Support and Promotion for Information Retrieval through Information Technology

(SPIRIT)

PROPOSAL

Presented by
Department of Communications, Canada
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"A key issue: How to ensure the development of a vibrant Canadian electronic information industry" 1987 Green Paper on Telecommunications in the 21st Century

Part I: Rationale

Purpose:

The purpose of this paper is to present a proposal for the scope, organization, funding and management of Support and Promotion for Information Retrieval through Information Technology. The strategy consists of regional pilot projects and a national office that are based on broad objectives and diverse services that when linked together into a national alliance, can share and exchange developmental experiences and information. SPIRIT is intended to focus efforts and bring resources together to stimulate the utilization of electronic information and information technology.

Background:

The proposal was originally developed in a feasibility study completed in September 1990 by IGW of Calgary, Alberta. The proposal was presented as the Canadian Database Promotion Initiative at a National Database Workshop held in Winnipeg, Manitoba. Following the workshop, the Department of Communications has undertaken additional consultations and brought forward a re-formulated proposal. For the purposes of this proposal, the term "databases" refers to electronic information that can be retrieved by users through online access or by utilizing CD-ROM and other forms of delivering electronic information. Communication services refers to telecommunication network based services, such as electronic mail and bulletin board services.

A background study entitled, "The Canadian Electronic Database Industry: Impact of Foreign Services and Canadian Competitiveness", was completed in July 1990 by Robertson Nickerson Ltd. of Ottawa. The study showed that Canada's electronic information industry is relatively small and that its early development has been primarily driven by technology. The study found that Canada's database industry is stagnating because of an inability to generate sales and revenues to sustain growth rates in Canada relative to other countries. An OECD report shows that Canada's share of the international market is eroding and it has been inferred in other studies that Canadian producers are not only small but less profitable than their foreign counterparts.

Since 1980, a number of other countries notably Japan, England and the European Economic Community (E.E.C.) have undertaken long term initiatives to stimulate the market for electronic information services. The initiatives include the Japan Database Promotion Centre, the U.K. Information Resource Centre and the Impact Programme of the E.E.C.. These countries have undertaken the initiatives to offer a focal point for co-operation of key stakeholders to strengthen their electronic information service industry. They have recognized the economic importance of electronic information and communication services and the need to act collectively to overcome developmental barriers to growth.

Growth in new electronic services, such as databases, is handicapped by a "chicken and egg" problem because the development of the industry has been fragmented without essential infrastructure support to focus efforts. The Canadian database industry in particular, faces serious demand side barriers to growth. While there is a good supply of Canadian information available in the market place, the Robertson Nickerson study explained that awareness, education, generic promotion, cost, size and attitudinal factors are serious barriers to growth for the Canadian industry.

Information Technology & Competitiveness:

The Canadian Database Promotion Feasibility Study explained how and why electronic database resources have been increasingly characterized as a strategic resource both for the country as a whole and for companies that must compete in a global economy. Global competition is in part, a function of computer and communications technology. As globalization and competition proceeds, as it surely will, the need for strategic information will grow and the ability to respond is made through the same information technologies (IT). The link between commercial objectives and enabling technology applications must be constantly reviewed.

Since companies are increasingly driven by a need to be regularly informed about their markets and the competition, success ultimately depends upon information. Internal company information is becoming less adequate, while the need to retrieve external data is increasing. The processing of information electronically, therefore, is becoming more central to a company's overall strategic planning. The power of information can now be accessed from the personal computer, bringing the benefits of advanced applications to the desk. The demand for "knowledge workers" with electronic information retrieval skills will increase exponentially with increasing competition.

IT & Business Users:

The role of information technology and electronic information retrieval in the company did not attract earlier widespread interest because companies managed their information resources using a main frame computer. The central-processor model for computerized information meant that the central processor had to divide its time amongst hundreds of complex tasks. The decreasing cost of computer power, together with advances in microchip and network technology and software developments has meant that the desktop computer has almost become ubiquitous in business. By dividing up the power and functions normally trapped in a mainframe computer, desktop computers and workstations can offer specialized computers to do particular jobs, such as managing databases, printers, electronic mail systems and desktop publishing. Once they are all linked together on a network, information can be stored, manipulated and distributed as needed to workstations in the factory, the warehouse, the research branch and the executive office. A desktop computer or a workstation, therefore, becomes an opportunity for an almost limitless array of electronic information and communication services. The integrated information network models are technology enablers. They provide the platform for supporting inventive new business strategies and channels of communication and information exchange. Information networks can operate between headquarters and subsidiaries, inter-company, national and global, spanning time and space limitations.

The role of electronic information today is therefore defined by its content and enabling technological capabilities. The attributes of databases have become particularly advantageous in a highly competitive and spatially dispersed market situation, where decision making skills depend on knowledge and timeliness. Information which is organized and disseminated in electronic form offers timeliness, mobility, search capability, manipulative capability, speed and currency. All of these characteristics assist in the development of critical decision making skills and can help a firm to readily understand its market and to optimize its competitive advantage. More and more entrepreneurial decisions are being determined by precise market and technical data. Information obtained electronically creates a more efficient and productive company. The information flow links the various spheres of activity and functions in a company so that they become a network which connects technology with productivity, retrieval and marketing.

Though the management and use of information is different for organizations across Canada, companies generally lack the know-how to cope with the plethora of choices thrust upon them. Many companies would rather not be involved in managing their communications and information requirements. The process of deciding which new types of products, services and service features are needed, varies from company to company, ranging from the more technically sophisticated firms in their usage of information technology, to firms with powerful desktop computers used only for word processing or data processing. In both instances, communication systems and information technologies are not being exploited to maximize their overall technological capability in order to bring the firm "additional" benefits. A study done for the Department of Communications in 1988 by International Data Corporation (IDC) shows that 70% of 100 companies of the 500 largest Canadian companies did not know what their information requirements were, did not organize their information requirements and centralized information facilities did not exist.

According to a Statistics Canada survey completed in 1989 for the federal Departments of Communications (DOC) and Industry, Science and Technology (ISTC), 89% of establishments in the service sector are using personal computers while only 22% use external databases. Of the remaining 78%, only 8% of firms plan to begin using external databases over the next three years, representing a growth rate for commercial database utilization of about 2.6% per year in the Canadian service sector. This compares to 40% usage of Local Area Networks (LANS) and 17% plan to begin using it within three years, representing a penetration level of 57% by 1993. Use of "private" electronic mail is expected to increase to 44% within the next three years and the use of "public" electronic mail is expected to double to 19% over the same period. Though the utilization of "electronic" information is a natural complement to advances in office automation and Executive Information Systems (EIS), the utilization of external databases is lagging almost all other forms of information technology.

The full potential of commercial databases is not being realized by companies, including companies with substantial investments in information technology. The possibility of combining access to internal information, commercial available on-line services, and communication capabilities such as electronic mail and bulletin boards, has not been fully exploited by businesses. Coopers & Lybrand in the United States, for example, combines its information and communication requirements into a **Knowledge Network** that is currently used by 1,700 company partners to send electronic mail, monitor newswire feeds and on-line services and access internal information. On a day to day basis, organizations must make similar constructive use of current products and services to further their business aims.

IT & Educational Users:

The utilization of electronic databases is also a useful learning tool in the educational environment. There are some provincial Ministries of Education that are promoting the use of electronic databases by students and teachers as part of an educational strategy to respond to the transformative change of Canadian society into an information economy. A successful business will depend on the utilization of information technology and electronic information flows as being fundamental in the new knowledge based economy. The Education Technology Centre of British Columbia has explained in it's Discussion Paper "Education Reform and Tools for Change" that as "knowledge workers" of the future, students require training and access to relevant and current electronic information sources, as well as the skills necessary to evaluate and synthesize information. The executive MBA Program at Simon Fraser University had also expressed the desire for assistance in the training of students in the importance of information retrieval skills outside of formal courses. The university would like to see the development of computer based learning packages that could be used by other MBA programmes.

In some provinces, schools are obtaining access to U.S. database vendors because they have been unable to obtain an "educational rate" of usage from Canadian based electronic information service providers. One of the objectives of SPIRIT can be to organize an industry effort to interest more Canadian database vendors in offering educational rates to schools to meet Canadian curriculum requirements.

Strategic Overview:

The Canadian database industry is well positioned to meet any growth in demand for Canadian information. The supply of Canadian electronic information is strong. The industry will only grow, however, by converting more users to electronic information utilization to create a critical mass of users and a revenue flow to make electronic information services commercially viable in Canada. Since Canadians will provide the main and often only users of Canadian content commercial databases, increasing promotion and awareness of the value of electronic information and overcoming attitudinal factors can bring economic advantages to the Canadian electronic information industry, the telecommunications and computer hardware sectors of the economy. The strategic advantages for users in the business community can be increased productivity and competitiveness.

The CDPI feasibility study found that many of the problems for the long term development of the database industry stems from either a lack of attention to users needs or lack of sales, which in turn are a function of demand. Thus, the role of the potential user community stands out as the single most important element to be addressed by efforts to strengthen the industry in Canada. The Canadian database industry and the user community require a focal point around which stakeholders can coalesce efforts to stimulate the utilization of electronic information services in Canada. An industry-government supported initiative like SPIRIT can act as a facilitator, a promoter and an educator for increasing business utilization of electronic information. SPIRIT can provide non-intrusive market stimulation to reach a broad based critical mass of potential electronic information users in Canada'

Part II: Organization

General Approach:

In Canada, stakeholders need to address the issue of infrastructure support. The private sector collectively can play a significant role in strengthening the electronic information market in Canada. Recent mergers in Canada and the United States have shown previously separate information and technology industries converging into what can fundamentally be called the "information business." Canadian organizations that have a stake in the future of electronic information services include electronic information producers and service providers, telecommunication carriers, hardware companies, software developers and their respective industry associations. The underdevelopment of on-line database utilization and new forms of electronic communications have a depressive effect on existing and future revenue flows for the telecommunication carriers. It also hinders the development of new, innovative service offerings on telecommunication network based gateways.

Collaborative efforts in Canada are essential to overcome barriers to the adoption process of information technology in the Canadian economy. Stakeholders acting alone in Canada have not created a "critical mass" of users that can support a commercially viable database industry. By acting

together, however, they can provide infrastructure support in the form of pilot projects that are linked together to form a national alliance and a focal point for the electronic information industry and other stake holders and the user community.

As a follow up to the completion of the Canadian Database Promotion Feasibility Study, the Department of Communications received a recommendation to work with "existing organizations" for launching a database initiative. It was also suggested that experimental pilot projects be considered to initially launch the initiative. The organization and implementation of SPIRIT can, therefore, be developed on the basis of a bottom-up approach through the identification of interested organizations and geographical locations.

Regional Pilot Projects:

SPIRIT can first be developed as a series of regionally based two year pilot projects. The pilots can be funded by pooling the resources of committed stakeholders at the local and regional level where they can readily identify and serve a population of potential electronic information users. Developing pilot projects with a regional focus is also consistent with the current weaknesses in the geographic diffusion of information technology utilization in Canada. The Statistics Canada survey completed for DOC and ISTC in 1989 showed that Atlantic Canada and the Prairie provinces are generally the slowest to adopt new technology, followed by Quebec and British Columbia.

Leadership

Leadership for generating interest and commitment in a regional pilot projects should come from local industry players, such as a telecommunication carrier, an electronic information service provider, or an information broker. In some parts of Canada, leadership can be undertaken by government agencies that have a significant role in local or regional industrial development activity and have an on-going working relationship with the private sector. The lead organization will act to forge public and private sector community interest to form a core of project supporters. The lead organization could also act ultimately as the focal point or site for the pilot project.

Core Organizations

The regional pilot projects would be backed by the lead organization and stakeholders in the regions, such as carriers, electronic information providers and other regionally based organizations. The Department of Communications will partner with other private and public sector organizations to support regionally based pilot projects. The signing of a Memorandum of Understanding (MoU) is one possible way of establishing a core organization.

Resource Sharing

The responsibility for funding the regional pilot project would be shared by members of the core organization. The Department of Communications could share in the cost of the operations of the pilot project through the department's regional offices. In many instances, the assistance of provincial governments and government economic development agencies can play a role in offsetting the total cost. Western Economic Partnership Agreements between provincial governments and the Department of Communications could also be used to fund pilot projects. Local companies can participate in the resource sharing by making available human and material resources. Database firms from outside of the region can participate by offering access to their services at a discount for training and educational purposes. For the same purposes, telecommunication carriers, if possible, could also offer discounted rates for access to iNet 2000.

Functions

Consistent with the recommendations of the Canadian Database Promotion Feasibility Study, the regional pilot projects can undertake a number of different functions to encourage and promote the utilization of electronic information services. The functions can be defined and agreed upon by the core organizations based on "local and regional criteria." Since companies are not homogeneous in their use of technology, the pilot project can be developed to target companies depending on their existing level of information technology and communication network utilization. The functions for each regional pilot project can, therefore, be different from projects located in other regions. The basic principle for a pilot project can be, for example, the provision of any one or more of the following:

- a local information clearinghouse service to bring suppliers and users together;
- a collaborative effort for a specific product, such as a new human interface or a computer-based learning package
- funding for the development of new local or regional databases;
- on site support and consulting to integrate databases & EIS.
- a mixed basket of services targeted for a specific or broad based user group
- support and promotion of geographic information services.

The pilot projects can be used as a tool in achieving the objectives of SPIRIT at the local level by transferring information retrieval and information technology skills and concepts into the local community. Responding to the needs of potential users, however, is the principle goal of the regionally based pilot projects. A pilot project therefore, can be targeted for the business and educational institutional environment or a combination of measures to address the user needs of both communities.

Since the demand side barriers to the utilization of electronic information services are broad based and generic in nature, the provision of a mixed basket of services is probably the most effective method for transferring to the community, awareness of the benefits and enabling characteristics of electronic information and other communication services. Mixed services could include, by example, the following activities;

- education and training needs; (ie. focused industry sector user seminars and on site demonstrations)

- promotion and awareness of electronic information and communication services; (targeted campaigns and trade shows at appropriate sectors)

- access to commercial communication and electronic information services on a demonstration basis

- access to software business planning tools

- clearinghouse services & dissemination of information to users, (ie. directories and catalogues on training suppliers, database, e-mail and network suppliers, etc.)

The pilot project can form alliances with business, economic and educational development agencies in order to assist in the identification of a market for the pilot project's prescribed functions. Affiliated organizations can include the local Chamber of Commerce, local business associations and development associations, colleges and universities and small businesses.

The proven technologies that will be utilized and promoted by pilot projects must be consistent with commercially available information and communication products and services. The technologies are CD-ROM and modem based communications for information retrieval and other datapac services, such as electronic mail. The pilot projects are not intended to be "technology" projects, but a mechanism to increase the awareness of the value of the proven technologies.

Also, the functions and services performed by the pilot projects must not compete with private sector offerings. For example, the clearinghouse functions must use commercially available directories and other industry publications. A pilot project publication should only be produced in the absence of a commercially available product.

Locations

The development of pilot projects are under active consideration in the following regions:

- British Columbia
- Alberta
- Saskatchewan
- Northern Ontario
- Québec
- Atlantic Canada

The names of contact persons who are undertaking a lead role and exploratory consultations in the regions are listed in the attached Annex. The names of contact persons in the regional offices of the Department of Communications are also listed in the Annex.

The pilot projects will be joined together by an electronic network and linked to a national office, a focal point for the pilot projects and the hardware, telecommunication and electronic information service industries.

National Office:

Roles & Responsibilities:

The national office should be identified as being closely associated with Canada's leading industry associations that represent the broadest cross section of businesses involved in information and communication technology based services. The national office could be manned by one manager and one or two support staff. The role of the national office for SPIRIT is to act as a centre or focal point for industry participation in national efforts to increase the utilization of electronic information services in Canada. It will establish a national alliance of existing pilot projects in regions of Canada to facilitate the exchange of information and knowledge on pilot project developments across Canada. It can act as an information resource for stakeholders in the electronic information industry. The national office can also be a platform for the consideration of projects and proposals that require the support of more than one stakeholder involved in the "electronic information business", including the telecommunication carriers, electronic information providers and hardware producers.

There are many roles a national office can perform. The most fundamental role for the national office, however, is to act as a facilitator, catalyst, promoter and educator to increase awareness of the benefits of utilizing electronic information services across all regions of Canada. The specific functions that will be considered by interested parties are outlined below.

Functions:

1. To act as a clearinghouse/facilitator for the dissemination and sharing of information, for example, on:

   - database research, including national and international (commercial studies) on technology, legal issues and multi-client market developments ie: Ovum, Frost & Sullivan, Evans Research, etc..

   - suppliers of electronic communications and electronic information in Canada, ie: directories, an updated monthly industry catalogue of database industry supplied training courses across Canada

   - existing training firms across Canada that offer instructions in information retrieval from CD-ROM and ONLINE SERVICES and the use of electronic communications, such as e-mail

   - pilot project feedback to database industry representatives

   - federal government information resources for commercialization

2. To manage a fund for generic promotion and awareness of "Electronic Information" utilization which can include:

   - a print advertising campaign in industry sector publications

   - sponsoring workshops, seminars and database speakers with industry associations and other groups on computer based workstations and the benefits of electronic information & communications

   - supporting existing and potential electronic information conferences in Canada geared to the end user market by including specific industry sector participation, ie.

     Networking & Databases '92 for Agriculture, '94 for Schools
     '93 for Exports, '95 for Environment

   - an 800 telephone service for the dissemination of information nationally on clearinghouse services and regionally based pilot projects

   - an electronic media campaign on the benefits of electronic information and DATAPAC services similar to the Telecom Canada approach for business use of tele-marketing, conferencing and long distance services.

3. To operate as a networking focal point for the regional pilot projects and the industry, to facilitate national exchanges of information and developmental experiences using an existing "national" public network and bulletin board service, such as iNet 2000.

Interested Parties & Resource Sharing:

Support for the national office should come from stakeholders in the electronic information business, such as database suppliers and vendors, telecommunication carriers and hardware producers. It can be achieved by pooling human and financial resources from the private and government sector. A national industry associations can also play a significant role by channelling individual company initiatives into the national office if a partnership development effort is required. Telecommunication carriers could also make a contribution in terms of free or discounted rates for networking the pilot projects with the operation and function of the national office.

Part III: Management Structure

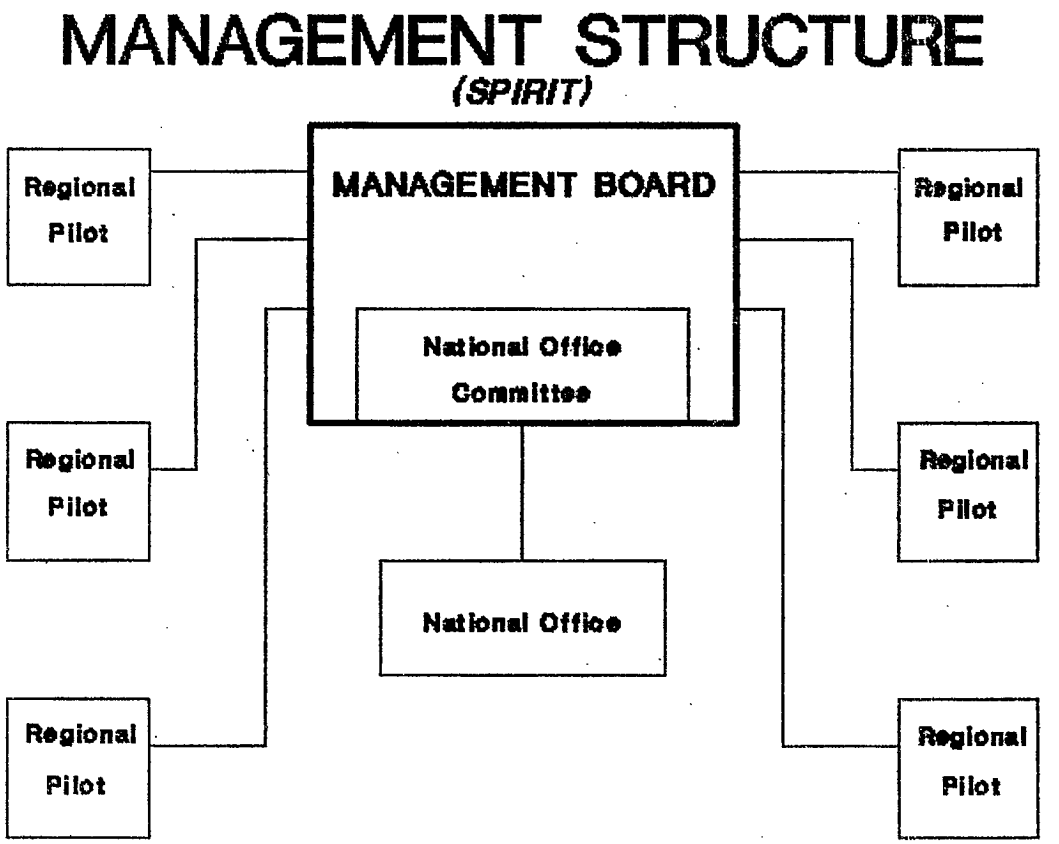
Regional Pilot Projects:

The management of the regional pilot projects would be managed and directed by regional parties. Their operation will be governed by a Management Committee, advisory committee or some other variation thereof, consisting of core organizations sharing in the funding and management of the two year pilot project.

Management Board & National Office Committee:

The Management Board will oversee the overall management and operations of SPIRIT. It will act as focal point or centre for co-ordinating the deliverables of the regional pilot projects with the functions of the national office. The Board will also regularly assess the effectiveness of SPIRIT in achieving its strategic objectives (3 or 4 month reviews).

The Management Board will consist of representatives from each of the Management Committees of the regional pilot projects. The Board will also consist of members of the National Office Committee. The National Office Committee is made up of the funding partners supporting the financing, direction and operation of the national office. Following is a chart showing the management structure for SPIRIT.



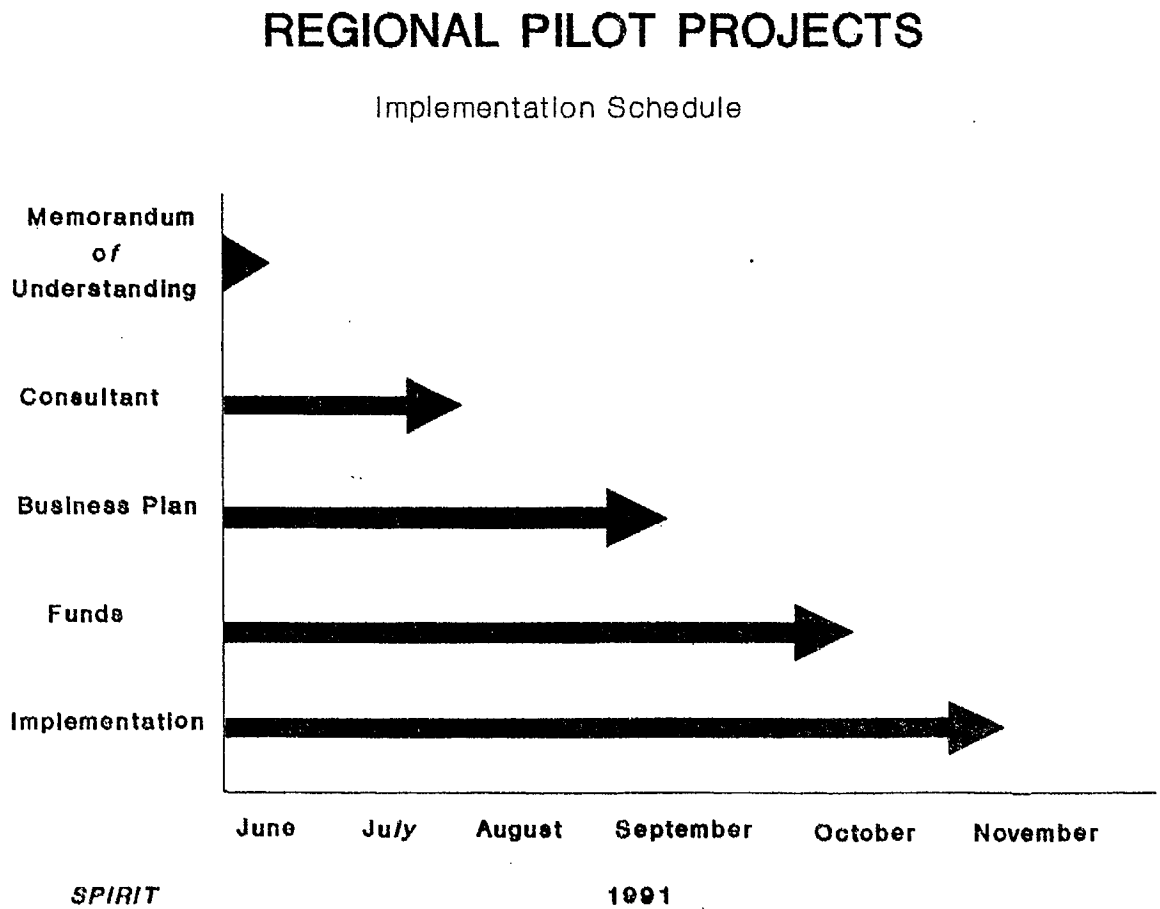
Part IV: Action Plan

Timing & Implementation:

The development of the pilot projects is the first phase in the creation of SPIRIT. A flow chart on the following page shows the steps to be taken over the next several months to bring the pilot projects on stream. The planning of the National Office can occur concurrently. The signing of a Memorandum of Understanding (MoU) by core organizations and interested parties could be the first step in the creation of both the pilot projects and the national office. The partners can thereafter collectively engage a local consultant to scope out a business plan for the pilot project and the national office, or agree to assign the work in-house to a particular partner. Once the Business Plan and Funding have been secured, the implementation of the pilot projects can proceed.

It is beneficial for the overall success of the national framework to launch the regional pilot projects together in conjunction with the planning of the national office.

Action Plan



ANNEX

Regional Pilot Project	Contact	Department of Communications Contact
British Columbia	Mr. Marcis Esmits 604-844-1950 B.C. Business Network	Ms. Susan Matasi 604-666-5424
Alberta	Ms. Judith Carrie 403-289-3336 IGW Canada Inc.	Ms. Nancy Desormeau 204-983-0261
Saskatchewan	Mr. Gordon Pierce Mr. Cliff Hansen 306-933-5413 Saskatachewan Research Council	Ms. Nancy Desormeau 204-983-0261
Northern Ontario	Mr. Peter Sheppard 705-474-7600 North Bay Centre of Entrepreneurship	Mr. Mitch St. Jacques 416-973-1203
Québec	M. Claude Fleury 418-646-3571 Ministère des Communications	M. Alain Robillard 514-496-5376
Atlantic Canada	Mr. Richard Fuchs Mr. George Smith 709-729-7000 Enterprise Network	Mr. Martin MacLellan 506-851-6512