



INTERNATIONAL DEVELOPMENT RESEARCH CENTRE

**CENTRE DE RECHERCHES POUR LE DÉVELOPPEMENT
INTERNATIONAL**

EDMS FEASIBILITY STUDY AND PILOT PROJECT

--- EVALUATION REPORT ---

**Submitted to Carole Joling
by the
EDMS Working Group
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This is an internal working document reporting on IDRC's experiences only. Recommendations and conclusions should be considered valid only within the IDRC context.

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EXECUTIVE SUMMARY

In the summer of 1995, while the Centre was undergoing significant organizational changes, the newly created Research Information Management Service (RIMS) established an Electronic Document Management Working Group to conduct a pilot project which would explore the feasibility of an Electronic Filing/Document Management System for the Centre.

Like other organizations in these times of stiff competition for reduced resources and of expectations to do more with less, IDRC was looking to the opportunities presented by advances in information and communication technologies to streamline operations, increase efficiency and effectiveness, and to facilitate information flow in an increasingly global environment. IDRC, which places knowledge brokering at the heart of its mission statement, has a particular need to seek the most effective means of managing its knowledge base and to be innovative in its approaches to information sharing.

The EDMS Working Group came together in the Fall of 1995. Work began with intensive staff consultations both in Headquarters and Regional Offices, identification and review of potential software products, and visits to EDMS installed sites. A consulting firm was contracted to conduct a business process and needs analysis. The project culminated with a 60-day pilot project to test a product suite of EDMS software and its impact on the work of a group of some thirty participants.

The key findings of the study were:

- **Staff response:** IDRC staff were consulted throughout the study in focus groups, product demonstrations and participation in the pilot project. They were enthusiastic about a system that would help them retrieve, file and share information. Reaction by participants in the pilot project was generally positive to the EDMS software although certain logistical problems presented challenges. The short duration of the pilot project (60 days) combined with heavy workload, travel, and Program Review Meetings restricted the time that staff had available to learn and apply the software. These time constraints along with workstation instability (discussed below) contributed to user frustration and a lack of full participation.
- **Technical compatibility:** The EDMS product suite integrated successfully with the Centre LAN operating system and the productivity software of WordPerfect and QuattroPro. Some client workstations never achieved adequate stability. This has been attributed to Windows 3.1, underpowered computers (particularly the 486/33 Powermates), and lack of standardized desktop configurations. Integration with Centre mail packages was not adequate and a quotation has been obtained to achieve this.
- **Business processes:** In order to fully realize the benefits of automated document management, a review of business processes and information management practices in the Centre must be part of the implementation strategy.

- ***Access from Regional Offices and by remote users:*** The project scope included access from one Regional Office (LACRO) and for travelling users with a laptop computer. Due to connectivity issues, software limitations, and shortage of time and resources, the goals in this area were not achieved. Emerging Internet strategies on the part of both the software vendors and IDRC's MIS group contain potential solutions. Further investigations are required.
- ***Training and coaching:*** As a strategic enabler, EDMS changes the nature of how people do their work. Training and coaching need to include not just software familiarity but also a perspective on the business functions of the whole Centre and the importance of all contributing processes.
- ***EDMS product suite:*** The products selected for the pilot project successfully met functional requirements developed by the Working Group and are recommended for Centre-wide implementation. Selection criteria such as open architecture, strong local support, and a proven track record were validated and met by the selected products.

The EDMS Feasibility Study and Pilot Project resulted in significant and practical information gains in the functionality of electronic document management products, user needs and concerns, implications for business processes and Centre systems compatibility. Based on all of its findings, the EDMS Working Group concludes by recommending the implementation of an electronic document management system for IDRC.

PART ONE: PROJECT OVERVIEW

1.1 INTRODUCTION

In the summer of 1995, while the Centre was undergoing significant organizational changes, the newly created Research Information Management Service (RIMS) established an Electronic Document Management Working Group to conduct a pilot project which would explore the feasibility of an Electronic Filing/Document Management System for the Centre.

Like other organizations in these times of stiff competition for reduced resources and of expectations to do more with less, IDRC was looking to the opportunities presented by advances in information and communication technologies to streamline operations, increase efficiency and effectiveness, and to facilitate information flow in an increasingly global environment. IDRC, which places knowledge brokering at the heart of its mission statement, has a particular need to seek the most effective means of managing its knowledge base and to be innovative in its approaches to information sharing.

The EDMS Working Group was tasked with:

- ***Identifying IDRC's requirements*** by studying the flow of information/documents within the Centre, discussing likely scenarios for methods of program development and delivery with selected program staff, as well as reviewing current developments in EDMS technology, visiting EDMS installations in other organizations, and assessing options.
- ***Designing and conducting a pilot project*** which would include capture of incoming correspondence regardless of medium, review of processes for information flow, scanning of selected paper documents into digital form, and management of documents through their life cycle. The pilot group was to be composed of one or two small cohesive work units, including both Ottawa and regional staff.
- ***Evaluating pilot results and developing an EDMS business case.***
- ***Recommending an EDMS strategy to Project Director.***

The Working Group has now completed its tasks. This document reviews the process in summary form and provides a detailed evaluation of the findings of the feasibility study and pilot project.

1.2 PROJECT REVIEW

The EDMS Working Group came together in November of 1995. Terms of reference were established, project scope and objectives were articulated and a workplan was reviewed by MIS for Systems Development Methodology compliance. Four months were spent surveying the availability and functionality of EDMS products; visiting other organizations who were

implementing electronic document management; and consulting with IDRC Headquarters and Regional Office staff about current practices and issues regarding document handling and information flow within the Centre and with clients. Staff input was documented in written reports and used throughout the project.¹

In March 1996, the consulting firm of EXOCOM Systems Corporation was contracted to carry out a business process and needs analysis to identify the business functions to be supported by an EDMS and to establish a baseline for performance measurement of the system. The Program Initiatives, Alternatives to Social Policy Reform and Foodlinks, participated in interviews and focus groups as EXOCOM gathered project-related information. EXOCOM issued a report² on their findings which was used in the functional design of the piloted system.

In April, the process began to find a supplier for software and professional services for the pilot project. A “Letter of Interest,” sent to some 20 vendors to assess their interest and capability, was followed up with a Request for Proposal to a shorter list. The systems integrator, SHL Systemhouse, was selected on the basis of their expertise and the value they proposed for our fixed price terms.

The project launch was June 24.

1.3 PARTICIPATION

Two Program Initiatives, Ecosystem Health and Grassroots Environmental Management, were initially recruited to participate in the EDMS pilot project. Staff movements in the summer created space for more participants in the capacity for 30 users, so the Special Initiatives Program staff were invited to join the pilot. When the pilot began September 1, twenty-seven Headquarters staff were participating in addition to the three-person EDMS Working Group. These participants used the EDMS software from the beginning of September to October 31. By the end of the project, 525 documents had been filed into the system. The system was composed of integrated software products offering document and records management functionality and imaging.

1.4 DEFINITIONS

¹*Report of Focus Group Consultations with Headquarters Staff for the Electronic Document Management Project, January 31, 1996 and Report of Consultation with Regional Office Staff For the Electronic Document Management Project, May 14, 1996.*

²*International Development Research Centre (IDRC) Electronic Document Management System (EDMS) Business Process and Needs Analysis Final Report. Prepared by EXOCOM Systems Corporation, March 29, 1996.*

Document management: the software that provides staff with the tools to create, capture, share, edit, retrieve, reuse and store their documents. It also maintains version and access control.

Records management: the software that applies corporate filing discipline and practices to all Centre documents through their life cycle. Life cycle includes the creation, organization, maintenance, storage, retention and disposal. Records management discipline handles this cycle through a corporate-level classification structure and retention and disposition schedules.

Imaging: imaging is the scanning of paper documents so that they can be handled, transformed and stored in electronic form. Optical Character Recognition (OCR) processing may take place in order to convert image files to text files.

Electronic Documents Management System: Through integration of document management, records management, and imaging software with client productivity software, an electronic document management system combines powerful functionality for corporate information management while providing users at the desktop with the tools to file and retrieve information as needed. Workflow and forms management software may also be part of an electronic document management system thereby further strengthening the support to business processes.

1.5 SCOPE

The software functionality of the project was to comprise document management, records management, imaging and Optical Character Recognition (OCR), a viewer, SQL RDMS and search and retrieval capability. The products selected for the pilot and supplied by Systemhouse were:

- DOCS Open v. 2.5.3 for documents management
- RIMS 5.03 for records management
- Watermark Enterprise for imaging and OCR

The software came with an embedded search engine. IDRC purchased licenses to Microsoft SQL Server for the database engine and Windows NT for the server platform. While the three software products had been integrated by the vendors, Systemhouse was to install the software on the server and integrate the suite into our technical environment and with the applications Corel WordPerfect 6.1 and Quattro Pro 6.0. Integration with BeyondMail was not part of the scope but they proposed a “directory monitoring” approach which will be described below.

Evaluation software licenses were available for some 30 users who were to be chosen from the Headquarters Office. An additional two people were to participate from the LACRO office using laptop computers which were to be configured in Ottawa, then carried to LACRO.

Beginning at the end of June, the pilot project was to be completed by the end of September. Technical difficulties in fact delayed completion until October 31.

1.6 PILOT PROJECT

Systemhouse began their involvement in the project with a two-pronged approach.

- ***Technical architecture:*** The SHL technical architect reviewed our technical environment and reported on his findings to the EDMS Working Group and MIS staff. His report identified the server, client, network and application architectures. Several issues were discussed such as backup procedures, reliability of the new server and of the network, exporting the files created in the pilot at the end and access from Regional Offices.
- ***Functional design:*** At the same time, Systemhouse conducted workshops with pilot participants and records staff leading to the design of the functional requirements of the system. The EXOCOM report proved useful in providing information on business processes; the sessions were used to validate their results and identify the documents generated by the process. Following the workshops, the document ***Functional Design Specifications*** was delivered and, with some modifications, accepted. The SHL Systems Engineer then proceeded to customize the EDMS software according to these criteria.

The systems engineer installed Windows NT and Microsoft SQL Server on the EDMS server. He then set up the EDMS service on the Banyan Vines network and integrated it with the IDRC applications of WordPerfect and Quattro Pro. Immediate difficulties were encountered in achieving stability of the system. These problems continued over the summer, delaying training and the start of the pilot.

SHL included training of the EDMS Working Group members and the end-users within the scope of their contract. The actual implementation of training was delayed by the instability of the system, IDRC's own LAN problems, and the unavailability of many staff who were on Annual Leave and Official Travel over the summer months. In the end, all staff were trained by the first week of September. The technical problems had been overcome and the system software installed on the end-user workstations. SHL obtained extensions to the software licenses to allow the pilot to continue to the end of October.

The user group as mentioned above was the Ecosystem Health and Grassroots Environmental Management Program Initiatives and the Special Initiatives Program. Our strategy was to choose cohesive work units to benefit from existing working relationships and to test the collaborative powers of an EDM system. Choosing users on this basis also meant that we had a cross-section of functional responsibilities as well as computer skills and interest within the pilot group. There were "early adopters" who took to the new system with full participation and commitment. There were others who needed more encouragement and yet others who were keen but due to workload and travel demands were unable to participate to the level that they and we hoped. Some of the latter group in fact had to decline participation altogether.

During the 60-day period (September 1 - October 31), the EDMS Working Group worked closely with Systemhouse staff and the pilot participants. Extensive follow-up training and coaching were required for all users. The EDMS Working Group maintained a coaching role throughout the pilot as well as being the first point of contact for all user support. Systemhouse also continued responsive and supportive contact for technical issues.

The foregoing represents an overview of the highlights of the EDMS project. Part Two continues with a report of the findings and evaluation of the pilot.

PART TWO: EVALUATION

An electronic document management system has been tested and evaluated against the goals of the pilot, user expectations and satisfaction, and the functional and technical requirements established by the Working Group. The following will recapitulate the goals of the pilot and then report evaluative findings according to various aspects of the project.

2.1 GOALS

The goals of the pilot project were as follows:

1. Test the feasibility of a corporate electronic document management system (EDMS) for IDRC Headquarters, Regional Offices and remote users.
2. Review and document current work processes / information flow within pilot group(s) in order to:
 - improve process efficiency required by staff reductions;
 - eliminate duplication;
 - improve access to, and sharing of information;
 - identify and eliminate redundant processes;
 - identify existing corporate information systems to which an EDMS should provide an interface or integration, and investigate feasibility and cost; and,
 - manage the life cycle of paper & electronic records.
3. Select, acquire, install, and test for 60 days hardware and software components of an electronic document management solution.
4. Test the compatibility of the EDMS solution with existing hardware and software, specifically to:
 - assess LAN/WAN bandwidth on the existing infrastructure. This will include the monitoring of network traffic from the desktop through the hub, the switch and the server;
 - examine communications exchanges between a regional office (through our X.25 connection and/or Internet where available) and IDRC's travelling users utilizing Laptops and dial facilities;
 - evaluate storage requirements for dynamic as well as for static documents;
 - review information data base options regarding a strategy for centralized and/or distributed architecture between Headquarters and Regional Offices.
5. Test electronic, imaging and paper document management capabilities of an EDMS.

6. Test the human resource demands of an EDMS including:
 - user acceptance and absorptive capacity; and,
 - training, orientation and coaching requirements.
7. To measure cost/benefits and performance factors of an EDMS to prepare a Business Case for Corporate-wide implementation.

2.2 BUSINESS PROCESSES

An important goal of the pilot project was a review of current work processes and information flow in the Centre. It was recognized from the outset that no new system could realize benefits unless it reflected and facilitated the business processes of the organization. SHL summarizes this view very well in their project report³:

“Product alone will not automatically achieve IDRC’s required business goals nor will it ensure the realization of IDRC’s EDMS vision. The challenge and the true benefits to be derived from the investment are based on a solid understanding of the business, the business processes, and the management practices required to support the electronic document world.”

To this end, the project began with extensive staff consultations both in Headquarters and Regional Offices to identify information flow and document handling issues and needs in the Centre. The consulting firm of EXOCOM was contracted to study more closely the business processes of two representative Program Initiatives, Alternatives to Policy Reform and Foodlinks, in order to:

- ensure the system encompasses necessary processes;
- anticipate staff needs for information access, system performance, etc.;
- establish a baseline for purposes of performance measurement; and
- look for ways that processes could be streamlined.

Through a review of available documentation, focus groups and individual interviews with 24 IDRC staff, as well as a review of IDRC’s technical environment and the records management system, EXOCOM drafted a report which described the organizational structure, roles and responsibilities, project business processes as well as the technical environment and information and communication patterns. The roles and responsibilities and business processes were validated by circulating drafts of the report to functional experts within IDRC. Their report was useful in various phases of the project. Some information management problems identified within IDRC were a loss of corporate memory; lack of security or backups of electronic documents stored on PCs or on

³*Final Report to International Development Research Centre for the EDMS Pilot Project.* SHL Systemhouse, November 19, 1996.

diskettes; excessive time spent managing paper and electronic documents; difficulty in finding information; and limited space for storing both paper and electronic documents. The report concluded by recommending that IDRC pilot an Electronic Document Management System comprising Document Management, Records Management and Imaging functionality.

The analysis of IDRC business processes continued when the vendor, SHL, came in to map document flow in order to develop the functional design of the system. User groups drawn from the participating PIs met in two workshops to validate the document flow identified in the EXOCOM report and to identify document types and retrieval needs in order to design the indexing fields that would be used when capturing a document. Only project documentation was discussed at these sessions despite staff making it very clear that this would only be a part and sometimes a small part of their work. This narrow scope was due to time constraints but continued to be a shortcoming as the pilot continued. Records management staff then took part in another workshop that explored Centre records management practices to ensure that the system would capture the information required for records management. The outcome of these workshops was a document from SHL entitled *Functional Design Specifications* which was then used by the SHL systems engineer to customize the EDMS software suite to our requirements for the pilot.

It was acknowledged during this analysis stage both by the IDRC EDMS Working Group and the SHL team that we were taking a much truncated approach in identifying processes for the system design. It was pointed out that what we did in two half-days, the vendor had spent three months doing in another organization implementing a similar system. Obviously, for the purposes of a sixty day pilot project such an in-depth review would not have been feasible, but to repeat the comments at the beginning of this section, the analysis of business functions and processes is vital to realizing the benefits of a new system and will have to be scheduled in-depth as part of the implementation process.

2.2.1 Recommendations:

1. In-depth business process analysis must be done before implementation. This would involve high-level analysis of Centre-wide business and functions as well as detailed needs analysis with each group as they are brought onto the system. Each branch and possibly functional area will have unique filing and retrieval requirements which will have to be addressed in system functional design.
2. The business process analysis should also look to possibilities of streamlining or re-engineering functions in order to maximize the benefits made possible by an automated system.
3. A review must be conducted of the corporate filing system to ensure that it meets the needs of the organization and allows the Centre to take full advantage of an

automated system. Efforts should be taken to streamline the filing system and simplify filing for end-users.

2.3 SOFTWARE SELECTION

The EDMS Working Group conducted an extensive search for a suite of EDMS Software. During this search the Group visited numerous software vendors and presentations, including PC DOCS Canada for DOCS Open, Xerox for Documentum, Interleaf, Provenance for FOREMOST, PSSoftware for RIMS, Digital for Linkworks, and Wang for its Document Imaging solution.

The EDMS Working Group also visited sites where EDMS software was installed. Some of these installations were: Canadian Coast Guard for ForeMost and DOCS Open; Department of Finance for ForeMost; Revenue Canada for ForeMost and DOCS Open; and Natural Resources Canada for DOCS Open.

By the time the EDMS Working Group was ready to make a decision on EDMS software, they were well-versed with the software and support that was available. A number of factors figured into software selection. Some were cost, suite integration with IDRC's LAN environment, availability of local support, and proposals submitted by integrators to conduct the EDMS Pilot.

Records Management software had two major contenders: RIMS by PSSoftware and ForeMost by Provenance. While both software products had their strengths, SHL pointed out some deciding factors to select RIMS:

- RIMS shares one document repository with DOCS Open
- ForeMost has its own document repository and DOCS Open has its own resulting in a complicated process of managing two repositories
- RIMS has better integration capabilities

2.4 TRAINING AND COACHING

Training of the Working Group and the end-users was included in the scope of work on the part of SHL. Training was to be completed in four steps:

- preliminary training of the design workshops participants in order to provide basic understanding of the products and their functionality
- training of the EDMS Working Group in DOCS Open, RIMS and Watermark
- training Records staff in the RIMS product
- end-user training of all pilot participants

Preliminary training, in the Training Room, began before stability of the system was achieved resulting in interruptions and delays.

System stability problems continued over the summer delaying training and compressing the time available for pre-testing the system. When end-user group training sessions were finally scheduled with users given the choice of three half-day sessions over one week, only about half attended with the remaining being unavailable due to travel, annual leave or conflicting schedules. With fourteen more participants at this point to be trained, we had to sign a change notice with SHL for additional training time. The week scheduled for the remaining sessions, which were all going to be conducted individually at the desktop, saw LAN problems with intermittent crashes and slowdowns. We rescheduled as much as we could hoping that the LAN problems would be resolved, but attempts finally had to be aborted for that week. The SHL trainer did come back the following week to conduct more training sessions but as some staff were still unavailable the EDMS Working Group completed the training.

Each end-user, regardless of how they had received their training, required extensive coaching at the desktop. The EDMS Working Group scheduled one-on-one coaching sessions and made rounds regularly among all the participants to encourage use, answer questions and refer system problems to the SHL systems engineer. While the software is not difficult to use, EDMS does introduce a new way of working, particularly with end-users filing to the corporate file. It was these problems and also problems with overburdened workstations which accounted for most calls. The Help Desk had not been asked to provide support during the pilot but users, according to their habit, did send some EDMS questions to the Help Desk. Some gaps in user support resulted.

Many problems that users were having with the system were quickly identified as “training issues.” As we had been advised on many fronts, “the technology is easy, it’s the procedures that will kill you.” It is imperative that training not just reflect the software features but also IDRC-specific procedure details.

2.4.1 Recommendations:

1. Achieve system and functional stability in the training room with a selected test group before installing on end-user workstations.
2. Complete all systems administrator training before rolling out to end-users.
3. Training staff, especially Program Officers, at IDRC is always going to be logistically difficult given the extent of travel, other training, and workload priorities. Scheduling has to be flexible and available over a period of time so that staff can take advantage of it when their schedule permits. At the same time, the new system has to be introduced with corporate backing so that staff are encouraged to give learning and using the system priority.
4. Extensive, ongoing and responsive user support and coaching will be key to a successful implementation. While users can quickly learn the software, they will

- need coaching and encouragement to file documents at the point of creation or receipt.
5. End-user training, to be most effective, should be conducted by in-house staff. As mentioned above, while the software is easy to learn, users would benefit from more IDRC-contextual information and training in the corporate filing system from the beginning.
 6. In-house expertise has to be developed on all the component software. We relied very heavily on the vendor during the pilot which would not be possible on an ongoing basis. Training at the systems administrator level is required in the documents management, records management and imaging software as well as SQL Server, the database software and Windows NT the server operating system.

2.5 SOFTWARE FUNCTIONALITY

The electronic document management system to be tested was a combination of document and records management software, a powerful search engine, a SQL database engine, imaging and Optical Character Recognition (OCR) software. The products tested were DOCS Open for document management, RIMS for records management and Watermark Enterprise for imaging and OCR. The vendors for these products have integrated their respective products to work together. DOCS Open 2.5.3 which is the version we tested came bundled with the Infoseek search engine. We purchased Microsoft SQL Server as the database.

These EDMS products were in turn integrated with IDRC's productivity software, WordPerfect 6.1 and QuattroPro 6.0. Integration difficulties with the Novell WordPerfect prompted SHL to acquire for the pilot users the Corel version of WordPerfect 6.1 which solved the problems. The integration achieved with these two products was such that users selected these applications from the EDMS desktop and when saving a document, rather than the WordPerfect or Quattro save screens coming up, the EDMS profile screen appeared. Instead of saving the document to the c: drive, the user was led to select a file number from the corporate filing system and to complete certain mandatory indexing fields.

Integration with the mail package was not as tight. Users still selected either Banyan Blue Mail or Beyond Mail from the EDMS desktop, but the integration was through something called "directory monitoring." Users were not able to save a mail message directly to EDMS but had to go through a few steps that ensured only that they would be prompted to save the message to EDMS at the end of the day. Calling up the document in EDMS at a later time was not satisfactory either. Full integration of the mail package was out of scope for the project but we have been assured that it is possible and have obtained a quotation for the full integration.

The final report provided to IDRC by SHL included a copy of the DOCS Open Application Programming Interface (API) Toolkit Reference manual. MIS reviewed the manual to identify if Centre database applications such as RADIUS could be integrated with DOCS Open. MIS indicated that the functionality of DOCS Open APIs is quite comprehensive and that tight integration is possible. Such integration could allow RADIUS generated documents to be accessed via or stored in DOCS Open and even that information entered into DOCS Open could trigger updates to RADIUS. Analysis, design and coding would have to be scheduled and budgeted to achieve this level of integration.

The search engine used in the tested system was workable but not adequate for the standards demanded by the Working Group. The new version of DOCS Open now comes bundled with a new search engine, Verity, which demonstrations show to be a significant improvement. DOCS Open is also working with Fulcrum to integrate their products and the functionality of the Fulcrum products promise exciting possibilities.

The software was tested in English only. All components do have French versions. Organizations in Ottawa whom we contacted were finding the French versions satisfactory.

Research into electronic document management systems at the beginning of the project combined with our staff consultations allowed us to draft detailed functional requirements in preparation for selecting a system. Vendors were not required to respond to the document but it served as a good reference for the EDMS Working Group in evaluating the functionality of the software. The Working Group has evaluated the component softwares against these functional requirements and find all significant requirements to be fulfilled.

2.6 HARDWARE AND NETWORK COMPATIBILITY/PERFORMANCE

The goals of the pilot project identified the need to “test the compatibility of the EDMS solution with existing hardware and software, specifically to assess network traffic, examine Regional Office and remote access and evaluate storage requirements.

2.6.1 Network traffic

While it was considered necessary to address the impact of EDMS traffic on the Centre network, the length of the pilot and the number of users produced insufficient traffic to effectively do this. Discussions were held with other EDMS installation sites (PWGSC and Coast Guard) to survey their experience. No bandwidth problems were encountered at those sites although Coast Guard is planning to upgrade their environment to 100MB.

IDRC is currently in the planning phase of providing 100MB to the desktop which will result in faster response times and access to all applications. Additional tools will be necessary to monitor LAN network traffic and disk space.

2.6.2. Disk Space Requirements

Disk space on the EDMS server was measured at the end of the pilot. The server was equipped with a capacity of 4GB. The average document size was 100k. With 525 documents created during the pilot, 52.5MB of a disk was consumed by documents with system files and application software bringing total consumption up to 1.2GB.

The other organizations were asked about guidelines for disk space requirements. While they are using NT and SQL Server tools to monitor space requirements, they reported that the low cost of disk space removes cause for much concern.

Storage management does require further investigation to develop a storage management strategy encompassing archiving and back up and restore needs. This will be a necessary part of implementation. Tools for disk space/server monitoring will be used in conjunction with measurements of document volume and use.

2.6.3 Workstations

Workstation stability was a great problem during the pilot. Users experienced crashes and frozen screens. Help Desk staff discovered that as EDMS users opened various Centre applications, their system resources were depleted to an unstable level. This instability frustrated users, causing many to question the efficiency of the EDM system and some to drop out of the pilot altogether.

Windows 95 and a more robust computer (Pentium) would alleviate these problems and provide the workstation environment necessary to realize the benefits of an electronic document management system.

Lack of a standard workstation configuration was also a difficulty in the pilot. Each computer took approximately two hours to prepare and configure, a task that was shared during the pilot by an EDMS Working Group member and the SHL system engineer. It will not be cost-effective to integrate the EDMS product suite with all versions of productivity software so decisions will have to be made on some standards. Users were appreciative of the time spent preparing or cleaning up their hard drives and asked if someone could not go round and set up all computers according to a standard configuration.

2.6.4 Remote Access

The vision of EDMS is access to corporate information resources from any location, including staff on travel or working from home.

The testing of remote access was limited to establishing connectivity from a laptop computer to the EDMS server. The EDMS server was configured for dial-in access using Remote Access Software (RAS) and the laptop was loaded with Windows 3.11, DOCS Mobile (a subset product of DOCS Open), and dial-in software. Despite many hours of effort and initial success reported by SHL, functionality was never achieved.

DOCS Mobile is not compatible with RIMS software and connectivity was never satisfactorily demonstrated.

SHL does address this issue in their final report pointing to Internet solutions, but this aspect requires extensive further investigation.

2.6.5 Regional Offices

The EDMS pilot also intended to test Regional Office access to a corporate electronic document management system. The plan was to involve one Regional Office which would be selected according the following criteria:

- location in a time zone close to HQ to provide support from HQ
- adequate connectivity to HQ
- RO not over- or under-automated
- RO staff willing to participate

Using these criteria, LACRO was selected to participate in the pilot and the participating PIs were in turn selected for their LACRO membership. Alicia Richero was selected by the LACRO Regional Director to be the RO contact for the EDMS Pilot. Ms. Richero came to Ottawa for the MIS annual meetings and received Administrator training on DOCS Open software.

As cost and time constraints prohibited the set up of the full EDM System on a LACRO server, SHL proposed that they install DOCS Mobile on two laptops and have LACRO staff participate as DOCS Mobile users. This installation was done in tandem with the preparation for remote users as described above with the same results. It was a great disappointment to the EDMS Working Group and LACRO that we were not able to connect with LACRO for the 60 day pilot. In retrospect, we were probably too optimistic in hoping for Regional Office participation within such a short period for preparation, installation, and training.

SHL provided IDRC with some good recommendations in their final report for connecting HQ and ROs together with EDMS. These recommendations include Internet connectivity taking advantage of PC DOCS' emerging Internet Strategy. In addition to

the Internet connectivity solution, PC DOCS is working on database replication for a future release of their software. This would allow Regional Offices and Headquarters to replicate databases across the Centre, so that users would appear to be working with the same document from office to office.

It became apparent in the pilot that technology has not reached the point where seamless connectivity is available between Regional Offices and Headquarters. Connectivity between the offices goes beyond merely the scope of the EDMS project as it is a Centre-wide concern and initiative. An EDMS will benefit from advances the Centre makes in this direction and the openness of EDMS software is designed to fit into most solutions that will be developed.

Configuration of an EDMS between Headquarters and Regional Offices will also depend on future developments in Regional Offices structure and location. Centralized versus decentralized document repositories hinge on this as no doubt does the connectivity that it will be possible to achieve.

2.7 RECORDS MANAGEMENT

The EDMS pilot project was based on two assumptions which have implications for Centre records management:

- The system is to accommodate both paper and electronic records thereby managing the life cycle of all records regardless of medium; and
- Staff reductions that have already taken place in IDRC necessitate that end-users take responsibility for their own filing.

The system that was chosen for the pilot allows the profiling or indexing of both electronic and paper documents, maintaining pointers to their location be it an electronic file on a hard drive or a file folder in the filing room, and managing the document from creation through to disposition. It is important that the same File Classification Plan be maintained for both paper and electronic records to avoid the redundancy and confusion of parallel filing systems.

The second expectation of end-user filing was perhaps one of the most difficult aspects of the pilot. Many software demonstrations by vendors and other organizations which we attended allowed users to do minimal indexing of a document sending it to a “holding area” where Records staff would take over and assign correct file numbers and complete the necessary information. In IDRC, such a cadre of records staff does not exist. While practices in the Centre are emphasizing more and more individual responsibility for corporate information systems, responsibility or “ownership” of the filing function was still found to be an issue in the pilot project and in the staff consultations conducted last winter.

In full implementation of an EDM system, all existing files now in the corporate file (currently managed by the software FROLIC), would be migrated to the new system. For the purposes of the pilot, however, Program Assistants identified active projects to be input into the system. In addition, a condensed version of the Administrative File Classification Plan was entered into the system. Once the Special Initiatives Program staff were brought into the pilot, all of the current Awardee files were also entered. Throughout the course of the pilot, users found that many of the files that they required to file their documents were not there. This included idea files, developing project files, new projects and new RSAs, Conference and Meeting files, etc. Records Management staff were able to quickly respond to requests for new files to be opened but, due to the nature of the system, this proved frustrating to users. When filing into EDMS, documents are filed while composing in the productivity software (ie. WordPerfect). This requires that a file number already exists in EDMS or filing cannot proceed.

Even when the necessary file number existed within EDMS, some users indicated that they had trouble locating the appropriate file number. Lack of user familiarity with the File Classification Plan and extensive listings in the File Look-Up tables proved confusing to the users.

2.7.1 Recommendations:

1. The Records Management software should be the first component implemented for EDMS, to ensure that all files are entered into the EDMS before users are brought on board.
2. The File Classification Plan was designed for paper records only and should be reviewed to see if changes are required for EDMS. See Recommendation #3 under "Business Processes."
3. Records Management software for EDMS should allow end-users to have a personal default "short-list" of most frequently used files.
4. End-user training and coaching must include extensive guidance on filing to the corporate filing system.

2.8 DOCUMENT SCANNING

One of the Goals of the EDMS Pilot was "To test electronic imaging and paper document management capabilities of EDMS." To achieve this goal, the EDMS Working Group selected Watermark Enterprise as the document scanning software, and a HP Scanner with a feeder. The Scanner was installed at the workstation of the 11th floor Records Coordinator.

Due to the brief period of the pilot, it was impossible to fully test all functionality of document scanning. This activity could be piloted on its own to understand the full potential benefits of document scanning and electronic document delivery.

2.8.1 Scanning Incoming Mail

During a two-week period of the pilot, three members of the Special Initiatives Program (SIP), along with the 11th floor Records Coordinator participated in a mail scanning trial. For the purposes of this trial, certain guidelines were established:

- only incoming letters would be scanned
- no brochures, newsletters, or “junk mail” would be scanned
- only mail for SIP Awardees would be used in the trial
- all mail for the trial would be opened and scanned by the Records Coordinator
- the e-mail system (Beyond Mail or “Blue” mail) would not be used to deliver the scanned mail for the trial

Incoming mail for the three SIP participants was sorted according to normal practice in the mailroom and sent to the Records Coordinator on the 11th floor. He again sorted it according to the criteria for the project and scanned the appropriate pieces using the HP Scanner. At this point, he assigned a preliminary profile to the documents, entered them into DOCS Open and then caused them to appear in a saved search on the EDMS desktop screen of the addressee. The recipient was able to then view the images at her desktop of her mail for the day, compose any replies in WordPerfect and complete the filing for the mail and the replies, thus handling all her correspondence electronically.

Optical Character Recognition was also available to create searchable text files from the image, but it was not used during this mail test. Had the integration between EDMS and Beyond Mail been fully established, the Records Coordinator could also have had the mail appear in the user’s electronic mail box.

During the two-week mail scanning trial, the Records Coordinator maintained statistics on the activity. Some of the findings are included below:

Average time to process each letter:	3.67 minutes ⁴
Average time to process each page:	1.42 minutes
Total number of letters received:	34
Total number of pages scanned:	88
Total time spent scanning and inputting mail:	125 minutes

2.8.2 Incoming Mail Survey

⁴Time for both letter & page includes all processes from opening mail, classifying, scanning and profiling into EDMS.

For a four-week period during June and July 1996, the EDMS Working Group and Records Coordinators, with the cooperation of all Program Branch and Corporate Services Branch staff conducted a survey to measure volume, types, and scanning issues of incoming Canada Post mail.

During the survey the mailroom processed the incoming morning mail as usual delivering it then to the Records Coordinator for processing instead of leaving it at the mail drop off point. The Records Coordinators opened all mail unless it was identified personal or confidential. The Records Coordinators were provided a form to record statistical information before sorting the mail by addressee. All envelopes were clipped to the back of the letters.

Below are statistics gathered during the survey:

Time Taken:	2,223 minutes
Total Mail Received:	2,495 pieces
Addressed to Individuals	
Yes:	1,827
No:	668
Number of Documents	
Handwritten:	95
Typed:	664
Number of Pages	
Handwritten:	163
Typed:	5,742
Other Correspondence:	652
Brochures, Advertising, etc.:	1,084

2.8.3 Recommendations and Observations:

Scanning incoming paper mail and delivering it electronically to the desktop offers several advantages. It ensures that information is captured into the corporate filing system at the point of entry into the Centre. It could streamline the handling and processing of mail in the Centre. Attached to a workflow or tracking engine, it could also route and track necessary action required for all incoming correspondence.

Drawing on results from both the SIP scanning trial and the mail survey a number of observations are possible.

It will be very important to develop policies or guidelines on what should be scanned. Part of the purpose of the mail survey was to determine both the proportion of different types of mail, e.g., letters vs. brochures, and also to see what the scanning quality would be from, for instance, laser printed versus dot matrix printing. It would probably be

generally accepted that such things as brochures, advertising materials, and newsletters would not be scanned. According to mail survey figures, this would eliminate 1,736 (69.6%) mail items received during the mail survey. This would leave 759 (30.4%) mail items received during the survey that could be scanned.

Extrapolating from both the mail scanning trial (3.67 minutes per single mail document) and the mail survey figures, it would take 46.5 hours per month or 75 days per year (1/3rd of a Person Year). (It should be noted that the mail survey was conducted only in the Corporate Services Branch and the Program Branch.) Statistics have not been gathered on the time it currently takes all Program Assistants to open and file these documents. However, if you add the time it takes support staff to open, classify and physically file paper mail into a file folder, there probably would not be any additional time taken to scan and file.

We can conclude that the Centre would not require additional PYs to scan and file mail electronically but corporately the Centre would benefit greatly from the fact that all incoming mail of any value would be captured into its information systems.

2.9 DOCUMENT SECURITY

DOCS Open functionality has an extensive document security component. The document creator determines who may view, copy, and modify documents that their documents. Access to documents can be changed by the author at any point during its life cycle. The DOCS Open administrator can override this functionality should the need arise.

The software can also be set up to allow users to delete documents once entered into the software repository. During the pilot as will be during implementation, users did not have this capability in order to ensure the integrity of the corporate file. Documents that need to be deleted, duplicates or early drafts, may be done so through the Records staff.

During the pilot, the final version of documents were not locked which meant that modifications could still be made by the author or any other user defined as having access. This is a weak point with regard to document integrity. Systemhouse has indicated that this issue is addressed in the 3.0 version of DOCS Open, released since the pilot. It is important that this function be activated and confirmed for Centre-wide implementation.

During the pilot, the EDMS Working Group attempted to access documents on the EDMS server without the use of the EDMS software. The attempt was successful and it was possible to view and copy files using WordPerfect, although files could not be overwritten or modified. This type of security breach is not acceptable. SHL indicated that the Banyan Vines security integration was not installed for the pilot, an oversight on their part, and that with the DOCS Open and Banyan Vines security integration, this

problem would not occur. Since we discovered this breach at the end of the pilot, we were not able to test the integrated security. SHL also indicated that the new version, DOCS Open 3.0 has improved security functionality. This must be tested and confirmed during implementation.

The issue of electronic signature was not tested in the pilot. It will be investigated with the locking of documents during EDMS implementation.

2.10 VENDOR PERFORMANCE AND SERVICES

The working relationship with the vendor, SHL Systemhouse, was very positive from the beginning. Their proposal⁵ reflected an understanding of our needs and the capabilities of electronic document management systems.

The vendor scope for the project included:

- providing free evaluation copies of the software
- installing the software on the server, the training room and the participant workstations
- integrating the EDMS software suite with the LAN and technical environment
- providing training to the EDMS Working Group, records staff and end-users
- providing system support for the duration of the pilot project

In addition, due to lack of expertise in IDRC in Windows NT, the SHL team installed Windows NT on the EDMS server and installed the server on the network.

The SHL team was made up of a project manager, technical architect, systems engineer and trainer from SHL as well as staff from PSSoftware, the vendor of the RIMS software. SHL also liaised extensively with DOCS Open, Corel, and brought in Banyan expertise as required.

Delays in the project occurred when the SHL team was unable to achieve stability of the system, specifically maintaining the connection of the EDMS server, or t: drive, to the LAN. This did cause frustration on all sides and MIS offered resources to assist. It was not until the project was in danger of being delayed past the point of feasibility and that SHL elevated the system instability to “critical” status that the problem was solved. An expanded SHL team came onsite for a week working closely with Sukdev Sidhu and Bob Soutar stress testing and monitoring the system. They were able to stabilize the connection by replacing the network interface card with a non-Compaq card which

⁵SHL Proposal for the IDRC EDMS Pilot Project, June 7, 1996.

allowed the pilot to proceed. In their final project report, however, they indicate that the t: drive problem has not really been resolved.

The SHL team remained flexible in the face of delays caused by these technical problems and also those caused by our own problems such as unavailability of staff for training, LAN problems and overstretched workstations.

2.10.1 Recommendations:

1. A systems integrator will be required for full implementation of the system. Developing in-house expertise will lessen the dependency on their services and allow IDRC staff to become more active partners in the installation and troubleshooting but the benefits, skills and contacts of an integrator cannot be matched in-house at this time.
2. In-house staff should be trained fully on all aspects of the system and be prepared to take over all of the functions provided by the integrator. Examples are all end-user training and support, customization of software, software upgrade and database maintenance.

2.11 HUMAN RESOURCE REQUIREMENTS

The tasks of the EDMS project included project management, business process analysis, software evaluation, system analysis and design, records management, technical support, user support, training and coaching. All of this would continue to be necessary as the system is implemented. In the project, some tasks were contracted from external sources (EXOCOM and SHL), some was resourced from the in-house IDRC MIS group while overall responsibility fell to two people assigned almost full-time to the project. The project has served to identify the staffing requirements for implementation of an EDMS.

An EDMS implementation team will need to be assigned to carry out with the project if funds are approved, conducting the initial steps of a review of the file classification system in tandem with an analysis of the business functions and processes of the Centre. Some of this can be contracted to an independent consultant but the EDMS implementation team would expect to work closely on both projects with the consultant, with records management staff and with Centre user groups. There will be ongoing staff requirements that will change as the system moves through phases of introduction.

2.11.1 Recommendations:

1. Clarification will be necessary on which human resource requirements will be met with in-house staff and which can be contracted out. The implementation team will be drawn up according to the expertise available and required in-house and individual members will vary according to the tasks and time commitment required.

2. EDMS will require continuing project management to oversee implementation, development, maintenance, support and a training program both in Ottawa and the Regional Offices.
3. Training and coaching would best be provided by the EDMS implementation team incorporating training on the EDMS software as well as guidance on corporate filing procedures and requirements. Extensive desk-side coaching will be necessary as shown in the pilot as much for procedures as for software support. All training staff will require full training in all components of the system.
4. An EDMS Systems Administrator would be required as the functional expert in all component software, doing system maintenance and upgrades, customization and user and technical support.
5. Records Management Coordinators will provide filing support to users and assist the EDMS Systems Administrator in user coaching.
6. The MIS Helpdesk would continue to maintain technical support to users as EDMS becomes a corporate system.

2.12 PARTICIPANT INPUT

Participants were consulted extensively throughout the EDMS project. It was believed that the system to be successful had to be user-driven and meet the real needs of IDRC staff as they do their work. The EDMS project also built upon the findings of the 1994 ACIM Communications Technologies Study which explored in depth the use of communications technologies in the Centre and the absorptive capacity of staff. This “sensitization” to staff views and also the Report’s recommendation that the new technologies must be seen in context as strategic enablers were also key factors in the approach to the EDMS project.

Staff input was sought and obtained through:

- staff consultations with Headquarters and Regional Office staff. Over 60 Headquarters staff contributed to this process and Regional Office contacts also surveyed their offices;
- the EXOCOM business process analysis. Some 40 staff from Programs Branch, CSG and RIMS were interviewed;
- system demos to program staff to recruit pilot participants, PUG, IWG, MIS regional office and Headquarters staff, RIMS and numerous other individuals interested in new technologies.

Members of the pilot groups:

- participated in the design workshops thereby contributing to the functional design and customization of the software;

- attended a workshop to define “success criteria” at the pilot outset;
- completed questionnaire at the end of the pilot;
- attended a post-project workshop to discuss their views of and experience with the system.

In addition, the EDMS Working Group worked closely with pilot participants throughout the pilot troubleshooting and witnessing their adaption to and experiences with the system.

Reaction to the system in all demonstrations and the pilot was generally very positive. Staff recognized that the Centre needs a system to manage its electronic documents and were impressed by the facility with which one could retrieve documents filed by oneself and colleagues. Some of the issues raised in their responses were as follows:

- ***not enough time:*** The testing period for the software was only 60 days during which time two weeks were given to the Program Review Meetings, the Board meetings and other priorities. Some participants found this period of time too short to become comfortable with the system and many were just too busy to participate fully or at all.
- ***system reliability:*** At least half of the users in the pilot were using 486/33 computers which proved to be inadequate to run EDMS as well as Beyond Mail and WordPerfect. The problems were compounded when users tried to use RADIUS; and to use TRIPS required exiting EDMS altogether and rebooting the computer before resuming. User frustration with crashes and slowdowns was significant and it was the Help Desk staff who quantified the resource depletion as each Centre application was opened, clarifying that the instability was due to Windows 3.1 and to insufficiently powerful computers. In addition, due to the pilot nature of the installation, certain functionality was compromised so as not to interfere with Centre applications such as TRIPS.
- ***filing:*** Filing was an ongoing issue and had several aspects. First of all, as discussed in Section 2.7 above, the EDMS Working Group tried to anticipate the files that would be needed by the participants during the pilot. Those files were entered prior to the start with others being entered as required. As a result the necessary files were not always there when needed.

Secondly, users did have difficulty in finding the appropriate file from the file classification list. The file list as presented was extensive and confusing to an end-user. The current version of the RIMS software, released since the pilot began, has gone a long way to resolve this problem. The review of the IDRC file classification plan will also address this problem.

Filing responsibility was also an issue raised throughout the pilot project and in the staff consultations earlier in the year. There is a lack of clarity about who should be ensuring that documents make their way to the corporate file. A system such as EDMS puts the tools for filing at the desktop of each user with the corporate advantage of a complete central file and user advantages of a structured repository in which to file and powerful access and retrieval capabilities. The realization of these benefits will only be fully possible when corporate procedures and practices clarify roles and responsibilities for filing.

Finally, the EDM system requires that each user “profile” or index each document as it is created. For example, when saving a WordPerfect file, instead of the WordPerfect save screen appearing, the EDMS profile screen appears prompting the user to complete certain mandatory fields. These fields are customizable and will be determined in user consultations prior to implementation. Some of the fields chosen for the pilot were not relevant to all users and many users complained that it took too long to profile a document or that they did not want to be forced to do so at a time when they might be in a hurry. Upon closer questioning it was usually the case that they were having difficulty finding the right file number. Presentation of the file plan and the design of the profile form will receive intensive attention during implementation.

- ***training and coaching:*** The feedback on the training and coaching in the pilot project was very positive. Most users had a combination of group training, follow-up one-on-one coaching sessions, and frequent troubleshooting or coaching visits from the EDMS Working Group. All found this to be necessary. The opinion was also expressed that while the follow-up coaching is desirable it is important to have training away from the distractions of the office.

In the consultations with Headquarters and Regional Office staff and in the “success criteria” workshop at the beginning of the pilot, staff articulated several issues and obstacles regarding document flow and information access in the Centre. Time spent looking for internal documents and files that were often filed in individual offices or c: drives, the clutter of extensive paper files, straining c: drives and ad hoc, inconsistent filing systems were among the problems for which staff wanted solutions. While an EDM system provides the necessary tools, the solution only lies in effective use on the part of staff.

2.13 CONCLUSIONS

The EDMS Feasibility Study and Pilot Project was successful in fulfilling its terms of reference and rich in lessons learned about electronic document management. Staff consultations and participation yielded very practical and useful information on document handling practices, filing and retrieval requirements, and user needs. Knowledge was gained on the products and technology in this field, and testing of

specific products within the IDRC technical and information environments provided valuable results that will be applied to full implementation.

Based on all of its findings, the EDMS Working Group is of the view that an electronic document management system could truly enable and facilitate IDRC program delivery and information flow and specifically recommends the EDMS product suite tested in the pilot project.