Federal Science eLibrary
Building the STM Knowledge Infrastructure
A feasibility study

Part One: Federal Science eLibrary Feasibility Assessment

1.0 Introduction

The Strategic Alliance of Federal Science and Technology Libraries was formed to seek solutions for the federal research community to the significant challenges presented by changes in STM publishing. The Strategic Alliance proposes to ensure continuing affordable access to STM information resources to all federal government scientists and researchers through a series of collaborative efforts. The cornerstones of the Strategic Alliance vision are a web-based gateway to the resources in all federal libraries, and nation-wide, seamless access to electronic content.

The ADM Committee on Science and Technology accepted a proposal from the Chief Scientist of Health Canada to assess the feasibility of implementing a government-wide program for the delivery of electronic content. This report presents the results of that study.

Part One of this report examines the following issues:

- The researchers' requirements for access to electronic journal literature.
- The current state of access to STM information for the federal research community.
- Trends in STM journal publishing and pricing.
- The response of STM information professionals and libraries to the situation.
- The cost-benefit factors for electronic and print journals.
- Best practice business models for acquisition and deployment of published electronic content.

Part Two of the report looks at the current context and support for federal S&T research and proposes a program implementation strategy built on the framework described by Jean-Pierre Soublière, in *Building the Canadian S&T Information Infrastructure*. The Federal Science eLibrary would be established as a consortium, with a centrally funded and managed delivery model. The program would require an investment of $41.8M over five years to acquire content and to make the transition to a digital environment. Eighty-six per cent of the funding will be used to acquire the digital content.

1.1 Project Objectives and Methodology

In assessing the feasibility of a common e-journal strategy and defining the most efficient governance and operations models, the study team:

- Developed an issue analysis framework and data collection plan to ensure that the right questions were examined and to facilitate communication and decision making on the complex issues involved. The framework is attached as Annex A.

- Interviewed 22 stakeholders from the government and private sector. A summary of the interviews is attached as Annex B.

- Reviewed current literature related to the issues. A selected bibliography is attached as Annex C.

- Conducted a survey of federal researchers to determine their needs and preferences for accessing and using STM literature. The survey questions and summary results are attached as Annex D. Specific results are used to support findings and recommendations throughout this report.

- Surveyed the community of federal STM libraries to determine their response to the challenges they face acquiring and deploying STM content. A summary of the survey results is attached as Annex E.

- Analysed trends in STM journal publishing and pricing. Two emerging publishing models are described in Annex F.

- Developed cost projections for the establishment of the Federal Science eLibrary office and for delivery of an e-journal program. Annex G contains a draft budget for the proposed program.

- Examined best practices to assess the best implementation strategy for the delivery of published electronic content. The Canadian National Site Licensing Project (CNSLP) was examined in depth. Annex H contains a description of the CNSLP as well as a review of similar consortia in the United Kingdom and Australia.

- Identified the impact and risks to the federal research program if the initiative is not successful.

2.0 Researchers' Requirements for Access to Electronic Content

Federal STM information professionals reported that scientific and policy researchers frequently request access to electronic content. The study team conducted a web-based survey to verify researchers' requirements for access to journal literature, particularly full text articles in electronic form, and to elicit feedback on the value of electronic access. In addition, a small paper/manual survey was completed which confirmed that respondents to the paper survey responded in a similar fashion to those who participated in the web-based survey. The survey questions and responses are attached in Annex D of this report.

The survey was distributed in six federal organizations, and was open for 6 weeks during July and August. The survey yielded 2345 responses, more than 10% of the estimated population. The sample profile has these characteristics:

- There are no significant differences in the responses across departments.
- The sample consists of respondents from more than 125 communities across Canada with 42% of the sample from the National Capital Region.
- All respondents reported using the WWW/Internet or a library to locate or obtain scientific information in the form of journals or articles in the past year for themselves or someone else.
- 78% of respondents reported no affiliation with a university in any capacity.

Discipline or Research Area of Current Projects
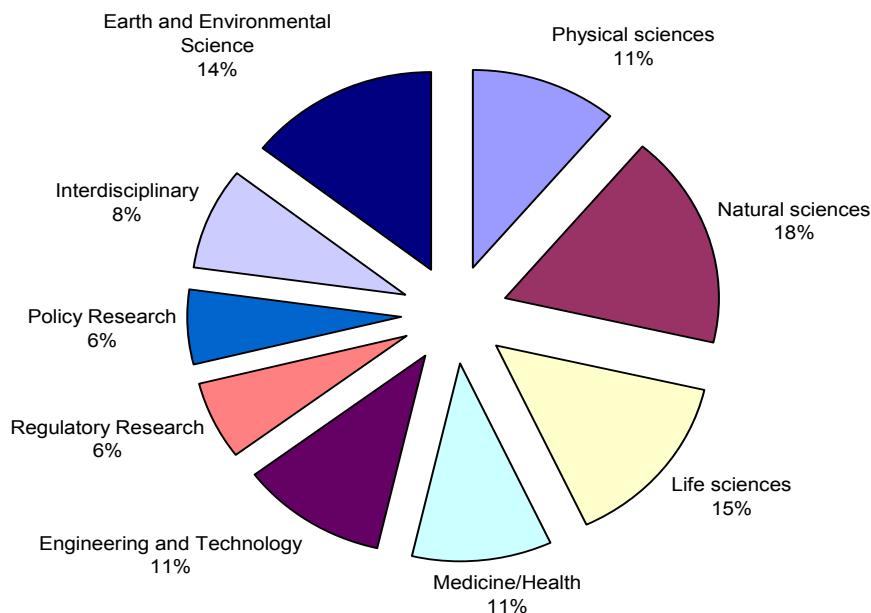
Figure 1: Research areas reported by survey respondents

The survey responses demonstrate that:

- 87% of respondents reported that access to journal literature is important or very important to their research, work or project

- 78% of respondents report spending more than 1 hour per week actively searching for information on the Internet while 37% spend more than 3 hours

- 89% of respondents reported spending more than 1 hour per week actively reading scientific information while 59% spend more than 3 hours a week

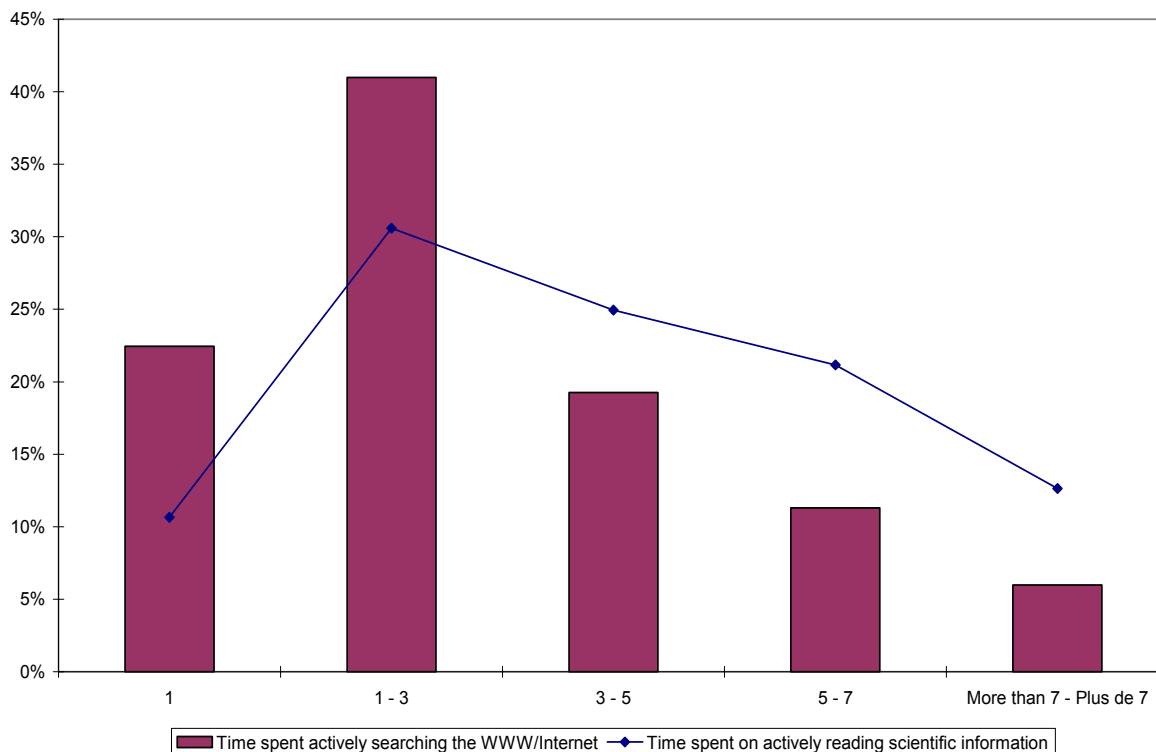**Time Spent Searching and Reading STM Information**

Figure 2: Time spent searching for and using information

- 67% of researchers depend on information related to specific experimental processes through e-journals
- 76% exchange more journal articles with colleagues when in electronic format
- 74% agree that access to electronic journal literature increases the number of articles they read outside their primary discipline
- Of those researchers who publish articles, 58% agree that access to e-journals allows them to publish more articles

The survey results also confirm that use of e-literature improves productivity by reducing search time, replication and filing time:

- 94% of researchers responded that access to e-journals shortens the time they spend searching for and retrieving articles.

As these researchers point out:

> *"It is absolutely critical that senior management realize that desktop computer access to as much of the library as is financially and technically feasible is the one sole key reason scientists here … are able to keep up with their astronomical workload. It is the only way I can stay current, as I do not have the time to go to the library in person for most day-to-day activities."*
>
> *NRCan*

> *"As you know, the number of available journals **on-line and in print** in many sections of the federal government is significantly lower than at most universities, if not all. To have the accessibility to information that the universities have would save the average researcher a tremendous amount of time and effort. As a young employee of NRCan, I truly hope that more journals will become available to us in the near future."*
> *NRCan*

Early notification and the ability to collaborate are also features of access to e-content:

> *"… e-access allows us to do a quick survey of current evidence should an issue arise that requires a quick response, e.g., for briefings, meetings with external groups, etc."*
> *Health Canada*

- 58% of respondents reported that they retrieve, read or download full-text, peer-reviewed articles online or through the Internet on at least a weekly basis
- Overall 81% of respondents prefer to search for articles themselves, either manually or online
- 59% of respondents obtain the articles they request from their workplace library, while 39% obtain them directly from the Internet
- 65% of respondents use their workplace library monthly, or more often

## 3.0 The Current State of Access to STM Information

Although most researchers have access to STM journals through departmental library subscriptions (either paper or online) many indicate they do not have access to many of the titles they need.

Access to Needed Journals
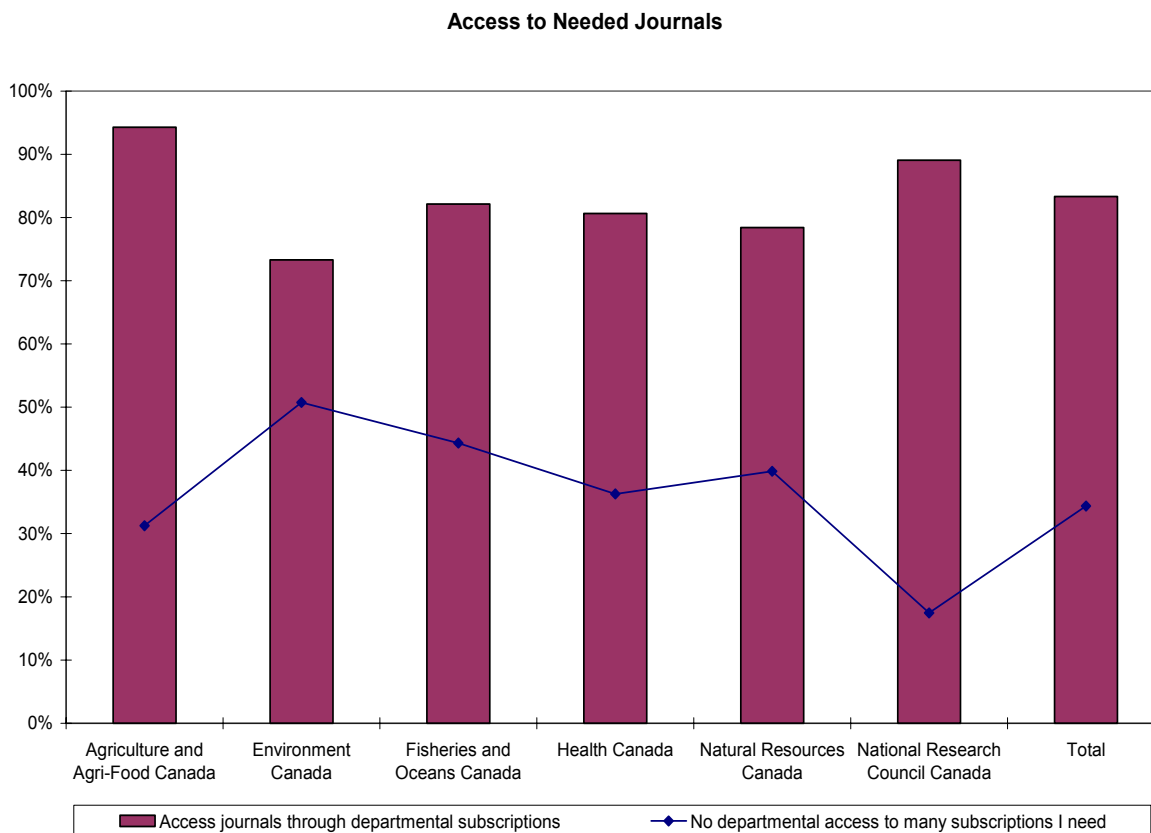
Figure 3: Access to Needed Journals

Furthermore, federal government scientists, researchers and analysts experience different levels of service with respect to the availability of and access to STM information. Easy access to a good range of STM literature is largely limited to employees in large departments located in large urban centres. Researchers in smaller agencies or remote locations face longer delays or travel time in obtaining print titles, and have very limited or no access to electronic titles.

Government purchases of digital content are the lowest of all sectors and a full 15% lower than the academic sector[1].
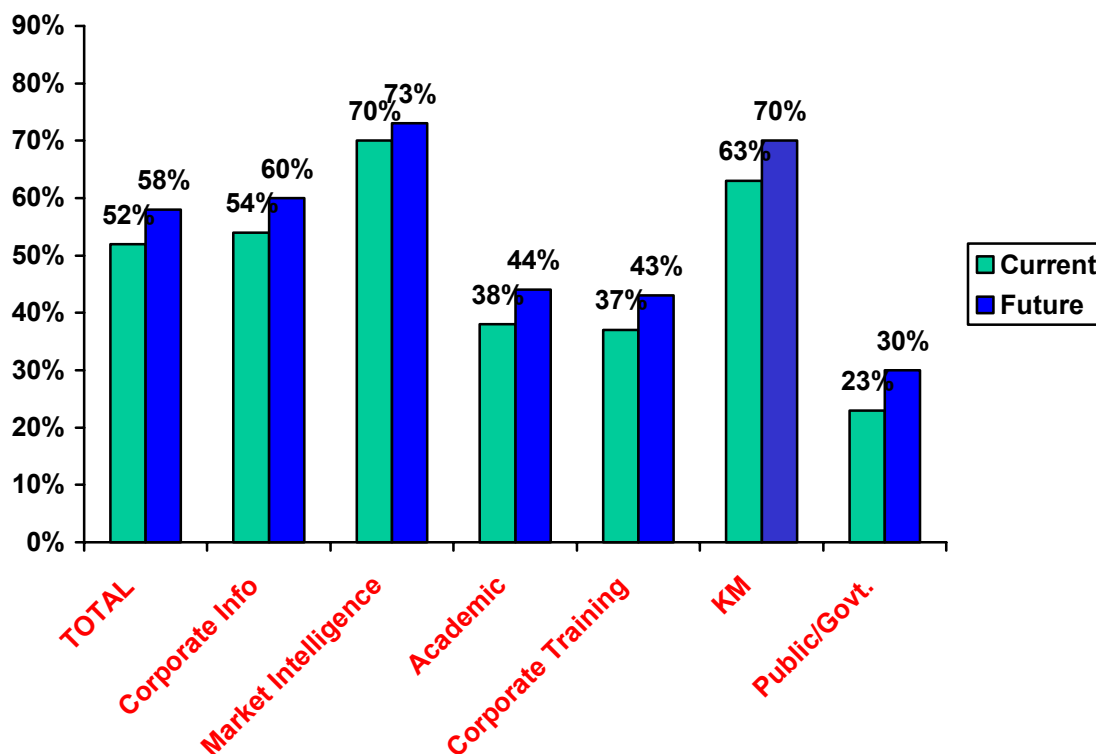
Unfavourable comparisons with the academic sector are particularly noticeable among new recruits, potentially leading to retention and recruitment challenges for the federal sector.

"I recently started a position with the Canadian Forest Service after six years of graduate school research and I have found it exceedingly difficult to do my research now that I have lost access to the University of Toronto online e-journal collection. Another issue is access to e-index services - most notably the Web of Science."

"In my view, if government researchers are to be competitive with university researchers we must have access to collections of e-journals and e-indexes that are comparable to those offered by universities. Access to journals in fields outside of our specialization is of particular value for generating new approaches and innovative methods of analysis."   NRCan

« L'abonnement aux versions électroniques est absolument essentiel si on veut maintenir la qualité de notre travail au niveau nécessaire. »
*   MPO*

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[1] "Buyers & Deployers Accelerate Digital Buys, Chart, (c) Outsell Inc., 2003"

4.0 Trends in STM Journal Publishing and Pricing

The STM publishing industry is a monopoly; prices are fixed and controlled by publishers. Subscription costs have increased 350% since 1988 and will continue to increase an average 8% per year. The study concludes that federal information service providers must develop new strategies to meet the challenges presented by the STM publishing environment.

JP, The Newsletter for Journal Publishers, reports in its 16th Annual Study of Journal Prices For Scientific and Medical Society Journals that "for more than 15 years prices of periodicals have increased at the rate of three times the (U.S.) Consumer Price Index…While the CPI has risen 2.8% to 3.1% annually…prices of all **US periodicals increased annually about 9.5% on an average between 1988 and 2003.**" … "The highest average price increase for 2003 …was the Chemistry and Physics category at $1,626.40USD. The next highest category was Medicine at $847.76USD. The average price for Math, Life Sciences, Earth Science and Botany was $647.10USD."

Average annual increases of 9.5% in each year, over 15 years, represents a 356% increase in cost between 1988 and 2003.

Subscriptions for electronic journals take the form of varied and complex licenses. Similar to annual software licences, these subscriptions are often based on the total number of *potential* users, not actual usage. Publishers defend the price increases on the basis of inflation, a slow economy and their struggles to cover the costs of peer-review and make the transition to the digital world while maintaining print operations, without loss of revenue.

Currently there are as many pricing and license models as there are publishers and subscription agents. Some licences require the print subscription be maintained as part of access to the digital content, or pricing is based on "print + 15%". Analysing and negotiating subscriptions to e-journals is a time consuming task that requires special expertise. Contracts are typically for services, not just a delivered journal issue. Publishers prefer longer-term deals, and librarians can negotiate for lower increases when a fixed period subscription is guaranteed.

It is clear, however, that the digital content is dominating the market. Outsell, an information industry analyst firm, reports that 52% of STM content purchased is now in digital form. Major publishers are also actively digitizing back issues and archives to make them more accessible. Reed Elsevier, a major STM publisher, has converted titles in 14 of 23 subject areas, and other publishers plan to follow suit.

There are important global organisations, such as **SPARC** and **Open Access** that are making efforts to change the model of the scientific publishing cycle. These initiatives are in their infancy, and will not likely provide viable alternatives to the monopoly environment *in the short term*. However, federal libraries and researchers need to make the transition to electronic desktop access now to be positioned to exploit the new models of publishing and information distribution. Descriptions of these programs are available in Annex F.

5.0 STM Information Providers Response

How are STM information professionals and the libraries responsible for deploying this content responding to these trends and to the needs of the researchers?

The need to provide more rapid and affordable access to research results and to cope with escalating journal subscription fees, have led to some creative solutions on the part of STM information professionals: *"some have reacted by cancelling subscriptions, forming consortia to negotiate licensing prices, and investigating and experimenting with new publication models...".*[2]

During the past ten years, the purchasing power of federal science libraries has diminished in the face of journal price increases, foreign exchange rates and the continued growth in S&T publishing. Base funding for federal government library budgets, which represent approximately .03% of all federal expenditures on research, has remained constant despite a 350% price increase and weak Canadian dollar exchange values.

Data from a survey of 89 federal STM libraries covering the period from 1996-97 to 2002-03 confirms the situation.

Across government departments, a variety of mechanisms have been used to relieve library collection deficits – most often, money lapsed by programs at year end is used to purchase content, or funds are provided out of science budgets or other programs. These factors make it difficult to interpret and compare the library budget information provided.

The following table is based on returns from 39 libraries in five science departments. Because of its size and considerable revenue generation activities, CISTI data is reported separately. See Annex E for details.

	% Change CISTI	% Change – 5 Departments
Total Budget	↑ 20%	↑ 23%
Salary Budget	↑ 36%	↑ 43%
Journal Budget (Includes e-journals)	↑47%	↓ 04%
Journal Titles	↓ 09%	↓ 22%
E-journal Titles	↑↑↑	↑↑↑

Figure 4: Financial and Collection data from Library Survey

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[2] Improving Access to STM Literature; The Need for Continuing Dialogue by Bonita Wilson, D-Lib Magazine, June 2003, Volume 9 Number 6 ***http://www.dlib.org/***

Although the data reported is of variable consistency and quality, the following findings are discernable:

- Library journal budgets have remained constant

- While federal library budgets have increased by 23% overall, the increases are almost entirely in the salary envelope (43%) due to contract settlements and pay equity

- The number of journal titles purchased has decreased by 22% (cancelled titles)

- Smaller (mostly regional) libraries generally provide access to significantly fewer e-journals than do the larger National Capital Region based libraries; in fact some libraries offer no e-journals

It is interesting to note that the number of e-journal subscriptions has increased markedly, as libraries strive to respond to the demand for electronic access. Many of these subscriptions, or licenses, are generally available "free" for the first year as long as the print subscription is maintained. In subsequent years, the journals are generally priced at "print + 15%" for the electronic version. Acquiring titles in electronic form only is the most expensive option, and remains unattainable with current budgets.

6.0 Costs and Benefits

An analysis of the costs and benefits of electronic journals versus print publications indicates that there are significant quantitative and qualitative benefits to providing and accessing STM information in electronic form for both researchers and libraries.

Researchers

The most important benefits will be improvements that will support and facilitate transformation:

- Electronic content is available to multiple users at the same time.

- The acquisition of a broad range of titles will enrich access to STM information overall, and ensure equal access to researchers in smaller departments or remote locations.

- The potential productivity savings for researchers is estimated at $24M annually. The researcher survey results confirmed that productivity improvements are real[3].

> *"I would fairly say that it {desktop computer access} saves me about two full workweeks a year (at my salary, that works out to around $3400). Now, if you were to multiply that by the number of scientists here at the GSC (I have heard a number of around 250), and assuming that each saves about the same amount of time, the total is: $850,000."*
>
> *NRCan*

Online access to a broader range of titles provides additional benefits:

E-Just, a two year Stanford University Libraries e-journal user study, reports that "The value of e-journals extends beyond full-text articles. While 82% strongly agreed that the use of e-journals shortens the time spent on article retrieval or visiting the library, more than one third of respondents (34%) strongly agreed that e-journals provide other valuable services or features, such as editorial news, hyperlinking, peer reviews, and alerts or notification services."

> *« …je peux vous affirmer que les bénéfices tirés de cette forme d'abonnement sont inestimables: c'est rapide, souple (on peut faire des recherches informatiques sur des mots-clés), complet, etc. … »*
>
> *MPO*

Fifty-two per cent of respondents strongly agreed that e-journals make them aware of recent research faster and another 40% somewhat agreed.[4] Our own survey results confirm this - 76% of respondents exchange more journal articles with colleagues when in electronic format.

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[3] The Case for a Federal Science eLibrary, p.5

[4] E-Journal usage and scholarly practice, E-Journal User Study, Stanford University libraries, 2002. See: **www.ejust.stanford.edu**

"One comment, in addition to publishing articles, a major benefit of e-journals is to have instant access to research results reported in the press, so that we may work with our provincial counterparts to develop responses from a health policy perspective."

Health Canada

The availability of pre-prints online, and the ability to "click on a link" (citation hyperlink) to pursue relevant articles, to email authors and to link published works with data repositories are all important benefits of access to electronic content.

The ability to manipulate e-content, beyond "full-text articles" is an important feature:

"Much of my work involves color images, and many publications in my field include color plates. It is virtually impossible to produce a useful reproduction of such plates, and in practice older issues are only available as microfiche while interlibrary loan often provides low quality black & white copies. Some authors and publishers do make the color images available in electronic form (e.g., PDF), but getting them often requires contacting the author. People who work with these images generally have better output devices than the library and are more able to produce useful printouts if needed, but often it is enough to be able to view the color images on a high quality display. Color images are increasingly being used in all fields as better visualization tools become available, so this problem is going to affect most researchers in the near future. There is now a trend towards making visualizations available in the form of data files that can be viewed interactively in a way that is not possible with printed material."

DFO

E-journals, indexes and abstracts are just the beginning of an integrated digital repository:

"I'm a geologist who works a lot with large format maps. I hope that eventually the e-Library will be able to include such material. I am part of a project that should eventually be able to contribute much of that."
NRCan

Libraries

While it is clear that service improvements will result from the transition to e-content delivery, there is no guarantee that costs will be lower for the service providers. Most libraries will be required to maintain print collections for the foreseeable future. Back issues of journals and materials already published may never be digitized.

It is more likely that libraries will see a shift to a higher level of activity with e-journals, particularly in training users to access and integrate electronic resources. However, once libraries have transitioned to e-content for most of the collection, there will be changes in operational costs associated with shifts in staffing, resources, materials, space and equipment[5].

The potential for cost reductions exists primarily in the manually intensive work of managing access to print journals, accessioning (check in, following up on missing issues, labelling, shelving and binding) and delivery to clients (photocopies and mail distribution).

An e-journal program will enable the libraries to:

- Manage budgets better by acquiring multi-year licenses that provide price predictability & stability for the planning process.

- Analyse usage statistics to make informed decisions about what content to acquire, ensuring that expenditures are aligned with research priorities.

- Give researchers a much larger measure of the control and independence they are seeking in literature searching.

- Improve the availability of STM literature by providing immediate access to journal articles for many researchers at the same time.

- Implement the infrastructure needed to provide access to a wide variety of e-content.

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[5] Montgomery, C.H and Sparks, J. Framework for assessing the impact of an electronic journal collection on library costs and staffing patterns. In D-Lib Magazine, Oct. 2000, Vol. 6(10)

7.0 Best Practices Governance and Service Delivery Models

In response to publisher monopolies many institutions have formed consortia to strengthen publisher negotiations, realize economies of scale, and in some cases, share the development of access to the information technology systems and infrastructure needed to deliver e-content to the researcher.

The study team examined the Canadian National Site License Project (CNSLP) consortia, along with those formed in the United Kingdom and Australia. Annex H contains more detailed descriptions of CNSLP, the Council of Australian University Librarians (CAUL) and NesLi2, the National Educational Site Licensing Initiative of the U.K.

Canadian National Site Licensing Project (CNSLP)

The CNSLP is a groundbreaking digital library initiative established by the Canadian research library community to increase the capacity for research and innovation in Canada.

CNSLP has been widely recognized in Canada and abroad for its significant role in the development of Canada's infrastructure for research excellence. CNSLP is delivering a suite of scientific research databases and journals from seven major scholarly publishers to sixty-four of Canada's research universities. The project received transition funding of $30M over three years from the Canada Foundation for Innovation, matched by university and partner funds of $20M. CNSLP has managed to obtain excellent value for its investment, and members enjoy $300M worth of e-content for $50M.

CNSLP governance and management structures are designed to ensure accountable decision making through consensus, and equitable sharing of costs and benefits among participating institutions. The 64 members now share costs.

The final program evaluation report endorses the value the project has contributed, and finds that "*Libraries agree that national site licensing has yielded lower subscription prices than libraries could have negotiated on their own or through regional consortia. Sixty percent (60%) of library directors surveyed declared themselves to be very satisfied with the prices negotiated by CNSLP .*[6]"

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[6] Impact of the Canadian National Site Licensing Project, A Report to Partners and Stakeholders, August, 2003, The Impact Group

8.0 Conclusions

In summary, access to electronic content, particularly journal literature, provides significant benefits for researchers, and the federal government significantly lags behind the academic and private sectors in providing access to STM e-content.

The cost of journal literature will continue to rise, and federal library buying power is declining. New funding is needed to help federal libraries make the transition to the digital environment. The consortium model for service delivery has been successful in obtaining lower prices and price predictability.

If the issue of access to STM information is not addressed:

- Federal S&T objectives for excellence in research will be compromised due to a continuing decline in availability of STM literature.

- Federal departments and agencies will experience a continuing decline in researcher productivity and the government's ability to recruit researchers from other sectors will be hindered.

- The ability of the federal research community to address issues that require multi-disciplinary input will be compromised and the opportunity to promote linkages through online scientific communication, both within and outside of the federal research community, will be lost.

- Federal STM libraries will not successfully transition to the digital world, leading to loss of credibility, decline in service and inevitable loss of existing investment and expertise.

Part Two: Building the Federal STM Knowledge Infrastructure

9.0 Support for Federal S&T Research

The Federal Government is committed to "(renewing its) science and technology capacity to respond to emerging public policy, stewardship and economic challenges and opportunities"[7]. It will accomplish this by focusing "on how to strengthen our science and research capacity and on how to ensure that this knowledge contributes to building an innovative economy that benefits all Canadians."[8]

Investing In Excellence, 1996 – 2001; A Report on Federal Science and Technology— 2001 indicates that between 1995 and 2000, the federal government's budgetary main estimates decreased overall from $156 billion to under $139 billion (constant 1992 dollars). Nevertheless, the proportion of the budget allocated to S&T activities increased from 3.5% to 4.3%. While federal intramural expenditures on R&D have increased over the past decade, expenditures by universities and businesses have increased even more rapidly, driven by government policy, federal funding and a rapidly growing economy.

Despite strong commitment to the need for an information system and the repeated assertions that "knowledge matters"[9], there is no recognition of the critical role that library services play in supporting STM research. Federal libraries, as discussed in section 5.0 of this report, have seen their budgets remain constant, effectively reducing their buying power.

Many challenges are facing the federal decision makers and the competition for the limited government resources is strong. However many of the current challenges facing policy makers require input from the scientific research component of government which in turn requires access to the most current information/knowledge to be effective.

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[7] Achieving Excellence: Investing in People, Knowledge and Opportunity, p.52

[8] Ibid, p. iv

[9] Knowledge Matters: Skills and Learning for Canadians

10.0 Canadian STM Knowledge Infrastructure

Jean-Pierre Soublière, a member of the Advisory Committee to Government On-Line, has outlined a vision for the *Foundation for an STM Knowledge Infrastructure for Canada,* which shows how Canada can transform itself to "become one of the top five countries for research and development performance by 2010"[10].

Based on a horizontal collaborative approach to the delivery of STM research and information, the infrastructure is built on three foundation blocks:

- ResearchNet, providing "one-stop-shop" Web access to information sharing, eResearch, eAdministration, and collaboration between federal-provincial granting agencies, territorial governments, academia and NGOs

- Federal Science eLibrary, providing seamless, equitable access to STM literature

- A coordinated approach to producing and disseminating departmental publications and reports

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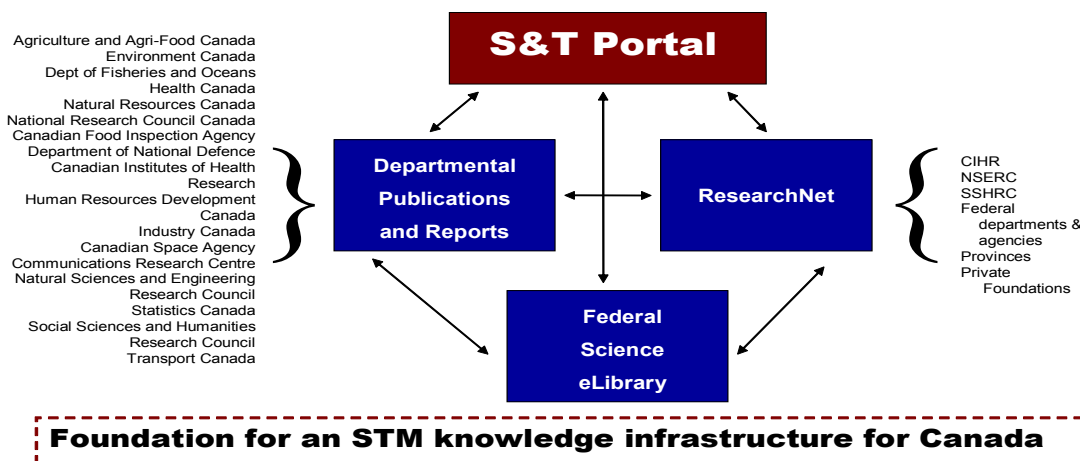
10 Speech from the Throne, January 2001

11.0 Implementing the Federal Science eLibrary Vision

The Federal Science eLibrary component will contribute to Canada's innovation capacity by providing a rich and constantly evolving spectrum of key information resources in science, technology and medicine to all federal government researchers. This will be accomplished through a series of collaborative efforts, including the development of a state of the art digital library available anywhere, anytime, featuring personalized client services provided by information specialists; and a web gateway to enable seamless searching of the federal STM library catalogues. The proposed electronic journal program, the first step in the creation of a national digital library, will provide essential STM information to all federal research professionals.

11.1 Service Delivery Models

The study team looked at four possible delivery models: continuing the status quo, transfer from A-Base, User-pay or "pay-per-view" model, and consortium governance.

Status Quo

Individual departmental libraries negotiate, administer and deliver e-content to their own constituents. This model is not recommended for the following reasons:

- Individual libraries are not likely to obtain reduced licensing costs based on economies of scale

- Research community continues to experience inequities in availability of journal literature, and access to electronic content

- Each library would have to acquire the appropriate expertise for negotiating licenses, carry the administrative burden and develop or purchase the appropriate software and hardware

- The cost of administrative duplication alone is estimated at $10M over 5 years

Transfer from A-Base

Funds are transferred from departmental A-Base budgets to cover the costs of e-journal licenses. This model is not recommended for the following reasons:

- The current fragmentation of library budgets, and the existing inequities in access to journal literature for federal researchers in different departments would be perpetuated and exacerbated

- Individual department A-Base transfers would not provide sufficient funding to meet the increased license fees as well as provide for the transition to the digital delivery environment

Pay-per-view

All government employees pay directly for access to full text e-content.
While this model would have the advantage of personal accountability, and direct attribution of information costs to research costs, it is not recommended for the following reasons:

- Existing inequities in access to STM literature would be perpetuated and the goal of the eLibrary journal program to provide equal access regardless of size of department or location would not be achieved

- Costs of acquiring information this way are high. If 20,000 researchers access 30 articles per year @ $30 each, the cost would be approximately $18M (annually)

- Researchers' productivity would decline as more time would be spent searching for and locating quality information (no content pre-selection by librarians)

- Significant overhead and administration costs for individual financial transactions

- Not all STM e-content is available on a pay-per-view basis; some licenses would need to be continued by the library

- No investment in the delivery system to achieve the transition to digital delivery methods

The study team also considered whether or not federal researchers could gain access to e-content through affiliations with academic institutions. However, 78% of the survey respondents reported that they had no such affiliation.

Consortium Governance, Centralized Operations

The study team reviewed best practices for the design of an efficient and effective business model for the Federal Science eLibrary. The "**shared governance, central administration model**" as conceived by the Strategic Alliance and based on the successful CNSLP experience is recommended for the following reasons:

- There are significant benefits to be derived from inter-departmental collaboration, including alignment of expenditures with federal and departmental S&T priorities, equitable access to STM information for all federal researchers, and a new approach to negotiations with publishers for e-content

- Centralized funding and operations is efficient and will enable a single procurement process for all STM organizations; centralized funding and operations will also promote the use of a standard licence model, thus avoiding administrative duplication costs

- This is the best approach to realize maximum economies of scale and ensure relevance to program delivery in the selection of e-content

11.2 Governance Model

The Federal Science eLibrary Consortium should form a Steering Committee to set direction and be responsible for strategic decisions, such as approval of the procurement process and proposed negotiating strategy, and the objectives of program evaluation. The Steering Committee would be accountable to the funding agency and to the membership.

The Committee membership should include Chief Librarians, client representatives and other specialists (procurement).

There may also be a role for an Executive Advisory Committee comprised of senior government officials, and if deemed appropriate, representatives of other consortia or the private sector.

11.3 Organization and Operations

The Director of the Federal Science eLibrary Office will oversee daily operations and lead the procurement and negotiation efforts. The Director will report to the Steering Committee.

The Office would be responsible for:

- Procurement, negotiating and reporting
- Liaison with all members, and support for the Steering and Advisory Committees
- Administering funds, communications and resolving any issues between publishers and members
- Providing assistance with information technology support, marketing and training materials

11.4 Procurement Strategy

The recommended procurement strategy would follow the CNSLP's " two step procurement process: an open Pre-qualification Bid to elicit general content, functionality and technical pricing information from vendors, followed by a detailed Request for Proposal (RFP) issued to pre-qualified vendors.[11]"

This means that a competitive process can be introduced and libraries would no longer be forced to pay publishers fixed annual subscription fees.

Annex H contains a detailed description of CNSLP's objectives, process and outcomes for procurement. It is expected that the Federal Science eLibrary will follow the same process.

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[11] CNSLP License Procurement 2000-2001, Objectives, Process and Outcomes Final Report

11.5 Proposed Budget and Discussion of Cost Elements

New funds are required to acquire shared content, and to continue some print subscriptions during the transition to the digital environment. Some federal libraries have introduced user fees in an attempt to fund services and offset the budget reductions of the early nineties. As federal organizations, these libraries cannot undertake many activities, such as fund-raising and private sector partnerships, that other public sector libraries do to help offset the severe financial pressure. Neither are federal libraries eligible for government grants to help with the transition to the digital world.

Figure 5 outlines the proposed funding requirements, totalling $41.8M in the first five years.

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	Total
E-content*		7,000,000	7,280,000	10,572,000	10,995,000	35,847,000
IT	1,750,000	362,000	366,000	369,000	383,000	3,230,000
Salaries**	210,000	324,000	329,000	335,000	340,000	1,538,000
Operating	165,000	269,000	269,000	270,000	270,000	1,243,000
Totals	2,125,000	7,955,000	8,244,000	11,546,000	11,988,000	**41,858,000**

Figure 5: Proposed Federal Science eLibrary Budget: e-journals program

*E-Content: estimated 4% annual increase, 3 $1M licences added in Year 4
**Salaries: estimated 2% annual increase; $110K additional salary in year 2
Note: Details in Annex G; figures rounded to nearest 000

	5 year Totals	%
E-Content	35,847,000	**86**
IT	3,230,000	7
Salaries	1,538,000	3
Operating	1,243,000	3
	41,858,000	100%

Figure 6: % breakdown of budget costs

11.5.1 E-content

The first license purchase would be approximately $7M. We have assumed a 4% increase in subsequent years of the contract based on negotiation.

In year 4, we have assumed 3 additional licenses purchased at $1M each. We have maintained the average 4% annual increase.

The estimate of $7M for e-content is based on conclusions drawn from current price negotiation experience. The actual content that will be acquired will depend on many factors, including:

- Products
- Demand of members (based on ranked data to be gathered from libraries)
- Vendor capability
- Technical support services
- Licensing approach (bundled, unbundled print; headcount)
- Ability to report use information
- Annual price increase limits

Annex I contains a list of core journal titles and publishers that would be pursued under the program.

11.5.2 Salaries and Operating Costs

Year one salaries ($210K) represent the Executive Director and administrative support. Year two salaries increase to include 2 officers for negotiation and license administration (additional $110K). Salary increases are estimated at 2% per year.

Equipped office space is included in the estimate for operating funds, as well as training and marketing materials, staff training, travel, etc.

11.5.3 Information Technology

Search interface

The federal government will need to acquire or develop a web portal to enable researchers to exploit the electronic content to the maximum, and to provide search capability across publisher content, manage rights access, provide personalization (My eLibrary) and ensure reliable archiving of electronic resources.

In Ontario, the Ontario Innovation Trust (OIT) has provided $7M to the Ontario University and College Libraries Ontario Information Infrastructure program (OII). The OII includes a Scholars Portal and the purchase and installation of a province-wide, state-of-the-art, computerized inter-library loan management system.

"… searching the Scholars Portal means that the Ontario University community has integrated browse and keyword search access to the full-text articles… altogether, the Portal's current archive is a staggering 2.7 million articles from almost 3,500 journals and it grows daily. Subsequent versions of the Portal will …enable the researcher to simultaneously search combinations of digital resources, such as abstract databases, full-text journals, library catalogues and native-web resources.[12]"

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[12] Queen's University Library – News Releases, Monday, 27 January 2003

Infrastructure Readiness

The feasibility study team contacted several departments and determined that the basic desktop and communications infrastructure exists to deliver e-content in most government offices.

The survey of researchers found that approximately 80% of all respondents have access to a computer, e-mail, the Internet and fax both at work and at home and, of these, 47% have high speed Internet and 30% have a printer.

11.5.4 Program Evaluation

The program will need to be closely monitored and evaluated to ensure it is meeting its objectives, and a model for continued, sustained funding will need to be developed as the program progresses.

The following criteria are proposed for evaluating the program:

- Improved range and number of STM titles available
- Relevance of titles available
- Overall quality of access to and content of the e-journals available, particularly for researchers in smaller departments and remote locations
- Improved price predictability and stability
- Improved value for money
- Sustainability of the funding model

12.0 Opportunities and Risks

12.1 Opportunities

The proposed service delivery model for the Federal Science eLibrary e-journal program is expected to yield the following benefits:

- Achieve economies of scale and better value for money than individual departmental purchase

- A single procurement process and the development of a standard license agreement that can be used in all government departments

- As a demonstration project, the establishment of a single administrative unit to deliver content to all federal STM departments will provide valuable lessons for inter-departmental governance and will provide a model for the entire federal government library community

- Minimize administration costs

12.2 Implementation Risks

The following risks have been identified for the implementation of the program:

A *critical mass of funding* is needed to attract publishers and to achieve economies of scale that are possible through aggregated purchasing; federal libraries do not have access to research grants or outside funding and without new funds, the project cannot proceed; a plan for long term sustainability of the program will need to be developed as part of the program evaluation.

Funding is not guaranteed: the direction of federal government spending plans is uncertain; success is dependent on the full support of the S&T Assistant Deputy Ministers who have many priorities to balance; the impact of this initiative will need to be clearly demonstrated.

Although *consortium governance* is not entirely new to federal departmental libraries (the consortium that exists under the Federal Council of Libraries is largely a "buying club" focused on achieving better subscription prices through economies of scale), the proposed Federal Science eLibrary will actually be responsible for the delivery of the program, and individual members will be accountable for results to their respective departments and the funding agency. The memoranda of understanding and shared governance will require the support and cooperation of Assistant Deputy Ministers and Deputy Ministers in the member departments to ensure success. The consortium will need to maintain good relationships with publishers, and leverage the expertise of CNSLP and other procurement specialists in negotiations.

13.0 Recommendations

Based on the analysis and results of this feasibility study, it is recommended that the ADM Committee on Science and Technology, representing the 6 largest federal science organizations:

1. Sponsor a Treasury Board Submission requesting $41.8M in transition funds over a period of five years; and

2. Approve the creation of the Federal Science eLibrary consortium to govern the acquisition and delivery of e-journals to federal employees to maximize economies of scale and ensure relevance to program delivery in the selection of e-content.

Further recommendations:

3. The Strategic Alliance of Federal Science and Technology Libraries expand its membership to include all departments and agencies that need access to STM information in order to ensure maximum return to the government on the investment requested and to strengthen the value proposition for new funds.

4. Once established, the Federal Science eLibrary consortium should seek a formal agreement with the CNSLP to further leverage economies of scale and expertise.

5. A sustainable funding model that will provide continued financial stability should be developed in year five of the program.

14.0 Suggested Next Steps

Identify a lead agent and sponsor to prepare a Treasury Board Submission.

Develop and execute consortium membership agreements.

List of Annexes

A   **Feasibility Framework**
B   **Summary of Interviews**
C   **Selected Bibliography**
D   **Researcher Survey**
E   **Library Survey Summary Results**
F   **Emerging Publishing Models**
G   **Federal Science eLibrary: Proposed Budget**
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