

SYNERGIES: BUILDING NATIONAL INFRASTRUCTURE FOR CANADIAN SCHOLARLY PUBLISHING

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Editor's note: In early 2007, the Canada Foundation for Innovation awarded funds to two digital library projects, each with a focus on the social sciences and humanities. The projects are the Canadian Research Knowledge Network and the Synergies project. Synergies will bring more Canadian research online and the Canadian Research Knowledge Network will help fund online access to social sciences and humanities literature from around the world. Both projects will receive matching provincial funding, with additional funding provided by the participating institutions. The following article reports on the four-year Synergies project that is addressing publishing and access to journals in the social sciences and humanities.

Smaller multilingual countries face particular challenges in addressing the crisis in scholarly communication. Yet a nation's voice is often defined, and refined, through its literature, including that of scholarship and research. Fortunately the academic community has benefited from a series of recent and emerging partnerships in the production and dissemination of new knowledge. This paper describes a collaborative project addressing publishing and access to research whose contribution will include testing scalability and generalizability. During its four-year grant term, Synergies will not only develop publishing services and expertise within Canadian libraries, it will deliver production-level services to publishers and editors. Synergies is a national project whose practical focus is building technical capacity, but whose intent is to provide a platform for the potential transformation of the Canadian scholarly record.

Overview

The Synergies project jointly addresses two major components of scholarly communication: electronic access to research published in Canada and digital publishing services. Synergies will develop a distributed national network for production, storage, and access to digital knowledge. Formats will include peer-reviewed journal articles, data sets, theses, conference proceedings, scholarly books, and gray literature. Leveraging the dual foundations of Érudit and the Open Journal Systems (OJS), Synergies has an initial focus on social sciences and humanities serials. The 21-university consortium is led by the Université de Montréal and five regional lead institutions.¹

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SYNERGIES LEADING REGIONAL PARTNERS

Québec: Érudit

Érudit, the Québec node of Synergies, is a not-for-profit organization with a mission to produce and disseminate both backfiles and current issues of scholarly journals. Founded in 1998, Érudit is an inter-institutional consortium composed of the Université de Montréal, Université Laval, and the Université du Québec à Montréal. Services offered include:

- digital publishing of current issues in XML, PDF, and XHTML formats;
- management of institutional and individual subscriptions;
- digitization of backfiles in XML and PDF formats;
- preparation of the articles' descriptive data and delivery to bibliographical databases.

Érudit already offers over 30,000 articles in 46 journals in the sciences, social sciences, and humanities. Thanks to funding from the Québec government, digital publishing of the journals is done to XML standards using a software suite developed by Érudit, which automatically handles 90% of the editorial treatment of articles. This ensures a high quality of editorial production that conforms to international norms at low cost. Agreements between Érudit and other providers permit access to a distributed collection through one or the other of the portals. For example, the journals of both the Persée platform (<http://www.persee.fr/>) and the Press of the National Research Council of Canada (<http://pubs.nrc-cnrc.gc.ca/>) are available through the Érudit platform. Moreover, the Érudit data model, under open source license, is used by five journal platforms, both private and public, which group together over 200,000 learned journal articles in Europe and in North America.

As part of the Synergies project, Érudit will not only further develop its journals-production capabilities but also add modules for data sets and monographs. More than 95% of the content in Érudit is open access. Érudit receives a monthly average of 300,000 visits and 1.2 million documents (page views) are consulted per month. Érudit journals are indexed by sources including Google Scholar, PubMed, Repère, Francis, OCLC, Cambridge Scientific Abstract, Chemical Abstracts Service, Elsevier, National Inquiry Services Center, ProQuest, Philosophy Document Center, and Nines. Érudit is LOCKSS-compliant.

British Columbia: Public Knowledge Project

The British Columbia node of Synergies provides support for journals in several ways. The Public Knowledge Project (PKP)—a partnership of the University of British Columbia and Simon Fraser University's Library and

Canadian Centre for Studies in Publishing—manages ongoing development and support of three, key, open source software components—Open Journal Systems, Open Conference Systems (OCS), and the OAI-MHP-compliant metadata harvester—that will be used extensively by the other Synergies nodes. Simon Fraser University Library will coordinate these activities, in addition to supporting other academic digitization and repository projects.

Open Journal Systems (OJS) was originally developed at the University of British Columbia under the leadership of John Willinsky. In seven years, OJS has emerged as the world's leading open source journal publishing system and was recently recognized by SPARC as a Leading Edge Project. Over 1,000 not-for-profit, commercial, and open access journals use OJS in a variety of settings, ranging from single silo journals to national scholarly publishing portals. The software is a robust, standards-based, publication-management system for scholarly journals, providing editorial workflow management, online article access, full-text searching, and interactive reading tools. The PKP community also ranges from individuals with a professional interest in the project to large organizations, such as the Instituto Brasileiro de Informação em Ciência e Tecnologia and now Synergies.

PKP has established working relationships with Google Scholar, LOCKSS, SPARC, and other organizations to ensure that its software is designed to serve the larger scholarly community. OJS has received funds from SSHRC, the Max Bell Foundation, the Soros Foundation, the International Network for the Advancement of Scientific Publishing, and the MacArthur Foundation.

Atlantic Scholarly Information Network: Integrating Érudit and OJS

The Atlantic Scholarly Information Network (ASIN), under the leadership of the University of New Brunswick Library, has begun integrating the Érudit XML-based processes, including the Érudit rich metadata description, with the journal management and delivery services of OJS. Currently, 12 journals are either being published under this combined model or have reached agreement to do so. ASIN will also investigate new models for institutional repositories, seeking to make them more relevant to researchers. As part of this initiative, the Electronic Text Centre at the University of New Brunswick is developing an automated metadata-generation application for DSpace.

Atlantic Canada's Synergies institutions will have considerable latitude in how they contribute, but this will work within a tightly knit regional framework of standardized repository and journal services and processes. Research results will be distributed through a scholarly communication module of the ASIN portal. Guided by a regional journal advisory committee, Atlantic

Canada will be providing a series of publishing services for back and current issues to journal editors. These will range from hosting an OJS instance at their institution of choice to offering full XML article markup with HTML delivery integrated into OJS.

Prairies: Preservation

Led by the University of Calgary Library, the Prairies node of Synergies will be responsible for developing the Synergies preservation program. Leveraging existing technologies, the intent is to establish a framework for trusted Canadian repositories. Initially, this node will focus on social sciences and humanities journals published through Synergies as the preservation test bed. Looking ahead, the infrastructure can be extended for institutions to store and preserve source documents, raw data, and multimedia content and material licensed through the Canadian Research Knowledge Network and other national initiatives. The Prairies node includes Athabasca University and the Universities of Saskatchewan and Winnipeg. Using the OJS software, the Prairies node will be working closely with Athabasca's International Consortium for the Advancement of Academic Publication (ICAAP).

Ontario: Scholars Portal

Ontario will be offering a centrally operated publishing service that is tightly integrated into the Ontario Council of University Libraries Scholars Portal services, yet with decentralized institutional identity and support. Four university libraries are involved in the Ontario node: University of Toronto (Ontario lead), University of Guelph, York University, and the University of Windsor. Services will be based on OJS, the Open Conference Systems, and DSpace. By seamlessly incorporating publishing services with Scholars Portal services, the Ontario Synergies partners will be able to provide more effective and a greater degree of information discovery and dissemination than would otherwise be possible. Specifically journal, conference proceedings and repository content will be integrated and/or exposed to Scholars Portal and other search services.

Scholars Portal is a resource-discovery service housing over 100 million citations and over 12 million full-text documents from all disciplines. From January 2005 to April 2007, 20 million searches were conducted and 12 million articles from 8,000 electronic journals were downloaded. Scholars Portal services are available to faculty, students, and staff in Ontario's 20 universities. Services will also include the secure archiving of published journals and conferences. We anticipate that Scholars Portal's traffic will generate additional use of Synergies-supported publications.

Synergies includes participants from the various milieux of the Canadian research community. These include faculty, journal editors, scholarly associations, directors of research centers, Canada Research Chair holders, librarians, publishers, and technical experts. Each of the leading regional partners brings different but complementary expertise:

- the Université de Montréal with Érudit's publishing and portal technology;
- Simon Fraser University Library with OJS, Open Conference Systems (OCS), metadata harvesters, and open source software development;
- the University of Toronto Libraries with its integration of OJS, OCS, and repository content into Ontario's Scholars Portal;
- the University of New Brunswick Library with its growing expertise in marrying elements of Érudit and OJS; and
- the University of Calgary Library with its focus on preservation and journals with limited circulation.

See the accompanying sidebar for a summary of the expertise, roles, and contributions of the Synergies leading regional partners.

Each regional leading institution will, in turn, collaborate with several universities. Local Synergies partners—currently 16 Canadian university libraries—will be able to choose from a variety of platforms and associated production tools to create and maintain content. The five regional nodes address different development segments of the overall project and will collectively provide expertise to develop, support, and coordinate the use of these systems by the local sites. In turn, the regional nodes will work closely with the Université de Montréal as the lead node to identify, develop, and implement appropriate standards and interoperability mechanisms to provide a consolidated central platform that will collect and present these resources in a comprehensive, seamless manner to all users.

A regional structure allows responsiveness to local publishing realities and reflects Canada's two official languages. A certain level of duplication and complementarity has been built in to promote face-to-face interaction with journal staff, other publishers, and researchers to distribute expertise nationally and to ensure content integrity and preservation. After the initial year of this four-year project, other interested institutions will be invited to join.

A wide range of tools to support the creation, distribution, and archiving of digital objects will be offered. The flexible infrastructure, while encouraging open access, also allows journal editors and publishers to structure subscription options and maintain revenue

control. Any code developed during the project will be released open source. The appropriate license is currently being investigated recognizing the complexity arising from existing legacy projects, and hence licenses.

Program Description

Through a national portal, Synergies will present a consistent and powerful interface to Canadian social sciences and humanities publications. The system will offer a variety of indexing and discovery options and strive for further innovative approaches. Synergies technologies will support metadata standards that comply with the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH), such as unqualified Dublin Core, and other subject and discipline-specific metadata structures as appropriate and when they become available. Synergies will provide language-localization options, both for searching and displaying content, in English or French.

Aims of the Synergies Program

Moving Research and Scholarship Online

For many Canadian journals, online presence is restricted to aggregators such as ProQuest and EBSCO. The Social Sciences and Humanities Research Council (SSHRC) spends \$2.2 million allocated to research and transfer journals to pay for quality assurance (peer review and professional editing and layout) and the creation of a public record. SSHRC support together with subscription income, in general, has been insufficient to fund the adoption of technologies that maximize the impact of scholarly communication. Complementing this support for journal publication is more recent institutional investments in centers of excellence, many of which have modest publishing programs. Even more recently, institutions have begun funding institutional repositories.

Electronic publishing models for the dissemination of scholarship present new opportunities for increasing the impact of Canadian research but lack the underpinnings that traditional print models have—preservation and permanent identification are but two key elements. Without this, concerns about the value of electronic dissemination will continue to be raised. This is in marked contrast to the social sciences and humanities traditional roles as gatekeepers, guardians, and servants of our social, historical, and cultural heritage. Synergies provides a long-term commitment to electronic publishing. The past activities of the five leading institutions attest to their commitment.

Enhancing Access to Publicly Funded Research

Several Canadian funding agencies are actively pursuing policies in support of open access to publicly funded research. The Canadian Institute of Health Research has

recently mandated publication in an open access journal or deposit in a repository for research grants. SSHRC's "in principle" support of open access has been hampered by lack of national infrastructure.

Building Persistent Public Infrastructure

Many countries have already developed public infrastructures for disseminating research results. However, their infrastructures are often limited to only one discipline or publication genre, such as theses or journals. Synergies will be the first infrastructure to include all types of university publications and results of research.

The complex distributed environment represents a political and social achievement. The project aims to build publishing, archiving, and dissemination capacity at the 21 participating Canadian universities, and beyond. Synergies will also establish direct links with dissemination platforms such as Project Muse in the United States, Persée in France and, at the provincial level, Ontario's Scholars Portal and the Atlantic Scholarly Information Network.

Building Cross-Institutional and Cross-Sectoral Collaboration

Effectively altering the face of scholarly publishing requires continual communication across and between institutional and sectoral divides. The Synergies grant application was successful, in large part, because of the participation of key stakeholders such as granting agencies, scholarly associations, and publishers. Stakeholders continue to be integrated into decision-making processes through national, regional, and local governance structures. Indeed, Synergies has created a much needed dialogue between participants whose previous relationships could be described as competitive or minimal. Synergies will also provide an invaluable environment for new research questions in fields such as text analysis, bibliometrics, and knowledge mobilization beyond academic circles to contribute to informed citizenship and the professional and public good.

Developing Open and Robust Innovation Practices

Transformation requires scale—both in infrastructure and diversity. The diverse approaches offered by Synergies partners will provide a solid core of experience. Not only are different technology platforms utilized, the member institutions have vastly differing histories and approaches: some have long-standing scholarly communication programs while others have yet to launch; some are situated within the library as separate cost-recovery units or integrated within library departmental structures and funded through operating

budgets; some report to vice presidents of research while others report with their university presses. Service levels also vary as does focus on open access publishing.

While the initial focus is on scholarly journals in the humanities and the social sciences, the project will support a variety of publication types and all disciplines. By providing robust and persistent infrastructure, it is the intent of the Synergies project to foster experimentation in scholarly communication forms and norms.

Conclusion

Synergies bears some striking overlaps with key recommendations contained in the Ithaka report, "University Publishing in a Digital Age."² Among their recommendations, the authors call for a "powerful

technology platform" and "shared capital investment" in order to develop online publishing capabilities. Key enablers include strategic investment, the development of online publishing capacity, scalability, appropriate

organizational structures, collaboration, and the inclusion of multiple medias and formats. The project also bears some resemblance to Crow's call for publishing cooperatives.³

But there are also some striking differences. Key is a national scale and initial focus on social sciences and humanities journals. Synergies partnerships, while situated squarely within libraries, cross sectors. While promoting a unified Canadian corpus is an intent, the starting point is the provision of a robust technical infrastructure. This project is also deeply embedded in the public sphere and shares a commitment to exploring and furthering new business models, such as open source development and open access. Synergies is a "grand experiment"—one we hope will benefit Canada and the world for years to come.

Project URLs

Synergies: <http://www.synergiescanada.org/>

Érudit: <http://www.erudit.org/>

Public Knowledge Project: <http://pkp.sfu.ca/>

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¹ The Université de Montréal is both the national lead institution and the regional lead for Québec.

² Laura Brown, Rebecca Griffiths, Matthew Rascoff, "University Publishing in a Digital Age," Ithaka Report, July 26, 2007, <http://www.ithaka.org/strategic-services/university-publishing/>.

³ Raym Crow, "Publishing Cooperatives: An Alternative for Non-Profit Publishers," *First Monday* 11, no. 9 (2006), http://www.firstmonday.org/issues/issue11_9/crow/.

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