National Research Conseil national
Council Canada de recherches Canada
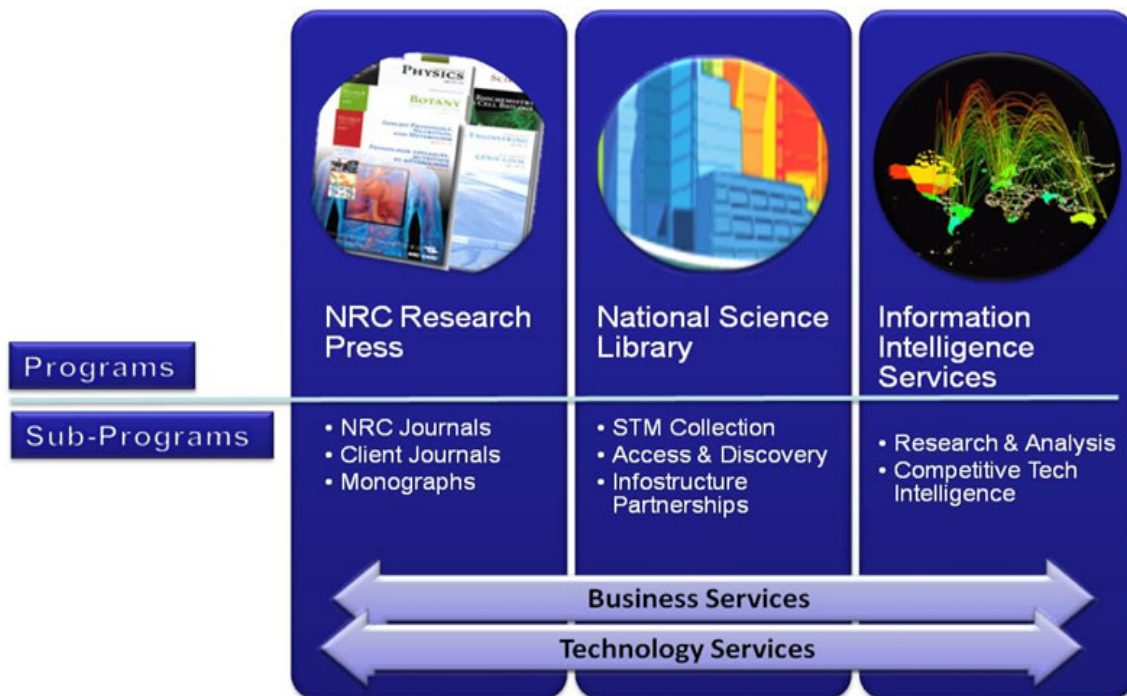
NRC · CNRC

Canada Institute for Scientific and Technical Information

Business Plan 2008 – 2011

Highlights

31 March 2008

Table of Contents

1.0 Canada's Foremost Provider of R&D Information Services

NRC-CISTI is the National Research Council's library, Canada's National Science Library and largest science publisher, and a premier source of information intelligence and analysis to support commercialization of Canadian research.

CISTI's unique value proposition is its suite of services to the core clients served. CISTI supplies three critical components in the innovation chain that takes an idea from an initial concept through research and development to marketable product or service.

CISTI

- provides **access** to scientific, technical and medical (STM) research publications that inform the research program;

- **publishes** peer-reviewed articles resulting from that research, and

- provides **customized information research, analysis and competitive technical intelligence** to support researcher and entrepreneur decisions.

CISTI's services are increasingly being offered in close collaboration with the Industrial Research Assistance Program (IRAP) and the Central Business Support (CBS) group under the umbrella of the NRC Technology and Industry Support (TIS) portfolio.

1.1 Core Clients

CISTI's core clients are Canadian industry, the health sector and government researchers. No other national organization or institution is mandated or funded to provide information and intelligence services to these groups, and they rely on CISTI's lower cost access, scale of operations and linkages to global information.

NRC-CISTI staff is co-located with NRC institutes across Canada at 18 sites.

1.2 History

Founded in 1924, the library of the National Research Council of Canada evolved into the National Science Library in 1957. In 1967, NRC agreed to accept responsibility for serving the information needs of the Canadian medical and health sciences communities, thereby assuming the role of the national health sciences library as well.

1.3 CISTI's Three Programs

National Science Library

NRC-CISTI is mandated under the NRC Act to provide NRC and other Canadian researchers with access to the world's scientific, technical and medical (STM) information. CISTI supplies documents to research institutions and researchers around the world on a cost recovery basis.

For over 75 years CISTI has provided information services to Canadian researchers in academic institutions, industry and other government organizations from a world-class collection of journals, conference papers, monographs and technical reports. Services include document delivery, loans, quick reference, literature search and referral. The NRC Virtual Library was launched in 1997 to provide NRC researchers from coast to coast with desktop access to full-text electronic journals and information resources.

Today, the National Science Library is in the process of transitioning from print to digital information access and delivery, and is positioning to become a national gateway to the world's digital STM information, including research data. CISTI is strategically moving towards providing Canadian research and innovation communities with value-added information tools and services to enable knowledge discovery, cross-discipline research, innovation, and commercialization.

Support to Canada's health sector
CISTI has offered specialized services to Canada's medical community since 1974, in part by collaborating with the National Library of Medicine (NLM) in the United States and by coordinating Canadian access to NLM programs and services such as MEDLARS and DOCLINE. This coordination role includes the provision of training and client support to Canadian institutions.
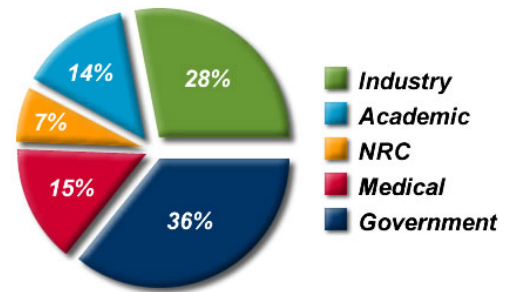
Snapshot:

Serving NRC
- Access to 26,000 electronic resources
- Access to 11,900 full-text e-journals
- Access to 47 specialized online databases
- 90 percent fill rate from CISTI Collection, delivered to NRC researchers' desktops across Canada
- NRC Expertise Database coordination
- NRC Web Office for NRC and sector-specific web portal development

Serving Canadians–National Science Library

- Access to 9,000 scientific, technical, medical journals
- Access to 7M full-text e-journal articles
- Reduced copyright fees for Canadians
- Coordination of NLM services for Canada
- Book and eBook lending
- Reference services

Serving the World–Document Delivery

- Contributor to the international STM information marketplace–40,000 document delivery registered accounts world-wide
- Resource-sharing agreements with international STI Centre partners (U.K., China, France, Japan, Korea, Taiwan, US)

310,000 Document Orders by Canadians in 2006-07

Segment	%
Industry	28%
Academic	14%
NRC	7%
Medical	15%
Government	36%

NRC Research Press

CISTI supports the dissemination of Canadian research through its publishing arm on a cost recovery basis. The NRC Research Press (RP) published the first issue of the *Canadian Journal of Research* in May 1929. Today it uses a state-of-the-art digital publishing platform to publish 16 NRC journals with worldwide reach—scientists and institutions in over 100 countries have subscriptions. Fifteen of those journals are currently available online free to Canadians, thanks to funding from the federal government's Depository Services Program (DSP) operated by Public Works and Government Services Canada (PWGSC).

Considered to be Canada's foremost scientific publisher, the NRC Research Press also publishes conference proceedings and is the only Canadian publisher of peer-reviewed scientific monographs.

The NRC Research Press publishes an additional 15 client journals on behalf of Canadian scholarly societies and is in the process of developing a digital publishing platform and Web 2.0 features to offer to these and new clients for publication of their journals. As Canada's most technologically-advanced S&T publisher, the NRC Research Press is well-positioned to assist others to electronically publish and disseminate Canadian research.

Snapshot:

- Largest and most advanced sci-tech publisher in Canada
- Publishes in English and French
- 16 journals, 13,800 subscribers
- 6,744 authors in 2006-2007
- 8.8 million article downloads in 2006-07 (DSP)
- Global reach: journals delivered to 101 countries
- Publishing services and platform
  - 15 Canadian S&T society client journals
  - Canada's only S&T monographs program
  - several titles per year (books, conference proceedings)
- Open access journal trial (*Genome*)

Information Intelligence Services

CISTI continues to offer traditional reference services to NRC institutes across Canada. In response to demand from IRAP's industrial technology advisors, technology clusters, and NRC commercialization initiatives for business intelligence and specialized information services, in 2001 CISTI leveraged its reference service competencies in global STM information to recruit and train business and information professionals to fill that demand.

Today, networked teams of information specialists and technical business analysts provide information research and analysis services and competitive technical intelligence to private and public sector researchers and small and medium enterprises (SMEs) associated with NRC institutes, industrial partnership facilities and technology clusters across Canada. CISTI staff contributes synthesis and analyses of global research as well as patent and market information in order to identify promising research directions, market potential, and commercialization partners. Demand for CISTI's information intelligence services is growing quickly.

Snapshot:

- Over 60 information specialists, client service officers and technical business analysts at NRC Information Centres (NICS) located at NRC institutes in thirteen cities across Canada
- Clients are NRC researchers, IRAP SMEs, ten clusters, industry partnership facilities (IPFs)

Valued research and development (R&D), commercialization, and innovation support:
- Competitive technical intelligence (CTI)
- Business and patent information analysis
- Referrals to experts
- Information intelligence searches, analysis and reports to
    - Assess commercial potential of new technologies
    - Validate market demand
    - Identify competitors & potential partners
    - Propose technology applications

Benefits to small and medium enterprises (SMEs):
- Reduced R&D costs and risk
- Improved chances of commercial success
- Faster time to market
- Increased efficiency and effectiveness
- Better partnerships and alliances

Benefits to NRC Institutes:
- Improved project and program selection
- Reduced R&D project costs
- Early identification of S&T trends
- Improved commercialization strategies
- Increased visibility and leadership for NRC
- Increased impact on creating wealth for Canada

CISTI's NRC Information Centre products and services:
- technical information
- literature searches
- company and market intelligence
- supplier, distributor, product and other company information
- patent and trademark information
- rapid delivery of full text articles from online sources
- current awareness services
- referrals to experts or organizations

2.0   Vision and goals

2.1 CISTI's Strategic Plan

The **CISTI Strategic Plan 2005-2010** is based on the input of 180 stakeholders, including CISTI staff. At nine consultations held across the country, stakeholders voiced remarkably similar visions of the future for STM information. The plan outlines CISTI's strategy for developing information service offerings that respond to the needs of Canadian STM researchers in the digital age.

At the time of writing this business plan, CISTI is in the process of completing a mid-term review of its strategy; internal consultations with staff and external consultations with stakeholders have yet to be completed. A consultant's review in the first half of 2007 established that the vision, mission and goals outlined in the *CISTI Strategic Plan 2005-2010* remain valid for 2007-2010.

One of the key findings of the strategic review was the need for CISTI to maintain and strengthen its role as the National Science Library. In the digital age, fast and seamless access to quality, up-to-date information is vitally important to the S&T research, health, corporate and industrial sectors of the economy. A direction that reflects CISTI's national mandate is to collaborate to develop components of the scientific information infrastructure, and to connect STM communities and content repositories in order to provide equitable access to STM information and knowledge discovery tools.

NRC-CISTI Core Functions
- Enable access to STM information & data
- Enable dissemination of STM research
- Provide information intelligence services

NRC-CISTI Programs
National Science Library
NRC Research Press
Information Intelligence Services

3.0   Environmental Scan

Publishing models are evolving
This is a time of experimentation in terms of finding a sustainable publishing model that will be widely adopted by funding agencies, authors, and publishing service providers. Given the trends toward Open Access, electronic-only and declining subscriptions, the key question is who will fund the editing, layout and coordination of peer review of the digital "first copy" of the article or journal. The publishers who are enabling open access are attempting to collect revenues from authors (i.e., from a portion of their research funding), from libraries (asking them to redirect journal subscription payments to journal publishing) and other organizations who traditionally did not have to pay for publishing. Alternative business models will impact publishers' product and service strategies. CISTI must be aware of and respond to trends regarding Open Access and will need to develop a new funding model for its publishing activities that will take these trends into account.

The research article is evolving in the digital age
Changing researcher behaviour has resulted in a new research process that now combines discovery services and full text, and is focused on the article. Mega-search engines, such as Google, have indexed the vast majority of scientific journals and now offer virtual instant access. This has helped to level the playing field between large and small STM publishers. More value is being placed not only on the article itself, but also on its disaggregated components (i.e., abstract, tables, linked citations, data).

> *Information is becoming "actionable" and capable of better supporting the cycle of research/writing/research by incorporating citation management, reference analysis tools, and visualization tools into their content products.*[1]

Institutional repositories enable Open Access
Institutional repositories are being formed to facilitate open access to outputs of research. Similarly, CISTI has received funding to create an institutional repository for digital publications and data generated by NRC researchers. This project, entitled NRC Publications Archives (NPArC), will be the first federal government department or agency institutional repository, other than that of the International Development Research Centre (IDRC), that is compliant with the Open Access Initiative Protocol for Metadata Harvesting. NRC research publications will be searchable and accessible free to all Canadians. As well, CISTI has a project underway to develop a Trusted Digital Repository for long term storage of digital content.

Connect Canadians to STM information
Canada must meet the challenge of developing a world-class networked infrastructure to support its scientific and health communities. Access to timely, accurate information is essential to economic development and innovation, yet there are many knowledge workers who, through lack of affiliation with an academic library or health network, or who work for an organization with limited resources to purchase information, do not have the ability to connect to the high quality information and evidence-based research they need.

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[1] Source: MarketView–STM Information, September 2006 © Outsell Inc.

*"Canada may once have been a world leader in Internet access, yet today it finds itself years behind other countries in developing a clearly focused strategy to link digital access with digital information. …There are tangible international advantages as well; since digital access supports cultural exports and collaborative scientific research…digital information and networked technologies are key drivers of economic growth and social well-being in the 21st century. **It is clear that the nations that nurture their digital information assets and infrastructure will prosper; those that do not will fall behind.**"[2]*

Opportunities to support access to health information
Canada's research and health information electronic infrastructure has been funded through separate federal, provincial, regional, and sector (e.g. academic or health) initiatives. As a result, there are many separate networks or "island" web-based information resources accessible by particular sector communities, but an unknown number of Canadian health practitioners have no access to these information resources. In the digital age, connections can be made between these autonomous web-based resources. Applications, technology and licensed e-content can be shared.

Access to data is increasingly important to collaborative research
While for now the research article is usually published in print, increasingly publication is in digital format only. Associated data supporting that research is stored in a number of distributed repositories that may not be centrally managed, and can be lost due to technology obsolescence or retirement. Research collaborations cross national boundaries. Data deposit and storage in accordance with international standards is needed for world class research and to support publication of articles based on that research.

4.0 Strategic Objectives

4.1 Focus on Serving Core Clients

NRC-CISTI will re-focus on core clients within the Canadian innovation sector, particularly those not served by other institutions. Core clients include NRC researchers, technology clusters and industrial partnership facilities (IPFs), Industrial Research Assistance Program (IRAP) small and medium enterprise (SME) clients, partners and collaborators in NRC national programs, sector and cross-NRC initiatives, and the wider Canadian innovation community, including academic, health, government and industry knowledge workers.

In the past, the focus was on supporting the needs of other libraries and institutions that served as intermediaries between the content and the end-user. In future, more emphasis will be placed on directly supporting underserved clients who do not have a library or librarian within their organization, particularly entrepreneurs and researchers in the small business sector.

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[2] Source: Michael Geist, Canada Research Chair in Internet and E-commerce Law, U of Ottawa, Ottawa Citizen, 13 November 2007.

4.2 Enable Access to Information & Data

See the following page for a list of partnership projects in support of this objective. As well, CISTI is developing several web portals for NRC program and corporate initiatives and a Canadian gateway to datasets.

CISTI will work towards negotiating expanded access rights to allow NRC collaborators and partners access to STM information resources with the fewest barriers possible. The specific groups targeted will be federal government, SMEs and the health sector.

4.3 Develop and Provide Discovery Tools and Services

Providing access to information alone is not sufficient to support world-class researchers, especially those engaged in cross-disciplinary research. To process and analyze larger amounts of information that will enable new discoveries in shorter time frames, Canadian researchers and innovators require knowledge discovery tools that find novel, interesting and useful patterns in data using techniques such as such as data and text mining, pattern recognition, machine learning, data visualization, optimization and high performance computing. CISTI has implemented a virtual demonstration and incubator platform, CISTI Lab, to enable collaborative development of knowledge discovery tools which will analyse and present information in new and innovative ways.

Partnership Initiatives

Initiative	Description & Partners	Value	Status
Federal Science eLibrary	Purchasing consortium of Federal Science-based Departments and Agencies (SBDA) to expand access to more titles. **Partners:** EC, NRCan, HC, DFO, and AAFC.	Improved access for SBDAs, mitigate collection price increases, improve buying power.	Proof of concept testing.
PubMed Central Canada (PMC Canada)	A mirror site for the US PubMed Central and an open access repository for federally-funded health research. **Partners:** Canadian Institutes of Health Research (CIHR), US National Institutes of Health (NIH) – NLM/NCBI.	Improved access to health information for all Canadians. Aligns with CISTI's mandate as National Science Library.	In negotiations.
Canadian Virtual Health Library	Gateway to web-based health information resources across Canada. **Partner**: National Network of Libraries for Health (NNLH) sponsored by the Canadian Health Libraries Association (CHLA).	Improved electronic access to health and evidence-based information for Canadian health practitioners.	In early stage of investigation for feasibility.
NRC Publications Archive	Internet access to NRC publications in linked CISTI and institute repositories. **Partners**: NRC Institutes.	Access to NRC research publications. Greater visibility of NRC research in Canada and around the world.	Funding for full implement-ation received.
Research Data Canada	Potential being explored. **Working Group** of representatives from research funding agencies, CARL, CNC/CODATA, researchers, federal library and other organizations.	Improved access to research data for Canadians.	Working group and task groups formed.

4.4 Develop and Support Digital Publishing and Web 2.0 Applications

To support NRC strategic priorities, NRC Research Press will continue to provide NRC and other Canadian researchers with an internationally recognized advanced publishing platform and service for disseminating their research within Canada and around the world. Scholarly communication is in the process of redefining itself in light of new technologies, publishing processes and publishing philosophies. NRC Research Press is finding an active and positive role for Canadian scientific publishing in this new world.

New web-based technologies are changing the face of scientific communication. NRC Research Press will continue to develop and integrate these web-based technologies so as to promote Canadian content across the Internet. Services will be developed to deliver greater support and profile for published authors. New Web 2.0 tools will be integrated to provide more research community support, participation and involvement in the scholarly communication process.

To support NRC research priorities described in the NRC Strategy, NRC Research Press will develop new electronic journals utilizing Web 2.0 tools to enhance participation by diverse Canadian research communities. Existing and future research content will be aggregated into new virtual journals, ensuring enhanced web access and supporting NRC's collaborative research initiatives.

NRC Research Press will develop an advanced digital publishing platform to offer to client scholarly societies in Canada, thereby helping Canada to maintain an independent and viable Canadian STM publishing infrastructure. The NRC Research Press has an opportunity to provide a digitization service for the journals of Canadian societies and publishers, delivering metadata and full-text searching.

4.5 Facilitate Decision-making for Canadian Innovators and Entrepreneurs

Scientific research and technology commercialization are high-cost investments with no guarantee of return on investment. Costs to commercialize technology can be ten to one hundred times the costs of technology development, with a less than a 5 percent success rate (Reamer, Icerman and Youtie, 2003). Science and technology decision-makers consequently need support in identifying potentially successful projects, in assessing the market and commercial potential of an innovation, in targeting resource investment priorities and in shortening decision-making timeframes (risk mitigation). Targeting these needs, CISTI has developed a valued expertise in delivering information intelligence services for the benefit of NRC's programs, clients, and partners.

Beyond the expansion of its client base, CISTI's goal is to have a clear impact on the strength of Canada's innovation system by increasing the Canadian S&T community's level of awareness of the use and benefits of information intelligence services. Internal surveys and feedback from stakeholders across Canada confirm that many in Canada's R&D communities are unable to access CTI expertise and services. Those communities include SMEs, S&T incubator companies, technology transfer offices, technology parks, regional economic development bodies as well as other federal agencies.

Key planned activities for 2008-2011 are to expand the availability of information intelligence services and to offer them to additional partners and players in the new NRC programs and key sector initiatives.
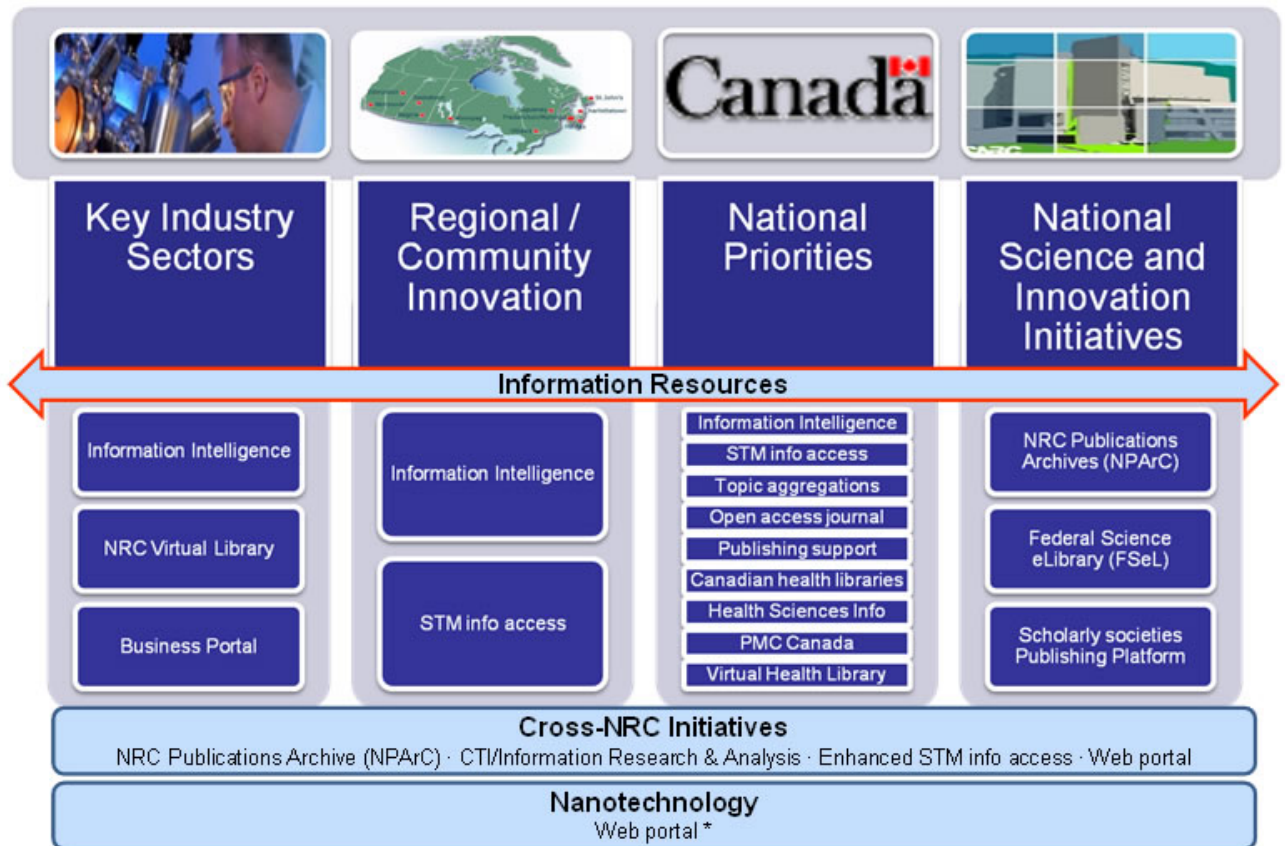
4.6 Support NRC National and Sector Programs

CISTI has identified a number of activities to support the NRC Strategy initiatives. These include:
- strengthening and aligning collection resources to meet the emerging research and commercialization information needs of sector and national program initiatives outlined in the NRC Strategy;
- NRC Research Press publishing projects, including conference proceedings, national program and key sector article aggregations, and a new open access bioproducts journal to disseminate this sector's research and give NRC a higher profile;
- enhanced support for commercialization of research by providing information intelligence services to sectors, cross-NRC programs, and national programs; and
- web portals to support specific collaborative research areas such as nanotechnology.

For a summary of CISTI support activities aligned to the NRC strategic goals, see the chart on the following page.

CISTI Contributions to the NRC Strategy

Key Industry Sectors	Regional / Community Innovation	National Priorities	National Science and Innovation Initiatives
Information Resources			
Information Intelligence	Information Intelligence	Information Intelligence	NRC Publications Archives (NPArC)
NRC Virtual Library		STM info access	
		Topic aggregations	
Business Portal	STM info access	Open access journal	Federal Science eLibrary (FSeL)
		Publishing support	
		Canadian health libraries	
		Health Sciences Info	Scholarly societies Publishing Platform
		PMC Canada	
		Virtual Health Library	

Cross-NRC Initiatives
NRC Publications Archive (NPArC) · CTI/Information Research & Analysis · Enhanced STM info access · Web portal

Nanotechnology
Web portal *

If funded

For more information contact:

National Research Council
Canada Institute for Scientific and Technical Information
Telephone: 613-998-8544
1-800-668-1222 (toll-free)
info.cisti@nrc-cnrc.gc.ca

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"R&D and the diffusion and use of research results are central to economic growth."

OECD report on the scientific publishing industry, 2004