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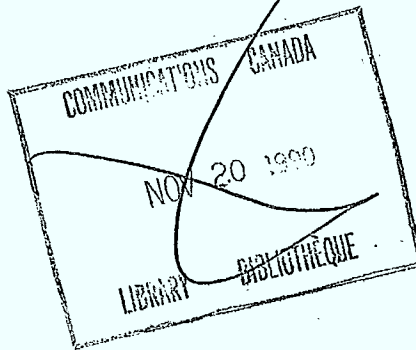
EVALUATION ASSESSMENT STUDY
OF THE TELIDON PROGRAM

DRAFT REPORT

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Program Evaluation Division
Department of Communications

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ANNEX A: TELIDON COMPONENT PROFILE

EXECUTIVE SUMMARY

The Program Evaluation Division, Department of Communications, is proposing to undertake a comprehensive evaluation study of the Telidon program. TEEGA Research Consultants Inc. was retained through the Bureau of Management Consulting to carry out an evaluation assessment, i.e. the pre-evaluation planning phase, for this study. The following report presents the findings of the completed evaluation assessment.

The evaluation assessment has determined that the program's activities are generally consistent with its mandate, the program is adequately defined, and the relationships between its activities and its intended results are plausible enough to allow a meaningful evaluation to be carried out. The validity of these relationships, i.e. their sufficiency and soundness, is to be tested during the proposed evaluation.

The proposed evaluation of the Telidon program is intended to provide answers to questions about the success or failure of the program: Did the transfer of Telidon technology to the private sector take place? Has a viable Canadian videotex industry been created? What elements of the program have been effective? How do the achievements of the program compare to original intentions? And is there a future role in Telidon for the Department of Communications? Within these broad policy questions a number of specific evaluation questions have been identified during the course of the assessment study and these are documented in this report.

Four evaluation options are presented which primarily differ in their coverage of issues, in the approaches used for gathering information, and in costs (ranging from \$80,000 for Option A to \$210,000 for Option D). Options A and B do not explore alternatives to the Telidon program or the future role of government in Telidon. Telidon is a "sunset" program and was originally intended to terminate in March 1983. It has been extended to March 1985. Exploring alternatives and whether government should have a continuing role in Telidon after March 1985 is covered in Options C and D. Option C, however, like Options A and B, does not include any market research on demand for Telidon products and services. In order to have a comprehensive coverage of the alternatives questions, as identified in the report, it is also necessary to conduct a market research study, to assess the commercial potential of Telidon technology. Only Option D fully covers this particular issue with adequate reliability.

The proposed quantitative and qualitative approaches, to collect the basic information required to answer the evaluation questions, are deemed sufficient and reliable enough to support conclusions about the program. These approaches include questionnaire surveys and structured interviews of selected participants in the Telidon program and its various applications. The data collection methods proposed in Options A to D yield results with differing degrees of reliability. The decision to select a particular data collection option largely depends on the extent to which DOC is willing to trade off study costs for reliability of results. In all options, however, careful design of survey questionnaires, appropriate selection of samples, and structuring of interviews are required to ensure maximum objectivity and reasonable reliability of study results.

SOMMAIRE-RECOMMANDATION

La division de l'Évaluation des programmes du ministère des Communications a proposé d'effectuer une étude d'évaluation détaillée du programme Télidon. Dans le cadre de cette étude, les services de la firme TEEGA Research Consultants Inc. ont été retenus par l'intermédiaire du Bureau des conseillers en gestion pour la réalisation d'une étude préparatoire à l'évaluation, c'est-à-dire, pour l'étape de planification préalable à l'évaluation. Le rapport qui suit présente un compte rendu des résultats de cette étude préparatoire.

L'étude d'évaluation a déterminé que les activités du programme étaient généralement conformes au mandat dudit programme, que ce dernier était bien défini et que les rapports entre les activités et les résultats visés étaient suffisamment plausibles pour permettre la tenue d'une évaluation valable. La validité de ces rapports, c'est-à-dire, leur caractère adéquat et leur sérieux, doit être mise à l'épreuve au cours de l'évaluation proposée.

Le projet d'évaluation du projet Télidon vise à fournir des réponses aux questions portant sur la réussite ou l'échec du programme : Y-a-t-il eu un transfert de technologie Télidon au secteur privé? Une industrie canadienne viable de Vidéotex a-t-elle été créée? Quels sont les éléments du programme qui ont été efficaces? Comment les réalisations du programme se comparent-elles aux objectifs originaux? Télidon sera-t-il appelé à jouer un rôle au ministère des Communications? Dans le cadre de ces questions de politique générales, un certain nombre de questions particulières ont été soulevées au cours de l'étude préparatoire et le présent rapport en fait état.

Pour l'évaluation, quatre options sont envisagées; ces dernières diffèrent principalement sur les points suivants : la façon d'aborder les questions à l'étude, les méthodes utilisées pour recueillir les données, et enfin les coûts (s'échelonnant entre 80 000 \$ pour l'option A et 210 000 \$ pour l'option D). Les options A et B n'examinent pas les possibilités autres que le programme Télidon ou le rôle éventuel du gouvernement en ce qui concerne Télidon. Télidon est un programme "temporaire" qui, à l'origine, devait se terminer en mars 1983. Il a été prolongé jusqu'à mars 1985. Les options C et D étudient les solutions de rechange et tentent de déterminer si le gouvernement devrait jouer un rôle permanent relativement à Télidon après mars 1985. Toutefois, l'option C, tout comme A et B, n'inclut pas d'étude du marché sur la demande relative aux produits et services de Télidon. Pour pouvoir faire une étude complète des solutions de rechange dont fait état le rapport, il est également nécessaire d'effectuer une étude du marché et d'évaluer le potentiel commercial de la technologie Télidon. L'option D est la seule qui traite à fond et de façon sûre et adéquate de cette question.

Les modes d'approche quantitatifs et qualitatifs proposés en vue de la collecte des données de base requises pour répondre aux questions de l'évaluation, sont jugées suffisamment adéquates et fiables pour étayer les conclusions qui ont été tirées au sujet du programme. Ces modes d'approche incluent les enquêtes sous forme de questionnaires et les entrevues méthodiques de certains participants au programme Télidon et aux diverses applications qu'il comporte. Les résultats obtenus par les méthodes de collecte des données que proposent les options A à D ne seraient pas d'une fiabilité égale. La décision de choisir une méthode de préférence à une autre dépend largement de la mesure dans laquelle le MDC est prêt à ne pas tenir compte des coûts de l'étude pour garantir la fiabilité des résultats. Chacune de ces options exige toutefois une conception attentive des enquêtes sous forme de questionnaires, un choix adéquat des échantillons et une grande structuration des entrevues afin que les résultats de l'étude soient autant que possible objectifs et suffisamment fiables.

I. INTRODUCTION

1.1 Background

The Program Evaluation Division, Department of Communications, is proposing to undertake a comprehensive evaluation study of the Telidon program. TEEGA Research Consultants Inc. was retained through the Bureau of Management Consulting to carry out an evaluation assessment, i.e. the pre-evaluation planning phase, for this study. The following report presents the findings of the completed evaluation assessment. A detailed description of the Telidon program is provided in Annex A.

The Telidon program is a cooperative industry-government program with the aim of fostering a commercially viable Canadian videotex industry. The first Cabinet decision on Telidon was taken on Through successive Cabinet decisions and Treasury Board approvals, total funding for the program since 1978 to the end of fiscal year 1982-83 was \$40 million. As first conceived, the program was a four-year "sunset" project to be terminated on March 31, 1983. New factors, however, have indicated that continued government support to the videotex industry is needed. These factors were discussed in a DOC submission to Cabinet, dated July 17, 1982, which proposed a new Telidon exploitation program "to continue government support of and cooperation with industry and to enable the government itself to benefit directly from the use of Telidon technology." This proposed new Telidon initiative has been approved in principle by Cabinet, with funding of \$23 million over the next two fiscal years ending in March 31, 1985. This decision of Cabinet was confirmed by the Planning and Priorities Committee.

DOC has already submitted a report to Treasury Board for the final approval of the new two-year Telidon initiative. A decision was made by Treasury Board to request that an evaluation of Telidon be conducted. The timing of an evaluation study and an assessment is considered appropriate. It is important at this stage to address fundamental questions about the program and its continued existence. Has the program so far achieved its objectives? What has happened as a result of the program? Have developments in the videotex and computer communications industries in recent years altered the relevance of Telidon as a government program? These and other evaluation issues, to be addressed by the proposed evaluation study of Telidon, are discussed in detail in Part III of this report.

Also included in this report are: a component profile showing the linkages between activities, outputs, and expected results of the program; evaluation indicators, data requirements and possible methodologies for evaluating the program; and costs associated with various evaluation options.

1.2 The Assessment Process

The assessment process leading to this report involved a series of interviews, focussing on issues and information sources, with senior Telidon program managers, and with DOC technical, professional and administrative staff. Interviews were also held with representatives of other Federal Government Departments (including Treasury Board, Ministry of State for Science and Technology, Ministry of State for Economic and Regional Development, and the Task Force on Service to the Public, Department of Supply and Services). In addition, various documents on Telidon were reviewed. These included submissions by DOC to Cabinet and Treasury Board, internal DOC reports on Telidon, articles and reports prepared by Canadian academics and private consultants, and previous and current evaluation studies dealing with specific Telidon sub-components, such as the field trials. These latter studies are discussed briefly in Section 1.4 below.

1.3 Uses of the Evaluation Study

The findings and recommendations of the Telidon evaluation study proposed in this assessment report would be submitted for senior management consideration. The general purpose of evaluation studies, as identified by the Office of the Comptroller General, is to provide a source of information for resource allocation, program improvement and accountability in government. As such, the proposed evaluation should be seen as an aid to decision making with respect to objectives, program direction and management of Telidon. The Deputy Minister is the primary client of the study. The responsible Assistant Deputy Minister, Directors General, and program managers will also have special interests in the study. Any significant findings which would result in changes to the program should be summarized in the Strategic Overview of the Department. In addition, since Treasury Board has requested that an evaluation of Telidon be conducted, the proposed study would be used to report to Treasury Board on the future of Telidon.

Telidon as a program has at least two important features which are paralleled in other programs of DOC. These features are: (i) use of the program as a medium for transferring technology developed by DOC to the private sector and (ii) the finite "sunset" clause of the program. Consequently, evaluation results on these features of the Telidon program could have important implications for other DOC programs with similar features, such as the Office Communications Systems and Development of Space Sub-systems and Components programs.

1.4 Previous Evaluations and Other Studies

Over the past four or five years much has been written about Telidon as a technological innovation, and about its actual or potential impacts on society. It was not a purpose of the assessment study to review all the existing literature on Telidon. In the recent past, however, some useful evaluative work has been carried out, focussing on specific areas of the Telidon program, particularly in the context of the field trials. It is important to be familiar with this related work, in order to benefit from the experience of evaluation approaches previously used and to foresee practical problems that could occur during the proposed evaluation. The following is a brief account of this previous work.

A series of studies focussing on the Telidon field trials has been completed in the past two years. Most of these studies have been conducted by private consultants and have included surveys of users, maintainers and producers of Telidon. The emphasis in these studies has been on evaluating Telidon as a technology from the point of view of the various field trial participants. Some examples of the topics covered by these studies are as follows:

- equipment design and convenience
- user satisfaction
- relevance of content and its usefulness
- effects of Telidon on lifestyles
- opinions and ideas on the future of Telidon
- opinions on pricing of Telidon hardware, software and subscription
- opinions of users about service and suggested improvements
- sequencing of information on data bases
- system problems
- Telidon and its application to education
- socio-economic background of users.

The field trial surveys were not designed with a view to address issues about Telidon as a government program. Nevertheless, results of these surveys could provide a secondary source of information for the proposed evaluation study. (See Part IV of this report.)

An evaluation of the Cantel program, which is administered by the Task Force on Service to the Public, DSS, was completed by the consulting firm Price Waterhouse Associates in September 1982. This study provides an indication of Cantel's achievements in relation to its objectives and

suggests ways to increase program impact. Interviews were held with 103 people who used Cantel in Nova Scotia, Montreal and Vancouver; managers from 14 government departments, agencies and Crown corporations; representatives of companies in the Telidon field; managers of five other Telidon projects; and managers and staff of the Task Force on Service to the Public. While the consultant's report on this study provides some useful information and findings about Cantel, the evaluation reflected the early stage of implementation of the program and its developmental nature. Moreover, the emphasis was to evaluate Cantel as a system and to examine the program only against its own specific objectives. There was little examination of Cantel as it relates to the Telidon program objectives in general. A more definitive evaluation of this sub-component of Telidon will have to be carried out.

A final report on an evaluation of the Public Initiatives sub-component of Telidon is currently being completed by a consultant, Mr. F.C. Hansen, under contract to the Data Base Development Division of DOC. In this study, a series of interviews were held with representatives of non-profit organizations, with a view of assessing the status and identifying problems associated with the public initiatives projects. Initial indications were that only a small proportion of these projects have actually reached the operational stage -- i.e., with Telidon pages created and included in network systems. It is expected that the final report on the Public Initiatives sub-component of Telidon will provide some up-to-date information, for the general evaluation of the Telidon program.

Several market studies were conducted at various stages of the Telidon program to forecast demand for videotex products and services. These include studies by Hickling-Johnson in 1979, Hough and Associates in 1980, Michael Tyler in 1980, Butler Cox and Partners in 1981, and Link Resources in 1982. The limitations of these studies and the approaches they used in assessing demand have been summarized by Wescom, Communications Studies and Research Ltd., March 1983. In retrospect, it appears that most of these studies have been too optimistic. The methodologies used have also involved serious limitations rendering the results suspect, particularly in light of current and recent events surrounding the videotex industry. Assessing the demand for Telidon products and services will be an important, albeit difficult, element in the proposed evaluation of the program.

A series of studies by Wescom Communications Studies and Research Ltd. have been completed. These include analysis

studies on marketing and economic issues, content and new services, social impact issues, and technical and human factors issues. A draft synthesis report amalgamating the results of the above studies has been completed by Wescom. The objectives of the synthesis report were as follows:

- to integrate the results of the four analysis contracts, relevant background studies and additional information that may be required to provide a complete picture for Canada, on the present and potential social and economic effects of Telidon;
- to provide an assessment of, and to suggest directions for, Canadian society, government and industry in the Videotex/Teletext and information technology area;
- to review and evaluate the process of using field trials as a means to transfer the Telidon technology, and to document the process by which Telidon was developed in government laboratories and transferred to Canadian industry.

The synthesis report is a comprehensive document on the many issues involved about Telidon and its proliferation in society. This work is a voluminous source of information on the current status of knowledge and schools of thought about Telidon's actual and potential impacts, and its implications for policy (e.g., on regulatory matters). Wescom's work, however, involves little original quantitative analysis of the type required to formally evaluate the Telidon program.

Finally, an "impact assessment" study of Telidon is also planned by the Informatics Applications Management Branch of DOC. This study, which was referred to in the submission to Treasury Board for the new Telidon initiative, would attempt to look at the introduction of Telidon technology from a broad perspective. The type of questions to be addressed by this study include:

- what type of content is required
- what price is acceptable for services offered
- is there a resistance to technological advancement
- what is the impact on job displacement
- what privacy issues are important
- are there significant health hazards or benefits.

At the time of writing this evaluation assessment report, the "impact assessment" study was in its planning phase.

II. PROGRAM RATIONALE

2.1 Program Component Profile

Before evaluating Telidon as a government program, it is important to develop a good understanding of the program and to prepare up-to-date documentation which describes it and the environment in which it operates -- i.e., a Telidon component profile. Such a profile is included in this report as Annex A. It is based on existing documentation about the program, including submissions by DDC to Cabinet and Treasury Board, and on discussions held with program managers. The profile has not yet been formally approved by the appropriate senior departmental managers.

2.2 Interpretation of Program Objective

The Telidon program evolved from what was essentially a laboratory project at the Canadian Communications Research Centre (CRC). Out of the applied research undertaken at CRC, Telidon emerged as a Canadian videotex system rivaling the existing British and French systems. Telidon was first publicly announced in August 1978 and was quickly recognized as superior to its foreign counterparts.

Faced with the exciting potential of this Canadian invention, the Department of Communications introduced the Telidon program. Initial funding of \$9 million for the program was approved by Treasury Board in March 29, 1979. The stated objective at that time was to develop a range of Telidon based products and services and to ensure proliferation of Telidon in the national and international markets.

Various wordings of the Telidon program objective have since been presented in successive Cabinet and Treasury Board submissions. An essential theme underlying the program, however, has always been the transfer of the CRC invention to the private sector with the objective of creating and fostering a national videotex industry based on Telidon technology. Government support to industry has involved activities and financial assistance aimed at setting-up the necessary infrastructure capable of sustaining a commercially viable videotex industry in Canada.

The general objective against which the Telidon program is to be evaluated in the proposed study is, therefore, as was stated in the July 27, 1982 Cabinet submission:

"To foster the development of a complete and commercially viable Canadian videotex industry which will bring to Canada economic benefits from both the sale of videotex goods and services at home and abroad, and from the use of this technology."

2.3 Consistency of Program Activities With Mandate

Ascertaining the consistency of a program's activities with its mandate is an important first step towards an evaluation. If the program activities are clearly unrelated to what it is supposed to do, this then becomes the overriding evaluation issue and the option of not conducting the study is open to the Deputy Minister, until the program is redirected.

The mandate of Telidon, as described in Annex A of this report, evolved through successive Cabinet and Treasury Board submissions. The allocation of resources over the years since 1978 have been appropriately distributed to specified activity areas, as delineated in these submissions. The following estimates of actual expenditures on program sub-components were provided by DOC Telidon personnel:

	Total Expenditures From 1978 to 1982-83
	----- (\$ millions)
Marketing and Standards	5.0
Research and Development	18.0
Field Trials	2.5
Industry Investment Stimulation	10.0
Public Initiatives	1.0
Staffing	2.5

TOTAL	40.0

The strategy developed by DOC to pursue the Telidon program objective originally involved the following activity areas:

- subsidization of a series of field trials -- the main means of subsidization being loans of terminals to field trial operators for the duration of the trials;
- encouragement of a broad spectrum of R&D activity in the private sector, by contract to DOC, and internally at CRC -- to develop hardware and software components of the Telidon system, and to assist industry to remain at the forefront of the development and application of this technology;
- promoting the acceptance of Telidon technology, in national and international standards forums, on at least an equal basis with competing systems;
- use of Telidon in government, to provide the vital support to Canadian industry which results from government procurements of equipment and services and to act, by example, as an incentive to other organizations potentially interested in Telidon-based services; and

- support for public interest initiatives to permit non-business and disadvantaged groups lacking financial resources to exploit Telidon potential as a communications medium.

Discussions with Telidon program managers revealed that DOC decisions regarding program activities were taken with appropriate consideration of relevance to the program's objective and mandate, and to the videotex industry environment. (See Section B of the Telidon Component Profile in Annex A, for more detail on actual program activities as they relate to objectives.)

For the purpose of the proposed Telidon evaluation, it is deemed that the program's activities are generally consistent with its mandate -- i.e., it can be plausibly expected that carrying out the identified program activities would lead to success of the program in achieving its objective. To what extent this success was actually achieved is, of course, a subject for the evaluation itself and not this assessment study.

2.4 Linkages of Program Elements to Intended Results

Another important first step towards the evaluation of a program is to assess the plausibility of the relationships between activities of the program and its intended results. Evaluation studies are usually costly and if they are to be effective in achieving their purpose, the causal reasoning underlying the program structure has to be plausible. If plausibility of the relationships is not established, an evaluation could prove to be a waste of resources on a misdirected program.

The program elements developed by DOC to achieve Telidon's general objective are as follows:

- development of national Telidon standards and promoting their acceptance internationally
- field trials
- data base development for special and general applications
- industry investment stimulation to encourage development of Telidon products (particularly terminals)
- special operational services involving national and international projects
- support to public initiatives involving non-profit organizations
- provision of Government information to the public via the Telidon medium

- continuing research and development to maintain the lead over competing videotex systems in other countries.

The direct and indirect consequences of these elements of the Telidon program strategy were intended to achieve the end result of creating a commercially viable Canadian videotex industry based on Telidon technology. (For more detail on the above, the reader is referred to Section B of the Telidon Component Profile in Annex A.)

The assumption underlying the choice of these elements is that they will lead to a chain of appropriate impacts and effects resulting in the accomplishment of Telidon's objective. The assumed causal linkages are shown in the program model included in Annex A.

Specific results will have to be examined in detail during the evaluation, to determine if indeed they were directly or indirectly caused by Telidon program activities. It has been estimated by DOC officials that the private sector has invested over \$100 million in the development of Telidon. Activities undertaken by the private sector in the open competitive market, made possible by the large industry investment, may well have had the overriding impact on Telidon successes -- in spite of the Telidon program. This is difficult to ascertain with confidence at the pre-evaluation stage.

Nonetheless, there is ample evidence that Telidon as a government program has provided direct contributions, without which the considerable progress towards proliferation of Telidon technology would not have occurred. As a direct result of program activities, Telidon is now recognized as the videotex standard in North America and has been incorporated into the standards recommended by the CCITT (the international telephone and telegraph consultative committee established under a mandate from the United Nations). There are now six Canadian manufacturers who produce Telidon hardware products and some dozen companies producing Telidon software products and services. It appears that all these organizations have effectively utilized program funds in establishing their Telidon related operations. Program funds have also been used by at least 60 organizations in Canada which are now operating or putting into place systems providing Telidon-based information services.

The Telidon program is adequately defined and the relationships between the program's activities and its intended results are plausible enough to allow a meaningful evaluation to be undertaken. The validity of these relationships, i.e. their sufficiency and soundness, is to be tested during the proposed evaluation.

III. EVALUATION ISSUES

The proposed evaluation of the Telidon program is intended to provide answers to questions about the success or failure of the program: Did the transfer of Telidon technology to the private sector take place? Has a viable Canadian videotex industry been created? What elements of the program have been effective? How do the achievements of the program compare to original intentions? And is there a future role in Telidon for the Department of Communications? Within these broad policy questions a number of specific evaluation questions have been identified during the course of the assessment study. (See Section 1.2 above for the process involved.) These specific evaluation questions focus on the measurable aspects of the general policy questions and are grouped below according to the basic program evaluation issues prescribed by the Office of the Comptroller General. Each group of questions is preceded by a brief discussion.

It should be noted that some of the questions are relevant only to the original Telidon program (1978-1983), some only to the new Telidon initiative (1983-1985), and some to both. By the time the results of the proposed evaluation are expected, the Telidon exploitation initiative will be in its last phase. Therefore, to be contextual and useful the evaluation should address issues relevant to both the old and new Telidon program initiatives.

3.1 Program Rationale (Does the Program Make Sense?)

Telidon was initiated as a government program in 1978. Information technology has undergone significant changes since that time. The hardware and software environment has advanced rapidly. Micro-computers are now firmly entrenched in the business world. Advanced information networks, integrated computer systems, and compact micro-chips are becoming more commonplace. Given this rapidly changing technological environment, a new context for Telidon, probably involving more specialized applications, may be emerging.

The Telidon program has evolved considerably with the times since 1978, and more recently has been refocussed to concentrate on five key components: continuing R&D, content development, government support for marketing of Telidon products, fostering government use of Telidon, and providing support to industry to apply Telidon technology to improve their operations.

The rationale underlying the Telidon program (as originally conceived and as it has evolved) will have to be carefully examined in light of the rapidly changing information technology environment.

As discussed earlier, the Telidon program is a technology transfer project. The strategy of the program has involved several initiatives including field trials, support to public non-profit projects, industry investment stimulation, support for data base development, and other special operational projects. The rationale behind this strategy needs to be evaluated, and its effectiveness should be compared to possible alternative strategies. Furthermore, the program may or may not have been an effective model as a "sunset" project. The rationale for having a finite program with relatively fixed terms in a technological environment undergoing rapid changes may well have been the most appropriate model, but this is not necessarily self-evident and therefore requires evaluation.

As was shown in Section 2.3 above, the expenditures on Telidon program sub-components have varied considerably. Research and development was the largest expenditure item, with about \$18 million spent on this from 1978 to 1983. The Industry Investment Stimulation Program was the second largest expenditure item with \$10 million spent. Marketing and development of standards, field trials, and public initiatives -- with expenditures of \$5 million, \$2.5 million, and \$1 million, respectively -- together actually made up less than 25 per cent of the total Telidon program budget from 1978 to 1983. These expenditure levels may well have been the most appropriate in magnitude and emphasis, given the program's objectives, but this is not obvious, and is therefore another issue for evaluation.

As was discussed in Section 1.4 above, several Telidon related market studies were conducted at various stages over the past five years. These studies in hindsight have proven too optimistic and/or have used inadequate methodology. An important feature of the rationale for government expenditures on Telidon is the underlying conviction that Telidon products and services will be in high demand, nationally and internationally. A comprehensive study which identifies the most promising applications of Telidon from a market perspective, and assesses current and future demand, has not been undertaken recently in the context of present events. This type of study should be carried out, since the assessment of demand for the various applications of Telidon will have an important impact on program rationale.

Evaluation Questions:

1. Have developments in the videotex and computer communications industries in recent years altered the relevance of the Telidon program?
2. How valid have the relationships between the Telidon program's activities and outputs and its intended results

been? (For example, has the adoption of the field trial approach been an effective element in transferring Telidon technology to the industry? Has the CVCC contributed in any way to the proliferation of Telidon?)

3. Has the Telidon program as a "sunset" project been an effective model, in keeping with its objectives, or have there been obstacles to effective operations imposed by established government funding mechanisms?

4. Have Telidon program funds been expended on DOC program activities with appropriate magnitude and emphasis, consistent with the program's focus and environment?

5. What is the actual and potential demand for Telidon products and services, in Canada and internationally? What particular applications of Telidon are most promising? In what ways do the estimates of demand for these particular applications impact on program rationale?

6. Are the relationships between the new Telidon Exploitation Program's activities and outputs and its intended results plausibly linked? Are they valid?

3.2 Objectives Achievement (Has the Program Resulted in a Commercially Viable Canadian Videotex Industry?)

The objective of the Telidon program is to create a commercially viable Canadian videotex industry dominated by Telidon technology. The targetting of program resources to assist Canadian firms involved in Telidon has been an essential catalytic function, bringing diverse elements together in a viable industrial infrastructure with common standards. The Telidon industrial structure, however, is a complex one involving many different enterprises, some of which are regulated monopolies and others are fully competitive businesses. It is necessary, therefore, to examine how appropriate the targetting of resources has been, given the different roles and functions of the various companies involved. The process involved in deciding which companies are to receive program support should be evaluated, to determine the effectiveness of this process and its outcome.

While it is known that Telidon is now used by many companies and individuals across Canada, the extent of the commercial application of Telidon is not fully documented. In order to evaluate how far the program has achieved its objective of creating a viable industry, it is essential to compile information on Telidon usage, and to determine what this usage means in terms of revenues to companies producing Telidon products and services. This will be a crucial analysis for establishing the extent to which the industry has become or is potentially independent of government financial support.

During the past four years, DOC has placed much emphasis in developing videotex standards for North America. This effort has been successful in that Telidon is now recognized as the videotex standard for North America. The development of standards has been emphasized as an important function of the program, in recognition of the role that this would have in opening markets for the Canadian product.

The extent to which this strategy has served to achieve program objectives is an issue for evaluation.

Finally, assessing the competitive position of Canadian companies involved in providing Telidon products and services vis-a-vis their foreign competitors, particularly in the U.S.A., Britain, France and Japan, is a difficult but necessary piece of analysis for determining the potential of Telidon in capturing a major proportion of the international videotex market.

Evaluation Questions:

7. Have Telidon program resources been appropriately targetted and distributed to the intended private sector recipients?

8. To what extent have the Canadian industry and media adopted and used Telidon as a component in their operations?

9. Can the Canadian videotex industry now operate viably, independent of Government financial assistance?

10. What role has Telidon played in shaping national and international videotex standards? Are current national and international videotex standards sufficiently developed to accommodate future developments in Telidon technology?

11. To what degree has Telidon penetrated foreign markets? Has the role of the Telidon program in shaping

international videotex standards been instrumental in opening new international market opportunities for Telidon products and services? What is the competitive position of Canadian companies involved in Telidon vis-a-vis foreign companies, particularly in the U.S.A., Britain, France, and Japan?

3.3 Impacts and Effects (What has Happened as a Result of the Program?)

The Telidon program was intended to serve as a catalyst to stimulate Canadian companies to invest in developing videotex products and services. It has been estimated by DOC officials that the private sector has invested over \$100 million in the development of Telidon. The activities undertaken by the private sector in the open competitive market, made possible by this large industry investment, should be identified as far as possible for the evaluation. These industry activities may well have had the overriding impact on Telidon successes, inspite of (or because of) the Telidon program. The extent to which these activities can be attributed to stimulative effects of the Telidon program is therefore an evaluation question.

Other intended impacts of the program are to minimize the penetration of foreign developed videotex systems into Canadian markets and the creation of job opportunities for Canadians. The extent to which these intended impacts have occurred is also a question for evaluation.

There are also secondary impacts and effects of the program which need to be identified. These could have had beneficial or adverse results on those involved with Telidon. Questions 15 to 18 below provide a focus for the evaluation on the secondary impacts and effects of the program.

Finally, question 19 focusses on the regulatory aspects arising from the proliferation of videotex in the Canadian society.

Evaluation Questions:

12. Have the Telidon program activities stimulated private sector investments in setting up videotex systems? Which Telidon related activities have been funded by the private sector and to what extent? (Specifically, to what degree has the private sector invested in producing Telidon products (terminals, decoders, etc.), in setting up Telidon

data bases, and in establishing Telidon networks -- and can these private sector investments really be attributed directly or indirectly to stimulative effects of the Telidon program?)

13. Has the Telidon program prevented foreign developed videotex systems from penetrating Canadian markets? To what degree, if at all, does the Canadian industry need protection from foreign competitors?

14. To what extent has Telidon generated job opportunities for Canadians? What are the types of jobs created by Telidon and what is the potential for growth in these or other related jobs? What is the impact of Telidon on job displacement?

15. Apart from job creation opportunities, what other measurable economic benefits can be expected from a mature videotex industry dominated by Telidon systems (e.g., increased exports of Canadian high-tech products and services contributing to a favourable balance of trade, improved productivity in certain segments of the Canadian economy, cost savings in office operations)?

16. What potential or actual impacts does Telidon have on the Canadian arts and culture industry (e.g., could it contribute to expansion of markets for Canadian arts and culture and strengthen related industries such as electronic publishing)?

17. What have been the social impacts of Telidon which may have benefitted or adversely affected users (e.g., impacts on lifestyles, impacts on special needs groups, impacts on privacy, social isolation, increased leisure time)? In what ways can these impacts change with the further evolution of Telidon?

18. What effects has Telidon had on other related Government programs (e.g., Office Communications Systems)? Does Telidon complement, duplicate or work at cross-purposes with these other Government programs?

19. Are existing regulations as they stand hindering the development of Telidon in any way? What, if any, new regulations are required as a result of the introduction of Telidon technology in our society? To what extent have these requirements been worked on by the relevant Canadian regulatory bodies?

3.4 Alternatives (Are there Better Ways of Achieving the Results?)

Questions 20 and 21 below are intended to provide a focus for the evaluation to examine viable alternative mechanisms and programs, which could provide better ways for achieving the intended results. The evaluation of possible alternatives is an essential component of any program evaluation, albeit probably the most difficult since alternatives will likely not have been tested in practice.

Question 22 addresses the issue of whether the program should be terminated as scheduled or phased out over a longer period of time.

Evaluation Questions:

20. Have the delivery mechanisms used by DOC to transfer the Telidon technology to industry (field trials, Industry Investment Stimulation Program, etc.) been the most effective means for achieving the program's objectives (i.e., are there any better mechanisms for achieving the same or more results for the same or less costs)?

21. Are there alternative programs that could achieve the Telidon objectives, and its impacts and effects, more effectively and efficiently (e.g., tax incentive programs)?

22. Is the option of having no program at all (particularly after March 31, 1985) sensible? Should the program be phased out over a longer period of time?

IV. METHODOLOGY

In this part of the report, the evaluation indicators, the type of analysis to be conducted, and information gathering approaches and sources are discussed. A summary table is also included to provide the links between evaluation questions, indicators, information sources and expected reliability of evaluation results.

Before addressing any of the evaluation questions, an underlying requirement for the evaluation is to clearly identify the so-called "videotex industry." In general terms, this involves Telidon users, information providers, page creators, data base managers, and network providers. But, what are the industrial classifications of firms or organizations actually participating in Telidon? How large or small are these firms? How many are new and how many well established? What are their primary business activities? And so on. The proposed evaluation study should, as a first step and to the extent possible, provide a concise classification and brief description of the "videotex industry." The necessity for doing this becomes evident from the discussion in the next section of this assessment report. (For example, it is not possible to adequately select samples for a survey of actual or potential firms or organizations involved with Telidon technology, without clearly defining what or who the "videotex industry" really is.) It is estimated by DDC officials that in Canada some 60 organizations are now operating or putting into place systems providing Telidon-based information services, six Canadian manufacturers produce Telidon hardware, and some dozen companies produce Telidon software products and services.

4.1 Indicators and Analysis

Program Rationale (Questions 1-6 in Section 3.1 Above):

In general, answering this set of questions will rely on subjective indicators such as opinions of experts in the field, representatives of industry, program managers, program clientele, and personnel in other government departments. To identify and compensate for the probable biases introduced by such indicators, the evaluation design should include such features as soliciting opinions of persons with different interests in the program; additional questions on questionnaires designed to identify respondents' biases; indirect questions; and comparisons with information provided in program documents and files.

The evaluation should document program strategies and actual activities and outputs. This has already been done to some extent in the component profile (Annex A), but the evaluation should follow up by describing in more detail the strategies, activities (or sets of activities), and outputs that have been important in bringing about impacts and effects, with the view of identifying any gaps in the delivery or quality of products and services of the program. This can be done by reviewing program records and interviewing DOC managers, personnel in other government departments, and clientele directly served by the program.

The validity of the relationships between activities, outputs and the results achieved by the program should be tested. This entails comparing the results of the program, which should also be carefully documented, with information that can be used to infer what the results would have been had the program not existed. This can be done by developing logical arguments to show what the situation could have been without the program, interviewing representatives in the industry (both participants and non-participants in the program), and comparing information on like firms both before and after entering the program with firms that did not enter the program. It is recognized that this analysis will produce at best inferential answers, so care should be exercised to provide only believable and timely information appropriate for decision-making.

The market basis underlying the program's rationale could be tested by means of a survey of attitudes and expectations about videotex products and services. Future consumption levels of a new product or service can often only be determined by means of such an intentions survey, focussed on a cross-sectional sample of users, or potential users. (For Telidon, commercial users should be differentiated in the analysis from home users.) This method is used particularly when there is little experience from which to construct time series, a requirement for use in formal mathematical models. Intentions surveys usually ask questions such as "do you expect (plan, intend) to buy X within the next Y months?" Responses to this sort of question are then coded into categories such as, yes-definitely, yes-probably, yes-maybe and so forth. The real purpose of such an intentions survey would be to measure the future consumption probability of a statistical population, and as such it is only a proxy to the realized consumption pattern. An important restriction on using intentions as a forecasting tool is that the consumer is not obliged to realize his intentions.

It will be possible to complement the intentions survey by constructing a simulation model. Characteristics of current

consumers can be determined via a survey of a representative sample of videotex users. This information along with other information on the videotex industry (including actual and expected purchase prices, suppliers' intentions, competing technologies, general economic conditions, etc.) can be used to develop the simulation model. Such models are useful in cases involving the study of problems which are so complex that analytic solutions appear impractical, or when little historical information exists. A properly conducted simulation duplicates possible situations of the future -- based on positing about expected conditions. In predicting future consumption the question asked is "what would happen if these sets of conditions were to exist?" Thus, various assumptions can be made about certain key components in the model and the resulting future situation is then determined.

The survey and simulation model discussed above will be focussed on the national market. However, the potential international market is an obviously important aspect for the Telidon program. In the past, the international market has been gauged through the synthesis of various studies, with narrower scopes, most of which have proven in retrospect to be inadequate. Unfortunately, without an international market study, the options for determining international demand for videotex products and services are limited. For the purpose of the Telidon program evaluation, however, it will be possible to use the experience in analysing national demand to formulate logical arguments extending the results to the international situation. In addition, any relevant studies conducted in other countries, particularly the U.S.A. and certain European countries, should be examined carefully for results which could enhance the reliability of conclusions regarding international demand.

An important feature of assessing demand for videotex products and services, and what implications this may have on Telidon program rationale, is the identification of those applications most promising for widespread use, and those which will have limited utility or relevance to only specific users. Reliable forecasting will depend in part on the categorization of the various actual or potential uses and users of Telidon products and services.

Objectives Achievement (Questions 7-11 in Section 3.2 Above):
For certain of these questions, it will be possible to collect quantitative information with reasonable objectivity and reliability. This information can then be used to develop indicators (see below), the interpretation

of which will help answer the specific questions. Other questions, or parts of questions, can only be addressed through qualitative techniques, such as opinion surveys and review of program documents (including DOC files on program sub-components and projects).

Indicators for answering those questions which can at least in part be addressed quantitatively (see the summary table in Section 4.3 below) include the following:

1. Number of Telidon program assisted private sector firms and the proportion of their revenues due to government funding.
2. For firms involved in Telidon technology, revenues due to Telidon products or services as a proportion of total revenues. This includes firms involved in providing information, creating pages, managing data bases, and providing network services.
3. Profits/losses of firms due to Telidon products or services, taking into account government funding.
4. Number of firms and organizations receiving program funds with actual and developed Telidon products or services for sale, as a proportion of all firms receiving Telidon program funds.
5. Total government funding provided to private sector firms and organizations involved in Telidon, in relation to overall program funding.
6. The number of firms or organizations which would not have been involved in Telidon without program funding.
7. Number of firms/organizations in Canada using or providing Telidon videotex as compared to firms using or providing foreign videotex products or services, if any.
8. National penetration ratios; i.e., ratios of actual users, information providers, page creators, data base managers, and network providers to potential users, information providers, page creators, data base managers, and network providers -- respectively.
9. Foreign penetration ratio; i.e., ratio of foreign firms/organizations using Telidon technology to firms/organizations using other videotex or teletext systems (focussing mainly on U.S.A. and certain European, Latin American and other countries).

10. Total sale values of Telidon products and services to foreign users (including hardware, software, subscriptions, etc.) -- actual and forecast.
11. Total sale values of Telidon products and services to domestic users (including hardware, software, subscriptions, etc.) -- actual and forecast.
12. Total value of Canadian procurements of Telidon funded hardware and software which otherwise would have been purchased abroad.

Some of the above indicators will also be used to address in part other evaluation questions, particularly those related to impacts and effects, which are dealt with below.

Impacts and Effects (Questions 12-19 in Section 3.3 Above):

Quantitative evaluation indicators are simplifications of the conditions or situations they are intended to assess. It will be necessary, therefore, in the course of the evaluation to validate the indicators used and to determine what their limitations are. This is particularly true in the case of evaluating impacts and effects. Since program impacts and effects imply causal relationships with program activities, the indicators used to answer related evaluation questions should be qualified, whenever necessary, by reliability tests -- i.e., to determine the extent to which these indicators actually measure impacts and effects that are directly caused by program activities.

The following quantitative indicators have been identified (see the summary table in Section 4.3 below) to answer some or parts of the impacts and effects questions:

1. Total dollar investments of private sector firms and organizations in videotex products and services, and proportion of these that are Telidon-based. This should be disaggregated to the extent possible (e.g., by category of firm/organization, hardware/software, user/producer, etc.).
2. Contributions of private sector firms and organizations to videotex products and services, that might not have been made if the Telidon program did not provide funds.
3. Private sector investments in videotex research and development in relation to Government investments.

4. Number of foreign firms that may have attempted to set-up videotex operations in Canada, but were discouraged (e.g., by FIRA or by being outbid by Canadian firms).
5. Number of foreign owned firms, or Canadian branches of multi-nationals, which are currently involved in providing videotex products or services in Canada.
6. Number of Canadian firms currently using videotex products or services (or sub-components of these) developed abroad.
7. Number of jobs directly created by Telidon videotex technology, in the private and public sectors. This should be disaggregated as much as possible to include typification of jobs.
8. The expected growth in jobs that are directly caused by Telidon, based on forecasts of demand for Telidon products and services.
9. Number of new jobs indirectly caused by Telidon applications (e.g., salesmen, educators, suppliers of materials, etc.).
10. Actual or potential jobs lost, as a direct cause of Telidon applications (e.g., clerical jobs). This should be disaggregated as far as possible to include typification of jobs.

A number of evaluation questions related to impacts and effects (for example, those pertaining to regulatory matters) will only be possible to evaluate using qualitative analysis of available program records and documentation, questionnaires, and interviews (see the summary table in Section 4.3 below).

Alternatives (Questions 20-22 in Section 3.4 Above):

To address these evaluation questions, it will be necessary to identify and quantify as far as possible the main program results and to compare them with program costs. This should be done at the program sub-component level (field trials, Industry Investment Stimulation Program, etc.). Plausible alternative program strategies can be determined and their probable results assessed. When alternative program strategies or formulations are compared, the net benefit from each alternative provides a criterion

of comparison. Determining the net benefit will be a difficult task. At best, it may be possible to only develop a tableau listing alternative cost items against alternative benefit or result items for each program formulation, providing a framework of reference (without actually assigning values to costs and benefits/results). This framework would be used to support common sense and qualitative analysis of alternatives. The impact of removing the program altogether as an alternative can also be examined in the context of this "balance sheet" of costs and benefits, both in an immediate and future perspective.

4.2 Information Gathering Approaches and Sources

There are several sub-components to the Telidon program which will require separate treatment for gathering information. Each sub-component is aimed at specific outputs and results. Recipients of benefits from these sub-components are not always from the same particular target groups. The Public Initiatives sub-component, for example, is directed at non-profit organizations. Recipients of field trial funds have tended to be private and public sector profit organizations. Cantel is a government Telidon system set up for providing information to the general public. The Industry Investment Stimulation sub-component provides hardware assistance to private sector firms and field trial participants.

A combination of methods can be used to gather information to address the evaluation questions as they pertain to each sub-component. The basic technique of reviewing available records and documentation on the program will provide qualitative as well statistical information on the program sub-components. Information sources include the following:

- DOC project files
- computerized monitoring records on firms, such as that set up for IISP by the Applications Development Division
- tracking data on various Telidon accounts, kept by network providers
- statistical reports submitted to DOC by Telidon program participants
- DOC contracts with Telidon participants
- internal DOC reports on Telidon

- field trial evaluations and survey documentation
- previous evaluations of other sub-components of Telidon, such as Public Initiatives and Cantel
- other consultant reports on Telidon (e.g., Wescom study series)
- Treasury Board and Cabinet submissions
- program management documentation
- program correspondence.

In addition to the above, the following options exist for collecting original quantitative and qualitative information for the evaluation study:

- questionnaire survey of Telidon end users, possibly piggy-backed on one or more Telidon network systems (focussing on business users)
- piggy-back market survey (omnibus) on a selected sample of the Canadian population, including non-users of Telidon (focussing on the home market)
- questionnaire survey of IISF recipients
- questionnaire survey of field trial participants
- questionnaire survey of a representative sample of non-participating firms who are potential recipients of Telidon program resources
- structured interviews with Telidon line managers
- structured interviews with key representatives of other government departments (such as MSERD, MOSST, ITC, External Affairs, DSS, and Treasury Board) -- with an additional option for these representatives to submit briefs to the evaluation team on key issues of concern to their respective departments
- structured interviews with key representatives of industry and program clientele
- structured interviews with selected representatives of special operational projects (including WETA, Times/Mirror, Teleglobe, Bell, and CBC)
- structured interviews with representatives of non-profit organizations involved in the Public Initiatives Program.

SUMMARY TABLE

ISSUE AREA	QUESTION (abbreviation; see Section 3 for question formulation)	ANALYSIS	INDICATORS/ INFORMATION REQUIRED	SOURCES	RELIABILITY RESULTS
PROGRAM RATIONALE	1. Relevance of the program.	* qualitative analysis	* perceptions of government managers, industry representatives, and users	* opinion surveys * structured interviews	* good
	2. Validity of relationships between program activities, outputs, and intended results.	* analysis of activities, outputs and results * qualitative analysis of causal relationships, including logic models	* perceptions of government managers and industry representatives	* structured interviews * program documentation	* very good
	3. The Telidon program as a "sunset" project.	* qualitative analysis	* perceptions of government managers and industry representatives	* structured interviews	* good
	4. Appropriateness of program expenditures in magnitude and emphasis.	* analysis of expenditures	* expenditures by activity area and projects	* program documentation, project files * tracking data on Telidon accounts	* very good
	5. Demand for Telidon products and services.	* market analysis * survey of consumers * simulation	* consumers' attitudes and intentions * characteristics of business and home users * purchase prices, suppliers intentions, information on competing technologies, and general economic conditions	* questionnaire survey of consumers (businesses & home) * statistical reports submitted to DOC by participating firms * monitoring records on firms * DOC project files	* good

SUMMARY TABLE (continued)

ISSUE AREA	QUESTION (abbreviation; see Section 3 for question formulation)	ANALYSIS	INDICATORS/ INFORMATION REQUIRED	SOURCES	RELIABILITY OF RESULTS
	6. Plausibility and validity of the activities of the new Telidon Exploitation Program in relation to its outputs and intended results.	* analysis of activities, outputs and results * qualitative analysis of causal linkages, including logic models	* same as 2 above	* same as 2 above	* good
OBJECTIVES ACHIEVEMENT	7. Targetting of program resources.	* analysis of program expenditures and resource allocation criteria * profile of firms assisted by the program	* No. of firms and % of revenues due to government financing * economic characteristics of firms (see list of indicators on pp. 20-21)	* same as 9 below	* very good
	8. Extent to which Telidon has been adopted by Canadian businesses.	* profile of industry and firms	* economic characteristics of industry and firms (see list of indicators on pp. 20-21)	* same as 9 below	* very good
	9. Viability of the Canadian videotex industry.	* profile of videotex industry * profiles of firms in the industry	* perceptions of government managers and industry representatives * economic profile of industry and firms (see list of indicators on pp. 20-21) * profits/losses of firms * revenues due to sales of Telidon products/services	* questionnaire survey * project files * statistical reports to DOC by participating firms * monitoring reports	* very good
	10. Development of standards.	* qualitative analysis	* perceptions of government managers and industry representatives	* structured interviews * program records	* very good
	11. Penetration of foreign markets and creation of new market opportunities. Competitiveness of Telidon firms with foreign companies.	* market study * qualitative analysis * profile of foreign videotex industries.	* penetration ratios * foreign sales of Telidon products/services * No. of foreign contracts signed or being negotiated & their \$ worth * inferences from national market survey & other studies	* reports on videotex by international organizations, videotex conferences, etc. * DOC program records * interviews with gov. officials & industry * documentation on foreign government videotex programs, to be compiled via External Affairs	* good

SUMMARY TABLE (continued)

ISSUE AREA	QUESTION (abbreviation; see Section 3 for question formulation)	ANALYSIS	INDICATORS/ INFORMATION REQUIRED	SOURCES	RELIABILITY RESULTS
IMPACTS AND EFFECTS	12. Stimulative effects of the program.	* quantitative analysis of industry investments in Telidon * analysis of survey data on stimulative effects of program * qualitative analysis	* private sector investments (indicators 1-3 on page 21) * perceptions of gov. managers and industry	* questionnaire survey * structured interviews * others as 9 above	* good
	13. Prevention of foreign videotex systems from penetrating Canadian markets.	* industry profile	* indicators 4-6 on page 22	* questionnaire survey * program documentation * previous evaluation studies	* good
	14. Creation of Canadian job opportunities.	* survey of industry (producers, information providers, etc.)	* indicators 7-10 on page 22	* questionnaire survey * statistical reports to DOC by firms * monitoring reports on firms	* fair to good
	15. Other economic impacts and effects.	* survey of Telidon users & producers of hardware/software	* exports of Telidon products/services, changes in productivity levels of users, cost savings, etc.	* questionnaire survey	* good
	16. Impacts on arts and culture industries.	* qualitative analysis	* perceptions of gov. managers and industry	* structured interviews * opinion surveys	* good
	17. Social impacts.	* survey of users	* opinions of users	* survey of users	* very good
	18. Effects on other government programs.	* qualitative analysis	* perceptions of gov. managers and industry	* structured interviews	* good
	19. Regulatory aspects.	* qualitative analysis	* perceptions of gov. managers and industry * opinion of users	* structured interviews * opinion survey	* good

SUMMARY TABLE (continued).

ISSUE AREA	QUESTION (abbreviation; see Section 3 for question formulation)	ANALYSIS	INDICATORS/ INFORMATION REQUIRED	SOURCES	RELIABILITY OF RESULTS
ALTERNATIVES	20. Alternative delivery mechanisms.	<ul style="list-style-type: none"> * qualitative analysis * cost-benefit tableau, possibly but not necessarily assigning \$ figures to listed cost-benefit items 	<ul style="list-style-type: none"> * perceptions of gov. managers & industry * objectives achievement 	<ul style="list-style-type: none"> * structured interviews * previous evaluation studies * program records * projects files 	<ul style="list-style-type: none"> * fair to good
	21. Alternative programs.	<ul style="list-style-type: none"> * qualitative analysis * cost-benefit tableau, possibly but not necessarily assigning \$ figures to listed cost-benefit items 	<ul style="list-style-type: none"> * experience in other programs * perceptions of gov. managers 	<ul style="list-style-type: none"> * structured interviews * previous evaluation studies 	<ul style="list-style-type: none"> * fair to good
	22. Program termination or phasing out over longer period of time.	<ul style="list-style-type: none"> * qualitative analysis 	<ul style="list-style-type: none"> * perceptions of industry and gov. managers 	<ul style="list-style-type: none"> * opinion survey of industry * structured interviews 	<ul style="list-style-type: none"> * good

V. EVALUATION OPTIONS

Four options for evaluation are presented in this section. The basic differences between these options lie in their coverage of evaluation issues and in the approaches used for gathering information. The selection of the proposed options was primarily on the basis of ensuring credibility of findings and the possibility of answering specific evaluation questions by the time program-related decisions are to be made -- i.e., during 1984 before program termination on March 31, 1985.

Options A and B do not explore alternatives to the Telidon program and the future role of government in Telidon. Telidon is a "sunset" program and was originally intended to terminate in March 1983. It has been extended to March 1985. Exploring alternatives and whether government should have a continuing role in Telidon after March 1985 is covered in Options C and D. Option C, however, like Options A and B, does not include any market research on demand for Telidon products and services. In order to have a comprehensive coverage of the alternatives questions it is also necessary to conduct a market research study, to assess the commercial potential of Telidon technology. Only Option D fully covers this particular issue with adequate reliability.

The data collection methods proposed in Options A to D yield results with differing degrees of reliability. The decision to select a particular data collection option largely depends on the extent to which DOC is willing to trade off study costs for reliability of results. In all options, however, careful design of survey questionnaires, appropriate selection of samples, and structuring of interviews are required to ensure maximum objectivity and reasonable reliability of study results.

The evaluation options are described succinctly on the next page, followed by a summary of estimates of costs for each task area. This in turn is followed by a comparison of options with respect to comprehensiveness, reliability of results, overall costs, study duration, estimated Program Evaluation Division involvement (person-months), and likely usefulness of results.

TABLE 5.1 DESCRIPTION OF EVALUATION OPTIONS

OPTION A

Coverage of Issues

- All evaluation questions -- excluding questions 20-22 referring to program alternatives and question 5 referring to market research on demand for Telidon products and services.

Methods

- Review of available records and documents on the program, as outlined in Section 4.2.
- All structured interviews with key representatives in government and industry, as outlined in Section 4.2. But excluding questionnaire surveys.

OPTION B

Coverage of Issues

- Same as option A.

Methods

- Same as option A plus:
- All questionnaire surveys as outlined in Section 4.2, but excluding survey of Telidon end users and market survey.

OPTION C

Coverage of Issues

- Same as option A plus:
- Questions 20-22 referring to program alternatives.

Methods

- Same as option B plus:
- Survey of Telidon end users.

OPTION D

Coverage of Issues

- All evaluation questions -- including questions 20-22 referring to program alternatives and question 5 referring to market research on demand for Telidon products and services.

Methods

- Same as option C plus:
 - Market survey as outlined in Section 4.2.
-

TABLE 5.2 SUMMARY ESTIMATE OF COSTS BY TASK *

<u>EVALUATION TASK</u>	<u>dollars</u>
1. Analysis of DOC and industry records and documents on the program	30,000
2. Structured interviews of government managers	20,000
3. Structured interviews of industry representatives and program clientele **	30,000
4. Questionnaire surveys of videotex industry companies, including IISP recipients, field trial participants, and a representative sample of non-participating firms who are potential recipients of program resources	40,000
5. Questionnaire survey of end users	45,000
6. Market research on demand for Telidon products and services (involves survey of selected sample of Canadian population and business community, including non-users of Telidon, and simulation model)	45,000
TOTAL	210,000

* Estimates for each task include data gathering and processing, analysis, report preparation, and professional fees.

** This includes representatives of non-profit organizations involved in the Public Initiatives Program, and representatives of the special operational projects (WETA, Times/Mirror, Teleglobe, Bell, and CBC).

TABLE 5.3 COMPARISON OF EVALUATION OPTIONS

	OPTIONS			
	A	B	C	D
Comprehensiveness/ Coverage of Issues	medium	medium	medium to complete	complete
Reliability of Results *	fair to good	good	very good	very good
Usefulness of Results	limited	limited	medium to high	high
Costs (dollars) **	80,000	120,000	165,000	210,000
Study Duration (calendar months)	7	9	10	13
Estimate of PED Involvement (person-months)	3	4	5	6

* The summary table in Section 4.3 provided an assessment of the expected reliability of results for each evaluation question. The assessments in this Table are overall judgements based on the assessments in Section 4.3. Option A yields the poorest reliability, since it does not include any gathering of original information via the surveys described in Section 4.2.

** Refer to Table 5.2 for derivation of costs.

VI. CONCLUSION

Based on the results of the assessment study, it is concluded that it will be possible to conduct a comprehensive evaluation of the Telidon program, including its various sub-components. The qualitative and quantitative approaches proposed will provide sufficient and reliable support to conclusions about the program.

In order to proceed with the comprehensive evaluation study, it is recommended that senior departmental managers

- approve the proposed program component profile included as Annex A;
- approve or redefine the evaluation issues and questions listed in Part III;
- select an appropriate evaluation option from those described in Part V, or form another combination.

Once a decision is taken on the above, detailed terms of reference for the evaluation study can be prepared, based on OCG guidelines, and funds can be appropriately allocated.

ANNEX A
TELIDON COMPONENT PROFILE

A. BACKGROUND

1. Mandate

The Telidon program component has been developed under successive Cabinet decisions and Treasury Board approvals. The first Cabinet decision on Telidon was taken and initial funding of \$9 million was approved by Treasury Board on March 29, 1979 (TB 763862). Subsequent Cabinet decisions on September 2, 1980, February 11, 1981 and June 26, 1981, augmented the funding of Telidon and broadened the scope of the program. Approvals by Treasury Board were obtained for Telidon augmentation on October 25, 1979 (TB 766692) and October 15, 1981 (TB 773552). Furthermore, the Industry Investment Stimulation Program, which is aimed at directly promoting the manufacture of Telidon equipment, was approved by Treasury Board on December 10, 1981 (TB 780273). As a result of these successive Treasury Board approvals, total funding for the program to the end of fiscal year 1982-83 was \$40 million.

The mandate of Telidon is derived from the Telecommunications Research program component, which appears in the 1982-83 Main Estimates (Section 3, Communications) and in the DOC 1983-84 Expenditure Plan, under the Communications Program.

2. Objectives

The Telidon program component was identified in the original Treasury Board submission as a cooperative industry-government program with the objective "to develop a range of products and ensure market penetration of the Canadian Videotex system called TELIDON." Subsequent evolution of the Telidon component broadened its scope. Its main objectives, as identified in the DOC Cabinet submission of July 27, 1982, were as follows:

To achieve recognition and domination of Telidon as a national and international standard for the videotex industry.

To foster the development of a complete and commercially viable Canadian videotex industry which will bring to Canada economic benefits from both the use of this technology and the sale of videotex goods and services at home and abroad.

A new Telidon Exploitation Program has been approved by Cabinet with the objective "to continue government support of the emerging Telidon industry and to enable government itself to benefit directly from the use of this technology." This decision was confirmed by the Planning and Priorities Committee.

3. Component Description

The Telidon program is a cooperative program between the Federal Government and industry with the aim of seeding the creation of a Canadian videotex industry. As first conceived, the program was a four years "sunset" project to be terminated at the end of fiscal year 1982-83. It was originally intended that upon program completion continuing Departmental research efforts would provide some R&D support to industry. In 1979, the Department began to transfer available laboratory-level Telidon technology to industry for commercial development. This information retrieval and communications technology serves as the infrastructure for a Canadian videotex industry.

Although the original intent was to terminate the program as of March 31, 1983, new factors have indicated that continued government support is necessary. In July 1982, DOC submitted to Cabinet a proposed Telidon exploitation program, to continue government support of and cooperation with industry and to enable the government itself to benefit directly from the use of this technology. This new Telidon program has been approved by Cabinet, with a funding of \$23 million over the next two fiscal years ending in March 31, 1985.

The original Telidon program consisted of the following elements:

- Telidon product R&D
- program management and administration
- field trials
- market development and standards
- special operational services
- data base development
- Industry Investment Stimulation Program
- behavioural research and evaluation
- Government information to the public
- support to public initiatives
- Canadian Videotex Consultative Committee

Research and development is a major component of the Telidon program. The product R&D element of Telidon is aimed at progressing technology through laboratory models to production prototypes. This element is carried out by the Communications Research Centre at Shirley's Bay.

The offices of the Informatics Applications Management Branch, located at DDC headquarters and headed by a Director General, are responsible for other elements of the Telidon program, including: program management and administration, field trials coordination, market development and standards, data base development and other research and operational aspects.

A sub-component of the Telidon program was the Industry Investment Stimulation Program. This program funded one-half of the Telidon terminals to be procured by system operators for deployment in their systems. The Minister of Communications reported on January 12, 1982 that about fifty projects would be funded under this program. This program was administered by the Applications Development Division of the Informatics Applications Management Branch.

Providing Government information to the public through use of Telidon technology is undertaken via the Cantel system. Cantel is operated by the Task Force on Service to the Public, Department of Supply and Services. DSS also has primary responsibility for the use of Telidon in Government with technical and software systems support from the Department of Communications.

Early in the Telidon program a Canadian Videotex Consultative Committee (CVCC) was formed. This committee is funded by DDC and is comprised of some thirty senior industry and government representatives. The principal purpose of this committee is to advise the Department of Communications and the Telidon industry in general on the introduction of videotex services in Canada. To assist it with its activities the CVCC has established sub-committees in the following areas: industry and marketing, standards, education, legal aspects, social impact and a working group concerned with captioning for the deaf.

The intended populations served by Telidon technology, as broadly stated in the Cabinet submission of July 1982, are as follows:

- " - the general public in Canada
- the national media
- Canadian videotex industry
- Canadian business community
- government agencies at all levels
- Canadian advertising and public relations industry
- international businesses
- international videotex industry
- potential government users in other countries."

Telidon program subsidy funds, however, are only provided to Canadian interests, particularly to members of the Canadian videotex industry and media who are the prime target group of the program.

4. Relation to Estimates Program

Telidon is funded under the "Telecommunications Research" program component, appearing in the 1982-83 Main Estimates, Section 3, and the 1983-84 DOC Expenditure Plan. Specifically, the Main Estimates describes Telecommunications Research as having the following activities: "Technological forecasting; planning and conduct of exploratory and applied research and development directed towards the solution of problems and the advancement of technology in support of Canadian communications requirements."

5. Component Resources

The resources available to the Telidon program component since its inception are as follows:

ACTUAL	1979-80	1980-81	1981-82	1982-83
Fiscal Expenditures				
Person Years				
Expenditures as a % of Total DOC Research Expenditures				
Capital				

PROPOSED	1983-84		1984-85	
Expenditures				
Person Years				
Expenditures as a % of Total DOC Research Expenditures				

B. ELEMENTS AND STRUCTURE

1. Component Elements

A detailed list of activity areas, related outputs, and impacts and effects of Telidon is provided below. This list forms the basis for the simplified program model included in the subsequent section.

(i) Activities and Related Outputs

- Telidon product research and development:

Outputs

- laboratory models, i.e. for Telidon hardware and software
- production prototypes for commercial uses
- documentation on systems and systems equipment produced.

- program management and administration:

Outputs

- plans, priorities, financing and organizational structure for the program.
- research and other contracts
- technical advice.

- field trials:

Outputs

- demonstrations of equipment and techniques
- identification of areas for further R&D (e.g. in hardware technology, software enhancement and network development)
- analysis and documentation of trial results for policy, regulation and standards development

- market development and standards:

Outputs

- demonstrations of Telidon to appropriate standards-setting and marketing forums
- promotional strategies for sale and distribution of Telidon products and services
- Telidon marketing efforts coordinated with relevant industry, business, government and international agencies

- Telidon hardware and software standards
- presentations of the Canadian position on standards to various national and international standards-setting bodies.

- special operational services:

Outputs

- special projects (Bell, WETA, Times/Mirror, Teleglobe, and CBC).

- data base development:

Outputs

- demonstration data base packages for marketing
- criteria for anglophone and francophone data bases with quality Canadian content
- training materials for content production
- page creation standards
- R&D studies related to development of optimum data structures and access techniques
- techniques appropriate to development of public information systems
- analysis and documentation of research results
- support material for the PIP program.

- Industry Investment Stimulation Program:

Outputs

- Telidon terminals at reduced prices through volume production
- Telidon terminals for operational systems or market trials.

- behavioural research and evaluation:

Outputs

- consultant and in-house studies on human behaviour in relation to Telidon technology and standards
- recommendations regarding the design and use of Telidon technology on the basis of behavioural criteria.

- Government information to the public:

Outputs

- a data base for selected government information, accessible to the public
- Telidon equipment (terminals) installed in designated enquiry centre locations
- a communications network providing access to the government information data base
- program plan for selecting systems/format for collection and presentation of information, and criteria for assessing the suitability of information provided by departments
- monitoring and evaluation reports on the results of the project.

- support to public initiatives:

Outputs

- data bases appropriate to needs of special interest groups (such as consumer organizations, women's groups, native people and the disabled)
- examples of innovative data base style and structure for specialized uses
- training sessions for Telidon operators and other direct users
- demonstrations of practical abilities of Telidon
- practical enhancements of Telidon systems through feedback from specialized applications
- Telidon experiments featuring geographical and linguistic diversity.

- Canadian Videotex Consultative Committee:

Outputs

- workshop seminars and Telidon related studies on social implications, standards, education, legal aspects, marketing, and applications for special interest groups (such as the deaf)
- advice to the Deputy Minister, Communications, with regards to all aspects of videotex development in Canada
- information for dissemination to appropriate public and private domains on the Telidon program objectives and status.

(ii) Impacts and Effects

The expected impacts and effects of the activities and related outputs of the Telidon program are as follows:

- standardization in the videotex industry and acceptance of Telidon as a national and international standard
- participation by the Canadian electronic industry in new market opportunities
- stimulation of Canadian jobs in the electronic manufacturing and service supply industries
- transfer of Telidon technology developed by Government to industry
- prevention of penetration of the Canadian market by foreign developed videotex systems
- development and proliferation of Telidon in the international videotex market.

These impacts and effects of the Telidon program are intended to achieve the end result of creating a commercially viable Canadian videotex industry.

2. Component Structure

A chart showing the Telidon program component structure is provided on the next page. This chart shows the linkages between activities, outputs, expected impacts and effects and objective of the Telidon program.

TELIDON PROGRAM COMPONENT STRUCTURE

