

A Survey of Arctic Information Provision for the European Union

A part of the Strategic Environmental Impact Assessment of the Development of the Arctic and preparatory action for a European Union Arctic Information Centre

Commissioned by the Environment Directorate General of the European Commission,
Reference: ENV.E.1/SER/2012/0038



Compiled by:



UNIVERSITY OF
CAMBRIDGE

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Heather Lane (Lead Researcher)

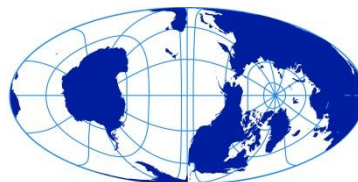
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1. Research Methods**1.1 About the study**

This study attempts to collect information about the various polar collections that exist in libraries and archives around the European Union and beyond. A survey was undertaken on behalf of the European Union Arctic Initiatives Compendium (EUAIC), and building upon previous work carried out by the EU Arctic Information Centre network. The study's research team wish to examine the potential for polar-focused collections to act collaboratively to provide a knowledge source about the Arctic for the citizens of the EU.

The survey was advertised via the Polar Libraries Colloquy POLLIB-L discussion list and directly to members of the EUAIC network. This will have reached approximately 150 individuals in library and information centres worldwide which have an Arctic focus. The study also targeted libraries beyond the European Union to gather data on the wider context of polar collections around the world. Those that responded to the survey represent a self-selected sample.

1.2 The survey

Respondents were initially required to complete a consent form which explained the context of the study, what data it aimed to collect and what implications this may have for participants. The structure of this consent form was based on an existing template provided by the Qualtrics software, provided by the University of Cambridge.

1.3 Procedures

Respondents were asked a series of questions about their collections, staffing and resources. The survey was designed to take no longer than ten minutes to complete. The questions were presented using a mixture of free text boxes, tick boxes, multiple choice selections and the Likert scale. This combination of question types allowed for flexibility of responses from participants.

1.4 Risk-Benefit Analysis

Risks were gauged to be minimal for participants involved in this study. However, they were advised that they were free to stop the questionnaire at any time and could direct any questions about the study to the main research team. Benefits of this study were determined to be that researchers would learn more

about the various polar library and archive collections that are available and whether it would be feasible to offer an information service that enables collaboration as part of an overall Arctic Information Network.

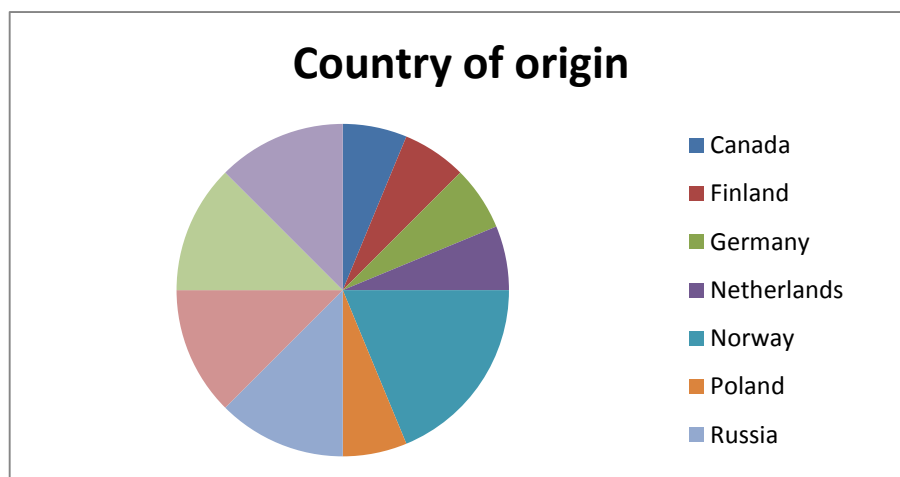
1.5 Confidentiality

All data obtained from participants has been kept confidential and is only reported in an aggregated format below. No one other than the principal investigator and project manager has access to the complete data set. The data collected is stored in the HIPPA-compliant, Qualtrics-secure database until it is deleted by the project manager. **The individual libraries which responded are therefore not named in this report.**

2. Responses

2.1 Country of origin

There were 16 complete institutional responses from 10 countries (8 from within the European Union and 8 from non-EU nations).



2.2 Institutional purpose

Institutions were asked to define the purposes of their library, and responses received are summarised below:

- Documenting the history of polar exploration within an active polar research environment
- Making historical records available for scholarly research
- Supporting interdisciplinary and multidisciplinary scientific research
- Provision of polar literature for the purposes of supporting polar research and education
- Archiving of information about institutions and statistical data
- Serving visitors, students and local people in the Arctic regions, as well as Arctic-based institutes overall
- Coordinating research and polar infrastructure at a national level
- Supporting informed decision making and awareness-raising activities
- Harmonizing innovative and traditional information products and services in support of learner defined needs

2.3 Total size of each institution's polar library holdings

Libraries were asked to provide total numbers of individual books, periodicals and other media.

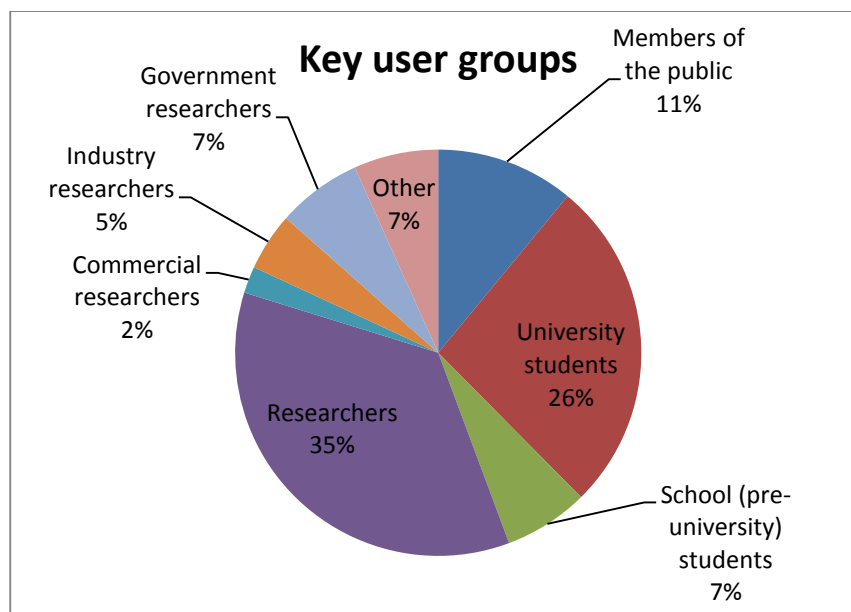
Only 14 respondents provided information. The libraries in question ranged from 200 items to larger collections with over 1,000,000 items. Many of the collections held both print and electronic resources. Those that mentioned periodical holdings gave figures either for number individual subscriptions or

holdings in linear metres. The maximum number of active periodical holdings given totalled around 575 individual titles. No information was gathered about the percentage of each library's holdings which were Arctic focused.

2.4 Total size of each institution's archival holdings

There were 10 responses of which 6 provided figures for the extent of their archival holdings, which ranged from 70 metres to over 1,000,000 documents. Two were unable to provide exact figures and a further two did not provide data in answer to this question.

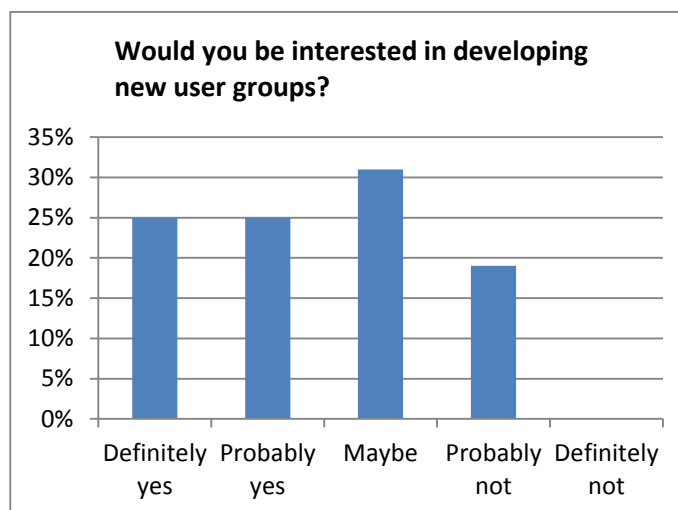
2.5 Key user groups



All of the responding institutions serve researchers, with 75% listing university students as one of their key user groups. Members of the public were an additional key group for 31% of institutions. Where 'Others' were specified, (authors, staff members, family members) these could be subsumed into the groups already listed.

2.6 Audience development

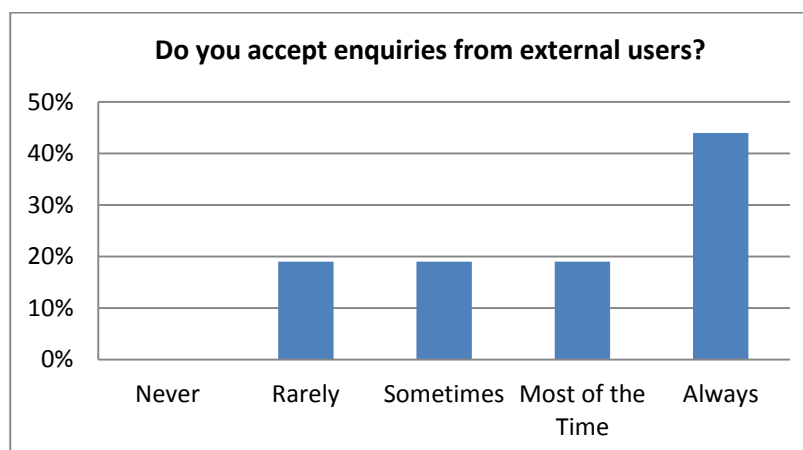
Respondents were asked to say whether they would be interested in developing new user groups. 50% responded positively and a further 31% said that they might consider this. No respondent stated that they would definitely not see this as a possibility.



It is reassuring that the majority of our respondents are open to the idea of providing access to wider use of their collections.

2.7 External use of collections

Respondents were asked to state whether they accept enquiries from external users. 44% replied that they always do, and a further 38% do so some or most of the time. 19% do so only rarely, but no respondent listed Never as an option.



2.8 Staffing

Respondents were asked to specify the total number of library/archives staff that work with polar collections. Three quarters of respondents stated that between 1 and 5 staff worked with their polar collections; one quarter reported between 6 and 10 staff. This indicates that most polar collections are maintained by relatively small teams. The survey did not request information on whether these staff were employed on a full-time or part-time basis, but one respondent did mention in answer to another question that they are the only member of staff and that they work 0.5 FTE. These data could be ascertained by a

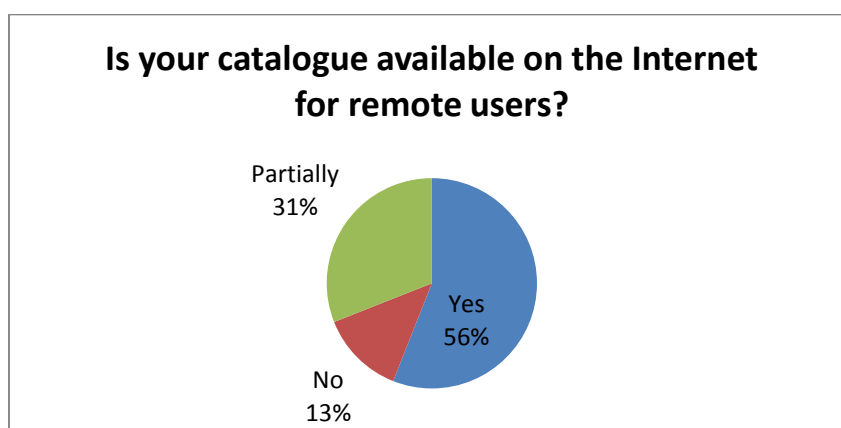
follow-up survey. However, from anecdotal evidence, it is common for libraries to have a mix of staff on full- and part-time contracts.

2.9 Catalogues

2.9.1 Electronic availability

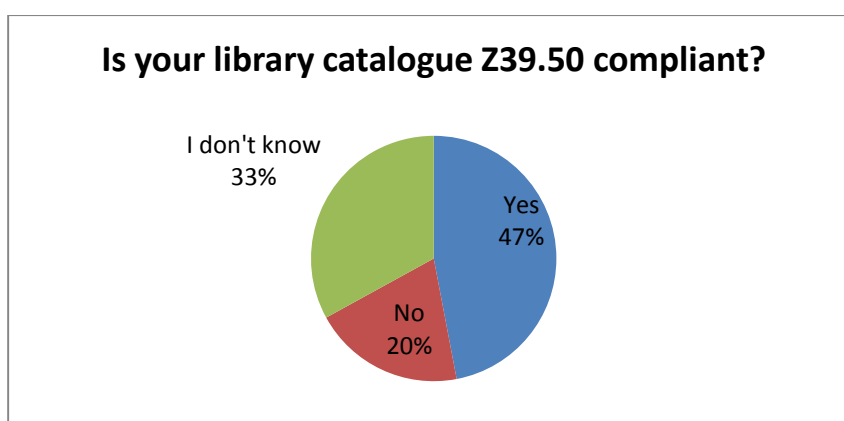
In response to the question, 'Do you have an electronically searchable catalogue?' 75% confirmed that they do. Only 4 libraries surveyed do not. It is important to note that some library collections may still be using card or guard book catalogues alongside an existing electronic catalogue. If the network is to develop, these additional records will need to be made electronically accessible as a matter of priority. Such projects are often labour intensive and financially costly and further investigation as to the scale of material confined to paper-based catalogues is required.

Internet-accessible catalogues are available to remote users in 56% of responding libraries and a further 31% provide partial access. Two libraries do not currently make their catalogues available online.



2.9.2 Z39.50 compliance

The request for information on whether electronic catalogues are Z39.50 compliant was answered in the affirmative by 47% of respondents. "Z39.50" refers to the International Standard, ISO 23950: "Information Retrieval (Z39.50): Application Service Definition and Protocol Specification", and to ANSI/NISO Z39.50. The Library of Congress is the Maintenance Agency and Registration Authority for both standards, which are technically identical (though with minor editorial differences). The standard specifies a client/server-based protocol for searching and retrieving information from remote databases.



2.9.3 Web crawler technology

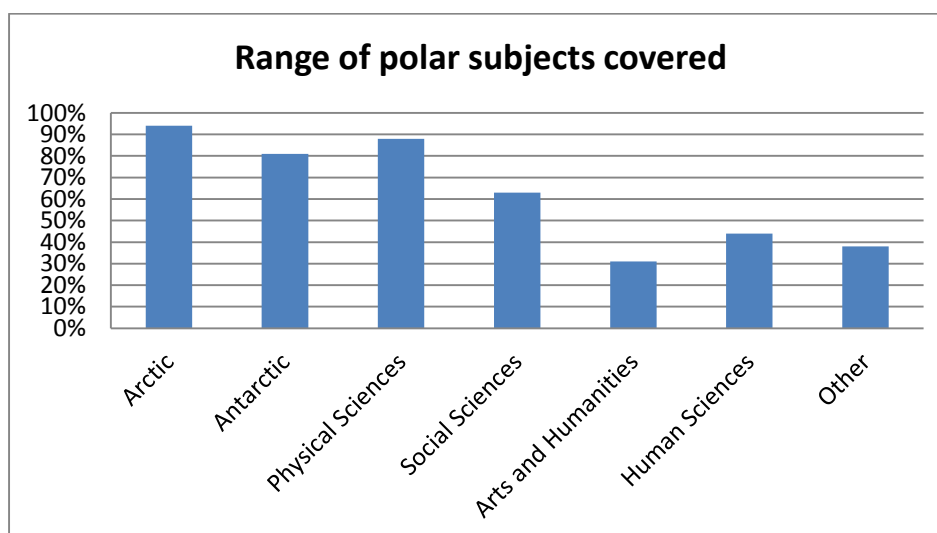
When asked 'Would you consider using technology, such as a web crawler, that would index your library's polar collections on one central website?' 44% of institutions (7) said yes, 50% said maybe (8) and only 6% (1) said no.

2.10 Provision of key contacts

Three quarters of respondents are able to provide key contacts to researchers, such as experts in a particular field.

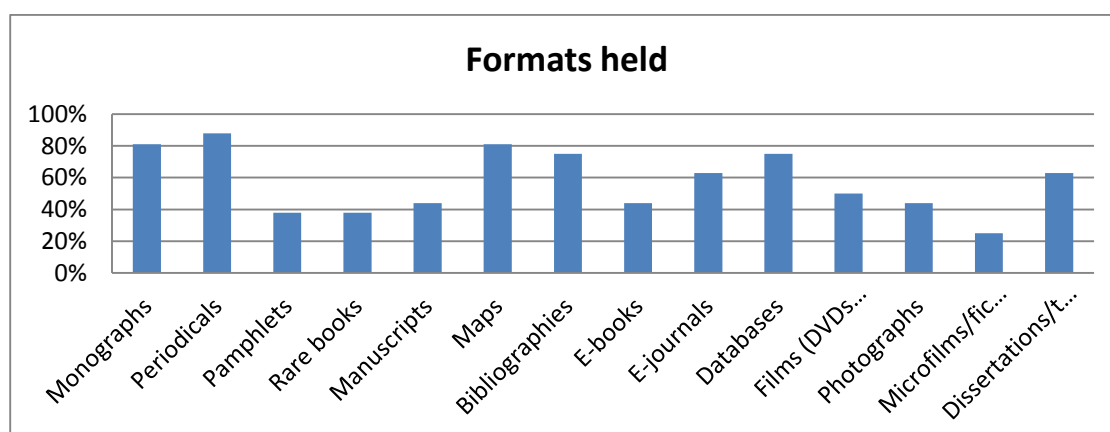
2.11 Range of polar subjects

The main range of subjects covered was reported as follows: Arctic (15 libraries), Antarctic (13), Physical sciences (14), Social sciences (10), Arts and Humanities (5), Human sciences (7), Other (6). Of the 'other' ancillary subjects, those listed specifically were life sciences; history/geography; regional studies (scientific and industrial development); climate science; marine and terrestrial ecology; geosciences; oceanography; environmental sciences; biological sciences; Arctic governance; Arctic environmental policy and geopolitics.



2.12 Range of formats

The libraries surveyed hold polar information in a wide range of formats, namely monographs, periodicals, pamphlets, rare books, manuscripts, maps, bibliographies, e-books, e-journals, databases, films (DVDs etc.), photographs, microfilms/fiches, dissertations and theses.



2.13 Digital databases

Only 15 of the 16 libraries responded to this question. Of those libraries, all had access to digital databases. 60% are able to provide information from these databases to external users. Of those libraries which provide access, 3 sometimes charge for this service and 6 do not.

The survey asked how libraries resolve the problem of research requests for access to articles that are only available in databases to which you do not subscribe. The main means are requests for interlibrary loans through other institutions, direct contact with authors and publishers, or referring the user to colleagues at other organisations which hold relevant material.

2.14 Development of the EU Arctic Information Network

Organisations were asked if they would be interested in being a part of the Arctic Information Network project. 63% would definitely wish to be involved, and 37% expressed a qualified interest. When asked why they would like to be involved, the majority of respondents cited provision, promotion and sharing of information about the Polar Regions as their main motivation.

Three explicitly stated that such a network would fit in with their existing strategic plans for their collections and that such a network would increase the ability of people around the world to find and use Arctic information without incurring increased collection costs at an institutional level. The ability to share knowledge about publications produced by other institutes was mentioned, as well as working in cooperation with colleagues worldwide. The project is seen as important for encouraging a new approach to developing an EU-wide polar database and providing innovative structures for cooperative cataloguing across collections. The move towards a similar network for museums with Arctic holdings was mentioned and one respondent emphasised the importance of the network for those living in the Arctic regions.

Five libraries elaborated on their reservations about involvement at this early stage. The main reason given was a lack of clarity of what the network might entail. Costs, impact on the collection and impact on staff were also cited as concerns.

2.15 Cooperative cataloguing

Ten of the responding libraries are already involved to some degree in a cooperative cataloguing network with other libraries. Those external networks include the National Snow and Ice Data Centre (NSIDC), BIBSYS, RAS, Finnish National Union Library (Melinda), Gemeinsamer Bibliotheksverbund (GBV) which provides access to the titles in over 250 German libraries, NEOS (Canadian library consortium), American Geosciences Institute, the Cambridge University Library system, and other non-polar library consortia.

2.16 Next steps

Fourteen institutions voiced an interest in receiving a digest of the final results of this study. Ten also provided contact email addresses and were willing to enter into further discussions about the development of a new EU-wide catalogue of Polar materials.

3. Recommendations

3.1 The network

This report is intended to lay the foundations for the development of the EUAIC, coordinating the library and archival components of the Information Centre, bringing together librarians and other professionals from polar libraries within and beyond the European Union willing to work on initiatives for open access catalogues, data harvesting and information exchange.

As its brochure states: The EU Arctic Information Centre (EUAIC) does not carry out research, it does not have a representative or a policy development role and it is not a database or an archive. Instead, **it will be a “one stop shop” which aims to disseminate information and activities** that require outreach and communication.^[1]

The emergence of a European Union Arctic Information Centre is an understandable, and timely, response to current strategic and political changes in the EU’s thinking with regard to the Arctic. Arctic policy making within the EU will, of course, require substantial analysis and evaluation of any data collected and provided by the Information Centre. The data alone, in other words, are insufficient to assist in policy formulation.

It is important to stress the importance of the *network* in this initiative, rather than the *centre*, highlighting the strengths of working with, and coordinating the expertise of, existing partner organisations across EU countries. The primary audiences for such a network are the citizens of the EU and EU decision makers in Brussels. The EUAIC is a network of well-established research units, mainly within higher education, which are already working together. It is recognised that the participating nodes already have good connections to Arctic information sources. In this context, the Scott Polar Research Institute (SPRI), which has compiled this study, is the United Kingdom’s central node, already linked to other university and government departments, as well as to industry, and with a highly developed library and information service well adapted to international cooperation. SPRI’s recent chairmanship of the Polar Libraries Colloquy (PLC) has strengthened a number of these key partnerships across Europe. However, it should not be forgotten that the breadth and reliability of information on the Arctic relies heavily on circumpolar and global partnerships with entities outside the EU, such as the PLC and the Arctic Council. The model of cooperation already provided by the Barents region should also inform the way the EUAIC develops.

3.2 Existing networks and partnerships

The EUAIC recognises the value of networks for acquiring and disseminating information to the widest range of audiences. The majority of participants in the survey open their doors to researchers from around the world, as well as to members of the public. Much of the enquiry work within these libraries and archives is carried out electronically, either via the web, email or telephone. We already see ourselves as nodes in a worldwide network of libraries and archives with polar collections, serving a variety of patron groups.

All the libraries which took part in the survey are already members of the Polar Libraries Colloquy (PLC), which shares polar information and resources and to make those resources accessible to their clientele. The PLC has had a number of initiatives in the past to develop shared catalogues, such as PolarPac^[2], a CD-ROM bibliographic database containing monographic records and a union list of serials. At the time of writing, further development to a web based service has been hampered by the lack of funding for a suitable technological solution that can be readily shared by all PLC member organisations. There may soon be further developments to be announced in light of AGI’s use of EP XML. As a membership organisation,

the PLC is not a fund holder in its own right, nor does it have a permanent secretariat, but opportunities exist for member institutions within the European Union to work with the EU, under the new 2020 Framework, to leverage funding which could benefit the wider membership. Members already contribute data to international bibliographic databases, such as the EBSCO database (available online and on CD-ROM) on Arctic & Antarctic Regions and the International Polar Year Publications Database^[3], set up to replicate the information-gathering work of the WDCs for the IPY 2007-08. The efficacy of this approach has been challenged with the development of search algorithms.^[4]

3.3 Models for cooperation

In an increasingly interconnected world, there has been a proliferation of models. Brian Lavoie^[5] from OCLC poses the problems very succinctly:

- *Institutional repositories*: what is the role of the library in collecting, managing, and preserving institutional scholarly output, and what services should be offered to faculty and students in this regard?
- *Metasearch*: how can the fragmented pieces of library collections be brought together to simplify and improve the search experience of the user?
- *E-learning and course management systems*: how can library services be lifted out of traditional library environments and inserted into the emerging workflows of "e-scholars" and "e-learners"?
- *Exposing library collections to search engines*: how can libraries surface their collections in the general Web search environment, and how can users be provisioned with better tools to navigate an increasingly complex information landscape?

This complexity increases with the drive to collect information across national boundaries, languages and cataloguing standards. In seeking a cooperative model, we need to be particularly alert to the needs of the end user. Considerable research is required before the EUAIC can begin to answer questions on the information needs of EU citizens, let alone politicians, with regard to the Arctic.

Historically, we have worked with 'push' models of data sharing, submitting batches of records to a central repository which manages the storage and dissemination on behalf of the participating libraries. Many of the PLC's own initiatives, including PolarPac, began on this basis.

Extending the scope of the library catalogue, the Northern Areas open scholarly documents (NAROS)^[6] project is an example of what we might describe as a 'pull' model. It was planned to exploit the resources of the OAISter database, a union catalogue of millions of records representing open access resources built by harvesting from open access collections worldwide using the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH). Using such protocols to harvest catalogue records from participating libraries is still hampered by the lack of compatibility in metadata standards between the Anglophone and non-Anglophone worlds.

In the OAIS Reference Model, on which OAISter is based, long-term preservation is the business requirement. Some of the key business entities relevant to preservation are defined in terms of the concept of an information package – i.e., digital content and its associated metadata viewed as a single, logical package moving into (submission information package, or SIP), through (archival information package, or AIP), and out of (dissemination information package, or DIP) the archival system.

One further possible model for library cooperation within the EUAIC (and by extension the PLC) is the International Association of Aquatic and Marine Science Libraries and Information Centers (IAMSLIC) Distributed Library project,^[11] aimed at facilitating international information resource sharing among marine and aquatic science libraries. This was developed as a joint project of the IAMSLIC Resource Sharing Committee, the California State University, Monterey Bay Library and the NOAA Coastal Services Center in Charleston, South Carolina, USA. It was modelled on the Coastal Information Library developed by the NOAA Coastal Services Center and utilizes the PHP/YAZ open source Z39.50 protocols. This model assumes, however, that contributing libraries have the facilities to make information available via z39.50.

The differences between data archives and library catalogues have been discussed at length elsewhere^[7], but the EUAIC should use the systems expertise gained by data managers in considering any new initiative. The PANGAEA information system, for example, described in detail by Hannes Grobe at the PLC^[8] meeting in Bremerhaven, is operated as an Open Access library aimed at archiving, publishing and distributing georeferenced data from earth system research. The system guarantees long-term availability of content through the commitment of its operating institutions.

Re-imagining Libraries is the 5-year strategic plan of National & State Libraries Australasia. A good example of a national strategy based on an ingest mechanism, Trove^[9] has been developed by the National Library of Australia as the central portal for access to Australian collections. Trove, the national discovery service for Australia, was released in December 2009. At that time it contained metadata for 80 million freely accessible items, including those harvested from 1,000 contributing Australian institutions. The focus was on Australia and Australians. Trove demonstrated innovation in resource discovery and access. In 2010 it was decided to extend the scope of Trove to include selected sets of e-resources subscribed to by Australian libraries. The work to implement this was undertaken over six months from November 2010 — May 2011, in partnership with the National State and Territory Libraries of Australasia (NSLA) and two e-resource vendors. A primary goal of the development work was to see if a theoretical model for national access of subscription resources translated into a practical workable model. The work was successful and in May 2011, version 4.0 of Trove was released, containing 120 million subscription e-resources for Australians. This took the Trove content total to almost 240 million items. Australian users of Trove are now able to access subscription e-resources within Trove when they are a member of an Australian library that has subscribed to a product included in Trove.

If EU funding is forthcoming, the EUAIC will begin to engage, first with partner libraries within the European Union, to consider these and other potential models. The University of Cambridge's Centre for Applied Research in Educational Technologies (CARET)^[10] is an obvious partner in research and development, but the EUAIC should not overlook the wealth of commercial products already available^{[11][12]}.

3.4 Resource implications

From a library perspective what will an Arctic Information network require? The need for funding and available technical expertise aside, unified access to relevant, high-quality information will be crucial. This will only be achieved if a pan-European approach is taken to making library catalogues accessible, so that researchers know where to look for information. In the initial phase, an assessment needs to be made of the volume of likely requests from the centre to the nodes of the network, so that individual partners can gauge the additional workload that joining the partnership might create. Requests for information may be of any type from all stakeholders (EU politicians, economists, scientists, citizens, etc.) The library component is envisaged as providing fact rather than opinion and participant organisations can undertake

to provide information in support of policy-making, but will not provide policy advice per se. A far better understanding of users' needs and expectations is also required.^[13] We recommend that a further survey of potential users is undertaken, as well as a follow-up study to provide more detailed analysis of the types of information that are already available.

In the medium term, given the current lack of standardisation, more work is needed to ensure that partner organisations have common frameworks for metadata, and are prepared to provide unfettered access to metadata harvesting tools. Those tools themselves need to be further developed to be able to work seamlessly across a range of European languages. Open access to existing catalogues on the IAMSILIC model could replace the need for a single, pan-European (or worldwide) polar library catalogue, as envisaged in the 1990s by the Polar Libraries Colloquy, but some potential partner libraries may not be z39.50 compliant^[14]. Apart from access to library metadata, further work will be needed to ensure that the EU Arctic Information Centre is effective in channelling requests for specific information to partner libraries, particularly if it has the expectation that these requests can be met within an acceptable timeframe without undue pressure on existing resources. There is now a pressing need for the EU to invest in its Arctic facing libraries and archives, funding a partnership in which institutions within the network are provided with support to develop a shared infrastructure for the benefit of the citizens of Europe.

3.5 Significance

The right to access information is a key issue and concern among information professionals, policy makers and governments around the world. According to a 2003 report by the United Nations Development Programme, the importance of access to information can be summarised in the following ways:

- Implementation of the rights to freedom of expression and to access information are prerequisites for ensuring the voice and participation necessary for a democratic society.
- Access to information and communication build on these internationally recognized rights and together encompass the core principles of democratic governance: participation, transparency and accountability.
- The promotion and protection of both access to information itself and flows of information that exist between constituents, government, parliament, community groups, civil society organizations and the private sector are of equal importance.
- It is essential to create and strengthen communication mechanisms that enable poor people to influence national and local government policy and practice.^[15]

These four factors are relevant in the framework of the EUAIC project and are significant areas of complimentary development that will happen as a result of the implementation of the overall network, driving EU-wide policy in a direction that can allow for further involvement of EU nations' citizens within the democratic and political process.

3.6 Worldwide impact

The wide-reaching impact and potential for this project should not be overlooked. As already discussed, there are several national cataloguing schemes in existence within a number of EU nation states, and throughout the rest of the world, and the potential for connecting these schemes up into an international information provision network is strong. By leading with the EUAIC as a groundbreaking project, the EU will be able to demonstrate how joined-up working and collaboration can bring together disparate and

specialised collections in a way that best benefits its citizens and policy makers. It is not an over-estimation to say that the EUAIC could be the start of a dramatic shift in the way in which citizens access information, and it could unite nations beyond the confines of borders or political affiliations.

3.7 Relationship to EU Arctic Initiatives Compendium

This report has been prepared as an appendix to the European Arctic Initiatives Compendium, a part of the Strategic Environmental Impact Assessment of the Development of the Arctic and preparatory action for a European Union Arctic Information Centre, commissioned by the Environment Directorate General of the European Commission. Reference: ENV.E.1/SER/2012/0038.

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Appendix 1**Informed Consent Form****Introduction**

This study attempts to collect information about the various polar collections that exist in libraries around the European Union and beyond. This information is being collected on behalf of the European Union Arctic Initiatives Compendium and hopes to build on the work done by the EU Arctic Information Centre. The research team would like to demonstrate to Brussels that our polar libraries can act as a networked knowledge source.

Procedures

You will be asked a set of questions about your collection and library operations. This questionnaire should take no longer than ten minutes in total. This questionnaire will be conducted with an online Qualtrics-created survey.

Risks/Discomforts

Risks are minimal for involvement in this study. However, if you feel uncomfortable at any point, you are free to stop the questionnaire at any time. If any questions are unclear, please contact the principal investigator, Heather Lane on hel20@cam.ac.uk or project manager, Georgina Cronin, on gmp36@cam.ac.uk.

Benefits

It is hoped that through your participation, researchers will learn more about the various polar library and archive collections that are available and whether it will be possible to offer an information service that ties all of these collections together into an overall Arctic Information Network.

Confidentiality

All data obtained from participants will be kept confidential and will only be reported in an aggregate format (by reporting only combined results and never reporting individual ones). All questionnaires will be concealed, and no one other than the principal investigator and assistant researchers listed below will have access to them. The data collected will be stored in the HIPPA-compliant, Qualtrics-secure database until it has been deleted by the principal investigator.

Compensation

There is no direct compensation.

Participation

Participation in this research study is voluntary. You have the right to withdraw at any time or refuse to participate entirely.

Questions about the research

If you have questions regarding this study, you may contact Heather Lane (principal investigator), at hel20@cam.ac.uk, or Georgina Cronin (project manager) at gmp36@cam.ac.uk. Please note that this questionnaire will close on 31st August 2013.

Appendix 2

1. I have read, understood, and printed a copy of, the above consent form and desire of my own free will to participate in this study.
2. Consent
3. Where is your library based?
4. Which country is your library based in?
5. What is the name of your library and/or institution?
6. What is the main purpose or focus of your library or institute?
7. What is the total size of your library's polar holdings? (Please include total number of individual books, periodicals and other media)
8. What is the total size of your archival polar holdings? (if applicable)
9. Who are your key user groups?
10. What are your "other" user groups that have not been already listed?
11. Would you be interested in developing new user groups?
12. Do you accept enquiries from external users?
13. What is the total number of library/archives staff that work with polar collections?
14. Do you have an electronically searchable catalogue?
15. Is your catalogue available on the Internet for remote users?
16. Is your library catalogue Z39.50 compliant?
17. Would you consider using technology, such as a web crawler, that would index your library's polar collections on one central website?
18. Are you able to provide key contacts to researchers, such as experts in a particular field?
19. What range of polar subjects do you cover?
20. Please specify the other polar subjects that you cover.
21. Which formats do you hold?
22. Do you have access to digital databases?
23. Are you able to provide information from these databases to external users?
24. Do you charge for this service?

25. How do you resolve the problem of research requests for access to articles that are only available in databases to which you do not subscribe?
26. Would you be interested in being involved with an Arctic Information Network project?
27. Why would you like to be involved?
28. What makes you unsure about being involved?
29. Why would you not like to be involved?
30. Are you already involved in a cooperative cataloguing network with other libraries? If so, please specify.
31. Please provide your email below if you would like a digest of the final results from this questionnaire?
32. Would you like to be contacted to discuss the development of a new EU-wide polar catalogue? If so, please provide your contact email and we will get in touch.