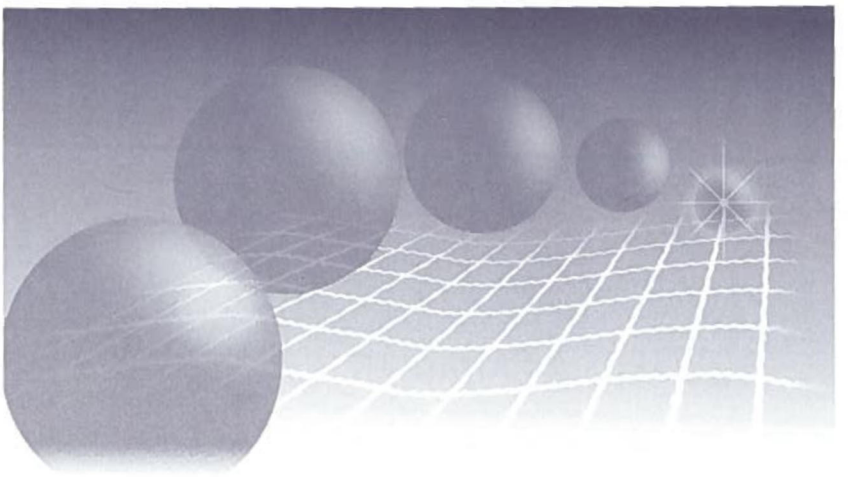
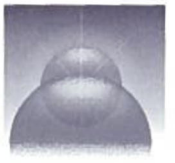


TOWARDS A CANADIAN HEALTH IWAY:

VISION, OPPORTUNITIES AND FUTURE STEPS

CANARIE INC.



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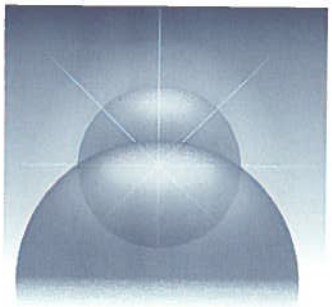


TOWARDS A CANADIAN HEALTH IWAY:

VISION, OPPORTUNITIES AND FUTURE STEPS

PREFACE

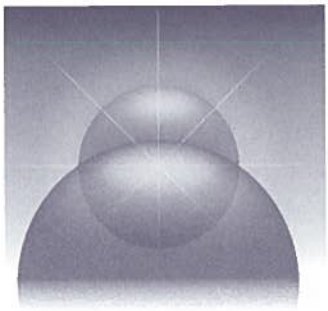
This report is being released by the Board of Directors of the Canadian Network for the Advancement of Research, Industry and Education (CANARIE) in order to accelerate discussions among potential stakeholders and other public and private sector organizations in Canada leading to the development of a Canadian Health Iway. The Canadian Health Iway is envisioned as a network of networks, applications and people that collectively support a wide range of health-related systems, activities and services in support of Canadians in all parts of the country.

The Board of CANARIE has long held the view that such a network will constitute one of the most significant applications of the new technologies arising from the convergence of computing and communications technologies known as the Information Highway. To reflect this view, the Board created a Health Information Infrastructure Advisory Committee in the spring of 1995, chaired by Dr. Mo Watanabe of the University of Calgary, a member of the CANARIE Board as well as of the federal government's Information Highway Advisory Council (*see Appendix 1*). In collaboration with Health Canada and Industry Canada, that Committee coordinated a number of consultative meetings regarding the vision of a Canadian Health Iway with stakeholders from the Canadian health sector (*see Appendix 2*).

Following those consultative meetings, a Working Group was created to prepare a report that would identify the next steps that should be taken to facilitate the further development of the Canadian Health Iway (*see Appendix 1*). Background work was conducted to look closely at such matters as the state of development of provincial health networks, promising technological applications, competitiveness of the Canadian private sector in health and global market opportunities. Dr. Penny Jennett of the University of Calgary led this effort in collaboration with several consultants.

Representatives of Health Canada and Industry Canada participated fully in these discussions and helped to finance the review and consolidation of the work to date. Stentor was also active throughout the work of the Committee and provided financial and in-kind support. Unitel* also provided funding and consideration in-kind by assisting in the review of draft documents. The CANARIE Board would like to thank all of the individuals who worked on the Committees and all those who took part in the workshops and studies for assisting in this initiative. Needless to say, as the recommendations are a consensus of the Working Group as a whole, they may not necessarily reflect the views of individuals or organizations who have taken part in the process.

*Renamed: AT&T Canada Long Distance Services



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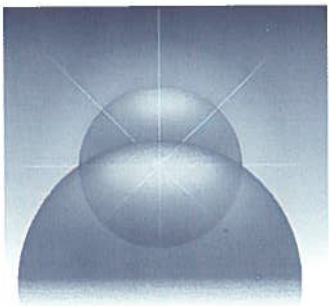


1.0 Preamble

Canadians enjoy a quality of life that is the envy of many nations. One of the determinants of that quality of life is our health system. Good health and access to good care have long been recognized as fundamental Canadian values.

Canada's health system is undergoing rapid change. Driven by fiscal realities, the recognition that there is room for improvement in the efficiency and effectiveness of our health services, and enabled by new technologies and new knowledge about the provision of quality care, our health system is being fundamentally transformed.

We are moving from a focus on acute care and cure to a broader vision that includes health promotion and disease prevention; from a focus on central control of institutions to regional support of home and self-managed care; and from a reliance on medical specialists to a recognition by all citizens of the need to assume greater responsibility for their own health. At the same time, we are developing a broader perspective of health determinants and the need to integrate into our health system the social, environmental, genetic, physical and personal factors which influence health status.

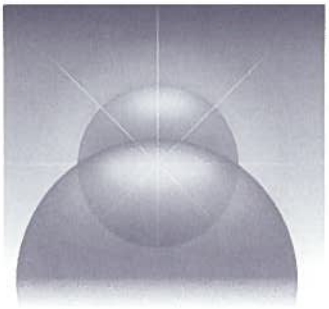
In light of these changes, the fundamental challenge facing the health sector in Canada is to facilitate a shift in the health paradigm while preserving a quality, cost-effective health system that responds to the needs of all Canadians. Given the wealth of new information and communications technologies available to support the health sector in its efforts, we believe that this task is achievable.

This report constitutes both a call to action and a definition of critical next steps. While the recommendations are primarily directed towards the Minister of Health and the Minister of Industry, the report is really meant to be read by all stakeholders in the broader health and information technology industries. The time to act is now.

2.0 Introduction

Canada's health system has become a strategic priority for every government in the country and virtually all of the studies of health reform in Canada have emphasized the critical link between health reform and the effective use of information technology. Indeed, some have argued that the reforms can *only* be achieved through the effective application of new information and communications technologies. Accordingly, many provinces are developing a core health information network infrastructure around which a wide variety of services and client-based applications can be developed and delivered more effectively and efficiently.

Among the provinces that have identified specific health-related network initiatives, an estimated $300–750 million will be spent on the development of applications and services over the next three to four years. These investments are being justified in part on the basis of estimates of long-term savings resulting from network-enabled information distribution. One provincial ministry has estimated potential savings of over $700 million and has decided to invest $118 million over ten years to achieve those savings. Another provincial government estimates that its network will generate efficiencies that will produce savings in the range of $43–106 million annually.



The health applications that are expected to lead to savings of this magnitude include: new information technology and network-enabled administrative practices and applications in hospitals and other health service organizations, for example through standards-based electronic medical records; support for evidence-based decision-making and other applications in clinical settings; and telehealth applications and other network based services for remote communities.

More broadly conceived, the introduction of technology-enabled reform will have economic benefits far beyond those identified for the health system itself. Many of those will be seen in the development of the Canadian Information Technology and Telecommunications (IT&T) sector, as part of an emerging "telehealth" or "health-IT&T" industry. This sector will be a primary contributor to the development of the new systems and services in the health field in Canada. In addition, there will be an emergence of new health-content providers.

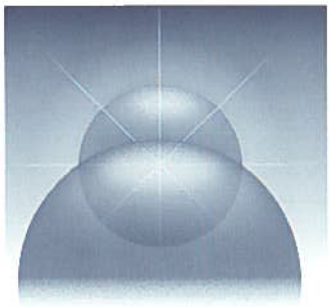
More generally, the IT&T sector is one of the keys to Canada's successful transition to an economy in which jobs and growth are based increasingly on the creation, movement and application of information. In 1994, this sector produced $54.4 billion in goods and services in Canada. In the same year, total employment in the sector was approximately 300,000. Since 1988, the IT&T industry has expanded at a compound annual growth rate of 14%, far higher than any other industrial sector in Canada.

Demand for information-related products and services is clearly poised to undergo rapid growth, particularly in the areas of education and training, health and health care, leisure and entertainment, and government information. These are niche markets of considerable promise for Canada's 13,000 innovative software firms. In fact, it has been estimated that the information sector can potentially generate global income of more than $3 trillion by the year 2000. The U.S., Japanese and European markets for health care information systems alone are estimated to be $7.5 billion. In addition, economically developing countries where multibillion dollar projects are currently underway, offer significant growth potential for Canadian companies.

Recognizing the potential for substantial revenue from innovative technologies and applications in the telehealth or health-IT&T sector, a number of countries are making large strategic investments to develop their expertise and to begin to establish their companies in the global marketplace. If our domestic telehealth sector is to become established as a competitive player in the international market, Canada must similarly view the development of the sector as a strategic priority.

The series of consultations on which this report is based led to one over-riding conclusion: In order to further enhance the value of the provincial networking and reform initiatives, **a national strategy and framework are needed if the benefits to the Canadian health system, the Canadian economy and the health of Canadians are going to be maximized.** This report constitutes a call for the development of such a national strategy, a central feature of which is the creation of a Canadian Health Iway.

The remaining sections of this report outline the primary characteristics of the Canadian Health Iway and propose some immediate next steps that would lead to its early development and implementation.



3.0 Canadian Health Iway

3.1 Vision

Successful health reform in Canada would be greatly advanced by the creation of a nation-wide information network which, while incorporating provincial networks, would also transcend traditional organizational, program and geographic boundaries. Such a network would be a "network of networks", integrating the health-related information services offered by a wide range of providers and meeting the needs of a wide range of user constituencies. We call this infrastructure the "Canadian Health Iway" or "Health Iway" for short[1].

[1] Canadian Health Iway — A framework within which network-based health services are provided, including: the network architecture; required sender, receiver, and carrier capabilities; some of the operational hardware and software; user training and support services; health IT&T products; and basic policies and standards.

As a "network of networks", the Health Iway would be the product of many public and private sector services and partnerships. It would provide a coordinated, secure and integrated set of network-based applications and services and would put powerful information decision-making tools into the hands of health providers, policy makers and the public.

The detailed development of the Health Iway would clearly be subject to considerable further discussion and debate, and, indeed, would evolve through the independent decisions of numerous companies and agencies in the public and private sectors. Nonetheless, there is considerable consensus within Canada's health community regarding the

VISION

The Canadian Health Iway will be a virtual "information centre"

that is created and used by communities and individuals across Canada.

It will be open and accessible, yet assure sufficient confidentiality and privacy

to assist decision-making by health professionals and patients; support research and training;

facilitate management of the health system;

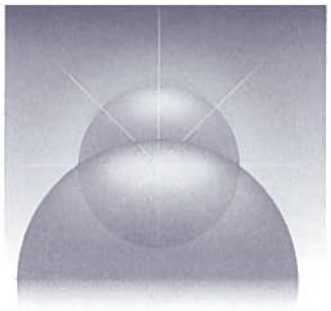
and respond to the health information needs of the public.

The Network will be an agent of change for the health system

and contribute to improving the health of Canadians.

It will also foster the development of globally competitive

Canadian technologies and services.



principles that should govern its development. Foremost among these principles is the need for an open architecture, distributed management and universal access.

The applications and services that would be offered through the Health Iway would also be subject to considerable debate and experimentation over coming months and years, although the range of interests and possible applications of interest to various user constituencies is well appreciated:

- **Individuals** at home and in remote locations should be able to access health and treatment information interactively and individuals with chronic diseases should be able to communicate with each other to share information about the management of their diseases;
- **Health professionals** should be able to use evidence-based decision support tools and access current information on treatment options and patient management information, engage in professional development activities with their peers even in remote locations, and offer health services to patients using efficient communications tools and independent of location; standards-based electronic medical records should be a key new technology underlying these applications;
- **Administrators and policy makers** should be able to assess the efficacy of treatment options and systems based on reliable and comprehensive data, monitor and promote economical use of facilities and improve the planning and management of health services generally;
- **Researchers** should be able to access health data bases and leading-edge appraisal and screening tools;
- **Hospitals and Health Facilities,** within the boundaries of privacy regulations, should be able to access the patient and other data and decision tools to enable them to increase efficiencies and reduce costs; and
- **Community agencies** should be able to become more involved in decisions related to health and health care at the grassroots level.

Through the development of applications such as these, the Health Iway would also create opportunities for Canadian companies in such areas as the development of health content and health education services, as well as core networking and software technologies. Each of the applications envisaged for the Health Iway would require investment in the development of appropriate databases, user interfaces and retrieval and decision support mechanisms. Telehealth applications would increase as the network capability grows; patient record management is already an area of considerable growth.

3.2 Building on our Strengths

Canada has several advantages in taking a leadership role in developing the technologies and applications that will underlie health information networks around the world. Foremost among these is the Canadian health system itself. Considered one of the best in the world, it enjoys high levels of public interest, use and support. The principles that govern it — **accessibility, universality, comprehensiveness, portability and public administration** — are well established and are preserved in the *Canada Health Act*. There is an acceptance that IT&T can enhance service, generate social benefits and facilitate the uniform desire by Canadians to receive informed care giving by a range of health

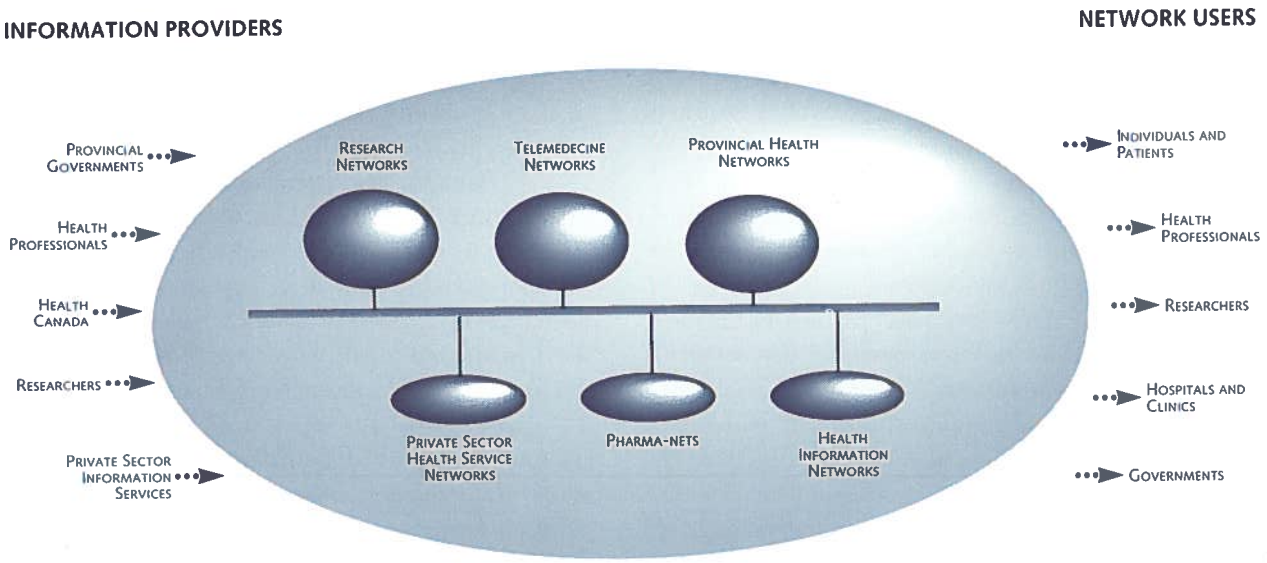
providers. Canada's geography, demographics, pride and leadership in health and health research are also factors that support the development of Canada's leadership in the sector.

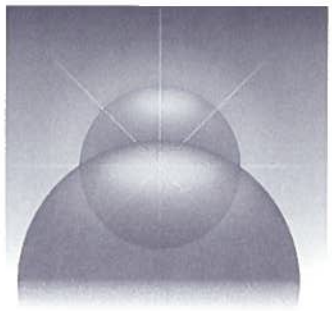
Health providers and administrators across Canada are focusing on health reform strategies that share several basic themes: patient/client-centred health delivery; adoption of an "outcomes" focus; increased accountability, local governance and regionalisation; managed competition; team and managed care; and universal access to core services. These themes call for the effective use of IT&T in the service of health objectives and, as such, are central to the Health Iway development.

Another enabling strength is that power within the Canadian health system is widely distributed. Although governments fund the system, they share power with professional associations, licensing bodies, hospitals, local health authorities, and many voluntary health organizations. Since our governments — provincial, territorial and federal — are all grappling with the need to balance the cost/benefit equation in our health system, they have a common interest in re-engineering the system in ways that will ensure cost effective quality care.

Canada also has a growing private telehealth or health-IT&T sector which will continue to be a driving force behind health network development

CANADIAN HEALTH IWAY





and use. Information technology has the ability to create benefits in the form of new jobs, new markets, new products and new services. Many of the companies within this sector are confident of doubling in size over the next five years. Most have created niche markets domestically. Rather than waiting for Canadian markets to develop, however, they are moving directly to the export market. The export of telehealth technology to countries with an underdeveloped health infrastructure and a dependence on remotely delivered health care is at the forefront of this trend.

Canada's technological infrastructure is also ripe for development of the Health Iway. We have universal telephone service coverage with a penetration rate of 98 percent, national fibre-optic routes, 95 percent digitization of our telecom networks, and pilot programs offered by both private sector and governments. We are leaders in systems integration, digital switching, asynchronous transfer mode technology, knowledge-building capabilities and electronic commerce. Our telecommunications hardware and software firms are internationally competitive.

Canada also has one of the highest rates of Internet usage in the world. Through the activities of CANARIE, Schoolnet, CA*net, the Information Highway Advisory Council, and many provincial initiatives and programs, awareness of and interest in IT&T issues and the application of networking technology, in particular in health and education, is remarkably high. As much as anything, it is probably the development of the Internet over the past ten years in Canada and elsewhere that now makes the dream of the Health Iway achievable.

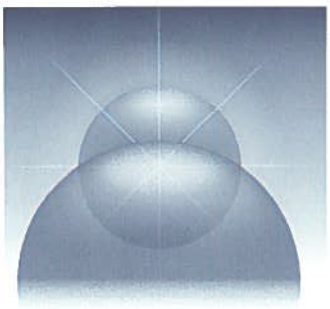
This rapidly developing technology has necessarily focused attention on issues surrounding network security and the protection of personal privacy. In this regard, Canada has at its disposal some of the strongest expertise on privacy found anywhere in the world, which will be of major value in the development of the Health Iway. Indeed, most if not all provinces have enacted legislation to protect personal information, at least at the public sector level.

Moreover, the Government of Canada is currently undertaking two initiatives to protect personal information. One is to introduce framework legislation. The Ministers of Industry and Justice, after consultation with the provinces and other stakeholders, will bring forward proposals for a legislative framework governing the protection of personal data in the private sector. The other initiative is to establish a public key infrastructure (PKI) for government. The PKI will be operational internally by 1997 and with external partners by 1998. The Minister of Industry, in conjunction with other ministers and levels of government, will work in partnership with industry and other stakeholders to secure the adoption of similar infrastructures across Canada.

3.3 Future Challenges

In spite of the strong foundation, it is clear that there are several significant challenges that must be overcome if the development of the Canadian Health Iway is to be successful and if Canadian companies are to be able to use this domestic infrastructure to develop products and services that will be globally competitive.

(i) Leadership: First and foremost among these is the need for a common focus, vision and direction among the key Canadian stakeholders and partners.



The current lack of national leadership has resulted in a number of health initiatives being undertaken in isolation with little emphasis on how they will connect and work in conjunction with each other. Competing initiatives are emerging in different regions where users and developers could benefit from a sharing of information and knowledge. There is clearly a need to develop a shared vision with national coordination.

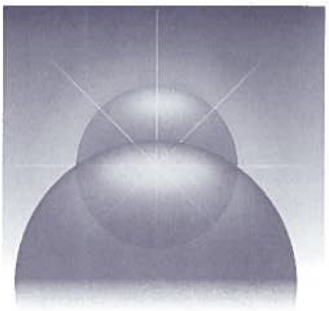
This need has been recognized by the federal Minister of Health who has committed to discuss with provincial and territorial governments, other federal departments, the private sector and professional bodies in the health field, the development of a national strategy to put in place an integrated health information network as part of Canada's Information Highway.

(ii) Framework: Closely allied with the need for a common vision is the need for a shared framework for the development of the Health Iway, including both common standards and a policy and regulatory framework. Currently, for example, the federal government, the provinces and the private sector each have their own distinct systems for protecting information.

Canadian Health Iway Principles

In brief, the Canadian Health Iway shall:

1. Give all Canadians affordable, timely and user friendly access to the information, services and products they need when they need them, while ensuring protection of their privacy and the confidentiality of their health data;
2. Improve Canada's health by helping Canadians make informed health choices;
3. Facilitate decision-making by health care professionals leading to a more efficient and effective health care system;
4. Provide nationwide coverage through financially viable, public and private, multi-partner initiatives;
5. Encourage research and development in an open system that uses technology sustainable standards that are vendor independent;
6. Use leading edge technology that supports the growth and development of the Canadian economy;
7. Promote the development of Canadian technology, applications and services;
8. Be guided by a management structure that ensures fair competition, practical standards and assures quality content;
9. Provide a secure environment where privacy and confidentiality are protected; and
10. Provide the ability to translate content between Canada's official languages.



The issues of intellectual property rights, privacy, confidentiality and security in the storage and transfer of clinical data are clearly going to require concerted attention in the years to come. The Canadian public consistently rates privacy and confidentiality as their number one concerns as IT&T are applied in areas such as health. Legal and ethical restrictions on the transfer of medical information from site to site already affect the work of potential network developers.

These challenges are not insurmountable, however. To pursue common solutions, stakeholders must participate in the development of the rules and then be willing to live by them.

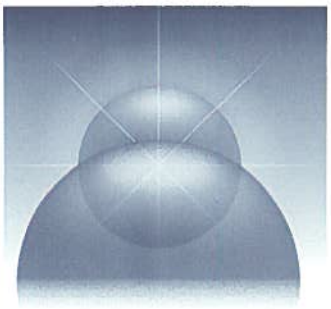
Regulatory barriers are also of concern. Regulations affecting clinical applications and remuneration for health services can create barriers to some telehealth practices, both within and between different provinces and territories. In addition, and although this is a general issue that goes far beyond health applications, it is also important that a new paradigm be developed within the regulatory environment for telecommunications. This is needed both to address the needs of the public regarding cost and accessibility and to address the needs of the industry regarding effective competition and the pricing and packaging of their services. Some have argued that special pricing flexibility for health related services, an option which faces barriers within the current regulatory regime, would improve access in rural and remote areas traditionally underserved by the health system today.

(iii) Technology: Central to the implementation of the Health Iway, at least from the user perspective, are user interfaces, decision support mechanisms, information search and retrieval and analysis engines, multi-media display software, and network navigation tools. Without seamless, user-friendly, open-architecture software of this sort, the applications that constitute the Health Iway will be of limited value.

(iv) Health Content: Technologies are only as useful as the end products they help to create and deliver. It is therefore central to the purpose of the Health Iway that accurate, up-to-date and reliable health-related information be made available to users. A wealth of information related to health already exists that will need to be adapted to these new technologies. The provision of trustworthy content, accessible through simple to use interfaces and data banks, is certainly a major challenge.

(v) Human Factors: Beyond the technology, information and policy framework, there are clearly challenges relating to the "human factor". It is important to recognize that the health community is still struggling to develop a general level of competence in the use of information technology. The health system urgently needs knowledgeable workers familiar with electronic data collection, data management and data analysis. The development of the Health Iway must take into account the technical limitations faced by many users who do not have the confidence or skills to use current technology. The Canadian health system must be prepared to invest in training opportunities and in the development of user-friendly, inexpensive and context-sensitive tools.

Beyond these issues is the challenge of community education. The public needs to understand what the new systems can do for them and how information technology is being used to improve the health system. Patients must be confident that



the systems are being designed so that there will be no breach of confidentiality or misuse of information by third parties. Ultimately, the public must be provided with access to the benefits of the Health Iway in a way that does not disadvantage those with limited familiarity with the technology.

3.4 Who Will Create the Canadian Health Iway: Roles and Responsibilities

Many of the key players that will address these challenges and help shape the future development of the Health Iway are already active, including departments in the provincial and federal governments, various segments of the private sector and a number of Non-Governmental Organizations (NGOs). Three strategic partnerships involving these players are at the heart of the Health Iway development strategy: federal/provincial partnerships; private sector alliances with public sector organizations; and a partnership between Health Canada and Industry Canada to leverage support from the private sector.

The Health Iway will only be developed through continued coordination and cooperation. Thus, important leadership and coordination roles identified for all key stakeholders and partners include such activities as:

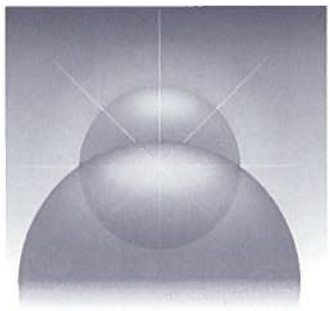
- fostering adherence to national standards and rules of the road;
- serving as role models for the use of technologies;
- providing content ideas and, at times, developing content; and
- providing input into identifying and selecting demonstration, pilot and research projects.

Within this framework, specific roles can be defined for each of the key stakeholders:

(i) Provincial and territorial governments: These are the primary stakeholders in the development of the Health Iway. They are critical to optimal infrastructure development, standards and funding, as well as the successful promotion of Health Iway, partnership building and implementation. There is a need to coordinate across these governments the regulatory, operational and economic factors related to the development of a *national* health information network. Coordination, collaboration and the sharing of initiatives would facilitate a team approach and avoid fragmentation.

(ii) Federal Departments: National leadership is needed, both in stimulating and coordinating the development of the Health Iway and in promoting the development of the telehealth or health-IT&T sector. Support is also needed for demonstration projects, pilots, and research and development projects. Furthermore, federal sources should provide support for Health Iway meetings, workshops, training opportunities and collaborative ventures. Also at the federal level, a strategic partnership between Health Canada and Industry Canada is needed to help support, facilitate and broker the Health Iway development.

(iii) Telecommunications Carriers: The services of the communications carriers are clearly central to realizing the dream of a carrier capability that is fast, efficient, reliable, cost-effective, open and



ubiquitous. The industry's work with the Canadian Radio television and Telecommunications Commission regarding regulations to enable networked health systems is crucial to the creation of the Health Iway. A specific and ongoing role for the telecommunications industry is to work with the health sector to identify pricing options that would permit the integration of networked health systems into day-to-day operations. Players within this industry can work together to facilitate creative approaches to revenue generation while responding to current user need.

(iv) Other private sector organizations: The Canadian IT&T industry has a long and excellent track record of technology development and deployment and is in a position to continue to lead advances in software and hardware technologies, user interfaces, carrier technologies and interactive content tools. IT&T in the health sector will generate new jobs — jobs that belong to the knowledge economy and jobs that otherwise displaced health-care workers could fill by leveraging their knowledge. These jobs will serve new markets with new products and services.

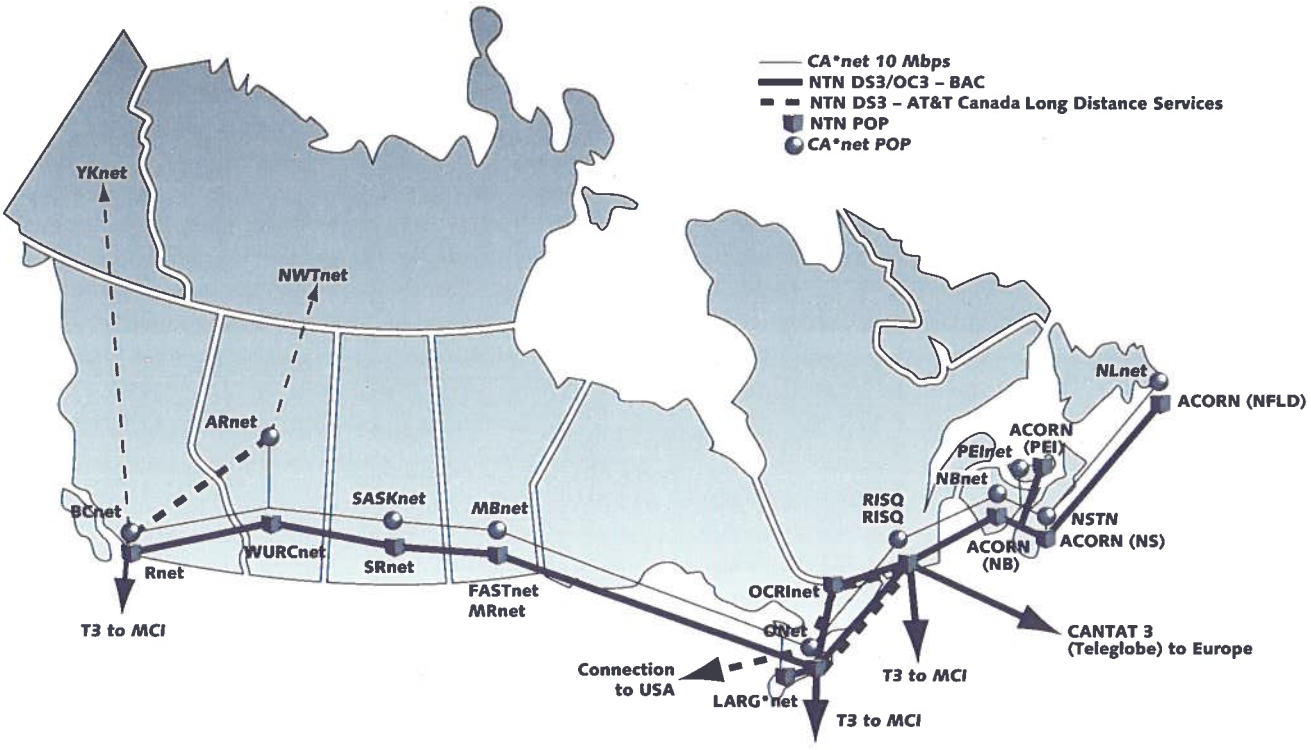
As the trend for cost containment grows, the private sector is responding by engaging in commercially-oriented health activities, for example in pharmaceutical companies, insurance companies, health maintenance organizations, publishing and media firms, medical delivery organizations and health information firms.

Beyond these commercial activities, opportunities for the private sector include continuing medical education, courseware development, training and diagnostic software applications. Training, in particular, has enormous commercial potential. A leading equipment manufacturer estimates that 80% of the technology needed to create a multifunction medical workstation is available today, but we are still a long way from having sufficient numbers of trained professionals to be able to use such technology efficiently and effectively.

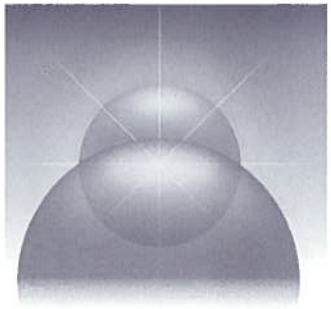
(v) Non-Governmental Organizations (NGOs): NGOs will play critical roles in the creation of the Health Iway by providing independent, non-governmental and non-industry viewpoints, as well as by taking on specific roles in specific initiatives. The Canadian Institute for Health Information (CIHI), for instance, plays a leadership role in standards development and consolidation for data gathering, processing and dissemination, activities which involve standardization of terminology, nomenclatures and classification.

Volunteer groups, professional associations, licensing bodies and multi-disciplinary research initiatives can also assist with facilitating levels of uniformity across health professions, uncovering the content information needs of their specific user groups, encouraging the development of IT expertise within their organizations and providing training for their users. The Canadian Organization for the Advancement of Computers in Health (COACH), for instance, provides a forum where users, vendors and service providers can meet to discuss common concerns and find innovative solutions.

The Canadian Network for the Advancement of Research, Industry and Education (CANARIE) will also have a role to play, continuing to facilitate the development of Health Iway, acting as a catalyst in raising the profile of health applications and promoting the importance of collaboration in achieving the potential benefits of the use of information technologies in the health sector. CANARIE should also continue to support high-priority projects, especially through the Technology and Applications Development Program, and continue to develop the National Test Network in cooperation with the carriers and encourage the use of that facility for the development and testing of innovative applications in the health sector.



CANARIE NTN AND CA*net NATIONAL NETWORKS



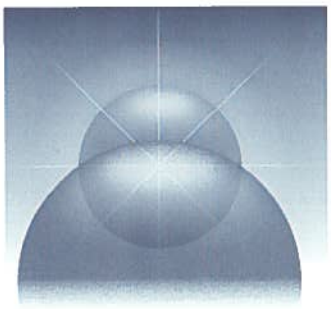
3.5 Funding

The Health Iway is envisaged as a "network of networks" providing an integrated infrastructure within which a range of health services and content will be made available to numerous user constituencies. Both the public and private sectors will play major roles in financing its development and the expense associated with its on-going operation.

As the Health Iway becomes fully operational and the range of services it offers expands, various financing models would be explored. For example, some information services offered by private sector organizations could be subject to usage fees in order to cover investments made in service development and the costs of ongoing network maintenance. For others, the network might simply offer a more efficient means of delivering a service that will continue to be funded by the provincial or federal government.

Initially, demonstration and research projects and pilot studies will be needed to clarify the focus and scope of services on the Health Iway and funding options for these activities will have to be explored. Given the breadth of activities envisaged, both federal and provincial funding sources will likely have to be pursued, as well as support from private sector and not-for-profit sources. Organizations that have taken part in the consultations leading to this report, such as the Medical Research Council, the Canadian Medical Association, the College of Family Physicians of Canada, the Canadian Institute for Health Information, might also be interested in participating in joint projects.

Finally, whatever approach is defined to support the development and start-up costs of Health Iway development, it is important to recognize that evaluation and measurement processes should be built into every pilot and demonstration activity and every phase of the Health Iway development. In the long term, private and public commitments to the development of the Health Iway and its allied services will only flow when there is a compelling, cost/benefit business case supporting the associated investment. Although there is ample evidence that the broader development of the Health Iway offers significant opportunities for cost saving and cost avoidance in the provision of health services, before investments in the development of particular services can be expected, hard data on the technical and market feasibility of the proposed new services are needed.



4.0 Action Plan

Following from the extensive consultation and research conducted over the past 18 months, the following recommendations are offered as a means of moving forward on the development of a Canadian Health Iway:

Recommendations

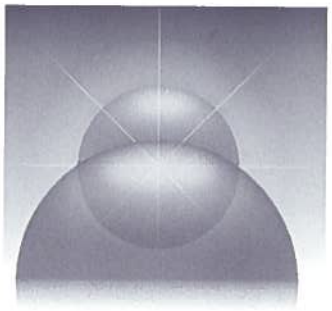
1. That, over the next 12–18 months, the Minister of Health, in cooperation with provincial and territorial governments, other federal departments, the private sector and professional bodies in the health field, provide leadership in the development of a national strategy to put in place an integrated health information network, Canadian Health Iway, as part of the nation's Information Highway.

2. That the Minister of Industry undertake a review of the opportunities facing and competitiveness of Canada's telehealth or health-IT&T industries, with a view to fostering their ability to compete in the growing domestic and international marketplace for such products and services.

3. That, pending the development of a comprehensive national strategy, CANARIE, the Information Highway Advisory Council, the Minister of Health and the Minister of Industry jointly create a Council of senior leaders in the health field and related industries to facilitate the early development of the Canadian Health Iway.

4. That the Council's mandate include refining and seeking partners and funding for high-priority demonstration projects and research pilots, such as those detailed in Appendix 3; developing a series of reports on key issues, including privacy and confidentiality; and, in consultation with other key stakeholders, coordinating the planning of a National Congress on the development of the Canadian Health Iway, to be held in the spring of 1997.

5. That, pending the development of a comprehensive national strategy, CANARIE continue to provide leadership to the Council and coordinate the funding of its work, using primarily non-CANARIE sources.



5.0 Conclusion

Developing the Canadian Health Iway is not simply a matter of building technological connections and defining a means of promoting economic growth. While such an undertaking focuses in part on technology and is an element in the development of Canada's information economy, developing the Health Iway will also deal with some of the fundamental values of concern to Canadians: health standards, public health promotion, training standards and the protection of personal privacy. It also involves ensuring that Canadian content is available to serve the health needs of Canadians.

The Canadian Health Iway is achievable. Throughout CANARIE's consultations there has been strong and consistent support for such a national health information network created through a coordinated and focused effort. **The time to begin is now.**

For more information contact:

CANARIE Inc.

410 Laurier Avenue West, Suite 470

Ottawa, Ontario, Canada K1P 6H5

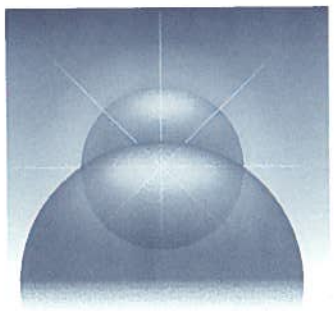
Phone: (613) 660-3634

Fax: (613) 660-3806

Email: info@canarie.ca

Gopher: //gopher.canarie.ca

World Wide Web: http://www.canarie.ca



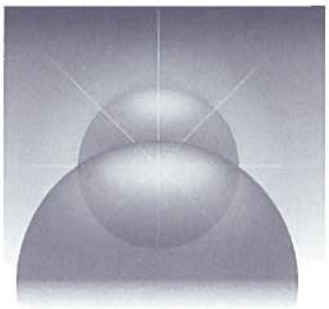
APPENDIX 1

CANARIE HEALTH INFORMATION INFRASTRUCTURE ADVISORY COMMITTEE

Dr. Andrew Bjerring, President and CEO, CANARIE Inc.
Mr. Tony Dagnone, President and CEO, London Health Sciences Centre
Dr. Jo Hauser, Director General, Research & Program Policy Directorate, Health Promotion & Programs Branch, Health Canada
Dr. Max House, Clinical Professor Telemedicine, Faculty of Medicine, Memorial University of Newfoundland
Mr. David Hoye, Director and Manager, Health Industries Branch, Industry Canada
Dr. Wilbert J. Keon, Director General, University of Ottawa Heart Institute, Ottawa Civic Hospital
Mr. Rafiq Khan, Director, Strategic Development, CANARIE Inc.
Dr. Robert Perreault, Chief of Preventive Medicine, Public Health Directorate, Maisonneuve-Rosemont Hospital, Montreal, Quebec
Ms. Kita Szpak, Secretariat, CANARIE Inc.
Dr. Mo Watanabe (CHAIR), Professor, University of Calgary
Mr. John A. Williams*, President and CEO, SmartHealth, Winnipeg, Manitoba
*appointed June, 1996

WORKING GROUP

Ms. Barbara Brackett, Industry Development Officer, Industry Canada
Mr. Richard P. Cavanagh, National Director, External Relations, Stentor Telecom Policy Inc.
Mr. Bob Ellis, Senior Analyst, Strategic Planning and Review Directorate, Policy and Consultation Branch, Health Canada
Mr. Greg Fernet, Manager, Strategic Planning and Review Directorate, Policy and Consultation Branch, Health Canada
Mr. Rafiq Khan (CO-CHAIR), Director, Strategic Development, CANARIE Inc.
Mr. Pierre Levasseur, Senior Marketing Officer, Research and Program Policy Directorate, Health Canada
Mr. Marc Lee*, Economist, Information Technology Industry Branch, Industry Canada
Mr. Marlon Oneid, Director, Business Development, Government Sector, Unitel Communications Inc.
Ms. Marie-France Remy, Manager, CANARIE — International, Information Technology Industry Branch, Industry Canada
Ms. Kita Szpak, Secretariat, CANARIE Inc.
Dr. Mo Watanabe (CHAIR), Professor, University of Calgary
*replaced Ms. Remy in May, 1996

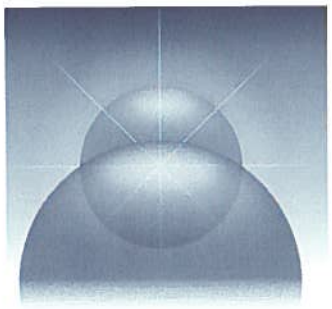


APPENDIX 2

Additional Attendees at Content Providers Workshop, Canadian Medical Association, Ottawa, 1995–12–5 and Telehealth/IT Workshop, Cifra Médical Inc., Québec, 1996–3–11 and Individuals Consulted by Dr. Penny Jennett

Mr. Richard Alvarez, Senior Vice-President, Canadian Institute for Health Information; Mr. Ron Baker, Industry Marketing Manager, Health Care, Stentor Resource Centre Inc.; Ms. Gina Marie Becker, Programs Officer, Research & Program Policy Directorate, Health Canada; Dr. Luc Bessette, Montreal Quebec; Ms. Alexa Brewer, Director, Laboratory Centre for Disease Control, Health Protection Branch, Health Canada; Mr. Simon Caron, Chargé de mission, Santé et services sociaux, Secrétariat de l'autoroute de l'information, Gouvernement du Quebec; Dr. Ann Carter, Associate Director, Department of Health Care Promotion, Canadian Medical Association; Ms. Carol Clemenhagen*, President, Canadian Health Care Association; Dr. Alain Cloutier, Centre Hospitalier de l'Université Laval; Ms. Denise Côté, Santé Canada, Direction générale régionale, Région du Québec; Ms. Jocelyne Côté, Adjointe au développement des affaires, Développement Purkinje Inc.; Dr. Trevor Cradduck, Executive Director, LARG*net, London, Ontario; Dr. Betty Cragg, Director of the School of Nursing, University of Ottawa; Mr. Gerry Dafoe, Executive Director, Canadian Public Health Association; Mr. Antoine Dagher, Directeur de produits Télématique, Immédia Inc.; Mr. Michael Decter, Managing Director for Canada, APM Incorporated; Mr. Ernie Delgrande*, First Nation & Inuit Health Programs, Medical Services Branch, Health Canada; Ms. Iris Diegel, TCT Health Corporation; Mr. Rick Domokos, Director, Information Technology Industry Branch, Industry Canada; Mrs. Barbara Drew, Executive Director, Canadian Medical Association; Dr. Gilles Dubuc, Hôpital Anna Laberge, Chateauguay; Mr. Leroy Fevang, Executive Director, Canadian Pharmaceutical Association; Dr. Paul Fisher, Director, School of Health Information Science, University of Victoria; Ms. Cathy Fooks, Director of Research Transfer Unit, Sunnybrook Health Sciences Centre; Mr. Jim Frankish, Associate Director, Institute of Health Promotion Research; Dr. Robert Funnell, Montreal General Hospital; Mr. Roger Gauthier, Centre de recherche informatique de Montreal (CRIM); Dr. M. Guerrier, Vice-President of Utilization Management, Chief Information Officer, The Toronto Hospital; Dr. Bill Hall, Acting Head, Dept. of Family Medicine, Associate Director (Clinical Services), Health Telematics Unit, University of Calgary; Ms. Sonja Halvorson, Development Manager, Health, MediaLynx; Mr. Jim Hamilton, Communications Research Centre; Dr. Richard Handfield-Jones, College of Family Physicians of Canada; Dr. Kathryn Hannah, Health Care Specialist, Sierra Systems Consultants Inc.; Dr. R. Hayward, Assistant Professor, Health Information Research Unit, McMaster University; Mr. Chris Helyar, Associate Director, Health Care Consulting, Hay Management Consultants; Mr. Doug Hull, Director General, Industry Canada; Dr. Mary Ellen Jeans, Executive Director, Canadian Nurses Association; Dr. Sid Katz, Executive Director, Science World; Mr. Abbdul H. Lakhani, Network Planning Specialist, Future Technology Development, Telesat Canada; Dr. Léo-Paul Landry, Secretary General, Canadian Medical Association; Mr. Peter Liebel*, Executive Director, Information Highway Advisory Council; Mr. David Low, Hickling Corporation; Dr. Jocelyne Mallett, Newbridge Networks Corporation; Dr. Henry Mandin, Associate Dean, Undergraduate Medical Education, University of Calgary; Dr. Rick Mathias, Director, Health Protection Branch, Health Canada; Ms. Nancy McBean, TCT Health Corporation; Dr. D. Menon, Executive Director, Canadian Coordinating Office for Health Technology Assessment; Mr. Francois Meunier, President, Cifra Medical Inc.; Dr. John Millar, Provincial Health Officer, Province of British Columbia; Mr. Jim Mintz, Director, Research & Program Directorate, Health Canada; Mr. Denis Morrice, President & CEO, The Arthritis Society; Mr. Ed Norwich, Manager of Information Management, Department of Health & Social Services, Government of the NWT; Dr. J. Parboosingh, Associate Director, MOCOMP Office, Ottawa; Mr. Tim Patterson, Director, CME Development, International Programs, HealthLink Communications Inc.; Dr. Reg L. Perkin, Executive Director*, The College of Family Physicians of Canada; Mr. Eric Perreault, Vice-President, Director General, Cifra Medical Inc.; Dr. Jocelyne Picot, University Fellow, Graduate Program in Communications, McGill University; Mr. Michael Pluseauskas, President, Centre for Health Information Infrastructure; Dr. Noralou Roos, Director, Manitoba Centre for Health Policy and Evaluation, Dept. of Community Health Sciences, University of Manitoba; Mr. Gil Sampson, Clinidata; Robert Thivierge, Secrétaire général associé, Santé et services sociaux, Secrétariat de l'autoroute de l'information, Gouvernement du Quebec; Mr. W. Tholl, Executive Director, Canadian Heart and Stroke Foundation; Mr. Eric K. Tsang, Chief, Business Development Office, Communications Research Centre; Dr. Jeff C.E. Way, Calgary, Alberta; Mr. Ulrich Wendt, Dept. of Community Health Services, University of Manitoba; Mr. Peter West, Director of Economic Development, Health & Community, Services Agency, Province of P.E.I.; Mr. Michael Wolfson, Director General, Institutions & Social Statistics Branch, Statistics Canada; Mr. Ronald H. Yamada, Senior Vice-President, MDS Health Group Limited

*The named individual no longer holds this position.



APPENDIX 3

POTENTIAL DEMONSTRATION PROJECTS AND RESEARCH PILOTS

Six areas are suggested as the focus of demonstration projects that illustrate the value of partnership building and the use of IT:

1. **Health policy** projects to show how IT-accessed quality data can be used by provinces and territories to inform policy decisions, influence resources allocations and impact health outcomes;
2. **Health research** projects to demonstrate how IT enables researchers to access, screen and interpret data from health research data banks, as well as how IT can facilitate research collaboration, agendas and the acquisition of research funding;
3. **Demonstration activities for the public** to illustrate how IT can help them access health information, health expertise and services;
4. **Provider projects** to show caregivers (e.g. physicians, allied health professionals, nurses, home visitors) how IT can enable them to access data when and where needed, and assist them in making informed decisions related to patients' health;
5. **Access and connectivity** demonstrations showing how remote provincial and territorial regions or districts can be connected by multiple carrier systems and how operational costs can be addressed; and,
6. **Business/partnerships** demonstrations to promote the characteristics and benefits of good alliances and partnerships.

Moreover, without innovative, proof-of-concept projects which are contextually and environmentally sensitive, the real benefits of health information technology may never be achieved. The following are four pilot areas which should be undertaken at the national level:

1. The **Healthy Region/District/Community Concept** pilots would assist regions, districts and communities in achieving "best practice" models through the use of information technology. Suggested foci include telehealth, home monitoring, emergency department utilization, medical information systems and paperless procurement;
2. The **Technology Helping Canadians** pilots would illustrate how IT-accessed information can assist the public in making decisions relating to health or health care, and how informed decisions lead to healthier lives. Suggested foci include help lines, health promotion, risk management, treatment options, nutrition, teenage suicide, health in the work force, family webs, interactive television, report card or diary of significant health events, electronic questionnaires, public centred guidelines via the Internet, along with the National Forum on Health themes: Determinants of Health; Evidence-based Decision Making; Values; and Striking a Balance;
3. The **Providers Enabled by IT** pilots include two recommended categories for research activities:
   (a) **The model IT office:** "Bringing IT to the office in stages" would involve focusing on such technologies as the core electronic patient record, core auxiliary pieces or decision aids, drug interaction data bases, clinical practice guidelines, provincial insurance formulas, standard coding mechanisms, decision support systems, electronic commerce (pharmaceutical), medical billing, and laboratory systems; and,
   (b) **Provider/user question banks (evidence-based cases, virtual care sites):** The suggested focus is on physicians, nurses in remote or under served areas, home visit community nurses, pharmacists, and on office care, before moving to other care sites and
4. The **Researchers Assisted by IT** pilots would focus on health research, examining health and outcomes-based research systems, search and screen software tools, electronic critical appraisal measures and evaluation criteria, information sharing and dissemination technology, and IT accessible funding sources.

In addition, a further pilot activity focusing on industry needs was identified. Two foci were considered important: a clearinghouse initiative and the development of an International Business Plan.