Community Consultation on Infrastructure in the Social Sciences and Humanities

May, 2009

In preparation for discussions between SSHRC and CFI on the evolution of CFI programming to support more effectively the needs of the social sciences and humanities (SSH) research community in Canada, SSHRC consulted with SSHRC Leaders[1] from across Canada, framing that consultation with a background document (Annex A) and three questions:

1. Does CFI's current program architecture meet the needs of the SSH community? L'architecture actuelle des programmes de la FCI répond-elle aux besoins des chercheurs en sciences humaines ?
2. What new types of infrastructure are SSH researchers looking for currently? Actuellement, quelles sont les attentes des chercheurs en sciences humaines quant aux nouveaux types d'infrastructure
3. Does CFI programming present any significant barriers for obtaining support for SSH research infrastructure? L'architecture actuelle des programmes de la FCI présente-t-elle des barrières significatives à l'obtention de soutien à l'infrastructure de recherche en sciences humaines?

This report summarizes the outcomes of those consultations, incorporating reflections from 10 institutions which have been successful in obtaining support from CFI in the past. Inevitably there is a diversity of opinions on almost any issue, but this report attempts to reflect faithfully the main body of opinion advanced in the individual submissions.

Context

> *While it might have been true at the start of CFI that SSH community was not hugely involved in infrastructure for innovative research this has changed… I consider that the need for this funding is as important as for the other sciences (natural and health).*

> *A university administrator*

Research in the SSH has been undergoing significant change in the last decade, characterized by increasing multidisciplinarity, e.g. in such fields as digital media and social innovation; use of quantitative methods that require access to large scale databases; and engagement in large-scale collective activities. Access to state-of-the-art infrastructure is becoming as important for the SSH as health and the natural sciences and engineering (NSE), but the nature and balance of the required infrastructure portfolio is distinctive, with the majority of needs in the range of $50,000 to $250,000, and a heavy focus on data and human infrastructure. On the other hand, researchers' understanding of the benefits of data and technology to enhance their research and how to access

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[1] SSHRC Leaders are senior university administrators serving as points of contact for SSHRC for two-way dialogue on program and policy issues. A list of current Leaders is available on SSHRC's website at http://www.sshrc-crsh.gc.ca/site/about-crsh/committees-comites/leaders-eng.aspx

it from CFI appears not to have evolved as rapidly as research needs. Nor has the CFI structure evolved at the same pace of these changes. Particular issues that should be kept in mind in this context are:

- A lack of understanding of the potential contributions of new technologies to the conduct of SSH research;
- The fact that there is still a considerable distance to go in creating, let alone consolidating, a culture of working "in labs" or" knowledge groups" in the SSH;
- SSH researchers are not used to parsing their research programs into "research resources" that are normally used collectively and research activities;
- Establishing the linkages required to address large socio-economic and techno-economic problems remains difficult because of the traditional barriers among disciplines and sectors, often because of the lack of appropriate "transaction spaces"[2];
- While SSH research is not as equipment intensive as health and the NSE, it can be exceedingly human-resource intensive – an aspect that has been problematic in managing the 40/40/20 funding split;
- Large scale research in the SSH (e.g. stochastic methods) require as sophisticated and flexible tools as the study of complex environmental and biological systems.

Does CFI's current program architecture meet the needs of the SSH community?

Past CFI support has been particularly effective in underpinning significant evolution of SSH research (e.g. the CFI-funded Research Data Centres have been remarkably successful in building capacity in quantitative social sciences), but there remain some pre-occupations about the capacity of the current program architecture to meet existing and future needs in the SSH.

1. Leaders Opportunity Fund (LOF, and its precursor NOF) – This appears to be a particularly effective means to support the infrastructure needs of the SSH, many of which are small scale. Indeed, approximately 47% of all SSH awards appear to be in this class. However, the restriction to $1M and 3 researchers does limit its value for larger scale enterprises. There is also a particular need for an infrastructure mechanism that better responds to the needs of mid-career researchers – which is limited in the case of LOF.
2. Leading Edge and New Initiative Funds (LEF/NIF and its predecessor the Innovation Fund) – There have been relatively few awards in the SSH (and also relatively few such applications) and a perception that this results from:
   - A lack of awareness of the CFI funding opportunities or how to parse an SSH initiative into infrastructure and operating components;
   - Concern that many of the key elements of SSH infrastructure (e.g. human infrastructure – see p. 7) are not eligible for support – diminishing the appeal of this program for support for legitimate SSH infrastructure;
   - A perception that the CFI committees do not fully understand the differences in SSH utilization of infrastructure;

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[2] The term "transaction spaces" connotes opportunities for researchers from different disciplines and for researchers and research users to interact, both formally and informally. These and are often created by purpose-build spaces (physical venues) in which researchers, research trainees and external partners work and talk, catalyzing spontaneous knowledge mobilization or formal structures such as networks, symposia and joint research activities.

- Inability to obtain the matching funds (either from certain provinces which are uniquely focussed on commercialization or other sources or from external partners, which are often not-for-profit organizations)
- Initiatives that are too large for LOF and too small for LEF/NIF

   On the other hand, this program does provide well for researchers in psychology and archaeology where there is a closer alignment with the culture and methodologies of the NSE.

3. <u>CRC CFI Infrastructure Awards</u> – As in the case of LOF, this is a good mechanism to access CFI funds in the SSH. In fact, approximately 42% of the CFI SSH awards appear to fall in this class. However, not being able to access IOF funds for support of O&M represents a particular and asymmetric hardship in the SSH because of the difficulty of accessing ongoing research support (e.g. SSHRC grants are small and low success rates mean that even excellent projects are not supported). This has resulted in "system inefficiency", e.g. CRC's devoting time to maintaining databases and technology, instead of a focus on the objects of their research.

4. <u>Infrastructure Operating Funds (IOF)</u> – For those researchers who have obtained infrastructure support from CFI, this is a very important program for the SSH. SSH researchers do not normally have access to the level of operating grants as their colleagues in the sciences and engineering (NSE) and as such rely very heavily on the IOF.

5. <u>Platforms</u> – These can be very effective vehicles for the SSH community, but the concept could be applied to the regional and local level. See below.

What new types of infrastructure are SSH researchers looking for currently?

Databases - In almost all submissions, support for databases of various types is the prime focus of response. Evidently this is the major preoccupation for alignment of research needs in the SSH with CFI's program architecture and policies. This need for effective support of databases may also extend to health and the NSE, but is acute in the SSH. One particularly cogent comment from a senior university administrator highlights the urgency of bringing to an end the era in which a researcher builds a database from scratch, in all probability duplicating work of others, and then struggles to maintain it for his/her program and students. This is inefficient and counterproductive.

Some of the specific needs in relation to databases:

- *Eligibility of database construction* - Research databases are the "synchrotron light source" of the SSH. And, in the same way that facilities in the natural sciences and engineering are often a mix of "make and buy", so too are those in the SSH – with "make" entailing the collection and organization of data and the development of access systems; and "buy" entailing the acquisition for a fee of relevant data sets. Both sets of activities may be used separately or together to make the facility available for use in multiple projects.
- *Hardware* – funds for computer hardware, servers, data storage equipment, renovations and salaries of technical personnel to develop the system. This part of database development is generally well recognized by CFI.
- *Regular or periodic updating* – For many SSH databases, regular or periodic updating is an essential, not optional, component of the infrastructure. It is this very feature that creates the unique knowledge resource that sustains world class research.
- *Making databases Web-based and accessible* – Web access is a *sine qua non* in today's world. This requires support for programming, consultants and consultations, and especially for effective data access, protection and management.
- *Ongoing/long-term infrastructure needs* - Once databases are in place, an essential and ongoing requirement is support of highly qualified technical support and support for the costs of communication/diffusion, enabling them to serve as a local, regional or national resource or

platform. It is also not appropriate to assign such work to a graduate student who would not be in a position to deliver services with the appropriate continuity and rigour. There is a perception that researchers in the NSE and health have access to a wider diversity of funding sources for such expenses.

A quote from one of the submissions expands on the nature of the SSH needs

> *CFI should quickly redefine the specific meaning given to the documentation-building phase on which the social sciences and humanities are based in order to complete the well-accepted notion of "infrastructure" (i.e., building databases, offering excellent programming services, providing computer and office equipment, etc.) As data retrieval and processing are an integral part of the research process, they are excluded from the notion of infrastructure. However, in the social sciences and humanities, how can we define the systematic retrieval and processing processes that enable the creation of organized and flexible data banks to meet the requirements of future research—even if this research isn't foreseen when banks are created? At this stage, we often talk about acquiring existing data banks. However, we know that this type of infrastructure barely exists. As a result, the overall funding of infrastructure should support the establishment of a flexible and versatile documentation infrastructure. In some social sciences and humanities disciplines, like social economy, it would be possible, for example, to systematically digitize data banks using modern storage and filing techniques. This is the type of infrastructure that would be adapted to our disciplines.*

> *A university administrator*

Electronic files , or e-records and records management as infrastructure - Funding for the development of more high-performance computing and records management is needed, e.g. providing researchers with access to all of the relevant legal documentation involved in key legal decisions (affidavits, facta, lower court decisions) on a consolidated web portal. As in the case of databases, it is crucial to have a trained person to manage and arrange these documents.

New media, especially multimedia and video - In the area of creative works, a number of researchers are looking for infrastructure that will enhance work in new media, especially multimedia and video. These require a significant initial investment in technology which is CFI eligible, provided there is appropriate recognition of the value and methodologies of such activity by the CFI committees.

Cultural research - Cultural research involving collaboration with members of cultural communities is a large area of research interest that could be more fully addressed through CFI infrastructure. The need is to enable collaborative and global work utilizing videoconference technologies, computing resources, and purpose-built spaces that are designed to be used in culturally sensitive ways.

Designated research spaces - For many SSH researchers exciting advances come from cross disciplinary contact that is facilitated by sharing common workspace (e.g. a cross disciplinary centre for medical ethics that brings together the very latest research from sociology, psychology, philosophy, communications, biochemistry). Such spaces may also serve as interview rooms, venues for focus groups, videotaping of simulations, and actual research exchange. However, providing a rationale acceptable to CFI for the creation of such space that may also have to be

used as office space given the current space crisis is a difficult and high risk venture, and has precluded some initiatives from getting off the ground.

Project managers – As the SSH moves into more large-scale collective research activities that rely on infrastructure serving a broad community of researchers and students, it is becoming critical that there be professional managers, and trainers for exploitation, of these research resources

While there was recognition of the expressed desire of CFI to integrate the SSH in many submissions, there continues to be a sense that the overall CFI program architecture and policies are dominated by a culture of laboratory-based research, and as yet have not fully adapted to the core needs of SSH knowledge infrastructure that requires periodic or regular updating (e.g. election data; legal decision records, longitudinal databases where the research value is absolutely dependent on periodic data collection) and ongoing professional management for ensuring a high return on the investment.

Knowledge Mobilization – Canada needs a national platform for SSH research collaboration that reflects and respects the scope of knowledge mobilization (KMb) and will allow researchers and research stakeholders to connect, collaborate and manage content. CFI has invested in national infrastructure for SSH publishing (CKRN) and for archiving (Synergies), both funded in the 2006 National Platforms competition. These national platforms allow for the "university push" method of knowledge dissemination but do not enable research collaboration or the engagement of non academic research stakeholders in the spectrum of research and knowledge mobilization – e.g. "user pull" as well as the co-creation of knowledge and collaboration between the campus and community. Synergies has a KMb mandate but they do not have a mechanism for supporting/facilitating KMb beyond making finished research products widely available.

Collective and community resources – There is a particular opportunity to improve the SSH research environment through support of diverse collective or community resources. This entails local and regional platforms that provide such things as computational/informatics infrastructure for individuals and small teams. Similarly this would include other forms of infrastructure that transcend and bring together individuals and groups that might otherwise not be able to sustain forefront infrastructure and hence benefit from the concomitant synergies.

Does CFI programming present any significant barriers for obtaining support for SSH research infrastructure?

The application form - The application form is perceived as problematic in language and structure, being focussed on hardware and technology rather than "human infrastructure which is most needed in the SSH. While appreciative that CFI seems to be flexible enough in its assessment criteria to include, for example, creative work as a valid form of research and to accept the importance of non-Western models of knowledge, there are ongoing concerns with the apparent requirement to translate research questions into language that seems foreign to SSH disciplines in order to fit the rubrics required by CFI. Also, while it is true that policy and quality of life issues are listed as important contributions in a few sections of the guidelines, the language of individual program requirements emphasizes the technology. There is particular difficulty in showing the direct benefits to Canada when the research being conducted does not use the language associated with the concept of "application".

While this discussion focuses on CFI, institutions must also play a role in helping social science and humanities researchers see that innovation is not just in the sciences, but that social innovation is of equal importance. This requires some assistance from CFI in ensuring university messages are consistent with the CFI policies.

Lack of harmonization in infrastructure definitions - More than one comment was made contrasting the more inclusive definition of infrastructure by FQRSC with the restrictive CFI definition. In particular, FQRSC allows the incorporation of such personnel as administrative assistants and professional coordinators of infrastructure.

Difficulties in obtaining matching funds - Developing a package of matching support for projects in the SSH is much more difficult than in other fields. The fact that SSH CFI projects often require very specialized equipment means that those vendors are not used to selling equipment with a special CFI rebate. In addition – the interpretation of institutional and in kind support is problematic as certain types of in-kind support, travel, services and salaries that have gone into the creation of a CFI-related initiative are frequently not within the allowable categories. Even more importantly, some provinces provide matching support only when the research sustained is directly targeted at commercialization, placing SSH initiatives that have a large, but longer term economic potential at a major disadvantage.

As a result of these various factors, and contrary to most CFI projects in the NSE and health, those in the SSH require a major cash investment from the Faculty/University/applicants. There was some sentiment that this financial reality has resulted in institutions differentially supporting those initiatives in the NSE and health where matching funding is more easily obtained, despite high quality, creativity and convergence with their Strategic Research Plan.

The "white elephant" problem – In the absence of a clear path for longer-term operational support of major research resources (e.g. a manager for the infrastructure), and regardless of the quality and research potential of the SSH initiatives, there has been some reluctance to pursue them, especially when they are multi-institutional in nature, for fear of creating a "white elephant" – a state-of-the-art resource that cannot be maintained at a level adequate for effective research use. SSHRC grants are not at a level and of sufficient duration to provide the necessary operational support and high levels of institutional commitment are required at the initial stage, leading to this concern.

Suggestions for moving forward

Many of the submissions contain suggestions for *enhancing CFI's responsiveness* to strong SSH initiatives. On program architecture, some of the key comments are:

- *For improved appreciation of the nature and needs of CFI infrastructure* - some respondents favour a separate program for the SSH; another suggestion is a separate first level review committee, while maintaining the competitive aspect of the CFI programs.

- *For the mid-ground between LOF and LEF/NIF* – for many, a critical gap is provision of some form of opportunity to access infrastructure for mid-career researchers with medium scale infrastructure, whether through an expansion and increased budget for LOF, or particular approaches targeted at researchers in the SSH.

- *For addressing the challenge of accessing matching funds in the SSH* – questions were raised as to whether CFI could provide possible special exceptions for the SSH. There is an opportunity here for CFI leadership to articulate the value of SSH research in its interactions with provinces.

- *For the O&M problem* – special consideration of initiatives in the SSH for IOF allocations

On the nature of *eligible expenses*, the majority of the comments reflected a need for the following:

- *Specialized human infrastructure (CFI)* – specialized programmers, developers, system managers with the SSH discipline knowledge and skills to adapt, and enhance electronic records and databases for effective use by the specific research community. They need to be able to link the cultures and languages of the research fields with the design and use of computational resources and databases. Similarly, a person who has the skills to coordinate diverse players is an important element of a multi-disciplinary infrastructure.

- *Operations and Maintenance* (CFI) – there is a particularly high need for routine technical support of infrastructure in the SSH because of the fact that few researchers (e.g. literature, philosophy) in the SSH have capabilities in computing and advanced e-systems.

- *The institutional role* – institutions can play an important role in assisting researchers to identify elements of their programs that are eligible for CFI support – something that is frequently not understood by the SSH research community. For example, it may be that acquisition of a set of key documents for a research project dealing with the authentication of documents of a specific period could be CFI-eligible.

In relation to major priorities for investment in the future, development of a more effective approach to support *databases* (providing they meet the criteria of excellence and relevance to addressing issues of intellectual and societal relevance) is a major pre-occupation. Solving this issue would go a long way to generating system-wide recognition of the fact that CFI is truly committed to inclusion of social and human innovation.

The SSH community has concern with the formulation of the *STIC priorities*, especially the sub-priorities, and is fearful that CFI may restrict its support to those themes. Diverse fields of the SSH could contribute in a meaningful way to addressing issues associated with the four designated priorities, but appear to be precluded in the way the sub-priorities are formulated. There are also many areas of SSH research addressing issues in the national interest (e.g. education, literacy, crime and violence, suicide prevention, immigration, urbanization) that are absent from that list. The community argues for an "open" solicitation in which the researchers themselves state the case for CFI support.

As noted above there is a need for a national platform for SSH research collaboration that will facilitate the interaction of researchers and research stakeholders to connect, collaborate and manage content. This collaboration platform should link to Synergies so that the outputs of the collaboration can be archived and made widely accessible. The collaboration platform should also be compatible with the CANARIE broadband network linking Canada's research and teaching institutions.

To facilitate research and KMb on a national scale such a collaboration platform should embrace the following characteristics:

- Support any discipline: e.g. fine arts, history, political science and economics must all be able to use the platform to collaborate amongst academic and non academic research stakeholders
- Provide broadband connectivity including video conferencing
- Capacity to be used to develop open or closed collaboration communities
- Provide:
    - Collaboration tools (wiki, instant chat, access control)
    - Connection tools (webinars, blog, shared calendar, CRM tools)
    - Content management (file sharing, document storage, version control)
    - Social networking tools – develop and maintain distributed collaborative community
- Be:
    - open to, and co-led by non-academic and academic research stakeholders
    - accessible to remote, northern and Aboriginal communities to ensure that research engagement is inclusive and not privileged.
- Include a repository of research summaries presented in clear language accessible to non academic stakeholders

Like Synergies and CKRN there is no central research question that will be addressed through this national collaboration platform. Such a platform is therefore best considered and funded through a national platforms competition. Such a platform should enable study the science of KMb which is now only studied in discipline silos - e.g. it would be a national KMb laboratory in and of itself. The platform should, therefore have an experimental installation allowing for KMb interventions and evaluation of KMb initiatives while allowing the collaboration installation to remain unaffected by KMb interventions and experiments. Such a national laboratory/platform will be unique globally and will allow new questions about research utilization to be addressed.

J.E. Halliwell
June 2, 2009

Annex A

Research Infrastructure in the Social Sciences and
Humanities

Adapted by Janet Halliwell from a document
prepared by David Moorman, SSHRC

Table of Contents

1.0 Introduction

The purpose of this document is to identify the types of infrastructure needed by the social science and humanities research community, whether supported by the Canada Foundation for Innovation or SSHRC itself.

Research infrastructure is characterized as the physical, informational and human resources essential for researchers to conduct high quality research. For the purpose of this document, infrastructure includes: (1) tools, equipment, instrumentation, platforms and facilities, (2) software and information resources, including enabling computer systems, databases, data analysis and data interpretation systems, and communication networks, (3) the technical support (human or automated) and services needed to operate the infrastructure and keep it working effectively, and (4) the special environments and installations (such as buildings and research space) necessary to effectively create, deploy, access and use research tools. This infrastructure may be used for an individual research project or it may be a common resource available to many research undertakings.

There is international recognition of the extent to which innovative tools and equipment, along with new information and communication technologies, such as the Internet, high performance computing, visualization systems, large-scale, complex databases and broadband transmission networks, are transforming the way researchers address fundamental questions about human society.

As we have seen in the natural and health sciences, access to appropriate infrastructure changes the way researchers structure their activities, allowing them to tackle larger, more fundamental questions in new ways and to aggressively push the frontiers of knowledge. Appropriate infrastructure allows researchers to be more efficient and more effective, while shared resources facilitate collaboration between disciplines and the re-formulation of research questions. These are important considerations at a time when demand for support far outstrips supply.

2.0 A Typology of Research Infrastructure in the Social Sciences and Humanities

Although it is impossible to list all of the types of equipment and facilities that social science and humanities researchers are currently using, and will need in the near future, we can delineate four general categories.

2.1 Specialized Research Tools and Equipment

The specialized research tools and equipment used by SS&H researchers come in a wide variety of forms. These include everything from GPS receivers to paleo-

DNA scanners to mobile field laboratories for linguistic analysis. Information and communication technologies are of particular importance. These include servers, computer work stations, digital video and audio capture and editing equipment, satellite receivers, and a wide variety of software tools. Individual pieces of equipment are rarely of exceptional cost, as can be the case in the natural and medical sciences, but bundles of equipment needed for a particular research undertaking can range from tens to hundreds of thousands of dollars.

2.2 Information Resources

Powerful desktop computers and the Internet are rapidly changing how researchers conceive of, and use, information resources. Large bodies of information are now routinely digitized and loaded into databases for manipulation and analysis. These databases are often made accessible through the Internet as part of a web site dedicated to a specific research program, or through an organization set up to provide access to primary information.

The content of these new information resources varies widely – social and economic statistics, three dimensional images of fine art objects, photographs of forestry and logging practices, biographies of historical figures, primary documents, poetry, administrative records, etc. Some are relatively small, such as the Canadian Elections Database. Others are large, complex, multi-use resources, such as *Early Canadiana On-Line*. Several are the result of longitudinal, multi-national research undertakings, such as the Luxembourg Income Study and the World Values Survey.

These information resources, no matter what their content, all require three sets of activities for their construction and long-term upkeep:
- Gathering of Information; whether it is primary data collection, scanning of images or documents, or the intake of pre-existing databases;
- Data Management and Provision of Access; including a wide variety of technical and administrative tasks, such as cataloguing, formatting, metadata tagging, functionality, access control, provision of technical advice. In most cases, such tasks are best undertaken by data management experts and technicians;
- Maintenance and Renewal; including software licences, hardware replacement, regular web site maintenance, security systems, data storage and archiving, updating and adding new material to databases.

2.3 Specialized Web-based Communication and Collaboration Systems

Specialized web-based communication and collaboration systems are beginning to be widely used in the social sciences and humanities. In general, they are composed of a web site that has within it:
- a series of databases holding documents, images, research data, software, events and contacts lists, and links to related resources;

- a set of discussion forums, usually divided into subject areas;
- editorial functions allowing a degree of control over what is made available;
- security systems to prevent corruption by viruses or unauthorized access.

Depending on functionality, these systems allow participants to collaborate, communicate, publish findings, discuss areas of interest, find each other, co-ordinate activities, and keep track of what is going on in their area of interest.

Communication and collaboration systems come in an exceptionally wide variety of forms. Costs can range from as little as $100 for a basic weblog system that allows a user to post and receive messages and archive simple documents; to as much as $80,000 for a fully functional collaboration environment that has all the features listed above and more.

2.4 Research Facilities

Research Facilities are being built on many campuses for the purposes of conducting social science and humanities research. Generally, these facilities are composed of:

- Dedicated space for research activities, to house equipment, provide work and meeting space, and offices for managerial. technical and administrative support staff;
- Specialized equipment in a wide variety of forms, including information and communications technologies, camera and lighting equipment, imaging scanners, recording equipment, virtual reality systems, Global Positioning Satellite receivers, etc.; and,
- Information resources, usually in the form of large compilations of information or images placed in databases. Often, these data can only be accessed at the research facility due to issues of confidentiality, protection of intellectual property or the complexity of the databases.

An example of this type of infrastructure is a Research Data Centre.

3.0 Research Infrastructure Support Requirements

Support requirements for research infrastructure generally fall into four categories. In certain instances, specialized tools and equipment can be bought, requiring support for purchase costs. Sometimes the tools and equipment must be developed, as well as maintained, by the researchers themselves. Occasionally, the infrastructure is intended for multiple users and support is required for use or access.

3.1 Purchase Costs

The most obvious cost element is the actual purchase or acquisition cost for research infrastructure. Purchase costs of research infrastructure vary widely ranging from a few hundred dollars to tens of thousands (or even millions) of dollars. Individual items costing up to $30,000 or $40,000 are generally well supported within SSHRC Standard Research Grants and other programs. More expensive facilities (e.g. > $150,000) may be eligible for support from CFI.

The SSHRC *Grant Holder's Guide* lists the following as eligible expenses:

- Computer hardware and software;
- Other non-disposable equipment such as microfilm readers, tape recorders, cameras, video equipment, field vehicles, laboratory accessories and equipment; and,
- Consultants that provide expert advice to resolve highly technical problems.

3.2 Development Costs

There are development costs associated with much SSH infrastructure, particularly for Information Resources and communication web sites. These may be eligible for support within SSHRC programs, as long as they are a component of a specific application or within a CFI application. There are particular challenges in finding resources for data gathering, software development, technical services and management costs related to the development of large scale database projects.

SSHRC also supports the development of research infrastructure in the form of "Research Tools", a specific category of infrastructure.

> "Adjudication committees may recommend support for research tools to the extent that they are judged to be a priority for advancing research in the field and that they will be widely accessible to the research community. Eligible research tools may include:
> - bibliographies, indices, and catalogues of research collections;
> - concordances and dictionaries;
> - materials that facilitate access to archival holdings or collections such as repository guides, inventories of a group of manuscripts or of a body of archives, inventories or documentary materials, thematic guides to archival materials, records surveys and special indices; and
> - scholarly editions.
>
> SSHRC does not provide funds for these activities:
> - the cataloguing or description of original holdings of any federal agency;
> - the conversion of bibliographic records into machine-readable formats;
> - document conservation;
> - records management; and
> - the arrangement of documents."

Currently, support for a "Research Tool" can only be requested within a research program and not as a stand-alone item.

More importantly, many researchers today are not looking for guides or inventories, but rather the primary materials themselves, delivered over the Internet to their office work station. With modern technologies, it is no more difficult to scan documents and images and place them in a database than it is to simply record their whereabouts. Indeed, concordance software and document management systems, many of which have been developed with SSHRC funding, make it possible to not only create primary document databases, along with appropriate indices and guides, but facilitate news forms of analysis that are simply not possible in a print medium.

3.3 Maintenance Costs

On-going, long-term support for research infrastructure, such as research project web sites and web-based collaborative environments, is not provided by SSHRC in any of its programs. On the other hand there are SSH infrastructures that have significant requirements for ongoing sustaining support.

An example of the need for maintenance cost support is the Atlantic Canada Portal, currently supervised by a Tier 1 Canada Research Chair at University of New Brunswick (http://atlanticportal.hil.unb.ca). This web-based, publicly accessible Portal is designed to use information technology to support research related to the Atlantic Region of Canada. Since the Atlantic Canada Portal is a common research resource, rather than a specific research program, it is not eligible for support in SSHRC Standard Research Grants.

3.4 Access Costs

Although there are several long-standing examples, we are beginning to see an increase in the use of research infrastructure that is designed to be used by a wide variety of researchers, and that have significant costs associated with use or access.

Long-standing examples include the World Values Survey, the International Social Survey Program, and the Luxembourg Income Study, all of which use longitudinal or time series statistical data to examine social phenomenon. Because of their nature – large-scale data gathering, in many countries, over several years or decades – these research programs do not fit within the parameters of the existing SSHRC programs.

4.0 **A Definition of Research Infrastructure**

The following definition attempts to capture the full range of resources employed by the SSH research community:

"Research infrastructure" is defined as all resources and services necessary for the conduct of research, or in the case of networks, the resources necessary for knowledge transfer among participants and coordination of research activities.

Infrastructure specifically includes:

- Equipment, such as laboratory instruments, personal computers and associated software, servers, communication equipment, and other physical devices necessary for the conduct of research;
- Information resources, such as databases and their associated metadata files, catalogues, finding aids and indices;
- The technical support and services, including laboratory personnel, needed to operate the infrastructure or research network and keep it working effectively;
- Access to facilities, physical or virtual, that are used for research purposes, such as research data depositories or large-scale national or international survey projects;
- Training services, including travel and accommodation, for developing the skills need to make the maximum use of infrastructure;
- Translation services for research outcomes.

Adapted April 2009

The CFI Database of SSH Awards

The following tables and the accompanying Excel Spreadsheet provide an overview of all CFI awards in the social sciences and humanities (SSH) from the initial 1998 competition. The data were retrieved from two public CFI databases. Given that the CFI databases have some apparent conflicts in content, two databases were combined and those that were clearly not SSH eliminated. There may still be a number of residual projects that may be more aligned with health than the social sciences and humanities (particularly psychology); nevertheless, the data are revealing of the spectrum of initiatives funded.

Four tables are provided for information:

A.   SSH Participation in CFI Programs by Discipline

B.   Distribution by Sector – Discipline and Area of Application

C.   Listing of Database-related CFI Awards in the Social Sciences and Humanities

D.   Full Listing of CFI Awards in the SSH (separate Excel spreadsheet)

Prepared by Janet Halliwell
April 29, 2009

A.   Distribution by Discipline

SSH Participation in CFI Programs by Discipline (from first competition)

Anthropology	24
Archaeology	21
Architecture	5
Classics, Classical & Dead Languages	1
Communication and Media Studies	13
Criminology	4
Demography	4
Economics	23
Education	60
Fine Arts	10
Folklore	4
Geography	32
History	35
Industrial Relations	1
Interdisciplinary Studies	15
Law	11
Linguistics	20
Literature	24
Management, Business, Admin Studies	27
Media Arts	3
Mediaeval Studies	1
Modern Languages and Literature	2
Multidisciplinary	6
Multidisciplinary and Multimedia Arts	17
Mulidisciplinary in Arts & Literature	1
Multidisciplinary in SSH	21
Music	11
Other – Humanities & Soc. Sciences	13
Philosophy	8
Political Science	20
Psychology (in the H and SS)	112
Religious Studies	2
Social Work	6
Sociology	27
Theatre	2
Urban, Regional & Env Studies	20
Visual Arts	4
	610

B.   Distribution by Sector – Discipline and Area of Application

Sector (discipline)	Sector (area of Application)	No.	Funding from CFI (max)	Av. Award
Arts & Literature				
	Engineering	6	$2,301,994	$383,666
	Science	9	$11,473,800	$1,274,867
	Social Science	52	$12,840,814	$246,939
	Sub-total	*67*	*$26,616,608*	*$397,263*
Human & social sciences				
	Engineering	37	$16,730,389	$452,173
	Environment	17	$1,373,923	$80,819
	Health	95	$21,997,965	$231,558
	Science	86	$32,609,707	$379,183
	Social Science	302	$65,406,279	$216,577
	Subtotal	*537*	*$138,118,263*	*$257,203*
Multidisciplinary				
	Science	1	$246,018	$246,018
	Social Science	5	$6,046,358	$1,209,272
	Subtotal	*6*	*$6,292,376*	*$1,048,729*
Grand Total		**610**	**$171,027,247**	**$280,373**

C. Listing of Database-related CFI Awards in the Social Sciences and Humanities (manual retrieval – consider approximate)
Retrieved from total CFI Database

University	*CFI Fund*	*PI*	*Title*	*CFI $$*
McGill University	Leaders Opportunity Fund - Funding for research infrastructure alone / Fonds des leaders - Financement de l'infrastructure de recherche uniquement	Bachand, Frédéric	Base de données regroupant les décisions judiciaires interprétant la Loi type de la CNUDCI sur l'arbitrage commercial international	$122,331
McGill University	Leaders Opportunity Fund - Funding for research infrastructure alone / Fonds des leaders - Financement de l'infrastructure de recherche uniquement	Wisnovsky, Robert	The Post-classical Islamic Philosophy Database Initiative	$610,500
Queen's University	Innovation Fund / Fonds d'innovation	Mendelsohn, Matthew	Enhancement of Public Opinion and Survey Research Archives and Database	$86,292
St. Francis Xavier University	Canada Research Chairs Infrastructure Fund / Fonds d'infrastructure des Chaires de recherche du Canada	Gregory, Sharon	Digital image database with imaging software, for comparative research in art history and creation of a database of illustrations in 16th-C books; database of Renaissance treatises on art.	$70,129
Université de Montréal	Leaders Opportunity Fund - Funding for infrastructure associated with a Canada Research Chair / Fonds des leaders - Financement de l'infrastructure associée à une Chaire de recherche du Canada	Karsenti, Thierry	Laboratoire de recherche sur les TIC en éducation, et infrastructure de base de données documentaire et vidéo portant sur les TIC en éducation	$196,667
Université de Montréal	Canada Research Chairs Infrastructure Fund / Fonds d'infrastructure des Chaires de recherche du Canada	Lessard, Claude	Construction d'une base de données statistiques, documentaires, et vidéo sur le personnel scolaire canadien	$102,907
Université de Sherbrooke	New Opportunities Fund / Fonds de relève	DEZUTTER, Olivier	Demande d'infrastructure pour la conception de la banque de données multidimensionnelle PRAX.I.E. (pratiques d'intervention éducative)	$42,783

Université du Québec à Chicoutimi	Canada Research Chairs Infrastructure Fund / Fonds d'infrastructure des Chaires de recherche du Canada	Bouchard, Gérard	Banque de données informatisées sur les rituels du mariage (RIMA)	$79,106
Université du Québec à Montréal	Canada Research Chairs Infrastructure Fund / Fonds d'infrastructure des Chaires de recherche du Canada	Beaulieu, Alain	Laboratoire de recherche et base de données relationnelle sur la question territoriale autochtone (1760-1900)	$93,163
Université du Québec à Montréal	Canada Research Chairs Infrastructure Fund / Fonds d'infrastructure des Chaires de recherche du Canada	Duchastel, Jules	Base de données réseau en analyse du discours politique, infrastructure de recherche pour la Chaire de recherche du Canada Mondialisation, démocratie et nouvelles régulations politiques de l'UQAM	$182,906
Université du Québec à Trois-Rivières	Canada Research Chairs Infrastructure Fund / Fonds d'infrastructure des Chaires de recherche du Canada	Castonguay, Stéphane	Base de données intégrée en histoire environnementale	$74,619
Université du Québec à Trois-Rivières	Canada Research Chairs Infrastructure Fund / Fonds d'infrastructure des Chaires de recherche du Canada	Raymond, Louis	Mise en oeuvre d'une base de données internationales sur la performance des entreprises	$125,000
Université Laval	Canada Research Chairs Infrastructure Fund / Fonds d'infrastructure des Chaires de recherche du Canada	Duhaime, Gérard	Banque de données sur la condition autochtone comparée	$175,967
University of Guelph	Innovation Fund / Fonds d'innovation	Inwood, Kris	A Public Use Microdata Sample of Households in the 1891 Canadian Census: Quebec, the Maritime Provinces and the West	$306,429
University of Guelph	Leaders Opportunity Fund - Funding for research infrastructure alone / Fonds des leaders - Financement de l'infrastructure de recherche uniquement	Inwood, Kris	Public use Microdata Samples of the 1871 Census of Canada and the 1871 Census of Scotland	$250,000
University of Manitoba	Canada Research Chairs Infrastructure Fund / Fonds d'infrastructure des Chaires de recherche du Canada	Cox, Brian	A computer lab for the analysis and storage of mental health databases	$34,636

University of Ottawa	Innovation Fund / Fonds d'innovation	Gaffield, Chad	Canadian Century Research Infrastructure (CCRI)	$5,219,580
University of Ottawa	Canada Research Chairs Infrastructure Fund / Fonds d'infrastructure des Chaires de recherche du Canada	Poplack, Shana	Database creation and preservation for the Sociolinguistics Laboratory at the University of Ottawa	$61,971
University of Saskatchewan	Canada Research Chairs Infrastructure Fund / Fonds d'infrastructure des Chaires de recherche du Canada	Olfert, (Margaret) Rose	Comprehensive Regional Database of Technological Adoption by Firms and Canadian-U.S. Labour, Demographic and Environmental Attributes	$125,000
University of Saskatchewan	Canada Research Chairs Infrastructure Fund / Fonds d'infrastructure des Chaires de recherche du Canada	Peters, Evelyn	Urban Aboriginal Data Base	$50,000
University of Toronto	Innovation Fund / Fonds d'innovation	Amrhein, Carl	Georeferenced databases for assessing the historical conditions of health and environmental problems	$273,000
University of Toronto	Canada Research Chairs Infrastructure Fund / Fonds d'infrastructure des Chaires de recherche du Canada	Livingstone, David W.	The Learning and Work Database: Resource Materials for Teaching, Research and Policymaking	$70,745
University of Toronto	New Opportunities Fund / Fonds de relève	Van Biesebroeck, Johannes	A plant-level dataset for the Canadian-U.S. Automobile Industry	$39,700
University of Toronto	Canada Research Chairs Infrastructure Fund / Fonds d'infrastructure des Chaires de recherche du Canada	Walcott, Rinaldo	The Other Canadians Database: Culture Re-making the Nation	$100,000
University of Waterloo	New Opportunities Fund / Fonds de relève	Tremblay, Bruno	Development of a research database in Medieval Studies: a WEB-based, searchable, electronic corpus of Albertus Magnus' complete works	$18,110

University of Waterloo	Innovation Fund / Fonds d'innovation	Williams, Robert	Canadian Elections Database - 1867 to the Present - A Research Tool to Support Analysis of Federal, Provincial, and Territorial Electoral Behaviour in Canada	$84,200
University of Windsor	Canada Research Chairs Infrastructure Fund / Fonds d'infrastructure des Chaires de recherche du Canada	Palmer, Steven	International Health Communication Data Archive and Repository	$74,770
Wilfrid Laurier University	Canada Research Chairs Infrastructure Fund / Fonds d'infrastructure des Chaires de recherche du Canada	Dicenzo, Maria	This project will establish an online, searchable bibliographical database of published materials produced in 19th century Ireland, especially Irish literature and non-fiction on Anglo-Irish relations	$72,320
Wilfrid Laurier University	Canada Research Chairs Infrastructure Fund / Fonds d'infrastructure des Chaires de recherche du Canada	Howard-Hassmann, Rhoda	Establishment of an International Database on Reparations	$75,000
Wilfrid Laurier University	Leaders Opportunity Fund - Funding for research infrastructure alone / Fonds des leaders - Financement de l'infrastructure de recherche uniquement	Smith, Brian	Insider Trading Database	$45,172
			30 Projects	$8,863,003