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EVALUATION ASSESSMENT

OF THE

OFFICE COMMUNICATIONS SYSTEMS PROGRAM

Evaluation Design
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PROGRAM EVALUATION DIVISION · DE L EVALUATION DES PROGRAMMES

EVALUATION ASSESSMENT
OF THE
OFFICE COMMUNICATIONS SYSTEMS PROGRAM

JANUARY, 1984

DOC

PROGRAM EVALUATION SERIES

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The views expressed herein are those of the author and do not necessarily represent the views or policies of the Department of Communications.

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THE OFFICE COMMUNICATIONS SYSTEMS PROGRAM:

EVALUATION FRAMEWORK AND ASSESSMENT

DEPARTMENT OF COMMUNICATIONS

the bureau of management consulting is an agency of the department of supply and services

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EXECUTIVE SUMMARY

The Office Communications Systems (OCS) Program has been allocated $13.25 million to promote the development of an electronic office systems industry in Canada. Designed as a "sunset" program, OCS activities will end on March 31, 1985.

An evaluation of the program is necessary to determine its impacts and to inform decisions on future initiatives. The Bureau of Management Consulting was retained by the Program Evaluation Division, Department of Communications, to complete an evaluation framework and assessment of the OCS Program in preparation for a more comprehensive study.

Review of program objectives, resources and activities reveals that implementation has been generally consistent with the initial design. And that the relationships between activities and intended results, at least with respect to immediate impacts, are sufficiently plausible to conduct an evaluation.

In developing possible approaches to an evaluation study, the following report articulates basic evaluation issues with respect to the OCS Program. These issues in turn are extended into evaluation questions related to each of the program elements. A list of tasks necessary to gather information on the evaluation indicators is then developed, along with estimated costs for each. Finally, three options are set out, each offering progressively more coverage of the issues at a greater overall cost.

The recommended option allows for the most comprehensive evaluation possible prior to the program's completion.

SOMMAIRE-RECOMMANDATIONS

Doté d'un budget de 13,25 millions de dollars, le Programme de la bureautique est un programme "temporarisé", qui vise à encourager le développement d'une industrie de la bureautique au Canada. Il doit prendre fin le 31 mars 1985.

Une évaluation est nécessaire afin de déterminer les répercussions du Programme et d'éclairer les décisions qui seront prises à l'égard des futures initiatives. La Division de l'évaluation des programmes a retenu les services du Bureau des conseillers en gestion pour effectuer une évaluation préalable à une étude de plus vaste envergure.

L'examen des objectifs, des ressources et des activités du Programme révèle que, en général, celui-ci a été exécuté conformément au projet initial, et que les relations entre les activités et les résultats escomptés, au moins en ce qui concerne les répercussions immédiates, sont suffisamment plausibles pour permettre une évaluation.

En ce qui concerne le genre d'évaluation à effectuer, le rapport rédigé définit un certain nombre de facteurs relatifs au Programme et, à partir de ceux-ci, formule des questions conçues pour l'évaluation de chaque élément du Programme. Dans un deuxième temps, il dresse une liste des tâches à entreprendre pour recueillir l'information relative aux indicateurs d'évaluation, et évalue les coûts de chacune de ces tâches. Enfin, il présente trois genres d'évaluation possibles, dont les coûts varient selon la portée des travaux à effectuer.

La solution recommandée prévoit l'exécution de l'évaluation la plus détaillée possible avant l'achèvement du Programme.

INTRODUCTION

A. BACKGROUND

The Office Communications Systems (OCS) Program is a federal industrial initiative administered by the Department of Communications (DOC). The Department of Industry, Trade and Commerce (ITC) cooperates closely through the provision of industrial development support related to the program. The objective of the program is to promote the development of an industrial capability in Canada for the supply of integrated electronic office systems to domestic and world markets, primarily through providing Canadian-based companies with the opportunity to field test new products and services in selected government departments. In addition, the program's mandate calls for research on the social, behavioural and employment impacts of office automation and the promotion of public awareness of such systems and their impacts.

The initial phase of the OCS Program was approved by Cabinet in November 1980, providing $2.5 million to test the feasibility of using field trials as a vehicle for industrial development and to plan these in detail if deemed appropriate. In April 1982, the Cabinet Committee on Economic and Regional Development approved funding of $12 million over the period 1982-85 to undertake the field trials and to conduct parallel research into the social and behavioural aspects of the technology, as well as a public awareness campaign. An additional $1.25 million was rephased from Phase I to Phase II, bringing the total funds available for this stage to $13.25 million.

B. OFFICE AUTOMATION AND THE OCS PROGRAM

Current trends in the diffusion of advanced office technology underly the program's rationale. The OCS Program defines office automation as:

> "The application of information systems technolgy to increase the productivity of the office and the effectiveness of the managerial, professional and clerical people who work within it".

This definition reflects the growing recognition that office costs have been escalating beyond corresponding gains in productivity. And that managers and professionals account for a significant proportion of these costs. Consequently,

new integrated office systems offer capabilities that extend beyond stand-alone word processing equipment to support the full range of office workers and their various functions.

Estimates cited in OCS Program information suggest that by 1990, approximately 70% of managers and supervisors will be using such systems (Trigon Systems Group Inc.), and that the Canadian and world markets will total close to $10 and $200 billion respectively (Arthur D. Little, Inc.). Specific components of this new industrial sector are growing rapidly. Estimates vary considerably, but the following figures reflect the general trend (OCS presentation):

	% of Growth/Year
° Voice/data PABXs (private automated branch exchanges)	71
° Multifunction workstations	50
° Software	25
° Personal computers	25
° Local area networks	14

The heart of these systems -- the multifunction electronic workstation -- offers the user such capabilities as:

- electronic mail and messaging;
- text management;
- decision support (e.g., electronic spreadsheets);
- teleconferencing;
- information storage and retrieval;
- personal support systems (e.g., diaries).

As mentioned above, the OCS Program mandate is to develop a Canadian industrial capability for supplying such integrated systems by supporting and evaluating fields trials, fostering research into related issues and conducting a public awareness program.

The field trials of prototype office technology in host departments constitute the major thrust of the program. The participants involved and their respective levels of funding are shown below:

Vendors	Host Sites	OCS$
Bell Northern Research	Customs & Excise	$3.0 million
Systemhouse Ltd.	National Defence	$2.8 million
OCRA Communications Inc.	Environment	$3.0 million
Officesmiths Inc.	Energy, Mines & Resources	$ .7 million
	Communications	$ .5 million

Each trial proceeds through a series of activities including:

- user needs analysis;
- system design and development;
- user training;
- pilot system operation;
- impact assessment (pre, during and post trial).

All five trials vary to some extent with respect to the types of users and applications involved. Table I-1 shows the specific users and functions for each.

A project team in each host department directly manages the trial. DOC ensures that relevant issues are addressed and retains responsibility for overall financial control, as well as for evaluation of the trials and of the program as a whole.

The potential benefits to vendors of these trials include:

- an opportunity to test particular OCS strategies and to assess user reactions;
- development and refinement of products, systems and methodologies;
- the development of a first customer as a reference for future business.

TABLE I-1 SUMMARY OF OCS FIELD TRIALS

VENDOR	DEPARTMENT	BRANCH	USERS	FUNCTIONS
Bell Northern Research	Revenue Canada - Customs & Excise	Excise	Senior Management and Excise Officers in Toronto and Ottawa	• Electronic mail/messaging • Advanced telephony • Report production • Electronic filing
Systemhouse Ltd.	National Defence	Financial Services	Financial policy, procedures and administrative personnel in NDHQ Ottawa and Air Command HQ/CFB Winnipeg	• Information retrieval • Spreadsheets • Document creation
OCRA Communications Inc.	Environment Canada	• Finance, Personnel and Administration • Environmental Protection Service	Management, professional and administrative staff in Hull and regions	• Electronic mail/messaging • Word processing • Electronic file management • Activity management • Decision support
Officesmiths Inc.	Energy, Mines & Resources	Finance and Administraiton	Administrative services personnel in Ottawa	• Electronic filing and retrieval
Not yet announced	Communications	Policy	Policy personnel and the Offices of the Minister, Deputy Minister, and Senior Assistant Deputy Minister	• Electronic messaging • Document control and processing • Access to information • Personal management tools

Government users hope to benefit from the trials generally by:

- gaining experience with the new technology and assessing its benefits;
- developing policies for future procurement and implementation; and
- improving quality of working life as well as efficiency and effectiveness.

Assessment of the field trials aims at determining the impacts and effects, both intended and unintended, of the technology on the people using it. An Impact Assessment Committee, comprising representatives of several interested departments, oversees the strategy and methodology adopted. A Site Impact Assessment Team (SIAT), including representatives from the host department, vendor, an external contractor and the OCS Program, manages and conducts each evaluation. General categories of issues being examined include system performance, user acceptance, human/social, factors, productivity and other organizational implications.

C. EVALUATION OF THE OCS PROGRAM

The OCS Program represents a model for economic development programs in the department. Funded as a "sunset" program due to end March 31, 1985, its performance in relation to industrial and other benefits must be evaluated in a timely manner so that planning for future federal initiatives can take place. Specifically, the findings would be used to determine the effectiveness of such funding models in general and to make decisions on the federal government's ongoing role with respect to office automation.

The program evaluation process, as set out in guidelines prepared by the Office of the Comptroller General, can involve three stages:

- **the evaluation framework** - the process through which a (new) program's purpose, background and description are clarified and plans are made in order to be able to conduct a useful evaluation at an appropriate time in the future;
- **the evaluation assessment** - an analysis of the nature and extent to which evaluation issues can be addressed, presenting options for conducting the actual evaluation study; and

- **the evaluation study** - the process whereby data are collected, analysis is carried out and the conclusions and recommendations are formulated.

The Program Evaluation Division of DOC began to develop an evaluation framework for the OCS Program in the fall of 1982. The Bureau of Management Consulting was subsequently retained to complete the framework and to conduct an evaluation assessment in preparation for the evaluation study.

Data sources for both parts of the study included program files, related studies, Cabinet and Treasury Board documents and interviews with representatives from the OCS Program, field trials, Treasury Board and Industry, Trade and Commerce.

Part I of this report develops a profile of the program and discusses relevant issues and indicators of program outcomes in a preliminary way. Part II discusses the program's rationale in more detail, expands on key evaluation issues, and presents options and related costs for the evaluation study.

PART I

THE OFFICE COMMUNICATIONS SYSTEMS PROGRAM -- EVALUATION FRAMEWORK

CHAPTER 1

OCS COMPONENT PROFILE

A. BACKGROUND

1. Mandate

The Office Communications Systems Program has proceeded in two phases. Phase I of the program covering the fiscal years 1980-81 and 1981-82 was approved by Cabinet 1980 . On October 16, 1980, Treasury Board authorized expenditure of $2.5 million for this period (TB 773526). Specifically, Phase I work was to assess the feasibility of implementing the major field trials in Phase II by:

- carrying out limited industrial, behavioural and systems research;
- developing guidelines for field trials;
- consulting with departments to identify and plan the trials; and
- initiating a public information program.

Surplus funds of $1.25 million due largely to staffing delays were subsequently directed towards FY 1982-83 (TB 779968).

the Cabinet Committee on Economic and Regional Development approved Phase II of the OCS Program . Treasury Board authorized $12 million for this phase on July 29, 1982 (TB 783586). Phase II formally began on April 1, 1982 and is scheduled to terminate on March 31, 1985. The mandate of this phase focuses primarily on the field trials. Related activities include:

- behavioural, economic and social research;
- public awareness;
- field trial assessment; and
- program management and administration.

2. Objectives

The objectives of the OCS Program as set out in Treasury Board submissions and Cabinet documents are:

- to develop an industrial capability in Canada for developing, manufacturing and marketing integrated electronic office systems to domestic and world markets;
- to determine the social, behavioural and economic implications of office automation;
- to ensure that integrated electronic office systems contribute to a better quality of work life and higher productivity for office workers; and
- to educate the public and promote Canadian systems.

3. Component Description

The Office Communications Systems Program is a federal industrial initiative designed to stimulate the development of integrated electronic office systems. The program was designed to deal with the rapidly merging technologies of micro-electronics, high-speed communications and information management systems that are transforming the modern office. Multifunctional workstations linked by telephone, coaxial cable or optical fibre networks will provide access to voice, video, data and graphic services. Each workstation will allow the office worker to perform a wide range of tasks including word-processing, electronic mail and messaging, teleconferencing, and storage, retrieval and sorting of information in local and remote data bases.

The program is administered by the Department of Communications with support from the Department of Industry, Trade and Commerce. The main thrust of the program is to provide Canadian-based companies with the opportunity to field test new products and services in selected government locations prior to their commercial introduction.

The rationale for funding the OCS Program was and continues to be motivated by a number of factors including:

- the strength possessed by Canadian companies, especially in word processing and telecommunications;

- the potentially large domestic and international markets and related employment opportunities;
- the large and rapidly growing trade deficit in the electronics sector;
- the apparent decrease in the productivity growth rate of Canadian labour.

With or without the OCS Program, offices will change as a result of new technology. Accordingly, the program is expected to provide Canadian industry with seed money and experience in developing and implementing integrated electronic office systems, as well as to investigate their impact.

In addition, the program (mainly through the field trials) should create market opportunities in the federal government for Canadian products. The leverage for Canadian companies from access to and involvement in government procurement, field trials, and research and development resulting from the program is estimated to be significant.

Although Canadian industry is the major recipient of funds from the OCS Program, federal departments involved should benefit substantially through experience with the technology and potential improvements in productivity.

Phase I, budgeted at $2.5 million, involved planning and co-ordinating activities for Phase II, as well as limited research. Phase II consists of the following five elements:

- field trial activity to test Canadian-made integrated electronic office systems;
- field trial evaluation and OCS Program evaluation;
- research into social, human factors, economic, technological and industrial concerns;
- public awareness and information dissemination activities; and
- program management and administration.

Phase II is expected to be consistent with the February 11, 1982 Cabinet decision concerning micro-electronics and information technology guidelines. These guidelines identify telecommunications equipment, electronic office equipment and software as priority areas for government support in order to increase productivity and competitiveness

in traded goods and services. They also emphasize the human resources dimensions of such programs.

As well, in the March 22, 1982 Memorandum to Cabinet, a pledge was made to "address not only the industrial aspects of the electronic office, but the human and social ones as well". Specifically referred to were employment impacts, social and behavioural concerns, and status of women considerations. These concerns are to be addressed by the OCS Program.

Discussion Paper (DOC-1-82 DP) also outlined a second stage to Phase II of the program. This stage would have involved a supporting and complementary program of special applications and systems research into leading-edge technologies at an estimated cost of $9.5 million, running from FY 1983-84 to FY 1985-86. However, this component has not been activated. New office automation research initiatives in Laval and Hull, funded by DOC, will operate under essentially the same mandate proposed for Stage II.

4. Relation to Estimates Program

The departmental spending plan is comprised of two programs - the Communications Program (Economic Development Envelope) and the Arts and Culture Program (Social Development Envelope).

The Communications mandate of the department is:

> "to ensure that Canada's telecommunications systems remain efficient, technically advanced and responsive to Canadian needs while making certain that Canada takes full advantage of the growth opportunities arising from the rapid progress in information and space technologies."
> (**DOC Expenditure Plan**, 1983-84)

The OCS Program has been funded under the Research Sector of the Communications Program. As described in the 1983-84 DOC Expenditure Plan, the mandate of the Research Sector has been to conduct research on communications applications and technologies and to support the development of Canadian high-technology industries.

However, as of April 1, 1984, the OCS Program will fall under the new Technology Applications and Industry Support Sector. The rationale underlying this change is that the program has advanced beyond research and development into the field trial/application stage.

5. Component Resources

As mentioned above, Treasury Board (TB 773526, October 16, 1980) approved the expenditure of $2.5 million for Phase I of the OCS Program. Also approved were three term person-years (PYs) for 1981-82. Specifically, of the $1 million allocated to FY 1980-81,

- $600,000 was to be for the development of functional specifications for possible products and integrated systems and limited field trials of partial systems;
- $200,000 was for behavioural studies to determine the impact of automation on the office environment; and
- $200,000 was for program management including salaries, consultant fees and Department of Supply and Services service fees.

In 1981-82, $1 million was to be spent on the continuation of the partial system field trials and initiation of the full system field trials. The remaining funds were to be applied to behavioural/human factors studies ($250,000) and program management ($250,000).

A cash flow adjustment request dated February 26, 1981, noted that the Department had experienced delays in implementing the program due to start-up difficulties. In particular, staffing problems created a delay in project implementation of approximately six months.

By means of Decision TB 776082 on March 19, 1981, Treasury Board approved in principle a 1981-82 supplementary estimate to provide for a cash flow adjustment of $750,000 for the OCS Program. The start-up difficulties were overcome, but the program required an additional adjustment to the original cash flow due to the lapse in time. Specifically, Treasury Board (TB 779968) approved a cash flow increase of $1,250,000 for 1982-83 offset by:

- a special lapsing allotment of $500,000 for 1981-82; and
- $750,000 representing the supplementary estimate approved in principle by TB 776082 for 1981-82.

The request also sought approval for continuing the three term PYs into 1982-83, to be supplemented by four PYs from within the Research Sector.

The original and revised cash flows for Phase I are shown below:

($000s)

	1980-81	**1981-82**	**1982-83**	**Total**
TB 773526	1,000	1,500	----	2,500
TB 776082	250	2,250	----	2,500
TB 779968	250	1,000	1,250	2,500

Table 1-1 shows the resources initially allocated to Phase II activities. The original Treasury Board approval (TB 783586) on 29 July 1982 approved funding of $12 million but only one person year for 1983-84. Following an appeal by the Minister of Communications, this decision was subsequently revised on 4 November 1982 to provide 8 term PYs in 1982-83, 12 in 1983-84 and 10 in 1984-85.

Of the $10,050,000 available to field trial activities (excluding evaluation), the respective costs over the three fiscal years FY 1982-83 through FY 1984-85 were budgeted as follows:

	($000)
Bell Northern Research/Revenue Canada - Customs & Excise	$3,000
Systemhouse Ltd./National Defence	$2,800
OCRA Communications Inc./Environment Canada	$3,000
Officesmiths Inc./Energy Mines & Resources	$ 700
Department of Communications	$ 500
Treasury Board	$ 50
Total	$10,050

The $335,000 initially provided for evaluation was supplemented in 1983-84 by a roll-over of $300,000 of 1982-83 departmental operating funds.

TABLE 1-1

OFFICE COMMUNICATIONS SYSTEM PROGRAM: PHASE II, INITIAL BUDGET

Fiscal Year ($000 and PY)

BUDGET ITEM		82/83	83/84	84/85	TOTAL
1.0 OCS Field Trials	(PY)	2PY	2PY	2PY	6PY
1. Bell Northern Research (Customs & Excise)		1000	1000	1000	3000
2. Systemhouse (National Defence)		600	1200	1000	2800
3. OCRA Communications Inc. (Dept. of Environment)		400	1200	1400	3000
4. Officesmiths (Energy, Mines & Resources)		250	450	--	700
5. DOC Pilot		90	250	160	500
6. Treasury Board Study		50	—	—	50
Sub-Total		2390	4100	3560	10050
2.0 Research Program	(PY)	1PY	2PY	0PY	3PY
1. Behavioral, Health and Safety, and Social Research		95	90	—	185
2. Industry, Economic & Employment Studies		80	60	—	140
3. Technology & Systems Res.		30	—	—	30
4. Productivity Research		20	10	—	30
5. Standards Studies		15	5	—	20
6. BMC Government Market Study		20	—	—	20
Sub-Total		260	165	--	425
3.0 Evaluation	(PY)	2PY	2PY	2PY	6PY
1. Field Trial Evaluation		180	145	—	325
2. Program Evaluation		—	5	5	10
Sub-Total		180	150	5	335
4.0 OCS Committees	(PY)	1PY	1PY	1PY	3PY
	($)	30	45	45	120
5.0 Public Awareness and Program Coordination	(PY)	1PY	1PY	1PY	3PY
	($)	90	50	20	140

TABLE 1-1 (Cont'd)

	Fiscal year ($000 and PY)			
BUDGET ITEM	82/83	83/84	84/85	TOTAL
6.0 OCS Administration: (PY)	4PY	4PY	4PY	12PY
1. Salaries	315	525	455	1295
2. Capital	70	30	--	100
3. O&M	420	275	90	785
Sub-Total	805	830	545	2180
Total Proposed Expenditures	3755	5320	4175	13250
Funds Re-Phased from Phase I*	1250	—	—	1250
Funds Approved for Phase II*	2505	5320	4175	12000
Person-Year Approved	8	12	10	30

A further adjustment carried forward $290,000 of OCS Program funds as shown below:

($000s)

	Previous Approval (TB 783586)	Change
1982-83	$ 2,505	$ 2,215 (290)
1983-84	5,320	5,510 190
1984-85	4,175	4,275 100
Total	$12,000	$12,000

As mentioned above, Treasury Board approved an appeal from the Department to authorize person year resources to the program in November 1982. However, throughout the period of July to December, the lack of human resources available caused the OCS Program to operate with minimum staff, resulting in delays of several program initiatives. In particular, the field trial evaluation activities experienced a slippage of several months. As well, the field trials themselves and other aspects of the program lapsed in their schedules. Table 1-2 shows the revised budget for the OCS Program reflecting the required cash flow adjustments.

Direct program expenditures are to be complemented by anticipated expenditures through existing ITC cost-sharing programs and through normal office equipment procurement during the life of the program.

B. ELEMENTS AND STRUCTURE

1. Component Elements

(a) Activities and related outputs

Phase I of the OCS Program was to test the feasibility of using field trials as a vehicle for industrial development and to plan the trials if deemed feasible and desirable. In addition to planning and coordinating activities, limited industrial, behavioural and systems research and public awareness activities were to have been conducted.

Phase II consists of the following groups of activities:

TABLE 1-2

OFFICE COMMUNICATIONS SYSTEM PROGRAM: REVISED PHASE II BUDGET

Fiscal year ($000 and PY)

BUDGET ITEM		82/83	83/84	84/85	TOTAL
1.0 OCS Field Trials	(PY)	2PY	2PY	2PY	6PY
	($)	2317	4073	3660	10050
2.0 Research Program	(PY)	1PY	2PY	0PY	3PY
	($)	246	190	15	451
3.0 Evaluation	(PY)	2PY	2PY	2PY	6PY
	($)	50	303	25	378 (+$300)
4.0 OCS Committees	(PY)	1PY	1PY	1PY	3PY
	($)	24	60	20	104
5.0 Public Awareness	(PY)	1PY	1PY	1PY	3PY
	($)	90	80	20	104
6.0 OCS Administration	(PY)	4PY	4PY	4PY	12PY
	($)	738	804	535	2077
Total Proposed Expenditures		3465	5510	4275	13250
Funds Re-Phased from Phase I*		1250	—	—	1250
Total Funds Approved for Phase II		2505	5320	4175	12000
Person-Years Authorized*		3	--	—	3
Total Person-Years Authorized		11	12	10	33

* Decision TB 779968

- **Field Trials**

The primary focus of the program is on field trials in federal departments to test integrated electronic office systems under development by Canadian industry. The strategy is to support five major field trials, each based on a different technology and systems integration scheme. Each field trial is conducted in a different federal department by different vendors.

Departments chosen exhibit significant diversity, although they share characteristics such as information intensity, relevant technical expertise and a major commitment to the field trials. Companies directly involved are diverse in their strengths and capacities, but all demonstrate commitment to developing a share of the electronic office market.

Objectives common to the OCS field trials include:

- production of system designs and functional product specifications to which Canadian industry can respond;
- experimentation with office automation systems to test their impact on productivity, organizational structures, user acceptance and overall effectiveness;
- development of a general methodology for carrying out office systems analysis to aid industry in defining and marketing office automation systems; and
- provision of test sites for research and analysis of other economic, social and behavioural aspects of office automation.

OCRA Communications Inc. is conducting its field trial at the Department of Environment. The second integrated field trial is led by Bell Northern Research (BNR) and is supported by Bell Canada and Northern Telecom. The location for the BNR field trial is Revenue Canada, Customs and Excise Branch. The Department of National Defence is hosting the third integrated field trial with Systemhouse Ltd.

The OCRA, BNR and Systemhouse trials are testing completely integrated systems with several occupational groups in the federal departments concerned. A fourth trial tests a system which augments more specific functions or tasks, but which later can be expanded and developed into a larger integrated system. This small, special field trial of an electronic

business manual system developed by Officesmiths is being conducted in the Department of Energy, Mines and Resources. An integrated field trial is also being implemented in the Department of Communications, involving executives and professionals in the department. Limited financial assistance was also provided to Treasury Board to complete a feasibility study begun during Phase I.

A project team in each host department manages and administers all matters relating to the trial. OCS Program staff participate directly in each field trial to ensure that relevant issues are properly addressed. The Program is also responsible for the overall financial control, field trial evaluation and industrial benefits relating to the field trials.

Each field trial proceeds in three phases: a feasibility and planning phase, an implementation and operational phase, and an evaluation phase. An assessment is to be conducted at the end of each phase and a decision made before proceeding to the subsequent stage. If successful, a fourth phase or full-scale operational implementation will follow.

- **Field Trial and OCS Program Evaluation**

Evaluation plays a key role in Phase II of the OCS Program. Two kinds of evaluation will be undertaken:

- evaluation of the field trials to determine their effects in the host departments, and
- program evaluation to measure achievement of the program's industrial development and other objectives.

Field trial evaluation is undertaken jointly by the vendors, the departments hosting the field trials and the OCS Program in the context of Site Impact Assessment Teams. These evaluations address issues such as user reactions to the system, organizational and employment impacts, and changes in productivity. A detailed list of these evaluation issues as specified in the Request for Proposal for the field trial impact assessments is appended.

Evaluation of the OCS Program itself is conducted by DOC in accordance with guidelines established by the Office of the Comptroller General. Program evaluation involves the systematic gathering of verifiable information on a program and demonstrable evidence of its achievements and cost-effectiveness. Input to the program evaluation of the OCS Program

includes, but is not limited to, results from field trial evaluations, research activities, committee work and public awareness activities. This framework constitutes the first step in the OCS evaluation process.

The key objective to be assessed in the evaluation is the program's contribution to industrial development, especially relating to the next generation of electronic office systems. In the Memorandum to Cabinet and in negotiations with the Ministry of State for Economic and Regional Development, commitments were made regarding the use of funds. Funds must be directed to the Canadian industry groups identified in the Memorandum and cannot be used to purchase capital equipment or subsidize government operations. The systems and applications supported by the OCS funds cannot be off-the-shelf products currently available. Rather, they must address the next generation of electronic office systems generally characterized by their multifunctional nature, particularly their integration and communication features. Finally, the evaluation must examine the extent to which the program has addressed employment impacts, social and behavioural concerns and status of women considerations.

- **Research Program**

The research program for Phase II is to identify and investigate the various technological, social, human, economic and productivity issues related to office automation in order to forecast trends and developments. The following issues are to be addressed:

- **industrial and marketing issues** such as Canadian industry performance, industrial strategy, market segmentation, market forecast and policy analysis;
- **employment and retraining issues** relating to the displacement of office personnel as a result of new office systems;
- **behavioural research** into the attitudes of office staff toward office automation and strategies to ensure that new integrated systems are designed to meet the social and psychological needs of the office worker;
- **organizational performance research** to investigate methodologies and measurement criteria for determining the impact of office automation on worker productivity, worker satisfaction, quality of work life and organizational efficiency;

- **technological and systems research** to investigate cost performance characteristics, systems design and communications standards; and

- **health and safety research** to identify, assess and properly cope with any adverse impacts of new technology on office workers.

- **Public Awareness and Information Dissemination Program**

The fourth major activity to be pursued by the OCS Program during Phase II has two objectives:

- to better inform and educate the public, Canadian business, federal departments and provincial governments about office automation; and

- to promote Canadian systems.

A quarterly newsletter is to be published during Phase II to inform the public of advancements and issues relating to the electronic office in Canada. In addition, an annual conference in Ottawa is planned involving the federal and provincial governments and Canadian industry. Other activities include a booklet entitled "The Electronic Office in Canada" and various publicity initiatives.

- **Program Management and Administration**

Funding for program management and administration covers salaries, capital, travel, conferences, DSS contract fees, operations and maintenance. Although person year levels fluctuate, program staff has included an OCS Program Manager, Manager of Industry Development, Manager of Technology Development, Manager of Field Trials, Chief of Economic Analysis, Program Coordinator, Special Advisor and administrative personnel. In addition to managing the field trials, impact assessments, research and public awareness activities, program staff must consult with various interest groups.

The OCS Program has established a number of committees in order to:

- achieve and maintain effective communication and consultation with Treasury Board, departments and agencies, industry and the general public; and

- enhance communication between the two levels of government with respect to the deployment of technology in the office in general and the delivery of the OCS Program in particular.

These include the:

- **Industry Consultative Committee** -- formed to provide private sector advice to DOC and ITC on issues related to industrial development of the office automation sector. Its principal function is to recommend to the federal government actions that will encourage the use of electronic office technology and stimulate the development of a competitive Canadian office automation industry.

- **Software Strategies Committee** -- a special interest group formed by Canadian software suppliers to investigate areas of cooperation among its members and to exchange information on software issues, standards and other areas relevant to office automation.

- **Users' Group** -- formed to represent the interests of federal departments and agencies. The task of this committee is to ensure that OCS Program activities and projects meet the needs of public sector offices to the greatest degree possible. The committee also ensures that the technical, economic and behavioural needs and requirements of office automation systems are satisfied and communicates these needs to the OCS Program, the Deputy Ministers of DOC and ITC, and all member departments.

- **Human Context Committee** -- to provide a national forum for arriving at a consensus on behavioural, economic and social implications of information technologies. This committee will provide advice to the Deputy Minister of DOC with respect to the development and introduction of new office communication technologies in Canada.

- **Impact Assessment Committee** -- to provide advice and guidance to the Deputy Minister on the acceptability and validity of the impact assessment strategy and approach to be used in evaluating the OCS field trials. Specifically, the committee will identify and agree on the major evaluation questions of concern to members, and on the criteria and methodology by which they should be assessed.

- **OCS Program Review Committee** -- to review the Program's activities and to resolve any major issue about its delivery.

° **Interdepartmental Working Group** -- to ensure close cooperation and consultation with interested departments on all aspects of the OCS Program delivery.

As well as liaison with the committees listed above, program staff maintain corporate memberships in several office technology professional associations and organize conferences in relation to public awareness activities.

(b) Impacts and effects

The expected impacts and effects of the OCS Program include:

- knowledge gained from implementation of prototype electronic office systems with respect to their impact on the organizations and individuals using them;
- development of competitive products and systems;
- identification and development of product markets;
- increased domestic and international sales of Canadian electronic office systems;
- increased employment opportunities in the electronics manufacturing sector;
- improved balance of payments in the electronics manufacturing sector;
- acceptance of the new technology by users;
- increased efficiency and effectiveness of managerial and clerical activities in the host government departments;
- deployment of advanced office technology in other government and business organizations;
- increased productivity growth rate in the Canadian economy;
- more informed government procurement decisions and policy development related to integrated electronic office systems;

- improved techniques for introducing new office technology aimed at enhancing the quality of work life.

2. Component Structure

Figure 1-1 shows the OCS Program component structure. The model illustrates the linkages between activities, outputs, expected impacts and effects, and objectives.

As discussed above, the program is intended primarily as an incentive to stimulate Canadian industry by providing participating firms with funds to implement and experiment with new systems prior to commercial introduction. The sequence of events for achieving the industrial development objective can be conceptualized as follows:

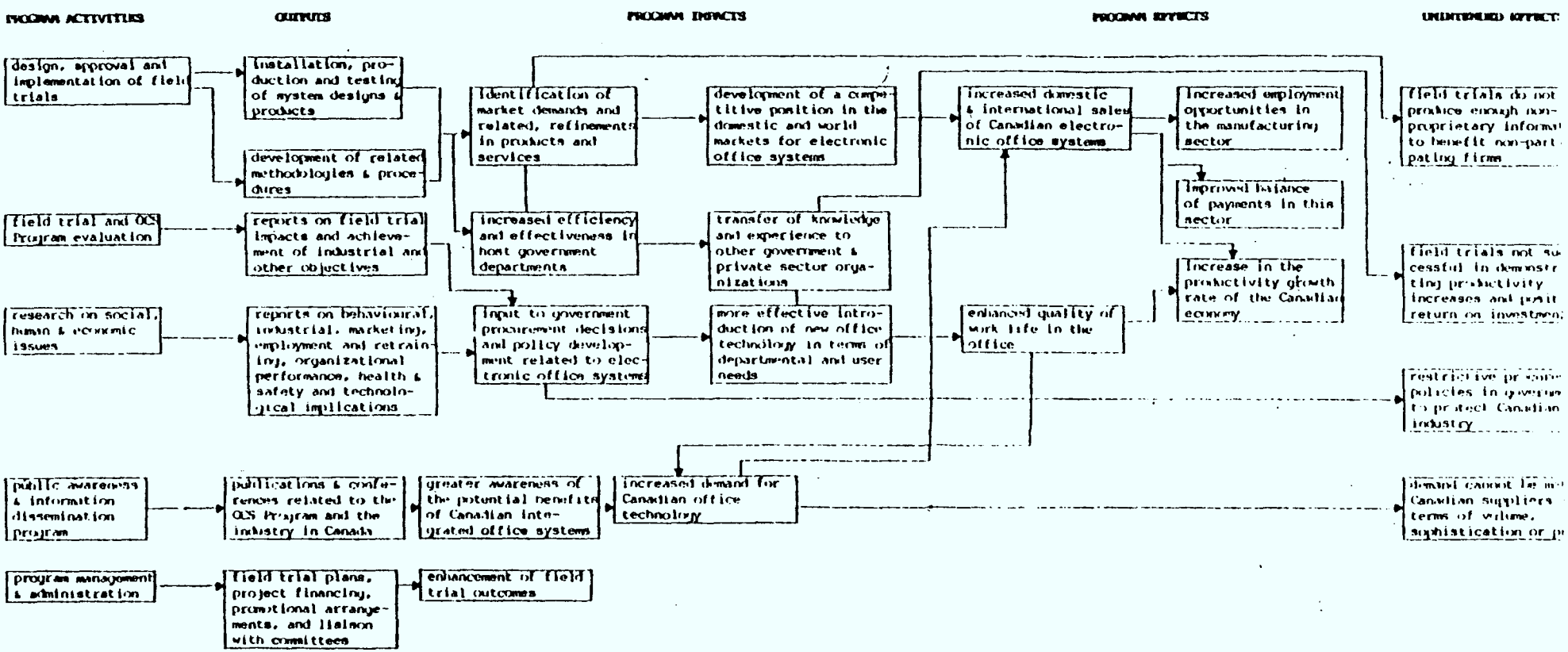
- The OCS Program provides funds and test sites to participating companies for implementation of new, multifunctional office communications systems which would
- stimulate product and market development and improvement leading to
- development of a world competitive system and product capability in integrated electronic office systems.

Prior to the OCS Program intervention, most suppliers had invested some resources into their proposed systems. It is expected that they will expend considerably more money during the course of the field trials for system modifications resulting from user input. The field trials will allow participating Canadian companies not only to improve new equipment and services in a working environment, but also to demonstrate proven products to potential buyers. The trials should encourage firms, especially participants, to develop market opportunities in and outside the federal government.

Although the program's focus is on the industrial development objective, the federal government and eventually other users of such systems are expected to benefit with respect to other program objectives. Through selected departments' participation in the trials, government should gain experience with the latest office communications systems and realize productivity increases.

In approving the Program, Cabinet agreed that "the Minister of Supply and Services pursue his interest in investigating on behalf of the federal government the use of office of the

FIGURE 1-1: OFFICE COMMUNICATIONS SYSTEMS PROGRAM COMPONENT STRUCTURE



future systems and technology to improve government operations, thereby providing a government-wide approach for integrating advanced office technology into government operations". Essentially, then, benefits could accrue to the government by:

- selected government departments participating in the implementation of and experimentation with integrated electronic office systems; which would
- provide information related to procurement decisions and federal policy developments; and
- increase the efficiency and effectiveness of managerial and clerical operations.

In the detailed model of the program shown in Figure 1-1, outputs, impacts and effects can be thought of in terms of both suppliers and users. The suppliers' level is identified with the industrial development objectives that ultimately would contribute to reducing the trade deficit and increasing employment opportunities in the office electronics sector. The suppliers are Canadian companies in the office communications systems industry. Initially, the activities and intended impacts are directed at the five participating companies. However, these efforts are expected to stimulate the total Canadian industry, contributing to the development of a world competitive system and product capability.

The users' level is associated with the objective of increased productivity and familiarity with new office technology. The users category is comprised of participating government departments, government as a whole and the business sector. The initial impact of the program will be felt within a limited segment of users -- host government departments. However, the aim is to extend benefits throughout government and private sector organizations.

CHAPTER 2

CONSIDERATIONS FOR DESIGNING THE OCS PROGRAM EVALUATION

A. BASIC ISSUES

The Office of the Comptroller General identifies a set of basic program evaluation issues to consider when planning an evaluation study. Each of these is discussed below in terms of the OCS Program.

1. Program Rationale: Does the Program Make Sense?

- Have developments in the office communications systems industry since the first discussion paper in 1980 affected the relevance of the OCS Program?

- How plausible are the linkages between OCS Program activities and its intended results? Of particular interest, is the field trial approach an appropriate vehicle for achieving the government objectives specified?

- How realistic is the level of resources committed to the program in terms of realizing the desired results? Specifically, are the funds and the number of companies and department sites sufficient to produce the intended information and impacts?

- Is it reasonable to expect that the field trial experiences will impact on other users and suppliers? On the Canadian economy as a whole?

- Is the Department of Communications the most appropriate context for the program?

- Does the finite nature of the program under the "sunset" model of funding constrain its performance?

2. Impacts and Effects: What Has Happened as a Result of the Program?

- To what extent do firms in the industry -- both those directly involved and others -- have a better understanding of market potential, a more competitive market position and increased sales as a result of the OCS Program?

- Have the field trial evaluations and research studies produced valid and useful data on the impacts of electronic office technology?

- Has the program been managed in such a way and with the appropriate resources to yield the desired outcomes?

- To what extent has the public's awareness of the OCS Program and the Canadian industry increased?

- To what extent have other government and private sector organizations benefited from the program?

- Can the impacts and effects of the OCS Program be meaningfully distinguished from other initiatives and economic factors?

3. Objectives Achievement: Has the Program Achieved What Was Expected?

- What evidence exists that industrial capability in electronic office systems has resulted from the OCS Program?

- Is it possible to identify or project the impacts of the OCS Program on employment opportunities, balance of payments and the productivity growth rate in the economy on either a micro or macro level?

- Have the research studies conducted reflected the concerns of various interest groups? And can they provide reliable and useful input to policy formulation?

- Have the field trials produced integrated office systems acceptable to users?

- Have the field trials achieved a better quality of working life for participating employees?

- Have potential buyers and users been made more aware of the OCS Program? Of the capabilities of Canada's office automation industry?

4. Alternatives: Are There Better Ways of Achieving The Same Results?

- Is the approach taken in the program (i.e., field trials and related research) the most effective way of achieving the industrial and productivity benefits hoped for? Could alternative strategies produce the same results at the same or less cost?

- Are there alternative programs that could achieve government objectives more efficiently and effectively?

- Is federal government intervention in this sector necessary in the future? If so, what form should it take? And over what time period?

B. RELATED INDICATORS

The evaluation assessment expands on the issues outlined above, discussing specific approaches and data collection methods for each question. In terms of the basic issues to be addressed, however, the evaluation will require such measures as:

- pre and post data on the number of Canadian electronic office systems under development or on the market;

- pre and post domestic and international sales by Canadian firms and improvement in the market share held by the Canadian-owned sector;

- the success to date of each field trial in implementing systems and achieving initial objectives (e.g., user acceptance, improved system design, training, etc);

- pre and post investment by government and business in office automation equipment;

- productivity in host departments -- e.g., reduced inputs leading to the same output or the same amount of input resulting in more output;

- awareness of the program and the potential benefits of such systems among potential buyers/users;

- the development of effective methodologies to conduct office system analysis, implementation and evaluation;

- scope, quality and distribution of related research;
- resulting policies within government to assist in the procurement and implementation of electronic office systems.

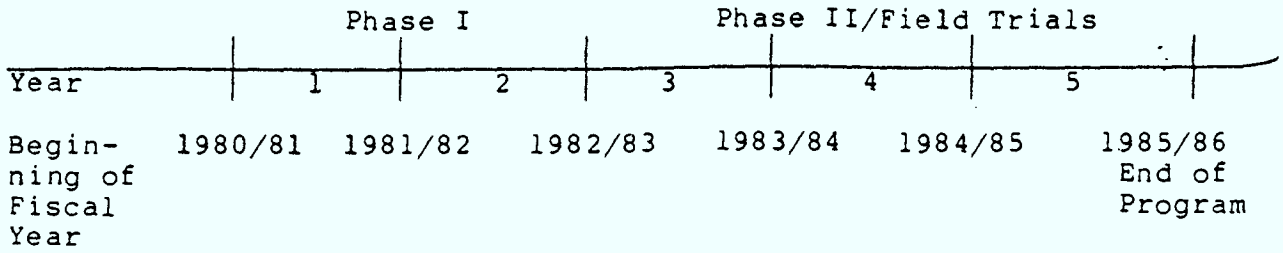
The question of attribution -- that is, accurately determining the program's impact as opposed to other intervening factors -- will present a potential problem in the evaluation study. For example, a firm's sales may increase over the period of the program due to a general economic upturn rather than any particular support or influence from the OCS Program. Conversely, the ultimate effects of the program may not have had sufficient time to materialize at the time of the evaluation. The implications for selecting indicators are that:

- Objective data representing the pre-field trial status of suppliers and users should be gathered wherever possible. Since the trials will have begun by the time the evaluation study is launched, these measures will generally have to rely on available data.
- For those areas where the impacts and effects of the OCS Program cannot be clearly discerned, the evaluation must focus on the more immediate outputs of program activities.
- To minimize the risk of incorrectly attributing outcomes to the OCS Program, the data should be gathered from multiple sources where possible.

C. TIMING CONSIDERATIONS

An evaluation of the OCS Program could proceed at a number of possible points. An outcome evaluation would take place at the end of the field trials when most of the experience gained would be available in the form of published project evaluations and related studies. As well, suppliers could more precisely indicate their business plans for the following period. Conducted at this time, the evaluation would clearly benefit from the richness of available data. Unfortunately, an evaluation conducted in mid to late 1985 could not contribute to the government's decision to extend, change or terminate involvement in the area of office automation.

For the evaluation to provide useful input to designing any future initiatives in office automation, it should be completed before the end of the approved program. The timeline below indicates that Phase I (the design stage) covers part of year 1 and all of year 2 (November 1980 to April 1982). Field trials begin in year 3 and are scheduled to continue through years 4 and 5, finishing at the end of FY 1984/85. The evaluation can contribute to the planning cycle if it is carried out by the fall of 1984.



Given this timeframe for the evaluation, its focus will be largely on the left side of the program model shown in Figure 1-1, including:

- product and market developments;
- assessment and research findings to date;
- preliminary indications of increased operational efficiency and effectiveness;
- awareness of the program and its goals; and
- mechanisms for providing input to government policy and procurement decisions.

The probability of these impacts leading to longer-term effects would be assessed where feasible. This approach would emphasize the micro rather than the macro level of analysis. Considering the relatively short time that will have elapsed, clear evidence of the program's impact will more likely exist within the individual firm or government department than in the industry or user sectors as a whole.

PART II

THE OFFICE COMMUNICATIONS SYSTEMS PROGRAM:

EVALUATION ASSESSMENT

CHAPTER 3

PRELIMINARY ASSESSMENT OF PROGRAM RATIONALE

A. CONSISTENCY OF PROGRAM ACTIVITIES WITH MANDATE

As outlined in the OCS Program component profile, the strategy chosen to pursue the program's mandate involves the following elements:

Phase I -	Planning and related research	$ 2,500,000
Phase II -	Field Trials	10,050,000
	Research	451,000
	Evaluation	378,000
		(+300,000)
	Public Awareness	190,000
	Administration	2,180,000

These revised figures shown for Phase II activities reflect the reallocation of $1,250,000 from Phase I.

An important first step in the evaluation process is to confirm that the program is being delivered as it was intended. If the activities do not resemble the original design, then the Deputy Minister has the option of redirecting the program rather than conducting an evaluation.

To date, the program appears to have followed its mandate relatively closely, with some divergences.

Background documentation requesting funding approval for Phase II summarized the activities carried out in Phase I. Specifically, in cooperation with ITC, the program:

- Commenced research to better understand the social and behavioural impacts of office automation. Eight studies were in preparation on various issues to guide the implementation of the field trials;
- Studied and reported on market forecasts, international trade trends, Canadian industry performance, productivity, employment and other economic effects;
- Established industry and federal department committees to advise DOC and prepare reports

on productivity, human factors, standards and technology assessment;

- Developed a field trial methodology and plan, which was distributed to all federal departments as a guide to field trial planning;
- Developed industrial benefit criteria for assessing field trial proposals;
- Solicited and assessed field trial proposals from Canadian industry;
- Initiated a limited public information program, which included a short film on office automation and a booklet on the subject;
- Conducted limited field trials to test several Canadian systems, including a Canadian built optical character reader to automatically read printed documents;
- Assisted and advised other departments planning to implement integrated electronic office systems;
- Brought together Canadian industry and federal departments to assess and match the proposals for field trials; and
- Assisted companies such as AES Data and Mitel under the Enterprise Development Program.

The primary purpose of Phase I was to assess the feasibility and carry out the selection and preparation of field trial sites. Certain criteria were established for evaluating field trial proposals:

- Systems proposed should be suitable for managerial, clerical and professional use and perform interpersonal, informational, computational and decisional functions;
- The field trial proposal should meet a distinct need of the host department and offer significant benefits to it in terms of productivity and quality of work;

- The field trial proposal should be sufficiently advanced technically and commercially and represent the state-of-the-art in integrated office systems; and

- The field trial proposal should offer significant benefits to Canadian industry and enable it to compete domestically and internationally.

These criteria represent potential benefits of the trial as much as measurable characteristics of proposals and the companies submitting them. Indeed, OCS Program management confirms that the review process was esentially informal. The actual basis on which projects were selected was an appropriate match between the system outlined by a satisfactory vendor and the needs of an interested government department. As well, an effort was made to choose projects that varied in terms of technology and applications.

All of the original proposals vastly exceeded the funds available. Consequently, a scaling down process was necessary to arrive at the final allocations.

As mentioned above, half of the funds available for Phase I were redirected to 1982-83. The evaluation should determine precisely what these funds were subsequently used for and whether the activities actually carried out as part of Phase I were sufficient to achieve the intended outcomes.

Aside from delays, the program elements constituting Phase II have generally been implemented as specified. One noticeable exception is a key study awarded to Robertson Nickerson Limited to:

- prepare and conduct an environmental technological, marketing and economic assessment of the integrated business/ office communications systems industry to the year 2000;

- develop the corresponding data base; and

- develop a comprehensive and integrated communications and industrial policy framework and strategy to deliver optimum economic and regional industrial benefits to Canada.

The OCS Program had allocated $100,000 towards this $240,000 study, the balance being supported by Supply and Services and Industry, Trade and Commerce. The study was halted soon after it began because of lack of consensus on the terms of reference. These are now being redefined to exclude policy development. The resumption and completion of this work (target date of March 1985) will contribute to understanding the outcomes of the program.

Field trials, impact assessment, research and public awareness activities are all currently underway. Overall, then, the program's activities appear to be generally consistent with its mandate.

B. LINKAGES OF PROGRAM ELEMENTS TO INTENDED RESULTS

Figure 1-1 provides a model of the OCS Program, showing the linkages between its activities and the intended results. The related discussion outlines the assumptions underlying these linkages. The question to be addresed at this stage is whether these relationships are in fact plausible. Are the assumptions realistic? And can the size and nature of the program intervention reasonably be expected to achieve the desired effects?

The trend in the office communications systems market is towards integrated systems. Manufacturers and suppliers who are not able to supply such systems could well find their markets disappearing. This trend is being driven by technological developments largely under the control of major multinational computer and office equipment suppliers.

Success requires strong technical and marketing capabilities. A preliminary discussion paper (DOC-5-80-DP) noted that "no one Canadian company has the size, resources and expertise to conceive, develop and produce a system in this country comprising several products and services to meet user needs". If multinationals continue to dominate this market as in earlier electronic-based technologies, Canada's role would be restricted to production as subsidiaries with possibly a few small independent companies attacking niches in the market. The end result would be a high level of importation of advanced products and systems, culminating in an expected trade deficit of approximately $4-5 billion by the mid-eighties, up from $1.77 billion in 1981. The estimated employment impact of such a

deficit is a loss of 60,000 jobs in the office equipment sector over the four year period.

The strategic objective of the OCS Program, therefore, is to provide governmental impetus to the development of a Canadian office automation industrial infrastructure. The assumption is that with government as the focus, companies are more likely to cooperate than if some firms attempt to dictate standards and design criteria to others. As well, the government's role as a test market gives the participating firms an opportunity that is usually available to major companies, but denied to smaller companies. Funding for the field trials provides the incentive to participants to commit their own resources to complementary research and development programs.

The OCS Program logic also assumes that once these companies become competitive suppliers of advanced office products, significant export earnings will result as well as jobs in management, marketing, engineering, production and service.

Finally, as the largest user of the technology, the federal government will gain invaluable experience from its involvement, both in terms of increased productivity and technical knowledge. Costly mistakes can be prevented before implementation becomes widespread throughout the government and recognition of social and behavioural implications can contribute to policy formulation.

On a conceptual level, the chain of events presented above from program activities to effects seems plausible. However, in terms of any imminent evaluation activity, the longer-term industrial, economic and productivity effects are less justified. Given the rather limited scope and timeframe of the program and its evaluation, it is unreasonable to look beyond the host departments and vendors involved for measures of major outputs -- i.e., product development, increased sales, user acceptance, enhanced productivity, etc. It would be highly unlikely -- and unfair to the OCS Program -- to be able to identify changes in employment opportunities, balance of payments or the productivity growth rate resulting from the program over the next year. Indeed, it is doubtful that such indicators could ever be traced back to such an intervention specifically.

With these considerations in mind, the relationships between program elements and intended results are

plausible enough to be evaluated. However, early implementation of the evaluation would limit the measurement of effects beyond direct impacts.

CHAPTER 4

EVALUATION APPROACHES

A. INTRODUCTION

Chapter 2 set the framework for the OCS Program evaluation by identifying a number of key issues grouped according to:

- program rationale
- impacts and effects
- objectives achievement
- alternatives.

These issues are expanded in the following sections into specific questions related to program elements. In each case, approaches to gathering the required information are proposed. Chapter 5 presents three options which combine these approaches for conducting the evaluation study along with estimated costs.

B. INDUSTRIAL DEVELOPMENT

With respect to the OCS Program's industrial development objectives, the evaluation should address the following questions:

- Have developments in the office communications systems industry over the past three years affected the relevance of the program? If so, how?
- How many Canadian electronic office systems were under development or on the market before the program? After?
- What is the market share -- both domestically and internationally -- of Canadian firms?
- What was the status of each of the participating vendors prior to the program in terms of product development, sales and employment?

- How has the program impacted on each of these areas? What other factors have had an effect?
- What have the benefits and problems of the program been from the vendors' perspective?
- To what extent do vendors have a better understanding of market needs and potential as a result of the program?
- To what extent have non-participating firms in the industry benefited from the program?
- What continuing role, if any, do vendors see for the federal government in the area of office automation?

An essential first step will be to define which firms and products constitute the electronic office industry in Canada. Case studies of the participating firms and of a sample of non-participants can then be conducted to gain their perspective on the rationale and outcomes of the OCS Program. Interviews with participants should focus not only on what **has** happened over the life of the program, but also on what **would** have happened without the program. This information should be compared with the experience of firms who did not take part.

Additional perspective on these issues, as well as on the electronic office industry in general, might come from a carefully selected panel of experts.

To confirm industry perceptions of market needs and potential, the evaluation should survey the federal government market -- both host departments and others -- to gauge their actual and intended purchases and applications of electronic office technology. The survey would also explore the impact of the OCS Program on procurement decisions, plans and policies. Historical procurement data available from Supply and Services Canada should supplement the survey data.

A comparable survey of the private sector, if conducted, would consume considerable resources in order to adequately sample all sectors. The same concern applies to assessing the market potential of other public markets and the export sector. Alternatively, secondary

indicators in the form of available data and reports could be reviewed. Unfortunately, official statistics currently available through Statistics Canada and Industry, Trade and Commerce (DRIE) do not disaggregate electronics products to reflect imports and exports of specific electronic office products.

The study being conducted by Robertson Nickerson largely focuses on market and technology analyses, assessing what the fastest growing products and markets will be. Some of the project's resources will also be directed towards the question of standards. Depending on the timing of deliverables, this research could contribute significantly to the OCS evaluation.

Finally, interviews with OCS Program staff and selected committee members would draw on their experience as key liaisons between program activities and the organizations they represent.

C. FIELD TRIALS AND IMPACT ASSESSMENT

As the element of the OCS Program consuming the greatest resources, the field trials constitute a focal point for the evaluation. Issues related to industrial benefits have been discussed above. Questions more directly related to the actual trials and their evaluation include the following:

- How do the approved field trial plans differ from the respective vendors' original proposals?
- Have the field trials been implemented as planned? If not, what problems have been encountered?
- Have the impact assessments been conducted as planned to date?
- Have the assessments produced reliable and useful information on the trials' impact?
- What can be said about the representativeness of these findings in terms of other federal government departments and employees? In terms of other organizations?

- Have the trials achieved the goal of producing integrated systems to support multiple functions in the office? And are these resulting products acceptable to users and comparable to the state-of-the-art as developed by multinationals?
- If the trials have produced variable results, what factors and design strategies were most successful?
- What have the field trials demonstrated in terms of the productivity and quality of work life in the host departments?
- Can the data produced in the trials be used to justify and promote the use of electronic office systems?
- What have the trials produced in terms of effective methodologies for office systems analysis, implementation and evaluation?
- To what extent have the impact assessments reflected the concerns and information requirements of labour, Status of Women, Treasury Board and other interested groups?

The evaluation approach to these issues would begin by reviewing project files and reports and conducting interviews with project teams (including vendor, departmental and OCS staff). Analysis of terms of reference, evaluation plans, and assessment reports would also be conducted, along with interviews of SIAT members. A review of available documentation on similar trials would contribute to evaluating the quality of the findings on OCS project outcomes.

D. RESEARCH

Evaluation of research on the technological, social, behavioural and economic implications of electronic office systems should address such questions as:

- What strategy was adopted to identify topics to be studied? To select appropriate researchers?

- Are the concerns of various interest groups reflected in the research carried out?
- Were the number and scope of the studies conducted representative of the importance of the subject area?
- Have the studies conducted employed appropriate research methodologies?
- Do they offer reliable and useful information to provide input to policy formulation?

The approach to this part of the evaluation study would first involve compiling a complete inventory of research studies funded under the OCS Program according to category. Project files and resulting reports (both interim and final) should then be reviewed to determine:

- Compliance with terms of reference
- Quality of the research and analysis
- Key contributions to the existing body of knowledge on electronic office systems.

Where necessary, interviews with the researchers involved should be conducted.

E. PUBLIC AWARENESS AND INFORMATION DISSEMINATION

This element of the program relies heavily on the field trial assessments and related research activities. With respect to its structure and delivery, however, the evaluation should ask:

- To what extent has a comprehensive communication plan been developed and implemented?
- Have potential users and buyers been made more aware of the OCS Program? Of the capabilities of Canada's office automation industry?
- What is the scope of information dissemination activities?

- What mechanisms have been established to provide feedback from field trials and research to target audiences?
- Has a framework been put in place to measure the effectiveness of the techniques employed? If so, which have been most successful?

In order to address these questions, the evaluation would review all promotional activities to date with respect to:

- media type
- content and quality
- distribution.

Interviews with OCS staff responsible for these activities should be conducted, along with a review of program enquiries and responses.

In terms of impact, it will be necessary to survey the recipients of information from the OCS Program. The survey instrument should explore such issues as respondents' awareness of the program; the extent to which information from the field trials and research satisfies their concerns over employment and other effects of office automation; their perceptions of how communications about the program have affected their plans to invest in the technology; and their overall assessment of the quality of the material produced.

F. PROGRAM STRATEGY

A number of critical evaluation issues relate to the design and delivery of the OCS Program:

- Is the field trial approach the most appropriate vehicle for achieving program objectives?
- Was the intent of the field trial strategy adequately implemented in the selection of vendors and sites?
- Were the funds and number of projects sufficient to achieve the intended effects?

- Has the program's "sunset" model of funding affected its implementation and outcomes?
- Is the Department of Communications the most appropriate context for the program?
- How effectively has the intended joint support by DOC and ITC worked?
- Were the various elements or sub-components of the program implemented as intended?
- What alternative strategies could have been implemented, if any?
- What other federal policies and programs are directed towards similar objectives?
- What role should the federal government, specifically the Department of Communications, play in the future to support this sector?

To address these questions, the evaluation would involve interviews with representatives from the OCS Program, Ministry of State for Economic and Regional Development, Industry, Trade and Commerce (DRIE), Supply and Services, Treasury Board and industry committees. In particular, the evaluation should review relevant programs such as the Industrial and Regional Development Program and the two new DOC initiatives -- the Office Communications Research Centre in Laval and the Electronic Office Management System at the Palais des Congrès.

Actual program delivery can be addressed by reviewing program records, including minutes of Review Committee meetings, and interviewing OCS managers, vendors and departmental participants.

The revised Robertson Nickerson study will conduct a survey of the industry to examine attitudes towards assistance programs currently in place. The findings of this analysis will contribute to an assessment of the OCS Program in the context of other government initiatives.

CHAPTER 5

EVALUATION OPTIONS

Chapter 4 identified a number of possible approaches to gathering quantitative and qualitative information for the evaluation study. Several of these strategies would produce data relevant to a number of evaluation issues and questions. Table 5-1 summarizes these issues and questions, along with possible indicators and data sources.

Table 5-2 lists the various tasks associated with the data sources identified, grouping these where appropriate, and estimates the cost of conducting that part of the evaluation study. Each estimate includes professional fees, travel, analysis and production.

Table 5-3 presents three possible options for conducting the evaluation. In each case, the evaluation process should begin by the spring of 1984 and produce a final report by the fall of 1984. Since the program will still be underway when the evaluation is carried out, Option C would offer the most comprehensive coverage of issues in the absence of final outcome data.

Once the component profile, issues and approaches have been reviewed and an option selected by senior management, the Program Evaluation Division of DOC can proceed with drawing up detailed terms of reference for the evaluation.

Concurrently, ongoing monitoring should be initiated in order to facilitate later data collection. For example, the Program Evaluation Division should:

- Ensure that a suitable log is maintained of enquiries to and responses from the OCS Program office from other government departments and industry;
- Identify data sources for office equipment procurement in the federal government;
- Develop an inventory of research and projects sponsored by the OCS Program;
- Maintain contact with the Robertson Nickerson project, specifically to identify key deliverables and field research plans.

TABLE 5-1. SUMMARY OF EVALUATION ISSUES AND DATA SOURCES

Basic Evaluation Issues	Evaluation Questions[1]	Indicators	Data Sources
Program Rationale	1. Continued relevance of the OCS Program?	• Developments in OCS industry since program approval.	• Review of relevant literature and data on OCS industry.
	2. Plausibility of field trial approach and other activities achieving intended results?	• Perceptions of government and industry representatives	• Interviews with program staff, committee members, participants.
	3. Sufficiency of resources and scope of program?	• Perceptions of industry experts.	• Expert opinion panel.
	4. Feasibility of impacting on other users and suppliers & economy in general?	• Documentation rationalizing program strategy.	• Review of program documentation.
	5. Appropriateness of DOC as context?	• Perceptions of central agencies.	• Structured interviews with represenatives of central agencies, other departments.
	6. "Sunset" model of funding.	• Comparisons with policies and programs in other jurisdictions	• Review of related activities in other jurisdictions.

1 Questions may be addressed by multiple indicators and data sources.

TABLE 5-1. (Cont'd)

Basic Evaluation Issues	Evaluation Questions	Indicators	Data Sources
Impacts and Effects	7. Impact of program on awareness of market potential, competitiveness, sales, employment and productivity? 8. Impact on non-participating firms and departments? 9. Validity and usefulness of data generated by impact assessments and research? 10. Adequacy of program implementation in relation to expected outcomes? 11. Impact on public awareness? 12. Impact of other factors?	• Pre and post program data on number of Canadian products/ systems. • Pre and post sales and market share. • Pre and post program data on employment. • Productivity measures in host departments. • Success of field trials in achieving objectives. • Awareness among potential buyers/ users. • Scope, quality & distribution of research. • Development of effective methodologies • Pre and post procurement data.	• Case studies of participating & non-participating firms. • Survey of industry • Review of available documentation. • Review of impact assessments. • Review of research studies. • Structured interviews with host departments. • Analysis of program records, related interviews. • Survey of other departments. • Review of awareness activities. • Survey of recipients of program information.

TABLE 5-1. (Cont'd)

Basic Evaluation Issues	Evaluation Questions	Indicators	Data Sources
Objectives Achievement	13. Resulting industrial capability in electronic office systems? 14. Macro-level impacts of program on economy? 15. Reliable and useful research products? 16. Awareness of buyers and users? 17. Impact on quality of work life? 18. Impact on government policy?	• Competitiveness and viability of participating and non-participating firms. • Diffusion of program effects throughout economy. • Scope and quality of research conducted. • Scope and quality of information. • Changes in job satisfaction, working conditions, etc. • Resulting policies on government procurement & implementation.	• Review of available data. • Case studies. • Survey of industry. • Expert opinion panel. • Review of impact assessment data. • Peer review of research. • Survey of recipients of program information including research. • Survey of departments. • Structured interviews with agencies and departments.

TABLE 5-1. (Cont'd)

Basic Evaluation Issues	Evaluation Questions	Indicators	Data Sources
Alternatives	19. Feasibility of alternative strategies? 20. Availability of alternative programs? 21. Future role of government?	° Comparisions with other interventions. ° Description of other federal programs ° Perceptions of government and industry.	° Review of literature and documentation including other jurisdictions. ° Structured interviews with agencies, departments and programs. ° Expert opinion panel. ° Survey of industry.

TABLE 5-3. EVALUATION OPTIONS

Option	Evaluation Tasks	Cost
A	1, 2 and 3 - addresses impact of research and information program only through surveys. - excludes expert opinion panel and review of literature.	$ 85,000
B	1, 2, 3, 4 and 5 - excludes expert opinion panel, survey and review of literature.	131,500
C	Tasks 1 - 7 - thorough coverage of all issues.	156,500

APPENDIX

IMPACT ASSESSMENT ISSUES

PRIME IMPACT ASSESSMENT ISSUES

I. System Performance

- System Utilization by Feature/Users
- Ease of Use & Responsiveness
- System Adaptability

II. Users' Acceptance

- User Attitudes
- Functionality with Respect to Needs
- Support to Decision Making
- Reduction of Inefficiencies
- User Identification of System Enhancements

III. Human/Social

- Quality of Work Life
- Health/Safety/Stress
- Incentives/Rewards/Sanctions
- Privacy/Security
- Employee Morale/Motivation
- Physical Environment

IV. Organizational

- Demographics
- Work Methods/Procedures/Policies
- Training
- Employment
- Labour Relations
- Effects on Organizational Structures & Relationships
- Policy

V. Productivity

- Attainment of Corporate Goals/Objectives
- Improvement in Custoemr Relations/Service to the Public
- Cost/Benefit Analysis

Note: The issues above are not listed in order of importance or priority for assessment activities.

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