CAIRNS

Overview and Executive Summary

An Embryonic Cross-sectoral, Cross-domain National Networked Information Service for Scotland?

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Overview and Executive Summary

The name CAIRNS is used to refer to two related things:

- An embryonic Scottish national networked information service or Scottish Portal that continues to develop and offers the potential of integrated access to all publicly available research materials, learning and teaching resources, and public information services in Scotland, whether digital or non-digital; it includes SLAINTE[1], and will add NGfL Scotland[2], BUBL[3], Glasgow Digital Library[4] in early 2001, while work with SCRAN[5] continues. This is receiving ongoing support within the SCONE project[6] until December 2001 and then by the CDLR until 2004;
- The eLib-funded and SCURL[7] -backed research project which created the service and ended in December 2000, having not only met all of its major objectives, but also won support in Scotland as the possible hub of a future cross-sectoral and cross-domain national networked information service.

This document is the final report of CAIRNS, the research project. It:

- Charts the development of the project itself, and of the embryonic service;
- Describes problems encountered during the project and lessons learned that are likely to be of value to other groups aiming to set up similar services;
- Provides details of the project evaluation programme and its results;
- Maps out future needs in respect of funding for additional research, development, and maintenance work and why this work would be of value to Scottish citizens and organisations aiming to compete successfully in the Information Age;
- Indicates the extent to which growth of the service is possible in the absence of additional funding and where additional funding is needed;
- Provides information on project finances;
- Encompasses essential background information, such as the Cataloguing Standards and Interoperability reports.

1 Activities and progress

The CAIRNS project ended on December 31st 2000, having met all of its major aims and most of its more peripheral aims. It also spawned three related funded research projects (SCONE, SEED[8], and HILT[9]), and at least one important related initiative (CoSMiC[10]), that between them will help improve service within the clump[11] in ways that are beyond the scope of the project and will contribute to the aim of building a national networked information service for Scotland. Full details on CAIRNS activities and progress may be found in the report itself, which includes, in particular, an initial section covering all project deliverables and related objectives in logical order, together with associated outcomes.

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[1] See http://www.slainte.org.uk/

[2] National Grid for Learning Scotland. See http://www.ngflscotland.gov.uk/

[3] See http://bubl.ac.uk/

[4] See http://gdl.cdlr.strath.ac.uk/

[5] Scottish Cultural Resources Access Network. See http://www.scran.ac.uk/

[6] Http://scone.cdlr.strath.ac.uk/

[7] Scottish Confederation of University and Research Libraries. See http://scurl.ac.uk/

[8] Http://seed.cdlr.strath.ac.uk/

[9] High Level Thesaurus. See http://hilt.cdlr.strath.ac.uk/

[10] Confederation of Scottish Mini-Clumps. See http://scone.strath.ac.uk/dissemination/events.html

[11] Roughly speaking, a clump is a group of distributed catalogues made cross-searchable via the Z39.50 standard and other means of ensuring interoperability between the catalogues.

The following table summarises the key achievements of the CAIRNS Project:

Project deliverable or objective	Outcome:
Creation of a geographically distributed but centrally co-ordinated cross-searchable virtual union catalogue for Scottish HE based on the international Z39.50 standard potentially encompassing 25 servers at 16 sites utilising systems from 7 different suppliers.	Working system in place with the 20 servers at 13 sites using 4 suppliers of 5 packages available in the event. 3 other servers expected early 2001 (Glasgow Digital Library, BUBL, NGfL Scotland,). 3 others, including public libraries, expected.
Integration of service with all subjects database of Conspectus-based collection strengths to enable the dynamic generation of smaller groups of cross-searchable catalogues appropriate to particular subject interests or geographical areas.	Database successfully integrated and working 'dynamic clumper' service in place.
Investigation of local client-based, local server-based, and central server-based service access routes.	Explored. Main member interest server-based. Dynamic clumper needs central server.
Explore cross-sectoral issues with public libraries.	Explored in various ways (see full report).
Explore cross-domain issues.	Explored with SCRAN, epixtech, Elias
Ensure service extendible beyond initial membership.	Ensured. Promoted through CoSMiC.
Maximise level of interoperability possible across the member sites of the distributed catalogue.	Ensured, includes broadcast searches with variable attributes and circulation data.
Improving user access to information, regardless of location, adding value to current systems.	Improved access through cross-searchable one stop shop service and single interface.
Exploit SCURL's current organisational structure and associated inter-institutional agreements.	Current structure helped manage project and get agreement on design, cataloguing standards, distributed serials (projected service), access agreements update and so on.
Work with users to ensure that CAIRNS interoperability is achieved within the context of an effective and efficient service to users.	Achieved through building results of user evaluations into development plans.
Progress various peripheral issues as time allows: Inter-Library Loans, Authorisation and authentication, distributed serials, surrogate Explain Service, current contents to serials service.	ILL awareness day held and ILL librarians asked to evaluate, distributed serials pilot planned post project, minimal progress on remaining three issues – see main report.
Test results and analyses.	Done. See main report.
Establishing requirements for future development.	Done. See main report.
Providing a model for other similar distributed services based on Z39.50, including guidelines to consider when setting up similar systems.	Model system in place, also work with CoSMiC, papers, presentations, guidelines in this report and in planned future work.
From CAIRNS experience, make recommendations to SCURL on any adjustments to SCURL functions and inter-institutional co-operative processes.	Recommendations made and accepted on CAIRNS future, cataloguing standards, distributed serials and other issues.
Contribute to the draft UK interoperability profile.	Contributions made on several occasions
Propose metadata scheme for the description of targets and collections.	Made contributions to RSLP/UKOLN schema discussions, implemented schema via SCONE.
Provide appropriate user and system documentation.	Done where appropriate. Some via online help. See report for more details.
Annual reports and final report to eLib as specified.	Completed with the sending of this report.

2 Summary of lessons learned

Project staff and participants learned a great deal about building and managing a distributed service of this kind. A full account of these is provided in the body of the report and will be of value to others setting up similar services elsewhere, whether it be regional organisations of other groupings in Scotland wishing to run mini-clumps or others wishing to set up clumps similar to CAIRNS in regions of the UK or, indeed, in areas beyond the UK.

Particularly significant lessons learned include:

- Members of a clump need to remember to 'Think globally before acting locally', and to be encouraged and trained to do so by the organisation responsible for the clump.
- Agreed cataloguing and indexing standards and associated training and monitoring are essential to full interoperability, although a useful functioning system can, given the right conditions, be put in place despite problems in these key areas. Agreed cataloguing and indexing standards must be the long term aim, however.
- It is possible – and, in the absence of significant resources for support and development, probably wise - to build a working system based on 'off the shelf' products. Specially developed software can give additional flexibility, but it makes the system difficult to maintain and development of it difficult to sustain unless significant resources are available to offer salaries and contracts that will enable the service to attract and hold on to the necessary programming expertise.
- As expected, integration of the distributed catalogue service with a collection description database proves to be the most flexible approach to creating sub-groups of catalogues for cross-searching for particular purposes – e.g. searching for a particular subject strength, location in a particular region, or on the basis of comparing other user criteria with the collection descriptions data (e.g. user wants electronic as opposed to hard-copy materials). In the context of the SCONE project, it is also viewed as important to co-ordinate collaborative collection development efforts via the same database, thus linking collection management with user navigation in the distributed service.
- Even within companies selling products based on Z39.50, there is a dearth of information available about the standard, how individual aspects of it affect interoperability, and even how it is implemented within the company's software. Establishing and maintaining good communications with the right staff in such companies is a must, as is mutual support and information and training sharing within the clump itself.
- Human interaction between clump members at a number of levels is as essential to interoperability as things like Z39.50 itself and cataloguing standards. This, in turn, will only work efficiently if the group is relatively small. In CAIRNS, this is seen as implying the need to work both with bodies serving particular sectors, regions, and other groupings, such as SCURL, ALF[12], and particular domains, such as the Scottish Library and Information Council (SLIC)[13] or SMC or SCA, but also an organisation like CoSMiC that will enable inter-sectoral, inter-domain, and other levels of co-ordination to take place.
- Firewalls are a problem in respect of Public Library Z servers.

Many of these have implications for the enterprises such as the DNER, and also for individual organisations either in, or aiming to join, a clump like CAIRNS. The full report contains additional information on these and other similar implications.

3 Final evaluation results

Formative (informing ongoing development and decision-making in the project) as well as summative (providing evidence of effects and longer term impacts) evaluation of the project was carried out and the full report of the project evaluators[14] is included as Appendix A. Although it included a number of qualifications and recommendations which will be noted and acted on as CAIRNS is taken forward under SCONE and the Centre for Digital Library Research (CDLR)[15], its main conclusion was positive:

> *"The CAIRNS Project made important progress towards establishing a comprehensive union catalogue for Scottish HE. The Project demonstrated the feasibility of this ambition - in organisational and technical terms. Where the Project encountered technical or other difficulties, these were identified quickly and appropriate recommendations were made. The Project adopted a mature and intelligent approach to its objectives, abandoning some goals that were found inappropriate and exceeding expectations in other areas. Key objectives were met. It is important that this work is carried forward towards implementation of a robust and comprehensive service.*

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[12] Ayrshire Libraries Forum. See http://www.slainte.org.uk/alf/alfohome.htm
[13] http://www.slainte.org.uk/Slic/slichome.htm
[14] Dr F Henderson, A McLean, Robert Clark Centre for Technological Education, Glasgow University
[15] See http://cdlr.strath.ac.uk/

4 Future development

The CAIRNS Project Business Plan or 'exit strategy' was discussed at the SCURL meeting of the 22nd June 2000. In summary, it proposed:

- Continuation of the basic service under SCONE then the CDLR until at least 2004.
- SCURL support for applications for project funding to support further developments[16] aimed at creating a cross-sectoral and cross-domain national networked information service[17] for Scotland based on CAIRNS and SCONE.

The meeting unanimously agreed with the central proposal that CAIRNS should continue and that it should develop in a Scotland-wide (as opposed to just HE) context. A small group (with CAIRNS representation) was set up to outline the SCURL's own HE vision within this context and to enter into discussion with other appropriate Scottish bodies such as SLIC to take the developmental aspect of the plan forward. The full Business Plan is included as Appendix B. SCURL has also agreed that both the CAIRNS Liaison Group and the CIGS[18]-coordinated CAIRNS Cataloguing Issues Working Group should continue to meet to assist in the ongoing development and maintenance of CAIRNS and CAIRNS-related standards.

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[16] Much work is required if the embryonic service is to develop into the envisaged portal to a Scottish Networked Information Service that is cross-sectoral and cross-domain. Some of this will be done within the SCONE, SEED and HILT projects (indirectly in the case of SEED and HILT), but a great deal of further work - and the associated funding that is a pre-requisite - is needed beyond this. This work is sketched out in the CAIRNS Exit Strategy (see Appendix B). Also, a particular non-development problem that needs attention relates to an apparent limit on the number of simultaneous users which appears to be set at 5 in this system. Since the software is in use in big libraries for user access to the library catalogue, this is assumed to be fixable. It is only a problem when class use is envisaged, the limit has never been hit in normal everyday use.

[17] Original reference to a 'National Electronic Library', changed to cover cross-domain ambitions.

[18] Cataloguing and Indexing Group in Scotland. See: http://www.slainte.org.uk/cigs/cigshome.htm