

Synergies, OJS, and the Ontario Scholars Portal

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Abstract

This paper introduces the CFI-funded project *Synergies: The Canadian Information Network for Research in the Social Sciences and Humanities*, and two of its regional components. This four-year project is a national distributed platform with a wide range of tools to support the creation, distribution, access and archiving of digital objects such as journal articles. It will enable the distribution and use of social sciences and humanities research, as well as to create a resource and platform for pure and applied research. In short, *Synergies* will be a research tool and a dissemination tool that will greatly enhance the potential and impact of Social Sciences and Humanities scholarship. The *Synergies* infrastructure is built on two publishing platforms: Érudit and the Public Knowledge Project (PKP). This paper will present the PKP project within the broader context of scholarly communications. *Synergies* is also built on regional nodes, with both overlapping and unique services. The Ontario region will be presented as a case study, with particular emphasis on project integration with Scholars Portal, a digital library.

Keywords: content management; online publication; digital access

1. Synergies Overview

This four-year project will create a national distributed platform with a wide range of tools to support the creation, distribution, access and archiving of digital objects such as journal articles. It will enable the distribution and use of social sciences and humanities research, as well as to create a resource and platform for pure and applied research. In short, *Synergies* will be a research and a dissemination tool that will greatly enhance the potential and impact of Social Sciences and Humanities scholarship.

Canadian social sciences and humanities research published in Canadian journals and elsewhere, especially in English, is often confined to print. The dynamics of print mean that this research is machine-opaque and hence invisible on the Internet, where many students and scholars begin and more and more often end their background research. In bringing Canadian social sciences and humanities research to the internet, *Synergies* will not only bring that research into the mainstream of worldwide research discourse but also continue the legitimization of online publication in social sciences and humanities by the academic community and the population at large. The acceptance of this medium extends the manner in which knowledge can be represented. In one dimension, researchers will be able to take advantage of an enriched media palette—colour, image, sound, moving images, multimedia. In the second, researchers will be able to take advantage of interactivity. And in a third, those who query existing research will be able to broaden their vision by means of navigational interfaces, multilingual interrogation and automatic translation, metadata and intelligent

search engines, and textual analysis. In still another dimension, scholars will be able to expand further into areas of knowledge such as bibliometrics and technometrics, new media analysis, scholarly communicational analysis and publishing studies.

Canadian researchers in the social sciences and humanities will benefit from accessing two research communication services within one structure. The first is an accessible online Canadian research record. The second is access to an online publication production level services that will place their work on record and will ensure widespread and flexible access. *Synergies* provides both these functions. Built on the dual foundation of *Érudit*, a Quebec-based research publication service provider in existence since 1998 and the *Open Journal Systems*, which is a British Columbia-based online journal publishing software suite used by over 1,500 journals worldwide, and the additional technical expertise developed by its three other partners, *Synergies* will aggregate publications from its twenty one-university consortium to create a decentralized national platform. *Synergies* is designed to eventually encompass a range of formats—including published articles, pre-publication papers, data sets, presentations, electronic monographs—in short to provide a rich scholarly record, the backbone of which is existing and yet to be created peer-review journals. *Synergies* will bring Canadian social sciences and humanities research into the mainstream of worldwide research discourse by using cost-effective public/not-for-profit partnerships to maximize knowledge dissemination. *Synergies* will also provide a needed infrastructure for the Social Sciences and Humanities Research Council (SSHRC) to follow through its in-principle commitment to open access and facilitate its implementation by extending the current venues and means for online publishing in Canada.

The members of the *Synergies* consortium are the University of New Brunswick, Université de Montréal (lead institution), University of Toronto, University of Calgary, and Simon Fraser University. Each brings appropriate but different expertise to the project. At its first level, *Synergies* consists of this five-university consortium that will provide a fully accessible, searchable, decentralized and inclusive national social sciences and humanities database of structured primary and secondary social sciences and humanities texts. This distributed environment is technically complex to implement, and represents a major political and social collaboration which attests to the project's transformative dimension for Canadian social sciences and humanities research and researchers. *Synergies* will be a primary aggregator of research that, in providing publishing services, will allow journal editors (and other producers) to manage peer review, structure subscriptions and maintain revenue control. At a second level, *Synergies* will reach out to 16 regional partner universities who will benefit from, and contribute to extend, *Synergies* functionality. At a third level, in a producer-to-consumer relationship with university libraries and organizations such as the Canadian Research Knowledge Network, *Synergies* will make possible national accessibility. Using this relationship as a model, *Synergies* will be positioned to facilitate similar relationships for journals with licensing consortia around the world.

There are many Canadian content and network infrastructure initiatives, such as electronic journals, institutional repositories, and electronic resources. *Synergies* partners and others are developing these infrastructures. What is needed nationally is an infrastructure that integrates these distributed components in order to enhance productivity and accessibility to Canadian social sciences and humanities at the national and international levels. The *Synergies* platform will integrate the outputs from the five distributed regional nodes in a centralized fashion on a large scale. The relevant technology is already partially in place. There is a need however to integrate and improve the technical infrastructure, and to address the financial processes whereby information can be made accessible to all Canadians in all sectors. *Synergies* will create public benefit from public funds invested in knowledge generation.

Synergies is not only a pan-Canadian technical infrastructure but also a mobilizing and enabling resource for the entire scholarly community of Canadian social sciences and humanities researchers. In embracing the whole of the social sciences and humanities, *Synergies* will foster cross-disciplinary, problem- and issue-oriented research while also allowing further research explorations that can be time-framed, discipline-

based, media or methodologically specific, theoretically constrained or geo-referenced. *Synergies* will thus serve to modernize Canadian social sciences and humanities research communication. It embraces emerging practices by utilizing existing texts, enriching, expanding, and greatly easing access to scholarly data and to audiences. It further provides deeper organizational capacity for a fragmented research record, ensuring and enhancing access to existing data sets. By providing a robust infrastructure, it allows content producers to explore new business models such as open access. However, it also facilitates access via aggregation of journals and an ability to enable agreements between Canadian social sciences and humanities journals and other producers' and buyers' consortia. It lays a foundation for expanding the research record to encompass all scholarly inquiry in order to achieve maximum accessibility and circulation. *Synergies* represents a project in parallel with other national projects and disciplinary databases emerging in other countries, for example, *Project Muse*, *Euclid*, *JStor*, and *HighWire* in the United States, and in France, *Persée* and *Adonis*. Similar to these projects, *Synergies* will capture and disseminate knowledge through a cost-recovery profit-neutral model.

As mentioned above, *Synergies* is the result of a collaboration between five core universities which have been working together for several years. With each partner bringing its own expertise to the initiative, a genuine collaboration resulted in an infrastructure that was conceived from the start as truly scalable and extendable. Each regional node will integrate the input of current and future regional partners in the development of *Synergies*, thus continuing to extend its pan-Canadian dimension. Each node in close collaboration with the head node will develop the functionality and sustainability of the infrastructure over the course of the first three years starting in 2008. The latter will also co-ordinate the establishment of long-term goals and priorities that will ensure the functionality being developed is appropriate and achieves the overall goal of enhancing the end-user experience.

2. OJS in the *Synergies* context

As partners in the *Synergies* project, considering how Simon Fraser University Library would play a role as the British Columbia node, initially we focused on the most obvious and important contribution we could make — digital conversion of Canada's humanities and social science research journals, current and past issues, to electronic form (a Canadian JSTOR – CSTOR – if you will). However, we quickly realized that we could play another important role and our thinking evolved along the lines reflected in the Ithaka Report [1] and we began to realize that our partnership with publishers in this key project could be stronger.

It is worth considering this important report in the context of *Synergies* and to note that the conclusions and recommendations relating to university presses in the United States also provide an important model for Canadian scholarly journals. The recommendation that universities 'develop a shared electronic publishing infrastructure across universities to save costs, create scale, leverage expertise, innovate, extend the brand of U.S. higher education, create an interlinked environment of information, and provide a robust alternative to commercial competitors' [2] could equally well apply to Canada and its scholarly publishing community. One important facet of the Report recommendation is that libraries are included as parts of the recommended model and *Synergies* and OJS have also brought together traditional and electronic publishers and academic libraries.

The Report notes the strengths that libraries bring to the partnership: technology; expertise in organizing information; storage and preservation capability; and deep connections to the academy, with networks of subject specialists familiar with faculty research, instructional needs and publishing trends. It goes on to note that librarians understand how to build collections and disciplinary differences. They understand multimedia content and own enormous collections of value to scholars, have extensive digitization experience and are committed to providing free access. They understand information searching and retrieval. They

are relatively well funded (although any university librarian will be quick to note that most of that funding is targeted, and that buying power is decreasing). Libraries excel at service. Through SPARC, they advocate nationally and institutionally to maximize the dissemination and bring down the costs of scholarly information, for example through open access, and open source publishing options. They are good at collaborating across institutions (for example, most Canadian university libraries have reciprocal borrowing and interlibrary loan agreements, and have been highly successful at leveraging online journal costs through consortia organizations such as the Canadian Research Knowledge Network, Ontario Consortium of University Libraries, the BC Electronic Library Network (ELN). They have experience in building shared technology; for example, SFU Library, with funding from the BC ELN and Council of Prairie and Pacific University Libraries has developed the reSearcher software which crosslinks index entries and journal content, as well as providing interlibrary loan requesting for print materials. They provide access to their collections through union catalogues, and are extending that model to the digital world, for example through Canadiana.org (formerly AlouetteCanada+CIHM) and of course through *Synergies*.

Complementarily, the Report notes the strengths that publishers bring to the partnership: commercial discipline – they understand the financial aspects of distribution of scholarly research, and the need to protect the sustainability of the enterprise. Publishers understand the publishing process, know how to evaluate demand, are experts at editorial selection, vetting and improving content quality. They work with faculty as the creators of scholarly content. They are marketing experts. They cultivate their longstanding national and international networks among wholesalers, retailers, libraries, and individuals. They are able to balance exposure for a work, financial rewards for creators and producers, and tolerable costs to consumers (libraries). They understand copyright protection and rights management.

Thus the reports sets out how libraries, with technological resources and expertise, can play a crucial role in fostering scholarly publishing, by partnering, appropriately, with the academics and publishers, who continue the responsibility for maintain the core editorial and peer review functions. This model is by no means new, in some sense. For example the UBC Press was successfully launched with the leadership and support of the University Librarian, Basil Stuart-Stubbs.

Coincidentally, while the *Synergies* project was being defined and brought into existence, the Public Knowledge Project evolved from its initial project-based inception into what has become an extraordinarily successful and sustainable partnership. It can be argued that part of the reason for its success lies in the conscious adoption of a partnership very similar to that subsequently laid out in the Ithaka report. Dr. John Willinsky, originator of the project, continues his vigorous leadership role, successfully attracting funding and new adopters. Not least of the reasons for the importance of the PKP Project and its success is the goal of bringing the tools for electronic publishing to developing countries and their research output to us. There are three software tools in the PKP suite: Open Journals System (OJS) which provides a scholarly journal process management framework; Open Conference System (OCS) which provides the tools for conference management; and the metadata harvester, which can be configured to harvest a selection of resources, and is used for example for access to the Canadian Association of Research Libraries' institutional repositories. SFU Library has undertaken the role of system development and maintenance, as well as providing a hosting service for interested journals and conferences. Under the leadership of Dr. Rowland Lorimer, the SFU Canadian Centre for Studies in Publishing and the CCSP Press provide the publishing support itemized in the Report. Under this partnership, OJS has expanded its take-up to over 1,500 journals worldwide, been translated into dozens of languages, and developed partnerships with, among others, SPARC, International Network for the Availability of Scientific Publications, Oxford, Instituto Brasileiro de Informação em Ciência e Tecnologia, Brasília, Red de Revistas Científicas de América Latina y El Caribe, España y Portugal (REDALYC), Mexico, FeSalud - Fundación para la eSalud, Málaga, España, Journal of Medical Internet Research, the Multiliteracy Project and the National Centre for Scientific Information, Indian Institute of Science, Bengalooru. Dr. Richard Kopak, Chia-ning Chan of UBC and the

team of Dr. Ray Siemens at University of Victoria, who are BC partners in *Synergies*, are contributing to the reading tools, which will form significant added value for researchers

The growth has not been without its challenges, though they have all been met, most notably, the SFU Library hosting of ‘Open Medicine’ whose immediate success led us to realize we needed to ensure 24x7 uptime. With visits reaching over 40,000 per month, pkp.sfu.ca is the twelfth most visited SFU site. A continuing requirement is the recruitment of intelligent, inquiring and thoughtful individuals to work on various aspects of the project, but the possibility of working at a distance has to some extent ameliorated the scarcity of available local talent.

With interest among all of the *Synergies* partners in aspects of the Open Journals System (OJS), Open Conference Systems (OCS) and metadata harvester, it became apparent that, in addition to fostering the transition or development of Canadian SSH journals online, a key component of the SFU Library role in *Synergies* will be to co-ordinate and foster the further development of the PKP software to provide the features of the software to meet *Synergies* partner- and, more importantly, Canadian scholarly SSH research publication needs. *Synergies* nodes University of New Brunswick and University of Toronto are contributing to the development of the software. This co-ordination will of course continue to involve our many other international partners. Thus, development is focussed on particular features such as interoperability with the *Synergies* national portal site, statistical reporting, reading tools, aggregator modules, scholarly monograph management, and interoperability with institutional repository software such as Dspace. The *Synergies* partnership has also led to a fruitful and ongoing exchange between the PKP and Érudit developers, in particular through the Technical committee. What is most exciting and encouraging is that our *Synergies* and international partners, enabling us to truly embody the vision of Open Source collaborative software development, are undertaking much of the development work. As is often noted, the reasons for failure to achieve that vision have much to do with requisite time commitments and resources. *Synergies* funding allows us to overcome those barriers, to the benefit of Canadian and international scholars and publishers.

The Ithaka Report concludes that “It is one thing to say that the organization needs to have a coherent vision of scholarly communications, quite another for provosts, press directors and librarians to agree on what that is and to put it into effect – especially when elements of this vision must be embraced across institutions... The basic infrastructure is there, and the question now is what the next layer (or layers) will look like. The recent report on cyberinfrastructure in the humanities and social sciences explored this question and focused attention on the state of scholarly communications in these fields. In addition, the terrain may now be more fertile for elements of the electronic research environments described in our report to take root, as the necessary ingredients (e.g. growing interest in eBooks) are falling into place. Finally, there is more recognition that the challenges are too big to “go it alone,” and that individual presses or even universities lack the scale to assert a desirable level of control over the dissemination of their scholarly output.” [3] This conclusion applies no less to the *Synergies* project, and to the PKP Partnership.

3. Ontario Scholars Portal

In addition to the development of two publishing platforms and the national portal, the work of *Synergies* will be carried out by a series of linked regional centres. Each region will provide a common set of core services to Canadian scholars. In addition, regional nodes are focusing on related key elements. The Ontario region is exploring search. A key issue for electronic publications is academic findability, acceptance and persistence – clearly the latter two are related to the first. Canadian scholars and publishers want to be found on the open Net, but also on established scholarly databases.

The *Synergies* Ontario node is comprised of York University, and the Universities of Guelph, Toronto (lead) and Windsor. Services provided include journal hosting using OJS, conference hosting using the

Open Conference System and repository services using DSpace. All selected platforms facilitate search engine crawling but what about recognized scholarly finding tools such as abstracting and indexing sources? This is a common question from journal editors – how can I get indexed in the leading A & I disciplinary database(s)? What is the application process? And how long will I have to wait? The Ontario Synergies regional node has partnered with the Ontario Council of University Libraries (OCUL) [4] to not only provide a presence within an well-known scholarly finding tool, but one that seeks to integrate itself into the academic workflow and emerging library archiving practices.

OCUL is a consortium of twenty university libraries, including the Ontario *Synergies* partners. OCUL'S vision is to be a recognized leader in provincial, national and international post-secondary communities for the collaborative development and delivery of outstanding and innovative library services. Organizational goals include building effective practices for advocacy, collaboration and organizational development; providing a robust, sustainable and innovative access and delivery services and building comprehensive and integrated digital collections. Projects often begin with grant funding but ongoing costs are then assumed by the membership. Founded in 1967, OCUL serves approximately 382,000 FTE students, staff and faculty within the province of Ontario. Joint services include resource sharing, collective purchasing and the joint creation of the digital library, Scholars Portal (SP).

Scholars Portal provides the infrastructure to all Ontario universities to support electronic access to major research materials. The portal is a gateway to a wide range of information and services for all faculty and students in the Ontario universities. *The goals of SP are to support research, enhance teaching, simplify learning and advance scholarship.* Specifically, Scholars Portal was established in 2002 with four primary objectives

1. To provide for the long term, secure archiving of resources to ensure continued availability.
2. To ensure rapid and reliable, response time for information services and resources.
3. To provide an environment that fosters additional innovation in response to the needs of users.
4. To create a network of intellectual resources by linking ideas, materials, documents and resources.

OCUL's strategy focuses on locally hosting and integrating a range of collections and services into Scholars Portal:

- SP contains approximately 200 million citations from 200 locally loaded abstracting and indexing databases: approximately 47% are scientific citations, 29% multidisciplinary, 18% social science and 5% from the arts and humanities.
- Thirteen million full text journal articles from over 8,250 journals are locally loaded. In 2007, 4.2 million articles were downloaded. Publishers include Elsevier, Oxford, Taylor and Frances, Berkeley and the American Chemical Society. Member libraries have integrated Scholars Portal into RefWorks and courses management systems such as BlackBoard.
- Refworks hosting is provided not only for Ontario but also for a total of sixty-seven institutions from every Canadian province. Thirty thousand regular users log in about 160,000 times a month during peak academic periods. These users collectively manage over 4 million citations.
- The Ontario Data Documentation, Extraction Service and Infrastructure (ODESI) project, in the early stages of implementation, will provide researchers data discovery and

extraction services for social science survey data. It is expected that this service will grow to include geospatial data.

Current plans are aimed at providing a rich tool set for users:

- Provincial funding will allow for some Scholars Portal data and search functionality to be made freely accessible. This will include open access journals, 120,000 books scanned from the University of Toronto collection as part of the Open Content Alliance and some journal metadata.
- Distributing and archiving over 150,000 e-books on ebrary's stand alone technology platform: ISIS

Two planned initiatives carry special import for *Synergies*: the migration of data into Mark Logic and trusted digital repository certification.

SP has begun migrating locally loaded data from ScienceServer to a Mark Logic content platform. [5] Mark Logic stores XML documents, an encoding format increasingly used by publishers, in native format. By building indexes on individual works, XML elements and attributes, such as tables or illustrations, it builds indexes not only on words but context and hence can provide a richer search. Relevance-based searching, facet-based browsing, thesaurus expansion, language-based stemming and collations, automatic-classification, web services, AJAX facilitate incorporating current Web technologies into a new interface.

As part of content migration, SP staff will be transforming all records from the proprietary ScienceServer DTD to the NIH Journal Archiving and Publishing Schema. Not only is NIH non proprietary, it also supports full text and metadata only sources. ScienceDirect is a metadata only DTD. The NIH schema will also allow for links to external resources such as genebank database and data integration with external applications such as Goggle documents. The target release date is September 2008.

In order for *Synergies* data to be fully searchable within Scholars Portal, we have begun mapping the OJS native and Érudit DTD to the NIH schema and loaded a few sample journal issues. Once the pilot is complete we will pilot integrating other content types and later invite participation from other *Synergies* hosted content and OA providers. It is often difficult for small journals to transition into the electronic realm, let alone alter their production methods to fully exploit the realm's potential. Over the course of the project, we will be seeking cost effective methods to assist journals with this transition.

Processes are being re-engineered not only to fulfil the move to Mark Logic but also to begin satisfying requirements of a "Trusted digital repository" [6] External review of practices and policies is planned for 2008-9. Consultation with the University of Calgary, which is charged with developing a preservation framework for *Synergies* partners, is scheduled. In looking to the future, OCU envisions a future where Scholars Portal can connect to the citation to the users workflow and support collaborative research. *Synergies* shares similar aims, though focuses on moving and aggregating Canadian scholarly works online.

4. Conclusions

The *Synergies* project is important for granting councils, for universities, for individual journals, for academics, and for Canadians. *Synergies* will facilitate both public access within Canada and international access and prestige. Academics' citations will increase substantially as they enjoy much greater national and international exposure. Journals will be able to increase their exposure and find new ways of aggregating content with comparable journals while maintaining their financial viability. Universities, through their institutional repositories, will increase their international reputations. Scholars representing Canadian

universities will benefit from an enhanced profile on the national and international stages.

Based on the current expertise of each of the regional partners, *Synergies* will also very quickly be in a position to become a leader in the field of digital humanities and electronic publications around the world. Thus, Canada's position on the international level will be reinforced through *Synergies* and the research it will enable. Furthermore, *Synergies* will establish itself as an advisory technical committee for policy-makers in Canada, and will play a role in the development of future collaborative projects around the world. The project will also help transform scholarly communication and promote a greater degree of interdisciplinary work. All Canadians are stakeholders in this enterprise and should be vitally interested in it, since they will be able to benefit from access to the research that is paid for by their tax dollars and that is contributing to transforming their society in an effort to democratize knowledge.

More than just benefiting present-day research, the organization of data within the *Synergies* infrastructure will be standardized for use by future research initiatives. An initial investment in *Synergies* thus profits not only already-identified research projects, but it will also benefit many research projects to come. Academic communities in Canada and elsewhere will have access to content that was previously unavailable or obtainable only with great difficulty. As well, this content will enjoy the extensive functionality—powerful searching tools, textual and other forms of computer-assisted analysis, and cross-referencing between disciplines—that will be available in the online environment developed by *Synergies*. Moreover, *Synergies* will allow researchers to ask new questions, to draw on previously inaccessible information sources, and to disseminate their results to a much broader range of knowledge users in the public, private, and civil sectors of society. All of these possibilities will greatly benefit Canada as a whole. Once fully operational, *Synergies* will provide researchers, decision-makers and Canadian citizen with direct, organized and unprecedented access to the vast store of knowledge created within our universities, in both official languages, regardless of geographic location, subject or discipline.

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6. Notes and References

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