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CASE STUDY OF PARTICIPATING
AND NON-PARTICIPATING COMPANIES
FOR THE EVALUATION OF THE
OFFICE COMMUNICATIONS SYSTEMS PROGRAM

Background Study

Etude de base

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This is one of seven Background Studies that form part of the evaluation of the Office Communications Systems Program.

The Study was prepared by Coopers & Lybrand Consulting Group for the Program Evaluation Division of the Department of Communications, Canada.

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

DEPARTMENT OF COMMUNICATIONS *aut*

2) CASE STUDY OF PARTICIPATING
AND NON-PARTICIPATING COMPANIES

December 20, 1985

Submitted to: ✓ Dr. B. Bragg

Submitted by: ✓ H. Jansen
✓ V.W. Fearon
✓ J. Herzog

The
Coopers
& Lybrand
Consulting Group

Management Consultants

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DEPARTMENT OF COMMUNICATIONS

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EXECUTIVE SUMMARY

The Coopers & Lybrand Consulting Group was asked to evaluate the impact of the Office Communications Systems (OCS) program on participating companies. We completed this by interviewing representatives of five participating companies, nine non-participants and two host departments. The results are detailed in the body of the report.

In summary, the interviewees' perceptions during Phase I (first quarter, 1985) and Phase II (some six months later) are summarized below.

1. OBJECTIVES

- In Phase I initial trial objectives were perceived to be too ambitious and had to be modified in the light of:
 - market requirements,
 - a clash between development activities and operational priorities, and
 - greater awareness of host department needs.

Toward the end of the trials, a reasonable balance was found.

- In Phase II most participants confirmed the Phase I findings but, with hindsight, commented that developing products for specific departments in such a public fashion constrained their ability to produce a product with broad marketing appeal. Participants and non-participants alike agreed that funding in particular and the program in general were useful and welcome.

2. COSTS, BENEFITS AND PRODUCT DEVELOPMENT

- Hard and soft benefits outweighed the costs. In Phase I payback periods of between two and four years were anticipated when total costs (including the Government's \$10

million) were considered. The companies invested about 20% more than the government through internal funding. Additional Phase I benefits for participants included:

- about 500 person-years of work,
- viable test sites for vendors,
- good reference accounts, and
- a better understanding of the marketplace.

Overall, three of five participating companies defined the results as "very positive" and two as "positive".

- Phase II findings regarding costs and benefits showed more change than any other subject. On balance, and making allowances for the difficulty of comparing different companies with different products, product development indicators show that:

- non-participants appeared to have created more person years than participants, and
- non-participants appeared to have made slightly greater progress than participants.

It must be pointed out, however, that some non-participants made little progress because the market was not deemed appropriate. All participants reached similar product development stages because the program, and vendor contracts, specified identical "sunset" dates.

- It is too early to determine the relative marketability and quality of participants' and non-participants' products.

3. PRODUCT AND MARKETING APPROACHES

- The experience helped the companies change their approach to the integrated office marketplace and to increase their likelihood of success. Four participants changed their marketing and strategic approaches considerably. By contrast, two non-participants with reservations about the marketplace either "froze" their activities or proceeded more slowly. Little change occurred to these factors in Phase II.

4. NON-PARTICIPANTS' VIEWS

- The perceptions of most of the non-participating companies in both phases were similar to those of the participants and five of the seven would like to have participated in the field trials.

5. AREAS OF CONCERN

- In both phases the major concerns raised by both the participating and non-participating firms were that:
 - in view of the \$20 billion trade deficit funding in the order of \$90 - \$100 million (rather than \$10 million) was felt to be more realistic,
 - the field trials could have diverted the focus of some companies,
 - smaller companies could not afford to compete for the contracts, and
 - the private sector would have provided a better product proving ground.

But there was not full agreement on these issues.

6. PRODUCT MARKETING AND SALES

- Four of the five participating companies intend to market a field trial product, i.e.
 - Renaissance by XIOS,
 - "Initiative" by OCRA
 - "The Officesmith" by Officesmiths, and
 - "Comterm Systems Product" by Comterm.

- During Phase II it was established that participants had not secured the firm orders or expanded their customer base in the manner hoped for during Phase I. Further, the perceived benefits of a good reference account and government contacts proved disappointing. Yet, participants remain more optimistic about the future of the integrated office marketplace than non-participants.

7. OCS RESEARCH

- Overall, in both phases most participants and non-participants were not fully aware of OCS research; two participants and only one non-participant were aware of one or more specific studies.

8. GOVERNMENT DEPARTMENTS' CONTRIBUTIONS

- In Phase I reactions to contributions from government departments were mixed. In particular:
 - DSS contractual policies were perceived to be too rigid,
 - opinions on OCS program staff and impact assessments varied widely, but
 - host department staff were highly regarded.

- Phase II findings confirmed the above but participants expressed disappointment with the small numbers of potential customers directed to them as a result of the OCS program.

9. SUGGESTED IMPROVEMENTS TO THE PROGRAM

- On balance, the private sector is enthusiastic about the OCS program and would like to see similar initiatives in the future. Improvements to the study objectives, program support and vendor-related issues are outlined in the report.

The field trials helped define the opportunities, challenges and constraints for the participating companies, and some "fringe" companies. Much was learned and many benefits, both hard and soft, accrued. However, it appears that non-participants, although not in the program, made greater progress and accrued greater benefits than participants. On the positive side, more participants than non-participants developed new products and entered new market sectors in the trial period. Overall, the integrated office systems industry was strongly in support of the program and would obviously welcome further programs of its kind.

SOMMAIRE EXÉCUTIF

Le Groupe Conseil Coopers & Lybrand a évalué l'impact du Programme de la Bureautique sur les compagnies participantes. Cette évaluation a été complétée par des entrevues avec cinq compagnies participantes, neuf non-participantes, et deux ministères fédéraux, hôtes de ce programme. Les résultats de cet impact sont reportés en détail dans le corps du rapport.

En résumé, les perceptions des personnes dont l'opinion a été demandée pendant la Phase I (1er trimestre 1985), et la Phase II (quelques six mois plus tard), sont reportées ici.

1. OBJECTIFS

- Les objectifs de l'essai primaire de la Phase I ont été jugés trop ambitieux et ont dû être modifiés en raison:
 - des exigences du marché,
 - d'un conflit entre les activités du développement et les priorités opérationnelles,
 - ainsi que d'une plus grande conscience des besoins des ministères fédéraux, hôtes du programme.

Un équilibre raisonnable a été établi vers la fin des essais.

- Pendant la Phase II, la plupart des participants ayant confirmé les conclusions de la Phase I, ont commenté en rétrospective, que les produits développés publiquement pour des ministères particuliers ont restreint leur capacité de développer un produit ayant de grandes possibilités de commercialisation. Les participants et les non-participants s'accordent à reconnaître que le financement en particulier, et le programme en général ont été utiles et bien reçus.

2. COÛTS, AVANTAGES ET DÉVELOPPEMENT DU PRODUIT

- Les avantages tant absolus que contestables l'emportent sur les frais. Pendant la Phase I, des périodes de rentabilité de 2 à 4 ans ont été prévues sur le coût total anticipé (y compris les 10 millions de dollars du Gouvernement Fédéral). Grâce au financement interne, les compagnies ont investi 20% de plus que le gouvernement. Les avantages supplémentaires de la Phase I ont été pour les participants:

- environ, 500 années-personnes, de travail,
- emplacements d'essais viables, pour les vendeurs,
- excellents comptes de référence, et
- une meilleure compréhension du milieu de travail.

En général, sur les cinq compagnies participantes, trois ont défini le résultat comme étant "très positif", et les deux autres "positif".

- Les conclusions de la Phase II ont démontré plus de changements sur les coûts et les avantages que sur tout autre sujet. Tout en tenant compte de la difficulté de comparer les différentes compagnies et leurs produits, les indicateurs de développement montrent en général que:

- les non-participants ont créé plus d'années-personnes que les participants, et
- que les non-participants ont fait sensiblement plus de progrès que les participants.

Il nous faut cependant souligner que certains non-participants ont fait peu de progrès parce que le marché n'était pas considéré approprié. Tous les participants ont atteint des stages de développement similaires pour leurs produits, puisque le programme et les contrats des vendeurs spécifiaient des dates "limites" identiques.

- o Il est prématuré de déterminer la commercialisation et la qualité respective des produits des "participants" et des "non-participants".

3. PRODUIT ET APPROCHES DE COMMERCIALISATION

- L'expérience a changé l'approche que les compagnies avaient du bureau intégré sur le marché, et a augmenté leurs chances de succès. Quatre des participants ont modifié considérablement leur commercialisation et leurs approches stratégiques. Par contre, deux des non-participants ayant certaines réserves sur le marché, ont "figé" leurs activités, ou avancent plus lentement. Ces facteurs ont eu peu de changements pendant la Phase II.

4. OPINIONS DES NON-PARTICIPANTS

- Les perceptions de la plupart des compagnies non-participantes étaient identiques à celles des participants pour les deux phases. Cinq des sept compagnies auraient voulu participer aux essais en vraie grandeur.

5. ZONES D'INQUIÉTUDE

- Dans les deux Phases, les compagnies participantes et non-participantes ont fait remarquer les inquiétudes majeures suivantes:
 - à cause du déficit de 20 milliards de \$, dans la balance commerciale, un financement de 90 à 100 millions de \$, plutôt que 10 millions, serait plus réaliste,
 - les essais en vraie grandeur pourraient avoir détourné l'attention de certaines compagnies,
 - les compagnies moins importantes ne pouvaient pas se mettre sur les rangs, pour les contrats,
 - et le secteur privé aurait permis un meilleur environnement de mise en épreuve du produit.

Il n'y a pas eu accord général sur ces questions.

6. COMMERCIALISATION ET VENTES DES PRODUITS

- Quatre des cinq compagnies participantes entendent mettre sur le marché un produit d'essai. c'est à dire,
 - Renaissance par XIOS,
 - "Initiative" par OCRA
 - "The Officesmith" par Officesmith, et
 - "Comterm Systems Product" par Comterm.

- Il a été établi pendant la Phase II, que les participants n'ont pas eu de commandes fermes, ou n'ont pas élargi leur clientèle de base comme la Phase I pouvait le laisser supposer. De plus, les avantages attendus de bonne référence et de contrats gouvernementaux ont été décevants. Pourtant, les participants demeurent plus optimistes que les non-participants en ce qui concerne le futur du bureau intégré et son marché.

7. RECHERCHE SUR LE PROGRAMME DE LA BUREAUTIQUE

- Dans l'ensemble pour les deux Phases, la plupart des participants et des non-participants n'étaient pas conscients de la recherche effectuée par le Programme de la Bureautique. Deux des participants et un seul non-participant étaient au courant d'au moins une recherche spécifique.

8. CONTRIBUTIONS DES MINISTÈRES GOUVERNEMENTAUX

- Pendant la Phase I, les réactions aux contributions des ministères gouvernementaux ont été mixtes. En particulier:
 - les politiques contractuelles de DAS ont été trouvées trop strictes,
 - les opinions sur le personnel du Programme de la Bureautique et les évaluations de l'impact varient énormément, mais
 - le personnel des ministères hôtes a été grandement apprécié.
- Les conclusions de la Phase II confirment les faits ci-dessus mais les participants ont été déçus du petit nombre de clients que le Programme de la Bureautique a généré.

9. SUGGESTIONS D'AMÉLIORATION AU PROGRAMME

- Le secteur privé a accueilli avec enthousiasme le Programme de la Bureautique, et aimerait voir d'autres initiatives de ce genre dans le futur. Des améliorations à l'étude des objectifs ainsi qu'aux questions de support du programme et des vendeurs sont soulignés par le rapport.

Les essais en vraie grandeur ont permis de souligner les perspectives d'avenir, les défis et les contraintes des compagnies participantes et de quelques compagnies marginales. De nombreux avantages tant absolus que contestables ont été reconnus et appréciés. Il apparaît cependant que les non-participants au programme ont obtenu davantage de progrès et de bénéfices que les participants. Sur le plan positif, plus de participants que de non-participants ont développé des produits nouveaux, et pénétré de nouveaux secteurs du marché pendant la période d'essai. En général, l'industrie de l'intégration Bureautique supporte fortement le programme et serait reconnaissante de tout autre program de ce genre dans le futur.

I. BACKGROUND

The Federal Government of Canada, through the Office Communications Systems (OCS) program in the Department of Communications, has initiated and run extensive field trials in cooperation with the Canadian integrated office services industry. The main purpose was to assist in the development of skills and capabilities in the industry and, thus, help close the trade gap. The field trials were conducted in five host departments by five lead contractors (Exhibit 1, overleaf).

Vince Fearon and Hans Jansen of the Toronto office of The Coopers & Lybrand Consulting Group were asked to provide an assessment of the impact of the field trials on participating companies. The partner responsible was John Herzog of the Ottawa office. This report presents an outline of the methodology used and the key findings of the research. A list of interviews conducted is included as Appendix I.

The study was conducted in two phases. The first phase took place in the first quarter of 1985 when the field trials were still in progress. The second phase was conducted some six months later to establish if the products were selling and if perceptions had altered once the field trials were complete. A presentation of Phase I was made to the Department of Communications on April 17, 1985, and Phase II results were presented on November 27, 1985.

This report summarizes the main perceptions of the program participants and potential participants (referred to as non-participants) with regard to the impact of the OCS program and also compares the differences which resulted with the passage of time. Further, we have included some recommendations for the future.

At the beginning of the study, it was agreed that all material was to be presented without revealing any market or financial information deemed confidential by the companies involved. While all conclusions in this report can be supported by data collected during the study, we have suppressed all confidential data.

EXHIBIT 1
THE FIELD TRIALS

<u>Company</u>	<u>Host Department</u>	<u>Budget</u>
Officesmiths Inc.	EMR	\$0.7 Million
OCRA Inc.	Environment Canada	\$3.0 Million
Comterm Inc.	DOC	\$0.5 Million
BNR Ltd.	Customs & Excise	\$3.0 Million
XIOS Inc.	National Defence	\$2.8 Million

II. THE QUESTIONNAIRES

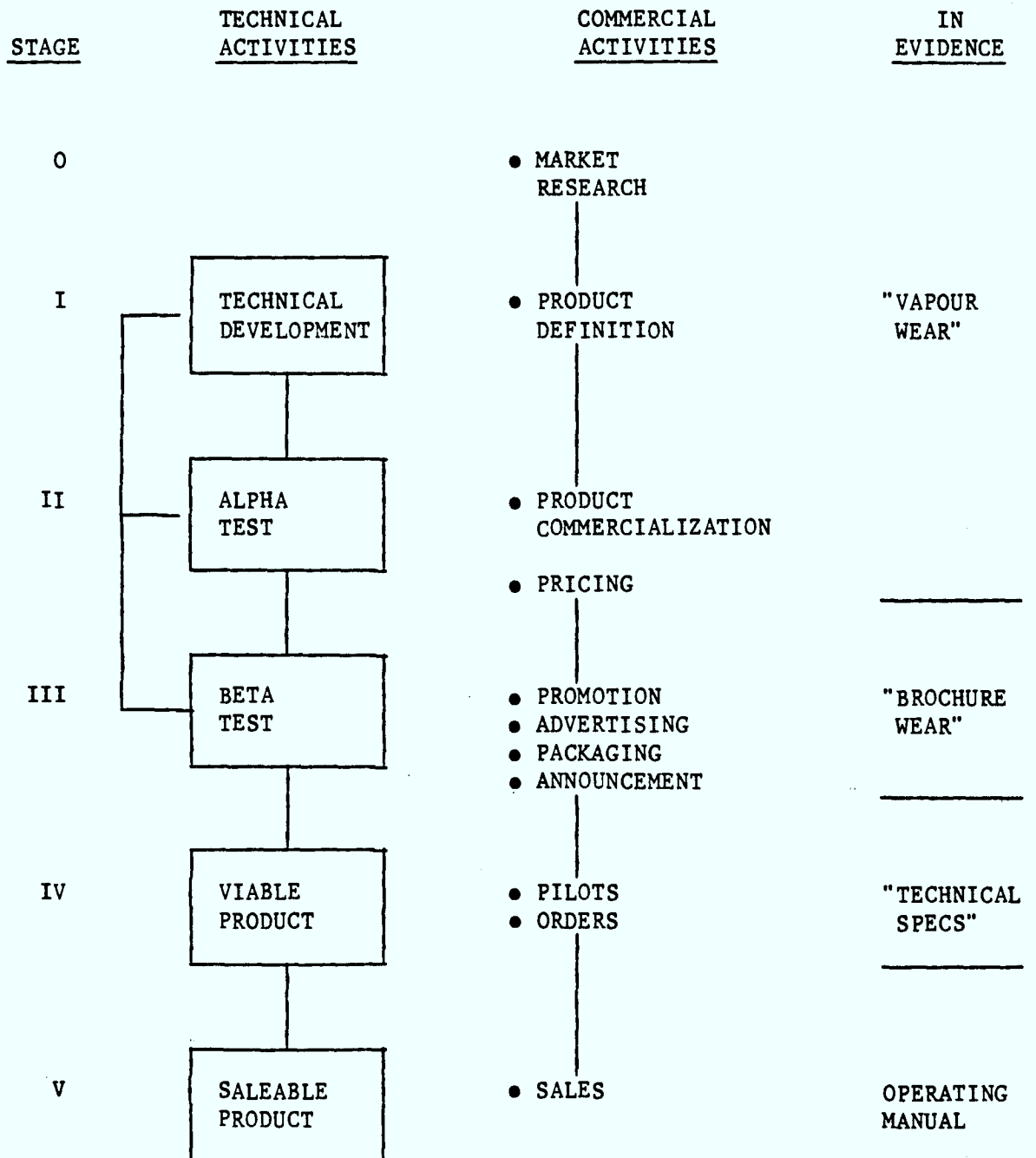
The terms of reference for this study were to assess the costs and benefits of participating in the OCS program. The resulting questionnaires were designed to answer the following questions:

- Did the participating companies achieve objectives?
- Did participating companies develop a saleable product or service?
- Do the participating companies intend to market a new product or service?
- Has there been any evidence of change in the participating companies?
- Have the participating companies developed new marketing directions?
- Overall, did the field trials have a positive impact on participating companies?
- Overall, what were the views of the non-participating companies on these questions?

The interviews were structured in such a way as to obtain specific answers to these questions.

EXHIBIT 2

PRODUCT DEVELOPMENT PROCESS



III. THE METHODOLOGY WAS DESIGNED TO MINIMIZE THE COMPARISON DIFFICULTIES

A. SIXTEEN COMPANIES WERE SURVEYED

Interviews and desk research were used to obtain the base data required to complete the study. A total of 19 people were interviewed. Five of these were in participating companies, eleven in non-participating firms (re Appendices I and III). In addition, three persons from two host departments were interviewed.

Although interviews were entirely on a voluntary basis, there were no refusals. All except two interviews were in person, and we spoke with each interviewee in complete privacy. The interviews ranged in duration from 1 hour to 3 hours.

The interviews were relatively structured, but a guideline questionnaire (Appendix II) was used. Under each topic, the relevant comments were noted, analyzed and consolidated to form the key findings of the study. During Phase II we were requested to place particular emphasis on the topics detailed in Appendix I, Page 2.

B. PRODUCT DEVELOPMENT PATTERNS VARY

Any assessment of the integrated office sector must be viewed and evaluated within the context of the volatility of the marketplace as a whole. The environment and the circumstances of the participants and non-participants are discussed in Appendix III.

The ideal product development process is illustrated in Exhibit 2, opposite. We designed this model to facilitate comparison of companies which were competitors but followed varying accounting development and other policies. We have organized the process into

five distinct stages with technical and commercial activities proceeding in lock-step. In theory, each new stage should not be started until the preceeding one is complete in every respect.

In practice, this never occurs. Most companies are technology - driven and press ahead with this stream to the detriment of the commercial stream. This leads to the following:

- Market research is rarely completed to any extent. Several products are often commenced in similar time frames and the ones that look the most promising technically are pursued. Consequently, there are a great deal of "stillborne" efforts which give rise to unfulfilled rumours in the marketplace.
- The sheer energy and effort required to complete alpha and beta tests usually stifle well-intentioned efforts to complete the necessary product commercialization, pricing, promotion, advertising and packaging activities. As a result, these aspects are usually poorly thought out when the product is announced.
- The volatility and competitiveness of the marketplace forces vendors to announce products long before they are fully tested, rush products out which are not fully developed and make claims which cannot be substantiated. This has resulted in a credibility problem in the marketplace which some companies, such as IBM, have exploited successfully by not announcing products until they are at Stage V, i.e. for general sale.
- Small companies in particular are burdened by these problems and the scepticism with which potential purchasers view their offerings makes it almost impossible for some of them to get a suitable beta test site. Thus, many have tried to feed the marketplace with "hype" in the development and test stages

leading to what is known in the industry as "vapour wear" and "brochure wear" i.e. street talk or "glossies" describing products which might not ever be viable.

Each of the participants and non-participants experienced these problems to some degree.

C. FIRM ORDERS WERE USED AS THE BASIS OF COMPARISON

To provide some basis of comparison we have used the five stage process described in the report. It must be viewed in context by recognizing some of the difficulties in making comparisons which have been described. Similarly, the definition of sales is often used loosely in the industry.

Of particular importance is the fact that "sales" are often quoted when tentative orders, or even verbal assurances are all that exist. And at the beta test, or field trial, stage, orders rather than sales are all that can be expected to be in place. Thus, for the impact assessment, we measured success in securing firm orders rather than sales.

A further distinction can be drawn between companies that,

- offer their products for sale directly to the user-company as, for example, XIOS does, or those that
- offer their products for sale to a hardware or software company that, in turn, includes it as part of a package. Officesmiths are a good example of this.

In the latter case, an order or an agreement with the hardware or software vendor is only the first step in securing a sale with the ultimate purchaser.

The marketplace is also extremely volatile and subject to radical change. Appendix III details some changes which occurred during the field trials and during the study period.

These considerations, and the fact that no companies in the Canadian marketplace offer identical products, make comparison difficult. These factors should be borne in mind when reviewing the results which follow.

IV. ON BALANCE, SATISFACTORY VENDOR OBJECTIVES WERE ACHIEVED, BUT THEIR ORIGINAL OBJECTIVES WERE TOO AMBITIOUS AND HAD TO BE REVISED

The OCS objectives of the field trials were ambitious, especially with regard to target dates and the ability of the products to satisfy operational needs. The vendors responded to these by setting unrealistic objectives for their own development programs. Since there was little experience with the products or the working environment this was not surprising.

A. PHASE I FINDINGS

As the trial progressed, the vendors gained a better understanding of:

- product limitations (eg., reliability of specified hardware),
- the degree to which objectives could be achieved (most realized much of the technology was not available "off the shelf"),
- the requirements of the market (some realized the host department needs had limited external potential),
- the capabilities of their staff (especially with regard to product development) and
- departmental personnel and their real requirements.

As their knowledge grew, some participants realized that they could not produce all "deliverables" on time and this led to contractual, financial and working relationship difficulties.

Thus, the field trial forced each of the vendors and host departments to clarify vendor objectives and to revise them based on the trial experience.

1. Reasons for Differences in Objectives

The vendors, however, continued to experience differences between their own objectives and those of host departments. The basic reasons for, and results of, these differences were as follows:

- Superficial needs analysis in four out of five host departments led to insufficient knowledge of the hosts' key results areas, constraints and opportunities and organizational environments.
- Unrealistic user expectations regarding new technology, and the time and effort it takes to produce a working system, led to continuing pressure on vendors to produce results before the vendors were capable of doing so.
- A clash between the vendors' product development activities and the hosts' operational objectives strained working relationships.

Several participants mentioned that towards the end of the trials a reasonable balance was struck between the host's objectives and their own.

2. Objectives which were Achieved

Specifically, the participating vendors mentioned that the following objectives or positive effects resulted:

- a show-case trial with the federal government,
- improved methodology e.g., the verification of BNR's product concepts in a live office situation,
- host department managers were allowed to use the new technology at an early stage,
- integrated voice and data advances,

- "government and corporate front doors which have been shut for a long time" were opened,
- a sharing of field trial experiences among participants and some closely associated companies occurred once the trials were underway,
- a better understanding of the realities of the marketplace was gained, and
- increased understanding of research results through observing the problems experienced in a live situation.

B. PHASE II FINDINGS

Most participants confirmed the Phase I finding that the field trials either provided the critically important "live situation" to help produce good software or helped them enter the integrated office systems marketplace. On the downside, however, several participants believed that developing products for specific departments in such a public fashion constrained their ability to produce and sell a truly generic product and manage its market roll-out successfully.

Unfamiliarity with the trials made many non-participants less clear what the likely results would have been if they had participated. For the same reason, non-participants' responses varied on the affect participating would have had on product timing and costs.

Both groups agreed that the funding in particular and the program in general were useful and welcome. It was also agreed that the major contribution of the field trials to producing superior software was the provision of a viable test site. This was perceived as particularly important to the smaller firms.

Thus the vendors' objectives were modified over the life of the trials. Their views six months later added a broader perspective to their interpretation of the objectives while the field trials were still in progress.

V. ALL PARTICIPATING COMPANIES FELT THAT THE BENEFITS OUTWEIGHED THE COSTS

While none of the companies designed a methodology at the beginning of the field trial to allow it to track costs and benefits precisely, the OCS program was perceived to be very beneficial for the integrated office systems industry in Canada.

A. PHASE I FINDINGS

Four of five companies expect to launch a commercial product in national and international markets. One company says it has 45 letters of intent and signed contracts for licence agreements. Another company has announced a modified version of its field trial product to be supported by marketing spending in international markets. As detailed in Section IX, other companies have marketable products ready for Canada.

1. Costs and Benefits

The government budgetted \$10 million for payment to the field trial vendors. The additional costs incurred by the vendors are heavily weighted by the large and identifiable development costs of BNR. It is possible to maintain confidentiality by considering the costs of the four other companies, i.e.:

OCS Budget	\$7.0 million
Additional Vendors Costs	\$8.4 million (+120%)

Some of the extra costs (which are predominantly product development costs although the exact breakdown was not available in most companies) were funded internally, some through equity financing and some through a Research and Development flip.

Since sales projections varied considerably in their completeness and the confidence accorded to them, it is not possible to make a direct comparison between development costs and sales. In general, non-participants' sales predictions were higher than those of comparable participants but most figures were poorly supported by solid research. Similarly, comparisons of sales projections and development costs were difficult to obtain. However, the estimated payback period, based on total sales costs (including government contribution), varied from two to four years. This was similar to the payback periods estimated by the non-participants, although the forecasts of some non-participants with less ambitious products were more favourable.

2. Other Benefits

The field trials also created a significant number of jobs. We estimate that about 500 person-years of work were created directly and indirectly. About 100 person-years of this was in companies which were sub-contracted work by the participants. These figures are based on the average workers employed over the course of the trials.

The "lessons learned" from the field trials were widely believed to be beneficial to the industry as a whole. During Phase I, key executives from competing firms in the industry (participants and non-participants) were meeting regularly to exchange ideas about how to make the Canadian industry more competitive with foreign suppliers.

Also during Phase I, three of the five companies defined the results of the trial as "very positive" and two as "positive". Their judgement was based not only on the hard advantages of revenue, job-creation, and lessons-learned by the industry as a whole, but also on the "soft" benefits which accrued, i.e.,

- The trial provided a viable test-site for their concept on a scale they would not normally have been able to achieve.
- The work provided a valuable reference account for future marketing efforts.
- The vendors gained a better understanding of the scope of integrated office systems.
- The trial helped the companies to define their market niche and their strategy for attacking it.
- The exposure provided sales leads for the firms.
- The experience provided improved understanding of integrated office systems by potential customers.

In short, significant hard and soft benefits were believed to have been generated.

B. PHASE II FINDINGS

During Phase II, further insights were gained. Although the restructuring of non-participants, together with the overlap in financial statements of many of their products, made it impossible to establish an exact comparison, it was possible to isolate and compare six companies as follows:

	<u>March '81</u>	<u>March '85</u>
<u>Person Years</u>		
Participants (3)	0	60
Non-Participants (3)	0	75
<u>Product</u>		
Participants (3)	3-Stage 0	3-Stage III
Non-Participants (3)	2-Stage 0 1-Stage I	1-Stage II, 2-Stage IV

Product differences mean that these figures must be treated as indicators only.

However, during Phase II, participants' estimates of payback were closer to 4-6 years (2-4 years in Phase I) but non-participants' views remained at 2-4 years. The reason is probably the participants' realization of the difficulties of the "outside world" in this particular marketplace and also the peaking out of interest in integrated office products in the last two years.

C. OUR OVERALL CONCLUSIONS REGARDING COSTS, BENEFITS AND PROGRESS

1. Comparison of Participants and Non-Participants

Reviewing the cost/benefits as a whole we concluded that:

- o In our opinion, there is enough evidence to suggest that all participants would not have reached Stage III without the field trials to either support them or, through the contractual arrangements, provide the incentive for them to deliver.
- o Because of the field trial arrangements, participants took three to four years to achieve Stage III. Non-participants that have proceeded to the same stage took two to four years.
- o Total development costs for participants (excluding BNR) amounted to \$15.4 million or \$3.5 - 4 million per product. Total costs for four non-participants to reach the same stage, although with different products, was \$15.5 million.
- o Revenues from field trial products (apart from the OCS program contribution of \$7 million, excluding BNR) were one tenth the revenues from four comparable non-participants.

- o The field trials also provided the stimulus to the participants to develop products and, in doing so, four of the five developed new market offerings and new technical capability. During the same period, four of the seven non-participants developed similar new capabilities.

Overall, we believe it is unlikely that all five participants would have achieved Stage III without the field trials. And there is some evidence that the products of the non-participants were more marketable.

Although three of the five participants had major changes of ownership and/or structure during the trials, the field trial products were not directly affected.

2. Some Differences to be Noted

Three of the seven non-participants underwent major ownership and structural change (as, later on, Emerald City did also) but their products can be characterized as different in the following ways:

- CSG, although maintaining a watching brief, has not advanced from Stage I,
- Sussex and Fulcrum produced products for specific applications (as did Officesmiths), rather than "across the board" products.
- Nabu and Mitel produced products in their traditional sectors whereas Gandalf extended its capability by taking control of OCRA.
- Emerald City is still endeavouring to deliver a "state of the art" fully integrated product.

Although the participants experienced as much or more internal change as the non-participants during the field trial period (re Appendix III), all five reached Stage III in comparable times. Non-participants either "stuck closer to the knitting", failed to produce a comparable product in the same time period or have yet to reach Stage III.

Thus, the field trials can be described as having aided Canadian software vendors to enter or extend their capability in the software marketplace. Some anticipated benefits were forthcoming, i.e.:

- improved understanding of integrated office systems,
- a greater appreciation of selling into the federal government environment,
- availability of a viable development and test site,
- development of a potentially viable product, and
- payback for the economy as a whole.

On the other other hand, some anticipated benefits were disappointing:

- integration of, or direction for, Canadian software offerings as a whole,
- a generic approach for other government departments to follow when implementing similar systems,
- significantly improved balance of payments difference,
- solid sales leads for the vendors, and
- "repeatability" for the vendors.

In addition, only two of the five host departments eventually acquired the systems.

To sum up, participating in the field trials helped five Canadian companies to develop and/or rigorously test new products. The viability and staying power of these products have yet to be tested.

Non-participants developed products at a pace dictated by the marketplace rather than budgetary time limits and, consequently, some have made more rapid progress while others have made very little. A further evaluation in one year's time, when the participants have been in the "outside world" for eighteen months, should provide the required solid evidence of product viability.

VI. MOST PARTICIPANTS CHANGED THEIR APPROACH, PRODUCT STRATEGY, AND MARKETING PLANS AS A RESULT OF THE FIELD TRIAL

Four out of five participating companies found out during the field trial that they needed to change their approach to the integrated office marketplace in order to be successful. The four companies and their host departments finished the field trial with a different product than that envisaged at the beginning of the process.

The fifth company changed its approach to needs analysis and evaluation.

A. MARKETING AND PRODUCT STRATEGIES ALTERED

Each company planned to spend significant budgets on marketing, and all the products, or their derivatives, were developed or tested during the field trial. The target markets range from hardware vendors to "multi-vendor environments" and end-users. The "Officesmith", for instance, is designed for suppliers and users of UNIX-based systems.

The key factors which led to the changes in approach, product strategy and marketing was the realization that the integrated office systems market is:

- poorly defined,
- international in nature,
- characterized by a large number of offerings,
- lacking in transparency, and
- a technological challenge in each segment.

Two non-participants that had reservations because of these factors either stayed at Stage I or proceeding slowly. Participants, once committed, did not have these options.

B. MARKETING ORIENTATION BECAME MORE IMPORTANT

These factors force integrated office products companies to concentrate on a limited number of market segments, and to become marketing-oriented rather than product-oriented.

Other ways in which changes were manifested include the following:

1. A greater emphasis on the "people component" and training.
2. An increased realization that a comprehensive, not cursory, definition of needs was required.
3. A realization that "responding to customer needs (i.e., marketing)" was a major determinant of success.

There was little change from these Phase I findings established during Phase II.

During the trial, the participants perceived that they developed a clear understanding of how to sell into a government department, and none of the firms cancelled projects that were in an advanced state of development. During the same period most non-participants did not make the same advances into new target markets. It is too early to determine if this is a positive factor for the participants.

VII. FIVE OF SEVEN NON-PARTICIPATING COMPANIES WOULD LIKE TO HAVE PARTICIPATED IN THE FIELD TRIALS

Companies which were aware of the OCS program but did not participate understood the program purpose and the fact that it was designed to support a limited number of trials.

The non-participants had to rely more heavily on either internal cash flow, venture capital or other government programs for funding of their integrated office product development.

Five out of seven non-participants said they would like to participate in future trials, and all firms strongly supported the concept. All companies would like to be kept up-to-date on future integrated office trials and related initiatives.

The two companies which did not want to participate cited some key concerns which are included in the discussion below.

There was little change in the views of non-participants during Phase II.

VIII. SEVERAL IMPORTANT COMMENTS WERE MADE DURING OUR INTERVIEWS ABOUT PERCEIVED SHORTCOMINGS AND AREAS FOR IMPROVEMENT IN THE FUTURE

A major concern which was raised was the limited nature of the funding. Respondents felt that the overall funding was a "drop in the bucket" in view of the \$20 billion trade deficit which Canada faces in the computer and integrated office sector. It was felt by two non-participants that funding in the order of \$90 - \$100 million would be more realistic.

Other comments from non-participants, some of which are also cited with hindsight by the participants, are as follows:

- "The danger with this type of field trial is that it might divert company focus".
- "Smaller companies cannot afford to compete for this type of contract".
- "The private sector would provide a better proving ground for some products in the sector".
- "The field trials were conducted in an artificial environment".
- "A consortium approach to product development and field trials will only work with one person firmly in charge".
- "The field trials have little repeatability because of the way they were run".

There was by no means full agreement on the issues raised by these comments, however. But these views were reiterated during the Phase II interviews.

IX. FOUR COMPANIES ANNOUNCED NEW PRODUCT AS A DIRECT RESULT OF THE PROGRAM

A. PHASE I FINDINGS

During Phase I, the products, or their derivatives, which had already been announced in the integrated office systems marketplace by field trial participants were: "Renaissance" by XIOS, "Colleague" (later changed to "Initiative") by OCRA and "The Officesmith" by Officesmiths. By Phase II, Comterm had also announced "Comterm Systems Products".

During our research, we also found that a new spirit of cooperation had emerged between the heads of participating vendor-companies. The group met regularly to discuss progress in the field trials and in the Canadian integrated office industry. These meetings provided the vendors with a better strategic understanding, and the information obtained helped them to fine-tune their marketing strategies.

B. PHASE II FINDINGS

Participants did not secure firm orders or expand their customer base in the manner they hoped for during Phase I. The reasons for this, which are beyond the scope of this particular study, might range from the lack of a market for the vendor's particular offerings and poor sales tactics to the adverse publicity arising from some field trials. Some insight into the latter may be gained from the fact that, although a key benefit of the field trials was frequently cited to be the establishment of a good reference account, two vendors are not encouraging potential customers to contact the field trial host departments. And yet, participants are more optimistic about the future of the integrated office marketplace than the non-participants.

In contrast, the products of the non-participants were at the same development and marketing stage during both phases.

X. AWARENESS OF OCS RESEARCH WAS LOW

Most of the participating and non-participating companies appeared to have serious planning difficulties, finding it problematic to predict future developments in their market in view of rapidly changing conditions.

Most of the companies have little or no in-house strategy planning, market research, and marketing expertise, and they typically have little understanding of market conditions and critical success factors in the all-important export marketplace.

One would have expected that, given this dearth of in-house expertise and research capability, there would be a reasonable awareness of DOC, specifically OCS, research. But when asked which OCS research studies they were familiar with, only three interviewees could identify specific studies. Among the participants, there was awareness of the research into their own field trial, but only two of five were aware of one or more research study. Among non-participants, only one was aware of one or more research study. There was considerable enthusiasm, however, regarding the seminars and workshops organized by OCS. At least one person from three participants and two non-participants had attended and derived benefit from such sessions.

The Phase I and Phase II findings were similar in this regard.

XI. REACTIONS ABOUT CONTRIBUTIONS FROM GOVERNMENT DEPARTMENTS WERE MIXED

A. PHASE I FINDINGS

Given the nature of the program, and the wide array of stakeholders involved, it was not surprising to find that stakeholders' objectives differed. The vendors were concerned with producing a viable, commercial product. Department of Supply and Services (DSS) was concerned with administering the contractual procedures appropriately, the host departments were concerned with improving their operational performance and the OCS staff were concerned with fulfilling OCS program objectives. From the vendors' point of view, the following were the mostly widely-held opinions:

- DSS had to adhere to its usual purchasing procedures which are ill-suited to the acquisition of software or similar intangible products or services. Thus, DSS was cited as a major problem by all vendors, particularly in regard to:
 - the "ownership" of the software,
 - the rigidity of the contract used and the manner in which it was interpreted and administered, and
 - the lateness of payments.

Some non-participants were also aware of these potential difficulties.

- On the other hand, from the vendors' perspective, after some initial difficulties, the day-to-day working objectives of the host departments became closely congruent with those of the vendors. Generally, the host department's efforts and understanding were highly appreciated by the vendors.

- Opinions on the contributions of OCS program staff varied, i.e., from:
 - "outstanding", and
 - "helpful", to
 - "too politically influenced".

- Views on the impact assessments also varied from:
 - "insufficient collaboration with vendor", and
 - "too early and incorrectly focussed", to
 - "very helpful".

Most vendors found that the assessments provided useful feedback which would benefit future projects but that they diverted their concentrated efforts to resolve technical issues. This did not change in Phase II.

Generally, a need was expressed to get roles and objectives defined, and to secure a full and early understanding of the needs analysis and implementation process by all concerned.

B. PHASE II FINDINGS

Both participants and non-participants praised the OCS program and the OCS office for raising public awareness about integrated office systems. However, participants felt that the OCS publicity did little to direct new customers to them. In general, from a vendor's perspective, the publicity surrounding the OCS program was perceived as poor. Of course, OCS was not set up or resourced to provide this capability. And, in our opinion, some underlying reasons for this could have been beyond the control of OCS, i.e., potential customers' shortage of funds, poor evaluation techniques or general economic conditions.

By contrast, however, two participants volunteered that the efforts of the Canadian External Affairs Department in the U.S. were really well executed and helped identify potential customers and direct them to the participants.

XII. THE INTERVIEWS HELPED IDENTIFY IMPROVEMENTS TO SIMILAR PROGRAMS

Overall, the private sector is enthused about the OCS program and would like to see similar initiatives in the future. Based on our interviews, and an assessment of the implications of the major conclusions, we believe that the approach can be improved. The improvements outlined in this section are related to the study objectives, program support and vendors.

A. KEY STUDY OBJECTIVES MUST BE CLARIFIED EARLIER

Should a similar program be undertaken, the key study objectives could be improved if:

- DOC and the vendors agree on a method of tracking costs and benefits from the outset.
- Strategic planning, the setting of objectives and the identification of a viable market niche in the Canadian and/or international marketplace precede field trials.
- Care is taken in selecting host departments with:
 - real, identifiable needs,
 - appropriate resources,
 - a realistic view of technology,
 - an understanding of the development/operational clash.
- The host departments play a pivotal role in selecting the vendor and be prepared to
 - forge objectives early
 - be specifically accountable
 - make the trade-offs necessary to help bring the product to market.

- A rigorous needs analysis is performed prior to the field trials.
- The best hardware (regardless of source or country of origin) is used to support software development.
- The DSS and/or contractual policies are amended to allow appropriate flexibility for software development.
- The "people component" is recognized as a key element, specifically that integrated office systems are
 - not just a technical problem, and that
 - training and support are costly items.

B. GOVERNMENT PROCEDURES SHOULD BE MODIFIED

Factors internal to government departments should also be improved by:

- A more efficient method of publicising the trial and disseminating research e.g., through "managing the media" to carry magazine articles tracing the objectives and the findings and through newspaper interviews and articles. This could be an extension of the highly regarded talks and seminars given by OCS staff.
- Custom designing and enforcing existing policies and procedures for managing such large government/private sector projects, with substantial "intangible" benefits, which include:
 - project management,
 - cost/benefits,
 - research,
 - contracting, and
 - inter-departmental considerations.

C. VENDORS SHOULD BE MORE AWARE OF THE OPTIONS

Potential vendors could also enhance their benefits by:

- Focussing attention on all elements of marketing, i.e.,
 - product development,
 - product commercialization,
 - pricing,
 - promotion and advertising, and
 - packaging.

- Realizing that a consortium is a high risk approach and that, if this approach is followed, roles/accountability must be pre-defined and, strong, supportable leadership is essential.

D. FUTURE EVALUATIONS SHOULD RECOGNIZE THESE FACTORS

With the advantage of hindsight, we recommend, that should a similar study be conducted again, the following be considered:

- The ideal time to launch a field trial is when a company is fully committed to a sector and has completed a beta test, i.e. at Stage III.

- At the same time, companies prepared to be compared as non-participants in return for a sharing of the detailed data should be found.

- Further, a base index, comprised of published information from selected companies in the market sector should be established as a means of placing results in context for the period as a whole.

These views were expressed at our final presentation on November 27, 1985. If future programs are considered, these recommendations should be incorporated in the interests of providing better results for the government, the vendors and the industry.

XIII. CONCLUSION

The field trial program has helped define the opportunities, challenges and constraints for participating companies and some "fringe" companies. Furthermore, OCS research will be of particular interest to the industry, and international interest has also been aroused. It has also confirmed that the private sector views the public sector as an important part of their marketing strategies.

Finally, we would like to thank all of the vendors concerned and the interviewees for their participation in the study. All gave their time willingly on learning the subject and were frank and insightful in their comments.

The DOC Program Evaluation Staff were also extremely helpful and we would particularly like to thank Barry Bragg for his valuable assistance.

Yours very truly,

THE COOPERS & LYBRAND CONSULTING GROUP

APPENDIX I

LIST OF INTERVIEWEES

LIST OF INTERVIEWEES
PHASE I

Non-Participants

Gandalf Technologies	D. Cunningham	President
Gandalf Systems Group	G. Gow	President
NABU	J. Kelly	President
CSG	B. Cox	Director of Information Systems
GEAC	H. Porteous	Vice-President
Sussex Informatics	E. Allain	Principal
	B. Hierlihy	Principal
	D. Todds	MAI. Rep.
Fulcrum Technologies Inc.	P. Eddison	Director
Mitel Corporation	M. Cowpland	Chairman
Emerald City Inc.	D. Tapscott	President

Host Departments

DOC	K. Dagg	Senior Consultant
DOE	M. Magar	Director
	J. Smith-Windsor	Manager

Participants

Officesmiths Inc.	G. McInness	President
BNR Ltd.	R. Fortune	Director
XIOS Inc.	B. Greenleaf	President
OCRA Inc.	G. Arkeveld	Executive Director
Comterm Inc.	J. Laursen	Vice-President

FOCUS OF FOLLOW-UP INTERVIEWS
PHASE II

The follow-up interviews involved all original interviewees except the representatives from Gandalf Technologies which has since taken a majority equity position in OCRA, a participant. It is believed that by now the close association of the two companies would have made Gandalf's views too close to OCRA's and, therefore, less valid as a non-participant.

In all, eleven people were interviewed; five in participating companies and seven in non-participating companies. In the interviews, DOC asked us to place particular emphasis on the comparison between participants and non-participants, particularly in regard to:

- o the quality of software produced,
- o the effect of the field trials on development costs and time to get products to market,
- o the estimated relative market position of participants and non-participants at the time of the follow-up interview,
- o the effectiveness of OCS publicity, and
- o the use of the Department of Industry Trade and Commerce for research and development funds.

Our conclusions on these topics, and others volunteered by interviewees, have been supplied to DOC.

OCS STUDY NO.1
PARTICIPANT'S INTERVIEW QUESTIONS
GROUP 1

Note: Non-participant's questions varied only
in regard to field trial involvement

A. OBJECTIVES

1. What are your company's objectives in office automation?

2. What market segment are you tailoring your product for?

2.

3. Do you perceive these objectives to be consistent with the OA objectives of the host department --- and those of OCS?

Interviewer note:

Probe for his perception of the OCS Program objectives and The Host Department objectives.

3.

4. What is your current strategy in office automation?

Interviewer note:

Probe whether the field trial has furthered or hindered this strategy.

B. COMPANY CAPABILITIES AND CONTRIBUTION TO FIELD TRIAL

1. Do you provide needs assessments?

2a. What are your company's strengths in the technical area?

2b. What are its weaknesses?

3a. What are your company's strengths in the area of marketing?

3b. What are its weaknesses in the area of marketing?

Interviewer note:

Probe for new product development strategy.

Based on what research?

7.

4a. What are your company's strengths in the area of R&D?

4b. What are its weaknesses?

5a. What are the firm's strengths in the area of provision of customer support?

5b. What are its weaknesses in this area?

6. What have been the major contributions of your company to the field trials?

Interviewer note:

Briefly summarize what you know about the company's contribution, and let interviewee expand on that. Ask for complementary written information.

C. COSTS AND BENEFITS FROM PARTICIPATION IN FIELD TRIALS

1. Can the costs and benefits of participation in this field trial be isolated?

2. What has been the major benefit to your company?

Interviewer note:

Make sure to cover the following benefits:

- o technical
- o needs analysis
- o market niche
- o marketing
- o financial

3. What major problems (if any) were experienced in the field trial?

Interviewer note:

Make sure to cover:

- o contractual constraints
- o client uncertainty as to needs
- o effect on encouraging work which otherwise might have stopped
- o payments

4. Has any "red tape" deterred your progress?

5. What would have happened to your company if you had not become involved in this field trial?

D. POTENTIAL FOR SALES

1. Is the company going to market the field trial product?

2. How much has been spent on marketing the product?

3. How much has been committed for marketing?

4. When will you start spending?

5. How many orders do you have?

Interviewer note:

Negotiate for opportunity to see signed orders.

6. Under what conditions would the company participate in future field trials?

E. OCS

1. Have the OCS publicity and educational activities been helpful to you? (If yes, how?)

2. Have OCS research results been helpful?

3. How have OCS research results affected your firm's activities in OA?

4. How have OCS impact assessment affected your firm's approach?

G. CONTRIBUTION FROM OTHERS

1. How helpful have OCS managers been in the field trial?

2. and the DOC Impact Assessment Manager?

3. and the Impact Assessment Contractor?

4. and the Department Field Trial Management?

5. and the DSS Representatives?

THE CONTEXT

THE CONTEXT

APPENDIX III

PAGE 1

The assessment of the integrated office sector must be viewed and evaluated within the context of the volatility of the marketplace as a whole. Below we discuss some of the factors which influence the swings and changes which take place and the realities of measuring change in the participating and non-participating companies in this environment.

A summary of the companies involved is attached as Exhibits 1 and 2 at the end of this appendix. It is intended as an overview created in Spring, 1985 and updated, where possible, since.

Some idea of the dynamic nature of the marketplace can be gained from considering the history of two participants and non-participants of the field trials. This information is available publicly (e.g., in The Globe and Mail newspaper) and was not part of the confidential interviews.

1. Participants

- Comterm Inc. merged with Bytec in the fall of 1983 but closed the manufacturing division in November, 1984. The main reason was the losses incurred in manufacturing the Hyperion microcomputer which led to a loss of over \$48 million in 1984.

- Systemhouse Ltd., which launched X10S, has since been restructured and its subsidiaries have been made the property of Kinburn Capital Corp., a private company. Systemhouse changed its name to SHL Systemhouse Inc. and focusses on the profitable and traditional computer systems business whereas the company's newer ventures, many of them unprofitable, have become part of Kinburn.

2. Non-Participants

- Mitel announced the SX-2000 in 1982 for delivery in 1983, and also announced an agreement in principle with IBM to jointly develop and market the new switch. But, in 1983, the IBM agreement was canceled due to software development problems and 1983 profits dipped to \$2.8 million from \$27.8 million in 1982. The switch was delivered in 1984 and, although sales improved to \$343 million, losses, including an extraordinary loss of \$12.8 million, were over \$31 million.
- Nabu Network Corp. designed a system to transmit software to home computer users through cable television. A pilot project in the U.S. was planned but abandoned in late 1984. The major shareholder of Nabu, Campeau Corp., restructured the company and formed International Datacasting Corp. to concentrate on commercial uses of the service. Nabu Network (1984) continues to develop the software for home markets and announced an agreement with Amway Corp. earlier this year.

These four examples are representative of the difficulties encountered in this marketplace. Other participants have also been restructured (e.g. OCRA was taken over by Gandalf this year), and had product difficulties (Emerald City is over one year late in delivery and has been restructured).

The key conclusion from these considerations are as follows:

- Direct comparisons during the period of the field trials are complex and subject to an understanding of the histories of the companies evaluated over the field trial period.

APPENDIX III

EXHIBIT I

SYSTEMS AND STAGES

<u>PARTICIPANT</u>	<u>PRODUCT</u>	<u>SYSTEM TYPE</u>	<u>STAGE (TIME)</u>

OFFICESMITHS	OFFICESMITHS	INFORMATION RETRIEVAL	
OCRA	COLLEAGUE	INTEGRATED SYSTEM	
COMTERM	C.S.P.	INTEGRATED SYSTEM*	
BNR	**	ADVANCED TELEPHONY	
XIOS	RENNAISSANCE	INTEGRATED SYSTEM	
 <u>NON-PARTICIPANT</u>			
CSG	UNDER REVIEW	DATA COMMUNICATIONS	
EMERALD CITY	EMERALD ONE	INTEGRATED SYSTEM	
NABU	NETWORK	HOME SOFTWARE	
SUSSEX	BABEL	DATA CONVERSION	
FULCRUM	FUL/TEXT	INFORMATION RETRIEVAL (TEXT)	
MITEL	SX - 2000	ADVANCED TELEPHONY	
GEAC	COAST	INTEGRATED SYSTEM	

* INTEGRATING OTHERS' SOFTWARE (E.G. MULTIMATE LOTUS 1-2-3)

** CONTRIBUTED TO PRODUCT CONCEPTS

*** THIS COLUMN SEVERED UNDER ACCESS TO INFORMATION ACT

- Companies in the sector do not have identical products or accounting systems and product and company structure timing do not coincide.
- Companies do not clearly isolate integrated office products from other products except where they are a single product company. All of the latter was deemed as privileged information by the interviewees.

To accommodate these factors, and preserve the confidentiality of specific company information, required selective use of information expressed as relative numbers rather than actual figures.

These considerations should be borne in mind when reviewing both the summary of the follow-up interview, which follows, and the conclusions in the body of the report.

COMPANY BACKGROUNDS

ALL FIGURES \$ MILLION, BASED ON LATEST EVANS RESEARCH CORPORATION ANNUAL SURVEY OR ANNUAL REPORTS.

<u>PARTICIPANT</u>	<u>DIRECT SALES</u>	<u>1983 ANNUAL REVENUE*</u>	<u>COMMENTS</u>
OFFICESMITHS	NO	N/A	COMPANY FOCUSED ON OFFICESMITH
OCRA	YES	N/A	NOW PART OF GANDALF ('83 SALES \$58.6)
COMTERM	YES	\$ 44.4	C.S.P. NEW OFFERING (EXCLUDED FROM SALES)
BNR	NO	\$ 40.4	R&D SERVICES (NORTHERN TELECOM, BELL CANADA)
XIOS	YES	N/A	PART OF SYSTEMHOUSE- '83 SALES \$49.6**
<u>NON-PARTICIPANT</u>			
CGS	YES	\$140.1	NO SPECIFIC I.O.S. SALES TO DATE
EMERALD CITY	NO	N/A	NO SALES TO DATE
NABU	NO	N/A	NABU MANUFACTURING CORP., SALES \$49.2
SUSSEX	NO	N/A	SMALL COMPANY, BABEL ONE OF THREE OFFERINGS
FULCRUM	NO	N/A	COMPANY FOCUSED ON FUL/TEXT
MITEL	YES	\$255.1	SX-2000 NOT AVAILABLE IN '83, EXCLUDED
GEAC	YES	\$ 62.4	SELF-FINANCED FIELD TRIAL (GOAST EXCLUDED)

* I.O.S. SALES/FORECASTS AVAILABLE BUT CONFIDENTIAL

** NOW KINBURN, 35% OWNED BY SYSTEMHOUSE

