

# Needs Assessment for a Digital Artefact Repository for the Canadian Interprofessional Health Collaborative

Robert Luke, Ph.D.  
[robert.luke@gmail.com](mailto:robert.luke@gmail.com)

26 April 2007

**Attention:**

Brenda Sawatzky-Girling  
Program Manager,  
Canadian Interprofessional Health Collaborative  
c/o College of Health Disciplines,  
University of British Columbia, Vancouver BC V6T 1Z3  
Office Tel: (604) 531-7970  
Fax: (604) 531-7907  
[brendasg@telus.net](mailto:brendasg@telus.net)  
[www.cihc.ca](http://www.cihc.ca)

## **Contents**

|  |    |
|--|----|
| Introduction .....   | 2  |
| Background .....   | 2  |
| Methods .....  | 2  |
| CIHC Member Feedback .....   | 3  |
| Results .....  | 3  |
| Recommendations .....  | 5  |
| Content.....   | 6  |
| Communication .....  | 11 |
| Community .....  | 12 |
| Future Activities.....   | 13 |
| Conclusion .....   | 14 |
| Appendix A: Dublin Core Metadata Elements.....                     | 15 |
| Appendix B: Model of Outcomes of Interprofessional Education ..... | 17 |

## ***Introduction***

The use of digital media for research, development and knowledge transfer is increasing, particularly with respect to research projects that produce information and knowledge transfer activities across multiple stakeholder domains. Funded projects with specified end-dates need to ensure the information and knowledge produced is made useful and useable to relevant communities of practice. This is typically achieved through the publication of project results in peer-reviewed and trade journals, through presentation at scientific conferences, and through the production of other media for public dissemination using the Internet.

The Health Canada Interprofessional Education for Collaborative Patient Centred Practice (IECPCP) projects, CIHC included, have the additional mandate of producing curricular materials. This raises other knowledge transfer issues that are best met with the use of digital repositories for the storage and retrieval of digital learning materials.

This report documents results from a needs assessment conducted for the Canadian Interprofessional Health Collaborative (CIHC). It outlines the CIHC digital artefact storage requirements, present and future work practices, as well as technical specifications and recommendations to consider for next steps.

## ***Background***

The CIHC is a large, multi-institutional stakeholder organization composed of five committees. The CIHC has unmet information needs with respect to the long term viability of the information and knowledge products that will be produced as part of the CIHC, and as part of other IECPCP funded projects. These information needs will outlive the lifecycle of the IECPCP funding.

The Needs Assessment for Digital Artefact Repository for the Canadian Interprofessional Health Collaborative Project (the “Project”) involved a short term consultation with the goals of providing expert advice and guidance on the creation of a sustainable online repository for the long term storage and retrieval of digital information and knowledge artefacts. A goal of this project was to compile a thorough list of possible artefacts. This will enable a broad and strategic understanding of the information needs of the CIHC and the IECPCP community of practice. A detailed understanding of present information needs has been created, as well as a map for future information needs with respect to the envisioned use of digital information and knowledge media. These needs are matched to available technology options, along with recommendations for implementation strategies according to these options.

Information and knowledge artefacts are digital media products, including reports, presentations, formal publications, curricular materials, and other media that will be used by national organizations seeking to better understand and utilize the latest research on interprofessional health care practice and education.

## ***Methods***

Work activities for this project included the following:

- Baseline planning with the CIHC Project Manager, to determine project scope and CIHC needs. A participatory and iterative process was used to define and refine project scope.

- Surveys and interviews with key CIHC stakeholders were conducted to assess present and perceived future information needs, and the context in which a digital asset library would function
- Document analysis, including a review of the following:
  - The CIHC Dissemination Strategy (CIHC DS, Version 5.0; February 6, 2007). The CIHC DS document contains comprehensive information relating to the structure of an online CIHC repository. Information will not be repeated here; rather, key aspects of that document are used as a basis for validation and work planning.
  - A list of the 20 IECPCP projects, to better understand the information needs/context of the IECPCP community of practice
- Functional analysis in order to assess the CIHC overall strategies and work functions (including future or perceived), as these affect the design project
- Review of technology options, and mapping these to present and future information needs and work practices
- Preparation of this recommendations summary document to assist the CIHC in moving forward to the implementation phase for the creation of the repository and systems needed for managing information and knowledge media needs.

## ***CIHC Member Feedback***

CIHC Steering Committee members, with a minimum of one member from each sub-committee, were selected as potential informants for the project. Thirteen participants were asked to answer a short survey designed to ascertain present and future work practices, information needs, and familiarity with concepts and other technologies currently in use. Respondents were asked to elaborate on answers either through email or through a follow up telephone conversation. Two participants were interviewed using the survey as an interview guide. Ten responses were received; results are summarized below.

In addition, two people involved with the technical aspects of the CIHC web site were contacted with questions about technical environment (present and future) and planned activities and capabilities. Results are matched to expert advice on digital library work practices and technologies with recommendations for next steps.

Our goal with this report is to present options to key stakeholders, and to work with these stakeholders to refine the options and ready the CIHC for final implementation.

## ***Results***

The CIHC Dissemination Strategy identifies the need to facilitate information exchange and knowledge transfer, two distinct activities that are nonetheless closely linked. Information exchange simply refers to the ability to get information (research results, for example) published or otherwise broadly disseminated or put into practice. Knowledge exchange is the ability to continually use and adapt this information for mutual learning within communities of practice or communities of interest. A key theme emergent from the surveys, and correlated with data from other IECPCP project initiatives, is the ability to facilitate this knowledge exchange, particularly around the use and dissemination of information and other media.

The CIHC Dissemination Strategy document's Appendix C Website Strategy lists the purposes of the CIHC website:

1. Act as a 'hub' for CIHC members to do research, seek information and interact with one another
2. Become the principle resource for the public, media and others interested in learning about CIHC projects in Canada
3. Collate and collect information in one central location ('one stop shopping')
4. Demonstrate past, present and future work of the CIHC and CIHC members

Notable is that all participants echoed these statements, indicating good message cohesion among those surveyed. Operationalizing these criteria will require a socio-technical approach that includes putting in place the requisite technology, and supporting its use among disparate members. The latter requirement will be more difficult, and will require sustainability discussions as the site is implemented.

There is a clear need for a place to share information and knowledge media, and to foster dialogue among those interested in IECPCP in Canada.

### **Present work practices for finding and sharing information**

A majority of survey respondents indicated their reliance on a combination of simple Internet searches and professional networks to locate relevant information. Because the IECPCP community is still nascent this is not necessarily an impediment, and indeed indicates that the growing community of interest around IECPCP issues is leading to the formation of meaningful communities of practice within professional networks. Examples of sites and tools currently in use range from Google (including Google Scholar), to more specialized services offered within institutions (libraries, librarians, research assistants). The role of health information intermediaries is important in this regard, and reflects recent work in library and information science to situate information professionals as key human conduits of and for clinical information.<sup>1</sup>

Knowledge media are shared chiefly through email with colleagues. Professional peer group networks also provide avenues for locating materials. Some projects use online community of practice software or institutional learning management systems for sharing information and curricular resources. Examples of other sites mentioned by informants that are good at facilitating information and knowledge exchange include:

- The Human Early Learning Partnership (HELP) <http://www.earlylearning.ubc.ca/>
- Interprofessional Network of BC <http://www.in-bc.ca/>
- MIT's Open Courseware project <http://ocw.mit.edu/index.html>
- The Canadian Health Services Research Foundation <http://www.chsrf.ca>
- The BC Academic Health Council <http://www.bcahc.ca/>
- The Institute for Healthcare Improvement <http://www.ihl.org/ihl>
- Tamarack <http://tamarackcommunity.ca/>
- PubMed <http://www.pubmedcentral.nih.gov/>
- Health Education Assets Library <http://www.healcentral.org>

Obstacles to information and knowledge sharing include intellectual property concerns, email's tendency to make information sharing uncoordinated and at times chaotic, and the need to check multiple sources of information.

---

<sup>1</sup> See, for example, Davidoff, F., and Florance, V. "The Informationist: A New Health Profession?" *Ann Intern Med.* 2000; 132: 996-998.

### **Motivation to use the CIHC site as an online repository**

Motivation is high with respect to the use of online tools such as those discussed in this document. There is widespread recognition across all the IECPCP projects that using the Internet for knowledge translation activities is a potential boon. Attendant problems include the need to coordinate efforts to ensure there is little or no replication, and the need to link people and projects in a way that respects professional autonomy while simultaneously enabling the collation of resources, networks, contacts, and research and work practice activities.

There is recognition that as IECPCP expands nationally, a coordinated method is needed to effectively share information and knowledge. The CIHC could provide this coordination, through a repository service, with linked communication media.

### **Digital Libraries and Learning Object Repositories**

The use of repositories to store digital media is increasing in Canada as elsewhere. Primarily this falls under the aegis of libraries, where most media are typically housed (books, journals, electronic journals, audio visual media, etc.). Learning object repositories (LORs) have come into use for storing curricular materials. Examples of LORs in Canada include the following:

- CAREO: <http://careo.ucalgary.ca>
- CLOE: <http://cloe.on.ca/>
- eduSource Canada: <http://www.edusource.ca/>

Research on LORs in Canada is proceeding chiefly under the auspice of LORNET (<http://www.lornet.org/>). Canadian LOR users also connect to numerous international LOR initiatives.<sup>2</sup> In addition, local institutional repositories are in use to house digital knowledge media.<sup>3</sup> Many institutions and libraries are using D-Space technology.<sup>4</sup> Other repository systems include open source options such as Greenstone<sup>5</sup> and Koha.<sup>6</sup>

An institutional repository for CIHC might thus be based on a number of good models. Discussions with the technical team members and within the scope of the baseline planning for this project indicated that a repository system was being built as a component of the CIHC website. It will be important for the CIHC repository to ensure that this system conforms to current standards so that it is extensible and interoperable with other systems

### **Recommendations**

Recommendations are below. These fall into three categories: Content, Communication, and Community.

---

<sup>2</sup> See, for example, the Multimedia Educational Resource for Learning and Online Teaching (MERLOT): <http://www.merlot.org/>, and ARIADNE, the European Union Knowledge Pool System: <http://www.ariadne-eu.org/>.

<sup>3</sup> For a comprehensive listing of LORs, see [http://www.uwm.edu/Dept/CIE/AOP/LO\\_collections.html](http://www.uwm.edu/Dept/CIE/AOP/LO_collections.html).

<sup>4</sup> See <http://www.dspace.org/>. For examples of the use of D-Space, see the University of Toronto's T-Space (<https://tspace.library.utoronto.ca/>), or, for a specialized use of an institutional version, see the University of Calgary's D-Space initiative for E-Health Resource Repository (<https://dspace.ucalgary.ca/handle/1880/42949>).

<sup>5</sup> See <http://www.greenstone.org>

<sup>6</sup> See <http://www.koha.org>

## Content

### ***Role of the CIHC website***

The site should be a one stop shop for issues concerning with IECPCP in Canada. This reflects the purposes of the site as outlined in the inception plan (CIHC DS). The addition of a repository service to the CIHC site would enable documents to be housed and linked from the CIHC site itself, greatly increasing the mobility of knowledge media for those accessing IECPCP materials from the CIHC site. In order for the CIHC site to become this hub, all IECPCP projects will need to participate in its creation and use.

### **Recommendation 1**

The CIHC should begin coordinated outreach activities to raise awareness and to foster future use of the repository. Achieving buy-in from the projects will be important. Efforts to coordinate IECPCP digital asset management will find a receptive audience.

### ***Finding information***

The CIHC website itself was praised for its ease of use, offering good information and links. The design documentation is sound, and has been executed well. Any addition to the present site should continue in the same vein. Linking an online repository to this should be a relatively straight forward task, though care should be taken to ensure that search functions are robust and integrated across the site, rather than in a specific search location.

### **Recommendation 2**

While a specific repository search location is necessary, it is advisable to provide redundant searching capabilities so that potential users can search for and access contextual information from any point within the site.

### **Recommendation 3**

Formal usability testing of the new search functions and the repository site should be conducted. A wide sample of prospective users should be used to test this function. This sample should include academic users as well as clinicians. Realistic use case scenarios should be established to design and test functionality, particularly just-in-time information acquisition features.

### ***Information classification***

Information classification should use standard metadata with terms relevant to IECPCP.

### **Recommendation 4**

The Dublin Core Metadata Element Set<sup>7</sup> (DCMS) should be used as the main taxonomy for all digital resources stored in the repository.

The website developer has reported beginning construction of a database for housing IECPCP resources. He has already planned on using a subset of the Dublin Core metadata. There are 15 elements in the DCMS<sup>8</sup>; some of these data can be automatically generated. The rest will need to be filled in by the content uploader.

---

<sup>7</sup> See <http://dublincore.org/documents/dces/>. See Appendix A for the DCMS elements with explanations.

<sup>8</sup> For an overview of the various elements of the DCMS, see <http://www.dspace.org/technology/metadata.html>.

### **Recommendation 5**

All 15 DCMS elements should be used.

The DCMS will need to be augmented with taxonomies and key word systems of relevance to IECPCP activities. One suggestion was to use the Freeth et al. Model of Outcomes of Interprofessional Education,<sup>9</sup> which is based on Kirkpatrick's Model of Educational Outcomes. IECPCP terms to be included could be placed in the Description and/or the Subject categories of the DCMS.

### **Recommendation 6**

Keywords and indexing relevant to IECPCP should be established, and should distinguish between resources for interprofessional education and for interprofessional practice. These could be taken from an existing vocabulary (such as MeSH<sup>10</sup>), created by CIHC, or a combination of these.

### **Recommendation 7**

Devising CIHC/IECPCP metadata and creating guidelines and best practices should be done by qualified information professionals.

Novice users may have difficulty assigning metadata, or may be unwilling to take the time required to fully complete the DCMS element set.

### **Recommendation 8**

A best practice resource guide should be created to assist users in assigning metadata.

### **Recommendation 9**

The best practice resource guide should be usability tested with novice users.

### **Recommendation 10**

This best practice resource should be linked on the CIHC site, and integrated within a contextual help system of the repository.

One problem with locating information on the Internet is that URLs can change. Link updating is laborious, and while there are software tools that can do this, they are not always used.

### **Recommendation 11**

The repository system should produce stable Uniform Resource Locators (URLs). The CIHC repository should create stable URLs in so far as this is feasible with the technology being used. D-Space, for example, has stable URLs – this is one of its features that make it appealing to long term data object storage. However, the CIHC can simply enact a policy to ensure that, if and when a CIHC repository URL changes, a referrer is established so that anyone with a link to the old location receives an automatic forward to the new location.

---

<sup>9</sup> See Freeth, D., Hammick, M., Koppel, I, Reeves, S., and Barr, H. 2002. "A Critical Review of Evaluations of Interprofessional Education." UK Centre for Advancement of Interprofessional Education. See Appendix B for the model.

<sup>10</sup> Medical Subject Headings: <http://www.nlm.nih.gov/mesh/>

The CIHC has identified target audiences for dissemination activities and products. The knowledge to practice overview (Figure 1, CIHC DS, p 8) can form lifecycle descriptions for documents housed in the CIHC repository. Informants for this project indicated that there were different levels of information that should be made available. This can range from peer-reviewed publications to emergent best practices. The ability to form conversations around these emergent best practices was seen as a positive element that could enable better or faster knowledge transfer of new interprofessional models into practice environments. This is taken up in more detail in the Communication and Community sections.

**Recommendation 12**

Target audiences already identified by the CIHC should form part of the key word system to enable members of these groups to locate relevant information.

***Future work practices for finding information***

Respondents reported that an online, digital media repository would be very helpful, provided it was easy to use, and offered opportunities to store information, as well as link to other information resources and sites. The CIHC repository should function as a search hub that contains high quality, up-to-date materials.

**Recommendation 13**

The repository should contain resources uploaded into it, as well as links to other resources of relevance.

**Recommendation 14**

Date-stamping of resources should be encouraged. DCMS Coverage and Date elements should be used.

**Recommendation 15**

Potential users in other IECPCP projects should be encouraged to cross list their resources either by uploading them into the CIHC repository directly, or by linking the metadata only.

The CIHC repository should be federated with other repository systems in use by member institutions. This will require a more thorough technical audit of the planned CIHC system against the Application Programming Interface (API) requirements of extant repository systems that facilitate federated searching. Such a review is beyond the scope of this project, but should minimally begin with an audit of systems in current use.

**Recommendation 16**

Investigate the development of federated repository search capabilities, starting with an audit of member organization repositories in use.

***Intellectual property***

The protection of intellectual property is the most often cited and most important aspect to consider when creating an online repository. This is a universal concern not easily addressed by technical systems alone. All respondents recognize the importance of intellectual property.

### **Recommendation 17**

Existing intellectual property guidelines should be followed, with new practices allowed to emerge as required.

It is widely believed that closed access can inhibit, if not prevent, effective knowledge transfer and mobilization. While intellectual property and copyright cannot be done away with in many cases, there are alternative intellectual property policies that the CIHC can enact for the sharing of some forms of its information and knowledge media.

Collaboration policies to which members can subscribe should be developed. Such policies could be formulated under Open Access publishing models<sup>11</sup> to allow for the free exchange of information and, therefore, knowledge generation. While existing intellectual property rights for particular documents will be followed (for example, with published materials) there is the opportunity to encourage IECPCP projects across Canada to share their knowledge media and curricular materials using Open Access publishing models. Creative Commons<sup>12</sup> copyrights can also be used for those resources that will have “some rights reserved.” One such example relevant to the sharing of curricular materials is the Open Educational Resources project, which shares resources for teaching and learning.<sup>13</sup>

### **Recommendation 18**

The CIHC should work with IECPCP stakeholders to define useful intellectual property policies that can function as a selector list for assigning copyright to resources listed in the repository. An “Other” category can also be left open.

### **Recommendation 19**

Use the DCMS Rights category for the expression of intellectual property rights in the object metadata.

The use of an online repository should be seen as facilitating access to the metadata (i.e. the description of the resource) primarily, and access to the actual resource, copyright restrictions permitting. In cases where resources require permission to access or use (or reuse, in the case of curricular materials), the CIHC repository search can yield relevant results, and enable the searcher to contact the owner of a resource to find out how to access it, and to accommodate any copyright provisions (for example, payment or other forms of remuneration, providing consent for use or notification of use).

Figure 1 provides an overview of how a federated repository system can function. In this example, the user searches from the CIHC web site for a resource (1). The search engine searches the CIHC repository, as well as any other repository federated with the CIHC site (2). Once a resource is located (3), intellectual property and copyright restrictions are addressed (4). If there are no restrictions, the user is given access to the resource, which is displayed with the asset metadata (5).<sup>14</sup> If copyright restrictions are in place, the user is given access to the metadata only (6), and directed to contact the IECPCP partner (7). Once copyright is cleared, the user is given access to the resource.

---

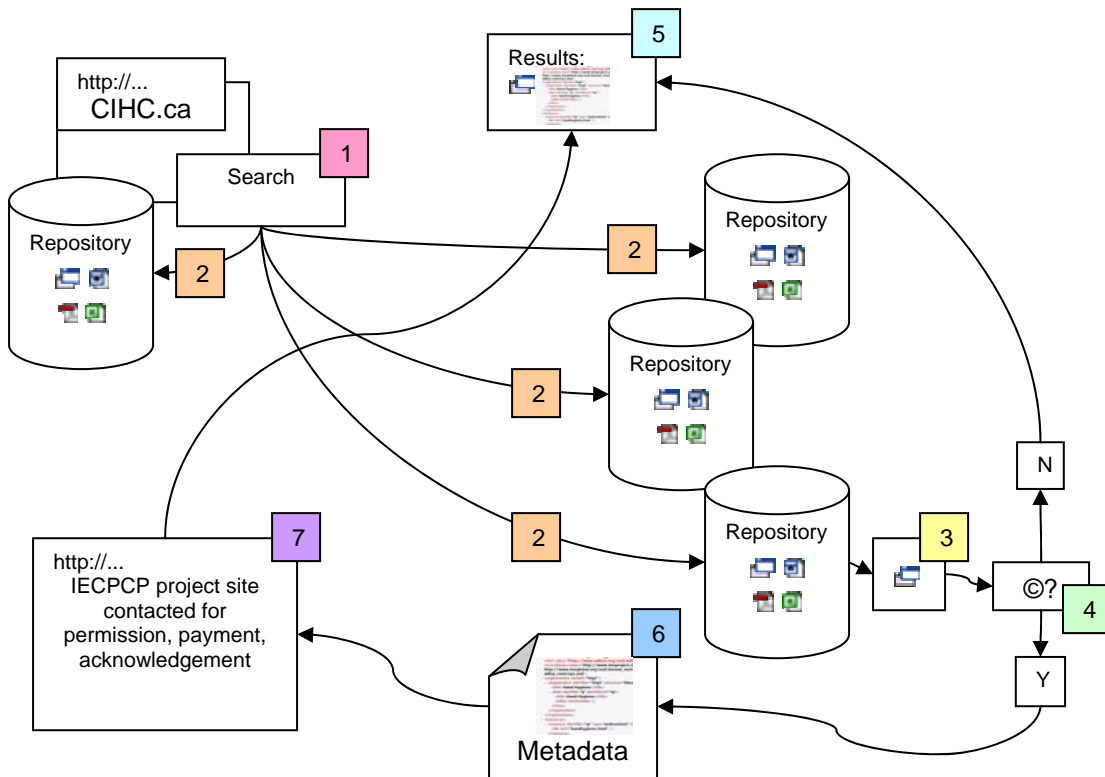
<sup>11</sup> See <http://www.pubmedcentral.nih.gov/about/openaccess.html>

<sup>12</sup> See <http://creativecommons.org/>

<sup>13</sup> <http://oercommons.org/>

<sup>14</sup> For resources that are designed to work with Learning Management Systems, the use of standard metadata such as the Sharable Content Object Reference Model (SCORM) should be encouraged.

Note that in this model, copyright restrictions may be one or a combination of permission, payment, acknowledgement, or some other form of notification. Individuals uploading content to any repository are asked to declare copyright intentions.



- 1 User searches for asset from CIHC web site
- 2 Federated repository search is executed automatically
- 3 Asset identified
- 4 Copyright clearance ascertained
- 5 If no copyright restrictions, asset is delivered to user
- 6 If copyright restrictions, metadata file is returned, containing contact data
- 7 User is directed to IECPCP partner contact for copyright clearance

**Figure 1: CIHC and federated repository search schema**

### ***Digital media artefacts to be stored or referenced in the repository***

The Dissemination Goals table (CIHC p 20) contains a list of knowledge media products. This list can be augmented with the following:

- Best practices documentation, including implementation guides for emergent practices
- A list of experts and the fields of expertise (to facilitate peer networking and communities of practice to form, either as ad hoc or more formally)
- Existing IECPCP projects, networks and communities of practice/interest
- Curricular materials, including
  - Course syllabi
  - Learning objects (text, video, audio)
  - Reading lists (indexed by keywords)
- Research instruments, linked to research papers or abstracts
- Links to and documents from grey literature (research reports, commissioned research, other research not appearing in the usual academic channels, policy documents)

#### **Recommendation 20**

Encourage the development of audio and video assets relevant to IECPCP.

### **Communication**

Communication can be facilitated by the CIHC site through email contact lists, feedback forms, threaded discussion forums, and web conferencing. Webcast lectures could be hosted through the CIHC site, and an archive could be stored in the repository.

#### **Recommendation 21**

Host and maintain online discussions and email contact lists or listservs for communities of interest and communities of practice.

A combination of *push* and *pull* communication should be used. Push communication uses technology that automatically sends users information based on their preferences. Really Simple Syndication (RSS) feeds (as mentioned in the CIHC DS document) can be used to push information from the CIHC site, and to collate information from other sites if RSS technology is in use on these sites.

Pull information is that which the user pulls themselves. Making the CIHC a central hub for IECPCP information in Canada will enable users to pull information they need. The caveat here is that the site should be useable and useful. While these two things are seemingly difficult to quantify, they can be understood as making available information for those potential users (useful) in an easy to use manner (useable). The former is socio-technical: the development of useful resources requires a reliance on what the community of interest and/or communities of practice deem relevant. The latter requires that formal usability testing be conducted on the CIHC site, in particular on the indexing, uploading, and searching functions to be developed.

#### **Recommendation 22**

Implement RSS feeds, and investigate other forms of media (blogs, wikis) with content relevant to IECPCP.

Just in time acquisition of information could be supported by an easy to use, online system. Such a system should have feedback mechanisms to enable those using information found in the repository to provide feedback to the originator of a resource on the relative utility or use value of the resource. This feature was seen as particularly important for emergent best practices that may not have been peer reviewed or otherwise submitted to scientific review.

### **Recommendation 23**

To facilitate knowledge sharing and collaboration, knowledge media resources, particularly research instruments, should contain contact information for the person responsible for creating or maintaining it.

## **Community**

### ***Membership***

Access to the CIHC repository should be password protected, and a system put in place to facilitate fast and easy acquisition of member signup and password provision.

### **Recommendation 24**

Design membership criteria for IECPCP projects.

The CIHC should link professionals working in the field and academics with students and student organizations.

### **Recommendation 25**

Provide for professional and student membership categories. These should also be part of the peer networking (discussed below).

### ***Peer networking***

The CIHC site should include a peer networking function to enable professional peer networks to contact, communicate and share information and knowledge with each other. Such a function will allow the CIHC to function as a communication hub for those interested in IECPCP. Further, this hub should encourage all of the IECPCP funded projects to link to the CIHC repository, and to link their resources from it.

### **Recommendation 26**

Develop a peer networking function linked to the CIHC communication media. Such a function could enable expertise matching by using social software conventions and technologies.

### **Recommendation 27**

The CIHC should partner with the IECPCP projects to facilitate metadata assignment and upload in the CIHC repository.

### ***Peer review for learning objects***

If the CIHC site is to act as a hub for IECPCP projects, it may be necessary to institute some form of peer review for the curricular materials to be stored in the CIHC repository. This could be a mechanism whereby someone who uses a resource located in the repository is able to provide feedback to the original author regarding the resource's use

and utility, as noted above. The feedback should be done using a formal evaluation instrument.<sup>15</sup> Recommendation functionality, similar to those in use on social bookmarking sites,<sup>16</sup> could also be used to enable colleagues to share and review resources.

#### **Recommendation 28**

Consider developing a peer review function for learning objects stored in the repository.

#### **Recommendation 29**

Investigate the use of social bookmarking/social software to allow users to locate resources, colleagues, and communities of interest.

### **Future**

### **Activities**

As discussed in this document, future work practices and information needs will necessitate situating a CIHC repository firmly within the social and technical constructs of those working in interprofessional education and practice settings. Getting stakeholders to use such a system will be contingent on its ease of use and usefulness.

Methods and mechanisms to record emergent best practice guidelines should be created. This will enable all practice sites/projects to document what they are doing in a standard fashion. These documents should be given their own classification and posted to the repository. Effort should be made to link these documents so that emergent best practices and organizations implementing them can find others doing the same.

#### **Recommendation 30**

Create a mechanism to collect emergent best practices. These could be listed as “works in progress” or some other category.

Social networking or social bookmarking provides a useful model here, enabling users to tag their content. User generated tags will need to be matched to formal taxonomic terms, done either by an information professional, or automatically through a software recommendation system.

#### **Recommendation 31**

Investigate the use of social bookmarking/social software to match user-generated tags with formal taxonomies.

The CIHC repository can function as a knowledge brokerage for IECPCP projects. This will require IECPCP projects to use the site, and to buy in to the concept of a centralized coordinating role for the CIHC. As noted above, this will require work to enrol IECPCP projects. This can form part of sustainability discussions for the IECPCP projects.

#### **Recommendation 32**

---

<sup>15</sup> An example of a validated learning object evaluation instrument is the Learning Object Review Instrument (LORI): <http://elera.net/eLera/Home/About%20%20LORI/>. Other repositories such as CLOE and MERLOT have implemented their own form of peer review as an option for uploaded resources.

<sup>16</sup> See, for example, <http://del.icio.us/>, which uses user-generated “tags” or keywords to link disparate users and their shared resources.

Address sustainability of the CIHC repository in conjunction with sustainability of the IECPCP initiatives.

As stated earlier, work has been initiated on a repository database as part of the CIHC website. As such, costing was not addressed in this document. However, it will be important for the CIHC to ensure that an appropriate business case is situated within the present and future work practices and technical capabilities and constraints, as outlined in this document. This business case should outline plans for sustainability of the CIHC site, including an accounting of the technical and social needs. Technical needs include the sustainability of the infrastructure (hardware, software); social needs include the work practices necessary to embed the use of the CIHC repository within the IECPCP communities of interest and communities of practice. Ongoing maintenance will be required of any system, and should be accounted for in the business case and sustainability discussions.

### **Recommendation 33**

Construct a business case for the CIHC repository build, including sustainability issues and plans that account for the evolution of work practices.

Finally, an evaluation plan will need to be situated as part of the implementation plan for the CIHC repository.

### **Recommendation 34**

Construct an evaluation plan, in consultation with stakeholders that includes iterative development of the CIHC repository, as well as the determination of metrics for gauging success of its use and embedding in future work practices.

## ***Conclusion***

There is a clear need for a mechanism to store and organize IECPCP knowledge media resources for Canadian, and international, initiatives in this growing area of Interprofessional health sciences education and practice. A repository system such as that discussed here will be a strong asset, as it will enable IECPCP resources to be collected in an organized and coordinated fashion. Such a system need not offer one single point of entry. Rather, as discussed in this document, every effort should be made to network existing resources within federated search technologies. As a corollary to this, peer networking functions can be established while the IECPCP projects are still formally underway. Doing so will promote sustainability measures of the IECPCP initiatives. The CIHC site can function as the central hub or organizing apparatus of the IECPCP initiatives.

Recommendations contained in this document should be further discussed in order to harmonize with future information needs and emergent work practices. These recommendations are intended to form a useful starting point from which the CIHC can build a repository system that will enable the IECPCP community to collaboratively create knowledge media that will aid in moving the science of interprofessional education and practice forward.

## Appendix A: Dublin Core Metadata Elements

<http://dublincore.org/documents/dces/>

| Element     | Content   | Notes  |
|-------------|---|--|
| Contributor | Include names of content developers; IECPCP project name                  | Examples of a Contributor include a person, an organization, or a service. Typically, the name of a Contributor should be used to indicate the entity.   |
| Coverage    | Canada; Interprofessional Education; Interprofessional Practice; <others> | The spatial or temporal topic of the resource, the spatial applicability of the resource, or the jurisdiction under which the resource is relevant.  |
| Creator     | Name of content creator; IECPCP project name                              | Examples of a Creator include a person, an organization, or a service. Typically, the name of a Creator should be used to indicate the entity.   |
| Date        |   | YYYY-MM-DD   |
| Description | <Insert description of each module>                                       | Description may include but is not limited to: an abstract, a table of contents, a graphical representation, or a free-text account of the resource.   |
| Format      | HTML; Javascript; Flash <as appropriate for each module/object>           | Examples of dimensions include size and duration. Recommended best practice is to use a controlled vocabulary such as the list of Internet Media Types [MIME]. See <a href="http://www.iana.org/assignments/media-types/">http://www.iana.org/assignments/media-types/</a> |
| Identifier  | Examples include URI, DOI, ISBN, ISSN and SICI                            | Recommended best practice is to identify the resource by means of a string conforming to a formal identification system.   |
| Language    | EN  |  |
| Publisher   | Name of IECPCP project; host institution                                  |  |
| Relation    | [Module X of X]   | Used only for those elements that are part of a larger structure or otherwise connect to another resource (useful for research instruments that refer to published results)  |
| Rights      | Copyright and intellectual property rights                                | Copyright statement  |

|         |   |  |
|---------|---|--|
|         | statement   |  |
| Source  | Description of resource history or connection to IECPCP project   | If elements from modules are used, then the relation of the element to the module is required.   |
| Subject | MeSH; addition IECPCP terms as required   | Typically, the topic will be represented using keywords, key phrases, or classification codes. Recommended best practice is to use a controlled vocabulary. To describe the spatial or temporal topic of the resource, use the Coverage element. See for example <a href="http://www.nlm.nih.gov/mesh/">http://www.nlm.nih.gov/mesh/</a> |
| Title   |   | Title of the asset.  |
| Type    | [for modules]<br>Collection; InteractiveResource;<br><br>[for image]<br>Image<br><br>[for movie/video]<br>MovingImage<br><br>[for audio]<br>Sound<br><br>[for graphics/schemas]<br>StillImage<br><br>[for text]<br>Text | The nature or genre of the resource. See <a href="http://dublincore.org/documents/dcmi-type-vocabulary/">http://dublincore.org/documents/dcmi-type-vocabulary/</a> for full list   |

## **Appendix B: Model of Outcomes of Interprofessional Education**

Freeth, D., Hammick, M., Koppel, I, Reeves, S., and Barr, H. 2002. "A Critical Review of Evaluations of Interprofessional Education." UK Centre for Advancement of Interprofessional Education.

|    |   |   |
|----|---|---|
| 1  | Reaction                                | Learners' views on the learning experience and its interprofessional nature.  |
| 2a | Modification of attitudes / perceptions | Changes in reciprocal attitudes or perceptions between participant groups. Changes in perception or attitude towards the value and/or use of team approaches to caring for a specific client group. |
| 2b | Acquisition of knowledge / skills       | Including knowledge and skills linked to interprofessional collaboration.   |
| 3  | Behavioural change                      | Identifies individuals' transfer of interprofessional learning to their practice setting and changed professional practice.   |
| 4a | Change in organisational practice       | Wider changes in the organisation and delivery of care.   |
| 4b | Benefits to patients / clients          | Improvements in health or well being of patients / clients.   |