario.	Marketing Research Expenditures: A Descriptive Model, November, 1973.
27. Blair Little	School of Business Administration, University of Western Ontario.	Wrecking Ground for Innovation, February, 1973.
28. J.W.C. Tomlinson	Faculty of Commerce and Business Administration, University of British Columbia.	Foreign Trade and Investment Decisions of European Companies, June, 1974.
29. Blair Little	School of Business Administration, University of Western Ontario.	The Role of Government in Assisting New Product Development, March, 1974.
30. R.G. Cooper	Faculty of Management, McGill University.	Why New Industrial Products Fail, January, 1975.
31. M.E. Charles D. MacKay	The C.E.R.C.L. Foundation, 200 College Street, Toronto, Ontario. M5S 1A4	Case Studies of Industrial Innovation in Canada, February, 1975.
32. M.R. Hecht	Faculty of Management Studies, University of Toronto.	A Study of Manufacturing Firms in Canada: With Emphasis on Education of Senior Officers, Types of Organization and Success, March, 1975.
33. I.A. Litvak C.J. Maule	Department of Economics, Carleton University.	Policies and Programmes for the Promotion of Technological Entrepreneurship in the U.S. and U.K.: Perspectives for Canada, May, 1975.
34. R.R. Britney E.F.P. Newson	School of Business Administration, University of Western Ontario.	The Canadian Production/Operations Management Environment: An Audit, April, 1975.
35. R.F. Morrison P.J. Halpern	Faculty of Management Studies, University of Toronto.	Innovation in Forest Harvesting by Forest Products Industries, May, 1975.
36. J.C.T. Mao	Faculty of Commerce and Business Administration, University of British Columbia.	Venture Capital Financing for Technologically-Oriented Firms, December, 1974.
37. J.W.C. Tomlinson C.S. Willie	Faculty of Commerce and Business Administration, University of British Columbia.	Guide to the Pacific Rim Trade and Economic Database, September, 1975.

<u>AUTHOR(S)/AUTEUR(S)</u>	<u>UNIVERSITY/UNIVERSITÉ</u>	<u>REPORT TITLE/TITRE DE L'OUVRAGE</u>
38. D.A. Ondrack	Faculty of Management Studies, University of Toronto.	Foreign Ownership and Technological Innovation in Canada: A Study of the Industrial Machinery Sector of Industry, July, 1975.
39. James C.T. Mao	Faculty of Commerce and Business Administration, University of British Columbia.	Lease Financing for Technology- Oriented Firms, July, 1975.
40. M. James Dunn Boyd M. Harnden P. Michael Maher Michael J. Vertigan John A. Watson	Faculty of Business Administration and Commerce, University of Alberta.	An Investigation into the Climate for Technological Innovation in Canada. Stage II - A Fundamental Research Effort Directed Towards the Design of an Experimental and Management Development Program for Research and Development Project Selection Decisionmakers, July, 1975.
41. Gary A. Sheehan Donald H. Thain Ian Spencer	School of Business Administration, University of Western Ontario.	The Relationships of Long Range Strategic Planning to Firm Size and to Firm Growth, August, 1975.

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