



# **Elements and Future Development Requirements of a Common Information Environment for Scotland**

## **Final Report to the Scottish Library and Information Council (SLIC) on the SPEIR Project**

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**Published: CDLR, Glasgow, 2004**

## Executive Summary: A Common Information Environment for Scotland.

### *Funding, Duration, Stakeholder Representation*

The SPEIR (Scottish Portals for Education, Information and Research) project was funded by the Scottish Library and Information Council (SLIC). It ran from February 2003 to September 2004, slightly longer than the 18 months originally scheduled and was managed by the Centre for Digital Library Research (CDLR). With SLIC's agreement, community stakeholders were represented in the project by the Confederation of Scottish Mini-Cooperatives (CoSMiC), an organisation whose members include SLIC, the National Library of Scotland (NLS), the Scottish Further Education Unit (SFEU), the Scottish Confederation of University and Research Libraries (SCURL), regional cooperatives such as the Ayrshire Libraries Forum (ALF)<sup>1</sup>, and representatives from the Museums and Archives communities in Scotland.

### *Aims; A Common Information Environment For Scotland*

The aims of the project were to:

- Conduct basic research into the distributed information infrastructure requirements of the Scottish Cultural Portal pilot and the public library CAIRNS integration proposal;
- Develop associated pilot facilities by enhancing existing facilities or developing new ones;
- Ensure that both infrastructure proposals and pilot facilities were sufficiently generic to be utilised in support of other portals developed by the Scottish information community;
- Ensure the interoperability of infrastructural elements beyond Scotland through adherence to established or developing national and international standards.

Since the Scottish information landscape is taken by CoSMiC members to encompass relevant activities in Archives, Libraries, Museums, and related domains, the project was, in essence, concerned with identifying, researching, and developing the elements of an internationally interoperable *common information environment* for Scotland, and of determining the best path for future progress.

### *Strategy; A 'Whole Environment' Approach*

The project intentionally built on and integrated concurrent and historical work carried out in a range of other relevant projects<sup>2</sup> - work funded by a variety of funders (SLIC, Scottish Executive, JISC, SHEFC, E-Lib, RSLP, the British Library) and initiated by a range of organisations (SLIC, SCURL, the NLS, CoSMiC, CDLR). This was done partly of necessity – because of the need to build on existing embryonic services such as CAIRNS<sup>3</sup> and SCONE and to integrate Scottish developments with those elsewhere in the UK and internationally – and partly as a deliberate strategy that views a 'whole environment'<sup>4</sup> or 'holistic' approach to developing the distributed information landscape as essential to the successful creation of a coherent and stable infrastructure with ongoing cross-community support.

### *Outcomes; Progress In Key Areas*

The project has made solid progress in all of the key areas tackled, as follows:

- Successful determination of requirements and working mechanisms for the seamless integration of the Cultural Portal Pilot into CAIRNS and related initiatives such as the SCONE collections facility, the collection strengths landscaper, and the SCAMP updates facility; investigations to ensure applicability in other areas as in public, FE, and other library systems;
- Inclusion of Public Libraries and SCRAN in the CAIRNS distributed catalogue<sup>5</sup>
- Specification and instantiation of an illustrative pilot terminologies server for Scotland, including implementation of illustrative facilities.

<sup>1</sup> A full list is available at <http://CoSMiC.cdrl.strath.ac.uk/>

<sup>2</sup> CATRIONA, RCO, CAIRNS, SCONE, SEED, HILT, SAPIENS, HaIRST, CC-Interop, and the Scottish Cultural Portal pilot – see glossary for details.

<sup>3</sup> The CAIRNS distributed union catalogue and landscaper and the SCONE collections database.

<sup>4</sup> See WIDWISAWN Vol.1 No.2: <http://widwisawn.cdrl.strath.ac.uk/Issues/issue2.html>

<sup>5</sup> Although progress in this area was limited (SCRAN and three public library authorities are available at time of writing, and three public library authorities and one FE library are planned for inclusion over coming months), the slow speed of development was expected because of the various technical, organisational and political difficulties involved.

- Creation of a pilot Scottish Distributed Digital Library (SDDL), based initially on three databases, and cooperative cataloguing through the OCLC CORC subscription (currently only SLIC and CDLR);
- Research and development work to permit embryonic services such as CAIRNS, SCONE, SCAMP, and the SDDL to serve as central facilities and data sources for the Cultural Portal Pilot and other Scottish portals;
- Identification of digital and non-digital collections relevant to the Cultural Portal for SCONE
- Development of a pilot cultural facets (from heritage to ballet to football to street theatre) landscaping facility
- The integration of CAIRNS, SCONE, RCO and SLIR into a single service
- Expansion of SCONE collections database in areas such as cultural and public library collections;
- Implementation of an illustrative closed access cooperative environment for possible use in collaborative collection management and other joint activities;
- Embryonic mechanisms to support ongoing community management of research and development in the Scottish Common Information Environment (SCIE) through the CoSMiC Joint R&D Plan process.
- Widespread dissemination of project developments and outcomes through the SPEIR website, SPEIR staff publications, SPEIR roadshows, presentations, leaflets and meetings, and a variety of mechanisms external to SPEIR (Scotslink email list, WIDWISAWN, the CoSMiC website and two 'Electric Connections' conferences).

Additional outcomes of note arose from work with other projects. These are detailed in the body of the report. Areas where progress was more limited than originally hoped are also covered there.

### *Future Actions; Stability and Achievable Progress*

SPEIR has brought the goal of a stable and coherent *common information environment* for Scotland a step closer. The degree of further development required is significant, and completion will take many years of work, but an embryonic infrastructure now exists that can be the basis of gradual development in line with available resources. With this as the backdrop, recommendations for future actions fall into two categories. The minimum requirement is to provide a level of funding that will permit development and support of existing facilities and joint investigation by SLIC and CDLR of how more stable infrastructural elements such as CAIRNS and SCONE might be embedded within existing organisations and services. The ideal – assuming more significant levels of funding can be found – is to couple these actions with major research and development work aimed at developing the infrastructure further, with the following being perceived priorities:

- Creation of a Scottish Terminologies and Semantic Interoperability support service
- Further development of existing shared services, particularly the Scottish Distributed Digital Library and the staff collaborative collection management portal.
- The creation of at least one additional pilot portal for Scottish citizens (One possibility would be a Science portal tailored for a range of groups – school children, socially excluded groups, researchers, the business community etc. – but the plan would be to consult the community on the preferred focus for this work)
- Intensive research into the user interface needs of key Scottish user groups (School and HE and FE students, socially excluded groups, lifelong learners, the business community, tourists and potential tourists, and so on).
- The creation of a fully operational and stable pilot infrastructure, together with a mirroring facility to support ongoing R&D work without impacting on service levels.
- Improved communication mechanisms, including the pro-active use of e-fora.
- The creation of a programme to tackle existing interoperability or metadata quality issues

The creation of the CoSMiC joint R&D plan mechanism should help ensure wide consultation on R&D priorities. It should also help fund R&D priorities through bids to a wider range of funders and provide a basis for influencing the R&D priorities of funding bodies.

# SPEIR Final Report: Contents

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## Glossary

<b>ALF</b>	<b>Ayrshire Libraries Forum.</b> ALF is a library cooperative for the Ayrshire region. Website available: <a href="http://library.paisley.ac.uk/alf/alfhome.htm">http://library.paisley.ac.uk/alf/alfhome.htm</a>
<b>BUBL</b>	Formally <b>BULLETIN BOARD FOR LIBRARIES</b> , now The <b>BUBL Information Service</b> , available: <a href="http://bubl.ac.uk/">http://bubl.ac.uk/</a>
<b>CAIRNS</b>	<b>Cooperative Academic Information Retrieval Network for Scotland.</b> CAIRNS is a distributed union catalogue for Scotland, available: <a href="http://cairns.lib.strath.ac.uk/">http://cairns.lib.strath.ac.uk/</a>
<b>CATRIONA Project</b>	British Library funded project (1994) to investigate whether the idea of a distributed catalogue of Internet resources integrated with standard Z39.50 library system OPAC interfaces was a feasible proposition, report available <a href="http://eprints.rclis.org/archive/00001305/">http://eprints.rclis.org/archive/00001305/</a>
<b>CC-interop</b>	<b>COPAC/Clumps Continuing Technical Cooperation Project.</b> JISC funded project investigating inter-linking between distributed and physical union catalogue systems, and collection-level description for user landscaping. Website available: <a href="http://ccinterop.cdlr.strath.ac.uk/">http://ccinterop.cdlr.strath.ac.uk/</a>
<b>CIGS</b>	<b>Cataloguing and Indexing Group in Scotland.</b> CIGS is the Scottish branch of CILIP's Cataloguing and Indexing Group. Website available: <a href="http://www.slainte.org.uk/CIGS/cigshome.htm">http://www.slainte.org.uk/CIGS/cigshome.htm</a>
<b>CDLR</b>	<b>Centre for Digital Library Research.</b> CDLR is based at the Department of Computer and Information Sciences, University of Strathclyde. Website available: <a href="http://cdlr.strath.ac.uk/">http://cdlr.strath.ac.uk/</a>
<b>Connexion</b>	<b>OCLC Connexion</b> provides a one-stop access to integrated cataloguing tools and the world's largest online catalogue and bibliographic database, WorldCat. Website available: <a href="http://www.oclc.org/connexion/">http://www.oclc.org/connexion/</a>
<b>CoSMiC</b>	<b>Confederation of Scottish Mini-Cooperatives.</b> COSMIC is a confederation of independent organisations, services and projects working together to foster and sustain co-operation between Libraries, Archives, Museums, Electronic Learning Services and others actively engaged in building and developing 'virtual Scotland'. Website available: <a href="http://cosmic.cdlr.strath.ac.uk/">http://cosmic.cdlr.strath.ac.uk/</a>
<b>Functional Granularity</b>	An approach that utilises 'functional granularity' defines or makes explicit those elements of a collection that the institution considers to be useful or purposeful for either resource discovery or collection management. Such collection definitions inform functional collection-level description in services such as SCONE.
<b>GDL</b>	<b>Glasgow Digital Library.</b> A distributed digital library based in Glasgow which aims to produce a coherent digital learning and information environment for Glasgow's citizens, through the development and implementation of a common collection

development policy and an agreed technical and inter-working infrastructure, available: <http://gdl.cdlr.strath.ac.uk/>

<b>GIS</b>	<b>Global Information Systems.</b> GIS are information computer systems designed to store, record, analyse, and produce maps and geographic products based on spatial data.
<b>HaIRST</b>	<b>Harvesting Institutional Resources in Scotland Testbed.</b> JISC funded project researching the design, development and implementation of a pilot service to provide stable ongoing UK-wide access to locally created learning and research resources in HE and FE institutions in Scotland. Website available: <a href="http://hairst.cdlr.strath.ac.uk/">http://hairst.cdlr.strath.ac.uk/</a>
<b>HILT</b>	<b>High Level Thesaurus.</b> A project investigating and reporting on the problem of cross-searching and browsing by subject across a range of communities, services, and service or resource types in the UK. Website available: <a href="http://hilt.cdlr.strath.ac.uk/">http://hilt.cdlr.strath.ac.uk/</a>
<b>HIP</b>	<b>Horizon information portal.</b> Modular addition to a Horizon library suite facilitating powerful results sorting and filtering capabilities. Website available: <a href="http://www.dynix.com/products/horizon/">http://www.dynix.com/products/horizon/</a>
<b>IESR</b>	<b>Information Environment Services Registry.</b> JISC funded service registry to improve resource discovery for users of electronic services. Website available: <a href="http://www.mimas.ac.uk/iesr/">http://www.mimas.ac.uk/iesr/</a>
<b>JISC</b>	<b>Joint Information Systems Committee.</b> The Joint Information Systems Committee (JISC) supports further and higher education by providing strategic guidance, advice and opportunities to use Information and Communications Technology (ICT) to support teaching, learning, research and administration. Website available: <a href="http://www.jisc.ac.uk/">http://www.jisc.ac.uk/</a>
<b>LCNAF</b>	<b>Library of Congress Name Authority File.</b> Name authority file as defined by the Library of Congress. Website available: <a href="http://authorities.loc.gov/">http://authorities.loc.gov/</a>
<b>LCSH</b>	<b>Library of Congress Subject Headings.</b> Subject headings as defined by the Library of Congress. Website available: <a href="http://authorities.loc.gov/">http://authorities.loc.gov/</a>
<b>LOCSCOT</b>	<b>Scottish branch of the Local Studies Group of CILIP.</b>
<b>LMS</b>	<b>Library management system.</b>
<b>MEG</b>	<b>Metadata in Education Group.</b> An open forum for debating the description and provision of educational resources at all educational levels across the United Kingdom.
<b>Mini-clump</b>	A set of collections and searches pre-defined for a special group of users.
<b>Mini-landscape</b>	A 'canned' sub-sets of collection-level descriptions.
<b>NACO</b>	<b>Name authority component of the Program for Cooperative Cataloging.</b> Website available:

<http://www.loc.gov/catdir/pcc/naco.html>

- NAS** **National Archives of Scotland.** The Scottish national repository for the public and legal records. Website available: <http://www.nas.gov.uk/>
- NGfL** **National Grid for Learning.** UK government initiative to help learners and educators benefit from information and communications technology (ICT) Website available: <http://www.ngfl.gov.uk/>
- NLS** **National Library of Scotland.** Website available: <http://www.nls.uk/>
- NOF-Digi** **New Opportunities Fund Digitisation Initiative.** Website available: <http://www.enrichuk.net/>
- OAI** **Open Archives Initiative.** The purpose of OAI is to develop and promote interoperability standards that aim to facilitate the efficient dissemination of content and enhance access to e-print archives as a means of increasing the availability of scholarly communication. Website available: <http://www.openarchives.org/>
- OAISIS** **OAI Scotland Information Service.** Website offering information and advice on Open Archives Initiative developments in Scotland. Website available: <http://hairst.cdjr.strath.ac.uk/oaisis/index.htm>
- Portlet** Portals can achieve greater personalisation through creating distinct building blocks of functionality. Such 'building blocks' might entail facilities like cross-searching, alerting, listing, each offering a visible block to the user. Each block is commonly known as a "portlet".
- RCO** **Research Collections Online.** A searchable analysis of the subject strengths of the larger general libraries in Scotland which support learning, teaching and research. Website available: <http://scone.strath.ac.uk/rco/index.cfm>
- RSLP** **Research Support Libraries Programme.** RSLP was a national initiative, funded by the four higher education funding bodies, aiming to bring together both traditional and new forms of access to library information, with specific reference to support for research. Website available: <http://www.rslp.ac.uk/>
- SACO** **Subject authority component of the Program for Cooperative Cataloging.** Website available: <http://www.loc.gov/catdir/pcc/saco.html>
- SAPIENS** **Scottish Academic Periodicals: Implementing an Effective Networked Service.** The SAPIENS service provides online access to a number of Scottish academic and cultural periodicals. Website available: <http://sapiens.strath.ac.uk/>
- SBO** **Scottish Bibliographies Online.** Catalogues of the published works of Scotland. Website available:

<http://cairns.lib.strath.ac.uk/CAIRNSService/ZCatSrch.cfm?uMiniID=13&uZCatAll=x>

<b>SCAMP</b>	<b>Scottish Collections Access Management Portal.</b> SCAMP is a web portal designed to support collaborative collection management amongst Scotland's information professionals. Website available: <a href="http://scone.strath.ac.uk/scamp/">http://scone.strath.ac.uk/scamp/</a>
<b>SCAN</b>	<b>Scottish Archives Network.</b> Initiative aiming to provide electronic access to the holdings of over 50 Scottish archives. Website available: <a href="http://www.scan.org.uk/">http://www.scan.org.uk/</a>
<b>SCIE</b>	<b>Scottish Common Information Environment.</b> An initiative aiming to facilitate collaborative and cross-sectoral partnerships capable of building a common on-line information environment for Scotland, within the wider UK CIE.
<b>SCONE</b>	<b>Scottish Collections Network.</b> SCONE provides descriptions of collections of all kinds held in libraries, museums, and archives in Scotland, as well as collections about Scottish topics held elsewhere. Website available: <a href="http://scone.strath.ac.uk/service/">http://scone.strath.ac.uk/service/</a>
<b>SCI</b>	<b>Scottish Cooperative Infrastructure.</b> A set of embryonic offline and online mechanisms to support collaborative work aimed at building and developing 'Virtual Scotland'.
<b>Scotland's Culture</b>	<b>The Scottish Cultural Portal Pilot.</b> Provide access to a wide range of printed and electronic resources, including data held by national and local organisations, galleries, museums, libraries and local authorities, through a single search interface. Website available: <a href="http://www.scotlandsculture.org/">http://www.scotlandsculture.org/</a>
<b>SCURL</b>	<b>Scottish Confederation of University and Research Libraries.</b> SCURL is the principal association of research libraries in Scotland and has been working collaboratively and cross-sectorally for over 25 years. Website available: <a href="http://scurl.ac.uk/">http://scurl.ac.uk/</a>
<b>SDDL</b>	<b>Scottish Distributed Digital Library.</b> Entails the creation of a 'coherent digital learning, information and research landscape for all Scots, collaboratively built and maintained via an agreed nation-wide, standards based, globally interoperable, cooperative infrastructure'.
<b>SEED</b>	The SEED project extended coverage of the RCO service to all of the Scottish universities, and implemented a maintenance mechanism for keeping the data up-to-date through the SCAMP service. The project also extended coverage of the SCONE service to named special collections held in Scottish public libraries. Website available: <a href="http://seed.cdrl.strath.ac.uk/">http://seed.cdrl.strath.ac.uk/</a>
<b>SLAINTE</b>	<b>Scottish Libraries Across the Internet.</b> Information and services for Scottish librarians, provided by SLIC and CILIPS. Website available: <a href="http://www.slainte.org.uk/">http://www.slainte.org.uk/</a>



<b>SLIC</b>	<b>Scottish Library and Information Council.</b> The Scottish Library and Information Council is the advisory body to the Secretary of State and Scottish Ministers, on library and information matters. Website available: <a href="http://www.slainte.org.uk/SLIC/index.htm">http://www.slainte.org.uk/SLIC/index.htm</a>
<b>SLIR</b>	<b>Scottish library and information resources.</b> SLIR provides addresses and contact details of libraries and other information services located in Scotland. Online version available: <a href="http://scone.strath.ac.uk/slir/index.cfm">http://scone.strath.ac.uk/slir/index.cfm</a>
<b>SMC</b>	<b>Scottish Museums Council.</b> SMC is the membership organisation for local museums and galleries in Scotland. Website available: <a href="http://www.scottishmuseums.org.uk/">http://www.scottishmuseums.org.uk/</a>
<b>SPEIR</b>	<b>Scottish Portals for Education, Information and Research.</b> SLIC-funded project that extends and builds on the work of earlier projects such as CAIRNS, SCONE and SEED. Website available: <a href="http://speir.cdr.strath.ac.uk/">http://speir.cdr.strath.ac.uk/</a>
<b>SSISWG OA Group</b>	<b>Scottish Science Information Strategy Working Group Open Access Group.</b> Website available: <a href="http://scurl.ac.uk/WG/SSISWGOA/">http://scurl.ac.uk/WG/SSISWGOA/</a>
<b>SSISWG Portal Group</b>	<b>Scottish Science Information Strategy Working Group Portal Group.</b>
<b>SVAG</b>	<b>Scottish Visual Arts Group.</b> SVAG represents librarians and information providers from academic and public libraries, museums, galleries and other institutions concerned with the promotion and documentation of the visual arts in Scotland. Website available: <a href="http://scurl.ac.uk/about/svag.html">http://scurl.ac.uk/about/svag.html</a>
<b>Ucablis</b>	<b>Union catalogue of art books in libraries in Scotland.</b> Catalogues of members of the Scottish Visual Arts Group (SVAG). Website available: <a href="http://cairns.lib.strath.ac.uk/CAIRNSService/ZCatSrch.cfm?uMiniID=11&amp;uZCatAll=x">http://cairns.lib.strath.ac.uk/CAIRNSService/ZCatSrch.cfm?uMiniID=11&amp;uZCatAll=x</a>
<b>UKEL</b>	<b>UK education levels.</b>
<b>UKOLN</b>	<b>Formerly the UK Office for Library and Information Networking.</b> Website available: <a href="http://www.ukoln.ac.uk/">http://www.ukoln.ac.uk/</a>

## 1. Introduction including Aims and Background

### Overview:

- **Introduction; Funding, Duration, Stakeholder Representation**
- **Aims; A Common Information Environment For Scotland**
- **Key Threads**
- **Strategy; A 'Whole Environment' Approach**
- **Project Management and Preliminary Planning**
- **The Structure of The Report**

### *Introduction; Funding, Duration, Stakeholder Representation*

The SPEIR (Scottish Portals for Education, Information and Research) project was funded by the Scottish Library and Information Council (SLIC). It ran from February 2003 to September 2004, slightly longer than the 18 months originally scheduled and was managed by the Centre for Digital Library Research (CDLR). With SLIC's agreement, community stakeholders were represented in the project by the Confederation of Scottish Mini-Cooperatives (CoSMiC), an organisation whose members include SLIC, the National Library of Scotland (NLS), the Scottish Further Education Unit (SFEU), the Scottish Confederation of University and Research Libraries (SCURL), regional cooperatives such as the Ayrshire Libraries Forum (ALF)<sup>6</sup>, and representatives from the Museums and Archives communities in Scotland.

Further information on SPEIR, including the project plan, dissemination activities, and reports of the joint CoSMiC Task group and SPEIR Steering Group can be found on the project web-site at <http://speir.cdlr.strath.ac.uk/>. Further information on CoSMiC can be found at <http://cosmic.cdlr.strath.ac.uk/>. Information on some of the relationships between CoSMiC and SPEIR can be found at <http://cosmic.cdlr.strath.ac.uk/ci/currentinitiatives.htm> and at [http://cosmic.cdlr.strath.ac.uk/cosmic\\_resources/resourcesmenu.htm](http://cosmic.cdlr.strath.ac.uk/cosmic_resources/resourcesmenu.htm).

### *Aims; A Common Information Environment For Scotland*

The aims of the project were to:

- Conduct basic research into the distributed information infrastructure requirements of the Scottish Cultural Portal pilot and the public library CAIRNS integration proposal.
- Develop associated pilot facilities by enhancing existing facilities or developing new ones;
- Ensure that both infrastructure proposals and pilot facilities were sufficiently generic to be utilised in support of other portals developed by the Scottish information community.
- Ensure the interoperability of infrastructural elements beyond Scotland through adherence to established or developing national and international standards.

Since the Scottish information landscape is taken by CoSMiC members to encompass relevant activities in Archives, Libraries, Museums, and related domains, the project was, in essence, concerned with identifying, researching, and developing the elements of an internationally interoperable *common information environment* for Scotland, and of determining the best path for future progress.

### *Key Threads*

Within this general aim, specific project threads included the following:

- Determination of requirements and working mechanisms for the seamless integration of the Cultural Portal Pilot into CAIRNS and related initiatives such as the SCONE collections facility, the collection strengths landscaper, and the SCAMP updates facility.
- A pilot 'interoperability focus' that aims to ensure interoperability within the portal environment at all levels, including, in particular technical standards such as Z39.50, metadata standards and terminologies.
- Research into, and preparation of, a specification for a pilot terminologies server and implementation of illustrative facilities. This work would draw on the work of the HILT Project.

<sup>6</sup> A full list is available at <http://CoSMiC.cdlr.strath.ac.uk/>

- Specification for, and development of, extension of SCAMP pilot facilities to facilitate a multi-domain mechanism for professionals involved in building and sustaining cultural 'collections' to collaborate online.
- Research into, and design of, alternative 'look and feel' themes for associated infrastructure elements in the CAIRNS, SCONE and SCAMP pilots.
- Research and development work to permit facilities in the co-operative infrastructure like CAIRNS, SCONE and SCAMP to serve as central facilities and data sources, not only for the Cultural Portal Pilot but for other similar portals in future.
- Establish and report on the best mechanisms for exploiting the CORC shared cataloguing facility for collaborative working and standards assurance in both the Cultural Portal Pilot and Public Libraries, with particular reference in the latter case to its use in the collaborative cataloguing of internet resources.
- Identification of digital and non-digital collections relevant to the Cultural Portal for SCONE.
- Determination of requirements and working mechanisms for the seamless integration of a significant number of Public Library catalogues into CAIRNS and the web enabling of the catalogues in question (likely to entail a single process).
- Similar integration of Public Libraries into related initiatives such as the SCONE collections facility, the collection strengths landscaper, and the SCAMP updates facility.
- Determination of requirements and of working mechanisms to allow any proposed Public Library portals to utilise data held centrally in CAIRNS and SCONE and to encompass, where possible, Cultural Portal elements in a similar way.
- Specification for, and development of, extension of SCAMP pilot facilities for Public Libraries.

### *Strategy; A 'Whole Environment' Approach*

The project intentionally built on and integrated concurrent and historical work carried out in a range of other relevant projects<sup>7</sup> - work funded by a variety of funders (SLIC, Scottish Executive, JISC, SHEFC, E-Lib, RSLP, the British Library) and initiated by a range of organisations (SLIC, SCURL, the NLS, CoSMiC, CDLR). This was done partly of necessity – because of the need to build on existing embryonic services such as CAIRNS<sup>8</sup> and SCONE and to integrate Scottish developments with those elsewhere in the UK and internationally – and partly as a deliberate strategy that views a 'whole environment' or 'holistic' approach to developing the distributed information landscape as essential to the successful creation of a coherent and stable infrastructure with ongoing cross-community support.

On the research front, this means studying every facet, not in isolation, but in the context of the whole distributed environment (and vice versa), and considering interaction in both local and distributed environments at every operational level from the technical to the human (including user, staff, and organisational levels). On the development front, it means ensuring that solutions work for the environment as a whole and all of its facets, not just for the particular facet in which the development takes place. The assumption behind the holistic approach is that the distributed information environment must grow as a single entity, and staff, user, and organisational cultures must grow with the distributed environment if the end result is to be an integrated, user-responsive whole<sup>9</sup>

In recognition of the organisational element of this strategy, SPEIR was steered by the Task Group of the inter-organisational and inter-domain Confederation of Scottish Mini-Cooperatives (CoSMiC), with specific project deliverables pursued within the context of the CoSMiC Joint Research and Development Plan an initiative designed by SPEIR to coordinate collaborative work on the creation and ongoing development of the Scottish Common Information Environment (SCIE). In line with this (see below under *The Structure of the Report*), the various SPEIR deliverables are reported on under the six main headings in the CoSMiC R&D plan leaflet (see Appendix 10).

<sup>7</sup> CATRIONA, RCO, CAIRNS, SCONE, SEED, HILT, SAPIENS, HaIRST, CC-Interop, and the Scottish Cultural Portal pilot – see glossary for details.

<sup>8</sup> The CAIRNS distributed union catalogue and landscaper and the SCONE collections database.

<sup>9</sup> See WIDWISAWN Vol.1 No.2: <http://widwisawn.cdlr.strath.ac.uk/Issues/issue2.html>

### *Project Management and Preliminary Planning*

The project was managed via a number of different groups:

- A High Level Liaison Group (HLLG), comprising Elaine Fulton, Director of SLIC, and Dennis Nicholson and Gordon Dunsire of CDLR, was responsible for management-level project coordination, particularly in the early stages of the project during the compilation of a detailed Project Plan (see below). This met monthly early on but less frequently as the project progressed.
- The CoSMiC Task Group had its membership extended and adjusted so that it could adequately serve as the SPEIR Steering Group and represent the various stakeholder communities. This met approximately once every two months.
- A variable-membership CDLR Project Team conducted day to day management. Key personnel were the authors of this report. This met as frequently as required, sometimes very frequently, sometimes less so.
- The Cultural Portal Advisory Group (CPAG), chaired by Derek Law.
- Although not connected directly with SPEIR as such, the Scotland's Culture team: Emma Jones (EJ), Penny Robertson (PR), Stephen Winch (SW), Ritchie Thomson (RT), Gordon Dunsire (GD) obviously played a key role in relating infrastructural work (SPEIR) to portal work (Scotland's Culture).

A key element in project management was the creation in the first three months of the project of a detailed Project Plan<sup>10</sup>. This organised work within the project as a series of inter-dependant workpackages, specifying the packages themselves, their aims and associated deliverable, inter-dependencies, schedules, and responsibilities. Three management level workpackages were specified in Project Plan Annexes:

- (A) SCI Vision and Architecture Annex
- (B) SCI Requirements Specification (B1) and Schedule (B2) Annex

The output from these management level workpackages was an initial agreed architecture and vision for the infrastructure.

As part of the process of agreeing a detailed project plan, more specific deliverables were specified than were listed in the original bid. These have been used in this report. However, the headings used to group these deliverables in the Project Plan were subsequently altered in the process of organising the SPEIR-instigated CoSMiC Joint R&D plan. The new headings from the R&D plan have been used in this report (see under *Structure of the Report* below).

There have also been some terminology changes during the lifespan of the project. In particular, the 'Scottish Co-operative Infrastructure' has been replaced with the 'SCIE'. Note that there is an (appropriate) implication in this that the SCIE covers more than just the common electronic environment – that it also covers physical libraries and museums, for example, and organisational aspects of the common electronic environment.

### *The Structure of the Report*

The following points on report structure should be noted:

- The headings specified in the SLIC requirements document have been used to structure the report, with slight adaptations to fit the nature of the project.
- Within these, the six R&D sub-headings used in the CoSMiC R&D Plan have been used to group deliverables, results, analysis and recommendations. These sub-headings are: *Coordination and Management; Local User Environments; Shared Central Services; Interoperability Forum; Collaborative Activities; Professional Support*. Further information on what is covered by these headings is provided at the start of each of the deliverables sections and also in the CoSMiC Joint R&D Plan leaflet<sup>11</sup>.

<sup>10</sup> Available at: <http://speir.cdlr.strath.ac.uk/documents/00speirPPV4.0.pdf>

<sup>11</sup> See Appendix 10.

## 2 Specific Objectives (Deliverables), Methodologies, Results Achieved

### Overview:

As indicated in Section 1, results and associated deliverables are reported under the six headings used in the in the CoSMiC Joint R&D Plan (see leaflet in Appendix 10), as follows:

- Coordination and Management
- Local User Environments
- Shared Central Services
- Interoperability Forum
- Collaborative Activities
- Professional Support

### 2.1 Coordination and Management

#### *Summary of Coverage*

The aim of work undertaken within this heading of the CoSMiC Joint R&D Plan is to instigate and co-ordinate initiatives designed to guide strategy, policy, planning, infrastructure design & development, training, and institutional representation within the SCIE, processes implemented via CoSMiC and existing or new groups who agree to affiliate with CoSMiC. Within SPEIR, key elements under this heading were to:

- Build on the work of the CoSMiC Task Group to create the organisational infrastructure required to support the *SCIE*, using existing Scottish organisations where possible.
- Create a CoSMiC common look and feel with which to 'badge' central services in the *SCIE*.
- Develop a CoSMiC Joint R&D plan, together with mechanisms to support it.
- Develop a pilot database of projects relevant to the developing *SCIE*.
- Monitor and steer R&D work financed under SPEIR.
- Plan future initiatives of relevance.

#### **Specific Objectives/Deliverables**

- 2.1.1 Agree and implement CoSMiC support infrastructure for people and organization level coordination of the Common Information Environment.

#### **Methodologies**

Discussion and agreement within the project, project groups, and CoSMiC itself.

#### **Results Achieved**

CoSMiC Task Group membership was made more representative, both of Library domain sectors, and of the Museums and Archives domains. It began to be used as the SPEIR Steering Group and as a focus for ongoing development of the *SCIE*.

It also oversaw the production of a series of leaflets<sup>12</sup> produced under SPEIR. These described:

- The Scottish Cooperative Infrastructure.
- The CoSMiC joint R&D Plan.
- Shared Central Services.

It also began actively using the WIDWISAWN e-journal, the Scotslink email list and the Electric Connections Conference<sup>13</sup> to take forward the *SCIE* agenda, as well as

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<sup>12</sup> See Appendix 10

investigating the use of electronic fora for cross-Scotland communication on key issues<sup>14</sup>.

- 2.1.2** Embryonic mechanisms for involving all Scottish co-operative organisations in the libraries, archives, and museums domains in the ongoing management and research and development planning and implementation of the SCIE infrastructure (through the CoSMiC R&D plan).

#### **Methodologies**

Discussion and agreement within the project, project groups, and CoSMiC itself, then subsequent implementation or testing of agreed pilot mechanisms.

#### **Results Achieved**

A number of mechanisms were introduced or improved, including the co-ordinating work of the CoSMiC Task group<sup>15</sup>, the CoSMiC Joint R&D Plan<sup>16</sup>, and the embryonic projects database<sup>17</sup>, and the experimental e-fora facility<sup>18</sup>.

- 2.1.3** Formation and co-ordination of a CoSMiC-based cross-sectoral and cross-domain cultural professionals group to guide the pilot portal; associated 'action research' activities to help elicit data on the best organisational support structures.

#### **Methodologies**

Discussion and agreement within the project, project groups, and CoSMiC itself.

#### **Results Achieved**

In the event it was agreed that the functions of this proposed group could be adequately undertaken through the combined work of the CoSMiC Task Group (which includes CDLR personnel) and the Cultural Portal Advisory Group.

- 2.1.4** Experimental formation and co-ordination of a CoSMiC-based cross-sectoral and cross-domain public libraries professionals group to guide development within the distributed infrastructure.

#### **Methodologies**

A break-out session on the topic "Towards a Scottish Information Environment user group" was included in the programme for Electric Connections 2004<sup>19</sup>, the second annual seminar on developments in the SCIE. The session leader was GD.

The 90 delegates were evenly distributed, in terms of domain and sector, across three break-out sessions. The user group session included 9 professionals from local authorities and public library services.

The session started with a brief presentation and demonstration of the CAIRNS, SCONE, and portal as an embryonic infrastructure for the SCIE. This was followed by 30 minutes of general discussion covering the relevance and usefulness of the

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<sup>13</sup> The presentations for Electric Connections 2003 and 2004 are online at <http://cosmic.cdrl.strath.ac.uk/pastevents/ec2003.htm> and <http://cosmic.cdrl.strath.ac.uk/pastevents/ec2004.htm> respectively.

<sup>14</sup> See Appendix 9

<sup>15</sup> See <http://cosmic.cdrl.strath.ac.uk/contacts.htm>

<sup>16</sup> See Appendix 10

<sup>17</sup> See Appendix 2

<sup>18</sup> See Appendix 9

<sup>19</sup> Available at: <http://www.slaite.org.uk/files/pdf/CoSMiC/ec2004prog.pdf>

distributed infrastructure and the potential of the embryonic CoSMiC online forum facility<sup>20</sup> for conducting the affairs of a large, distributed user group.

### Results Achieved

There was general agreement that:

- A user group was desirable.
- It should operate within the CoSMiC framework.
- The CoSMiC online forum facility would be an appropriate way of conducting business, but sectors and domains would have varying degrees of access to the infrastructure.
- A user group would benefit from a meeting one or two times a year, taking into account the size of the group and physical distribution of its members.

#### *Recommendation:*

*CoSMiC should implement an SCIE user forum, with joining instructions emailed to CoSMiC members and individual participants in EC2004. CoSMiC should also consider ways of ensuring the participation and representation of all domains and sectors in the group. CoSMiC should organise at least one meeting of the group per year.*

- 2.1.5** Research into, and design of, alternative 'look and feel' themes that might be used in the portal for consideration by the Cultural Portal Advisory Group.

### Methodologies

The underlying design of Scotland's Culture was required to follow a brief from the Scottish Executive. The brief was based on the design elements of the cultural strategy report 'Creating Our Future – Minding Our Past: Scotland's National Cultural Strategy'<sup>21</sup>.

Several variations of colour scheme, navigation bar and other graphics, and element layout based on the brief were used to create mock-up webpages. These were discussed by staff from SLIC and CDLR to determine which combinations best met requirements for a clear, comprehensible and coherent interface flexible enough to cope with a wide range of service functions.

A small number of final proposals was presented to CPAG. A final prototype was agreed on and implemented as the basic template for the portal website management system (Macromedia DreamWeaver MX). Templates allow a set of design elements to be consistently applied to pages in a website.

This was subsequently modified during the pre-launch phase of the portal implementation as practical issues were identified. Modifications were approved by CPAG members and other monitoring bodies.

The design brief constrains variation in the basic presentation of the portal interface. There is therefore no requirement to produce alternative themes for use in the portal.

Several variations of the Scotland's Culture logo were developed by adding text; the size and composition of the logo is governed by the design brief. The logos are intended for use on client websites.

The impact of the requirements of e-GIF standards<sup>22</sup> and the Disabilities Discrimination Act<sup>23</sup> on interface themes was investigated.

<sup>20</sup> See [http://cosmic.cdlr.strath.ac.uk/cosmic\\_resources/resourcesmenu.htm](http://cosmic.cdlr.strath.ac.uk/cosmic_resources/resourcesmenu.htm)

<sup>21</sup> Available at: <http://www.scotland.gov.uk/nationalculturalstrategy/docs/cult-00.asp>

<sup>22</sup> Available at: <http://www.govtalk.gov.uk/documents/e-gif-v6-0.pdf>

The potential of variant HIP profiles to present different themes for the Scotland's Culture catalogue for use in the SCIE, outside of the constraints of the portal design brief, was identified during development of the HIP components of CAIRNS and SLAINTE (see 2.1.6).

Similar potential was identified in the Connexion Pathfinder facility (see 2.5.4).

The potential of Horizon Kid's Information Portal was assessed by members of the Scotland's Culture team who attended the Dynix Users' Group/Horizon Users' Group annual conference in July 2004.

### **Results Achieved**

The final version of the portal interface was produced shortly after its official launch. There are no significant differences in the current version.

Subsequent development of major functional elements of the portal interface has been readily accommodated within the basic design template.

Logos for a geographically-themed presentation of the portal have been used in the template for the "Scotland's Culture in your area" web pages (see 2.2.4).

Significant variations in the design theme of the portal are limited to the linguistic presentation of local content. The ability to produce display different subject terminologies for specific themes has been included in the development of the management system for the point-and-click browse facility in the portal.

Text and Access key versions of the portal interface have been developed. These were tested and passed for compliance with e-GIF in 2003. The use of Access keys or keyboard shortcuts for navigation is recommended as good practice by the W3C. It is possible that the Text version is not required because the standard interface conforms with general accessibility standards, including the use of Alt tags on images, short and simple pages, use of highlighting colour, and disabling of navigation bars when used by screen readers.

Further work is required to assess the impact of HTML tables on screen readers, as tables are used extensively in the standard interface.

#### *Recommendation:*

*Horizon Kid's Information Portal would be a useful addition to the portal but relies on the extensive use of graphics. Consultation with the SE on the design and production of new graphics within the current design brief is required if it is to be implemented as part of the portal. Development of a children's version of the portal should take into account the use of the SCIE to support user landscapes (see 2.2.5).*

- 2.1.6** Research into, and design of, alternative 'look and feel' themes for associated infrastructure elements in the CAIRNS, SCONE and SCAMP pilots

### **Methodologies**

A number of generic logo designs incorporating both the cultural portal theme and the current CoSMiC theme for CAIRNS, SCONE, and related facilities were produced and tested in mock-up webpages.

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<sup>23</sup> Available at: <http://www.hmso.gov.uk/acts/acts2001/20010010.htm>



Constraints imposed by the design brief on the representation of Scotland's Culture by other services, and the use of the portal theme by other services, prevent the operational use of a common theme.

The use of variant HIP profiles to present local themes for specific CAIRNS mini-clumps was investigated. The Scottish Bibliographies Online service<sup>24</sup> was used as a test case.

The SCONE database structure and SCAMP updating interface were extended to accommodate data about client themes, using the SBO and Ucablis services as test cases.

The requirements for client themes were built-in to the design and development of the CAIRNS and SCONE portlets (see 2.2.3).

The potential for presenting catalogue metadata with local design elements was also investigated using the Connexion Pathfinder facility (see 2.5.4).

### Results Achieved

Variant profiles in the CAIRNS HIP can accommodate local banners and logos, specific welcome messages, and specific navigation options.

A specification for a standard CAIRNS client profile has been developed, allowing the display of the client service banner, title, and homepage link.

These elements were chosen to provide a basic integration of CAIRNS into the local theme by displaying the local choice of HIP page banner and title with a link to the local homepage as the only navigation option, preventing access to other elements of the HIP.

Once the profile has been set up, there are only these three parameters to maintain.

The SCONE database control record for a CAIRNS mini-clump has been augmented with fields for client service banner, title, homepage logo, and homepage link. An additional field contains the name of the corresponding HIP profile, if any; if not, the system defaults to the original CAIRNS profile.

The display layout of the CAIRNS portlet (see 2.2.3) includes client graphics and title, with a link back to the client homepage.

CAIRNS HIP profiles and SCONE database records have been created and implemented for Scotland's Culture, SBO and Ucablis.

CAIRNS mini-clump portlets have been implemented for SBO<sup>25</sup> and Ucablis<sup>26</sup>. The SBO portlet is displayed using client details stored in the SCONE database:

- The SBO banner is shown in at the top of each page.
- Below it is displayed a small version of the CAIRNS banner to identify which SCIE component is being used.
- Below that is the SBO logo with a link back to the SBO homepage.
- Navigation buttons use the same theme as the CAIRNS service.
- Navigation is restricted to submitting the user's choice of index and search term to the associated CAIRNS HIP profile for processing and results display.

<sup>24</sup> Available at: <http://www.scotlandsculture.org/sbo/sbo.htm>

<sup>25</sup> Available at: <http://cairns.lib.strath.ac.uk/CAIRNSService/ZCatSrchport.cfm?uMiniID=13>

<sup>26</sup> Available at: <http://cairns.lib.strath.ac.uk/CAIRNSService/ZCatSrchport.cfm?uMiniID=11>

The Connexion Pathfinder facility is suitable for creating local themes using fixed HTML elements and style sheets.

- 2.1.7** Coordination of extensive SPEIR and SCIE dissemination activities.

**Methodologies and Results Achieved**

(see under 2.1.1 above and 2.6 below)

- 2.1.8** Agree process for testing, evaluating and refining the various pilot facilities to be created within SPEIR and build into each Work Package (WP) as appropriate; Conduct testing, evaluation and refining in relation to each WP.

**Methodologies and Results Achieved**

Reported under the specific facilities tested, evaluated and defined (see 2.1.4 and Appendices 4, 7, 8 & 9).

## 2.2 Local User Environments

### *Summary of Coverage*

The aim of work undertaken within this heading of the CoSMiC Joint R&D Plan is instigate and co-ordinate initiatives designed to guide, evaluate and improve SCIE work related to 'local user environments' – taken to include both, electronic environments such as portals and elements of portals and physical environments such as actual buildings providing user services relating to collections in archives, libraries and museums. Within SPEIR, key foci under this heading were:

- Scottish Cultural Portal project.
- Portal aspects of generic portal support facilities (e.g. CAIRNS).
- The pilot user type landscaping facility research.
- The Pilot landscaping facility for cultural facets (music, football etc).
- The extension of the collections strengths landscaper to Public Libraries.
- The facility to generate CP, GDL and other views via the CAIRNS landscaper.
- Accessibility and user needs assessment issues.

### **Specific Objectives/Deliverables**

- 2.2.1** Technical advice and training covering the set up, development and ongoing maintenance of the Cultural Portal interface and database.

#### **Methodologies**

This work was done via GD's co-ordination of the Scotland's Culture Team. The training, documentation, support service, and email discussion list facilities offered by the HIP system supplier, Dynix, were used as a starting point and as an ongoing basis underlying development and maintenance activities. Within this framework, local methodologies and workflows were developed to take forward and maintain the specific adaptations utilized in Scotland's Culture and the supporting infrastructure of the SCIE.

#### **Results Achieved**

A working pilot portal was launched and widely demonstrated and the skills the Scotland's Culture Team required for further progress and ongoing maintenance developed.

- 2.2.2** Successful determination of requirements and working mechanisms for the seamless integration of the Cultural Portal Pilot into CAIRNS and related initiatives such as the SCONE collections facility, the collection strengths landscaper, and the SCAMP updates facility; investigations to ensure applicability in other areas as in public, FE, and other library systems.

#### **Methodologies**

The use of HIP to upgrade the CAIRNS Z client (see 2.3.1) resulted in a revised set of specifications for Z servers to be integrated into the CAIRNS service.

The specifications were applied to existing CAIRNS catalogues to test them over a range of commercially-available LMS Z servers.

The specifications were checked against the Z server of the Scotland's Culture catalogue, although no problems were anticipated as it was a component of HIP itself.

The Scotland's Culture Z server was set up for CAIRNS compliance and tested using the CAIRNS client.

The SCONE database record controlling the visibility of the Z server in the CAIRNS service was set up but not activated until the portal catalogue had been populated with sufficient records to warrant public access.

The Scotland's Culture development team was trained to activate and de-activate the catalogue in CAIRNS by using the SCAMP updating interface.

The CAIRNS Z server specifications were given to public, FE, and other library services, along with advice on which LMS servers were already successfully included in CAIRNS.

Where a library indicated it was using an LMS not yet tested with CAIRNS, the system supplier was asked to give advice on compliance with the CAIRNS specification. Where available, test connections were made to LMS servers located outside of Scotland.

The principle of functional granularity, used in SCONE to create collection-level descriptions for catalogues of general collections, was applied to the Scotland's Culture catalogue, as well as the catalogues of public and other library services.

The SCONE database and SCAMP updating interface were developed to provide a facility for creating and maintaining static subsets of SCONE collections, known as "mini-landscapes" echoing the mini-clump of CAIRNS. One of the intended applications is to indicate collection strengths against a wider range of parameters than can be offered by the dynamic landscaping offered by the SCONE search facilities; these include formats affecting access and availability, or membership of a group.

### **Results Achieved**

A range of record formats to be displayed as search results in CAIRNS is specified; it includes MARC21, SUTRS and GRS-1, which are commonly found in bibliographic databases.

A set of indexes for searching by the CAIRNS client is specified; it allows author, title, subject, ISBN, and ISSN searches. Author, title and subject indexes are required to support keyword searches. The indexes and search modes meet most of the requirements of conformance to Functional area A level 0, and some of Functional area A, level 1, of the Bath Profile<sup>27</sup>.

#### *Recommendation:*

*The CAIRNS index and search mode specification should be developed to include a precision match for an established name heading in an author search, which will allow full conformance to Functional area A level 0 for basic bibliographic search and retrieval.*

All existing CAIRNS targets met the specifications.

The Scotland's Culture catalogue was operationally connected to the CAIRNS service soon after its launch in November 2003. It has remained available except during period of planned maintenance, when it is temporarily de-activated from the service using the SCONE database record.

A number of new LMS Z servers have been successfully integrated with CAIRNS, including Aleph, Talis Prism, and DS Galaxy.

<sup>27</sup> See <http://www.ukoln.ac.uk/interop-focus/bath/1.1/>

A number of public and FE library services are known to have CAIRNS-compliant Z servers, but have not yet made them available. CAIRNS HIP and SCONE database records have been prepared for these services, but have not been tested or activated.

Scotland's Culture is included in the mini-landscape for collections of digital resources created and implemented in the SCONE portlet developed for the SDDL (see 2.5.1).

- 2.2.3** Research and development work to permit embryonic services such as CAIRNS, SCONE, SCAMP, and the SDDL to serve as central facilities and data sources for the Cultural Portal Pilot and other Scottish portals;

### **Methodologies**

The facets suggested during the development of the Scotland's Culture landscaping facilities (see 2.2.4) were compared with the structure and content of the SCONE database.

A number of facets which could be used to search for Scottish collections were identified. A machine-to-machine interface was created to allow canned searches based on these facets to be applied to SCONE records. The interface accepts searches specified in a URL in a standard format.

Documentation was developed to encourage use of the interface in Scottish client services, and ways sought for disseminating the information.

A number of requirements for local themes had been identified (see 2.1.6) for implementation in the SCONE service. Further research was undertaken to produce a specification for the development of a version of SCONE which would meet these and other requirements. CDLR and SLIC staff, including the Scotland's Culture team, were consulted and agreement reached on a number of other useful elements. Some element of SCONE branding should be retained to emphasize the SCIE. There should be no access to the SCONE collections search options to avoid complications in integrating client themes with the SCONE theme throughout the SCONE service, and to allow the client service to have complete control over the search specification. It was also agreed that there should be no access to other components of the SCIE, such as RCO or CAIRNS, to provide close integration with the client service; the only means of exit from SCONE should be a link back to the client homepage. It was important to retain the full functionality of SCONE for the display of individual collection descriptions, with external links to websites and catalogues and internal links to related collections.

A version of the SCONE search results displays was developed using Scotland's Culture as a test client. The software has been written so that a generic version can be readily developed using SCONE database records to record the details of specific clients. The results display has been integrated with the URL-encoded search interface using key/value pairs to create an embryonic "portlet" for SCONE; that is, a version of the service designed for integration with any external portal, or indeed web page.

The landscaping facets were also considered as the basis for new mini-clumps in CAIRNS. This identified the potential of a mini-clump of all CAIRNS catalogues with the subject keyword search pre-selected, requiring only the search term to be specified for a subject landscape.

A machine-to-machine interface was created to allow canned searches specified by search term and mini-clump identifier to be applied to CAIRNS. The interface accepts the search specification in a URL in a standard format. The interface also accepts URLs with only the mini-clump identifier specified, and displays a page for user input of the search term.

A version of the CAIRNS mini-clump display was developed using the SBO and Ucablis services as a test cases. This version meets the requirements for local themes for CAIRNS (see 2.1.6) and most of the additional requirements identified for SCONE. The mini-clump uses a specified CAIRNS HIP profile for the client service. The software is generic and uses specific client details maintained by the SCAMP updating interface to create dynamic CAIRNS portlet pages.

A version of the CAIRNS service display was developed for Scotland's Culture. It meets the requirements identified for the CAIRNS mini-clump portlet.

Proposals for integrating the CAIRNS service with local facilities for searching the Scotland's Culture database were discussed by CPAG, agreed and implemented.

AD developed a toolkit for the Scotland's Culture Team to use to format Glasgow Digital Library Records (from ASPECT and 100 Glasgow Men) for uploading in MARC format to Connexion and for subsequent import into the Scotland's Culture HIP. The toolkit (and the processes associated with it) permitted the team to:

- Examine existing GDL records in an access database and amend them if required using a template created for the purpose.
- Run software created by AD to converted the records to 'human-readable' MARC21 records.
- Run MarcEdit software to convert the MARC21 records to the machine-readable format required by Connexion.
- Upload the records to Connexion for subsequent download and import into the Scotland's Culture database.

### Results Achieved

A significant number of point-and-click searches of CAIRNS and SCONE have been integrated in the Browse interface of Scotland's Culture (see 2.2.4).

The SCONE service now offers a facility to specify URL-encoded canned searches for Scottish collections by:

- Person such as collector, owner, or subject.
- Corporate body as collector, owner, or subject.
- Language of text or speech.
- Local authority of location.
- Town of location.
- Dewey Decimal Classification number.
- Keyword in Library of Congress Subject Heading.
- Mini-landscape (see 2.2.2).

A draft protocol explaining the purpose of the new facility, specifying the syntax and semantic standards for specifying key/value pairs in the URL, and giving working examples, has been developed. Print copies were disseminated to all delegates at the SPEIR road shows and EC2004, and an online digital copy is available<sup>28</sup>.

Scotland's Culture uses canned searches of SCONE in several areas its Browse section:

- Special topics browse includes collections of materials written or spoken in Gaelic.
- Topics browse includes collections on specific subjects.
- Places browse includes a clickable map of local authority areas to identify collections located in that authority.

<sup>28</sup> See <http://cdlr.strath.ac.uk/pubs/speirroad/sconeportletspec.pdf>

- People browse will shortly include collections of materials about specific persons.

The “Scotland’s Culture in your area“ facility (see 2.2.4) uses canned searches of SCONE for collections located in the area as a whole, and in individual towns.

All SCONE search results are displayed using the portlet developed for Scotland’s Culture:

- The Scotland’s Culture banner is shown in its usual position at the top of each page.
- Below it is displayed a small version of the SCONE banner to identify which SCIE component is being used, similar to a channel identification logo for television.
- Below that is the Scotland’s Culture logo with a link back to the Scotland’s Culture homepage.
- Navigation buttons use the same theme as the SCONE service.
- Navigation is restricted to displaying the full description of a collection with active links to external websites and online catalogues. Internal links are provided for the full range of related collections, including sub- and super-collections, collections located in the same town, or with the same subject or owner, etc.

The SCONE Scotland’s Culture portlet can be used as the basis of a generic portlet, using client data stored in the SCONE database and maintained using the SCAMP updating interface to generate any number of locally-branded portlets.

A version of the SCONE portlet which uses the SCONE theme without any client branding has been implemented in a number of websites:

- SDDL (see 2.5.1).
- National Burns Collection<sup>29</sup>.
- SVAG (Ucablis)<sup>30</sup>.

*Recommendation:*

*Further work should be carried out to develop the SCONE test portlet for use by other Scottish portals, with corresponding development of SCAMP.*

The CAIRNS service now offers a facility to specific URL-encoded one-stop-searches across the range of its catalogues. Searches must specify the identification number of the mini-clump to be used.

A CAIRNS mini-clump for portal subject keyword searching has been created and is maintained via the SCAMP updating interface.

Scotland’s Culture uses canned searches of this CAIRNS mini-clump in the Topics area of the Browse section.

A CAIRNS mini-clump for SBO has been created (see 2.1.6).

A policy on publishing mini-clump identification numbers for use by other client websites, and procedures for creating and maintaining new mini-clumps for CAIRNS portlets is required.

*Recommendation:*

<sup>29</sup> Available at: <http://scone.strath.ac.uk/dnbc/Index.cfm> (this is a temporary URL used for demonstration purposes)

<sup>30</sup> Available at: <http://scone.strath.ac.uk/service/portal/landscape.cfm?LI=4>

*Policies and mechanisms should be developed to allow further exploitation of the CAIRNS portlet, taking into account the resources necessary to maintain the portlets using the SCAMP updating interface.*

Access to CAIRNS searches has been integrated with the search interface of the Scotland's Culture catalogue via a HIP profile tag labeled "Printed resources". This links to a web page explaining the CAIRNS service, with a link to the homepage of the version of CAIRNS developed for Scotland's Culture. This displays:

- the Scotland's Culture banner, logo and link to the Scotland's Culture homepage.
- the small version of the CAIRNS banner.
- the full set of CAIRNS navigation buttons for simple, advanced and mini-clump searches, in the CAIRNS theme.

Searches of the Scotland's Culture catalogue can be integrated with other CAIRNS catalogues by user selection of Scotland's Culture as a target.

Selected GDL records from ASPECT and 100 Glasgow men were added to Connexion for subsequent addition to Scotland's Culture.

- 2.2.4** Development of a pilot cultural facets (from heritage to ballet to football to street theatre) landscaping facility, and implementation of a working pilot as part of the pilot portal. Associated guidelines on resource creation and metadata.

### **Methodologies**

The HIP facility for creating and displaying hierarchical groups of canned searches was assessed for suitability as a landscaping facility. Sample canned searches of the Scotland's Culture catalogue were created and used as a test in the HIP facility.

The HIP facility was found to perform as documented, but a number of additional functional requirements were identified.

- Greater flexibility in the display of the search and hierarchy labels was required for the coherent presentation of sets of canned searches on different services such as CAIRNS and SCONE.
- Facilities for creating, maintaining and displaying related terms such as semantic and linguistic alternatives would allow a richer browsing environment for the user and the production of different versions of a cultural landscape for user profiles.

A functional specification for a landscaping facility meeting these requirements was drawn up by GD. It was based on the development of thesaurus maintenance software for the Scottish Library Association, the Scottish Poetry Library, and LOCSCOT carried out between 1993 and 2000.

The specification was used as the basis of the development and testing of a database and software for a pilot landscaping facility by CDLR and the Scotland's Culture development team.

An operational version of the landscaping facility was implemented and tested in the Scotland's Culture service. The public interface was developed in consultation with the Scotland's Culture development team.

Requirements for vocabulary sets to label Scottish cultural facets and topics were investigated in consultation with CPAG and the Scotland's Culture development team. A number of functional requirements were identified:

- Terms should encourage social inclusion.



- Provision should be made for local spellings and terms.
- Provision should be made for foreign language terms.
- Provision should be made for special vocabularies to fit user profiles; e.g. children.

The use of LCSH as a basis for cultural facets and topics was investigated and assessed. LCSH is applied to records for digital resources in the Scotland's Culture catalogue, following the standards agreed with CPAG. Although LCSH has the significant advantages of continuous and up-to-date maintenance, being widely used in libraries and with sophisticated, modern support tools, it is not appropriate for the direct derivation of terms and hierarchies for Scotland's Culture for a number of reasons:

- It uses North American spelling conventions; e.g. "color".
- It is policy not to accommodate alternative English spellings.
- It uses North American vocabularies; e.g. "railroad".
- It accommodates semantic alternatives such as "railway" in its authority records, but coverage is patchy and the records are difficult to integrate keyword search interfaces.
- The process of adding semantic alternatives to authority records via the SACO program is lengthy and time-consuming, and policy severely restricts what types of alternative are allowed; e.g. dialectical variants such as "fitba" are excluded.

A methodology for selecting appropriate terms for cultural facets and topics was developed in consultation with the Scotland's Culture development team. It was agreed that the attempting to create a local term for each LCSH term used in the Scotland's Culture catalogue would not be feasible because the complexity and cost would negate many of the advantages obtained from using LCSH in the first place. Instead it was suggested that the local terms should be associated with canned searches which produced more than a certain number of hits. This would give "warrant" to the facet or topic, generally guaranteeing a rich set of resources or "peak" for that part of the landscape. Although this would mean that some entries in the catalogue would not be retrieved by any of the canned searches presented within the landscape, they could still be found using the standard catalogue search interface. It would not be necessary to confine canned searches to LCSH keywords, and other sources of subject information such as DDC could also be used. This approach was tested using the pilot landscaping facility.

The application of this methodology to landscaping CAIRNS and SCONE using the cultural facets and topics was investigated. SCONE uses LCSH to describe the subjects of items in collections, and the URL for the SCONE portlet (see 2.2.3) allows the specification of LCSH keyword searches, so a topic created for landscaping Scotland's Culture could be readily used to specify a corresponding landscape in SCONE. Each CAIRNS catalogue uses its own vocabulary for subject topics, and although LCSH is the most widely adopted standard, there are several other schemes in use together with purely local terms. The CAIRNS service does not acknowledge which scheme is used in each catalogue, so it is impossible to specify different search terms to match different schemes. Subject keyword searches of CAIRNS therefore have low precision, and the best that can be achieved using cultural topics is to specify the same LCSH term. These approaches were also tested using the pilot landscaping facility.

Other types of landscaping interfaces were identified in discussion with CPAG. These included narrative contexts and GIS. It was agreed to use narrative texts describing broad aspects of Scottish cultural activity with hyperlinks to associated records in the Scotland's Culture catalogue, and to develop a clickable map linked to canned searches using geographical terms from LCSH.

The requirements for landscaping resources about local geographical areas were discussed with the SLIC e-Content Group. A basic web page template for containing dynamic local landscapes of Scotland's Culture and SCONE was developed.

Initial workflows for maintaining the cultural facets and topics were developed in consultation with the Scotland's Culture development team, and tested using the Scotland's Culture service.

The idea and some of the possible content of resource creation guidelines for cultural web-sites (e.g. have area on the web-site that summarises the site – have it in English if it is a Gaelic site or a Scots dialect site and (and time, and if possible, vice versa) was discussed and will be pursued by the Scotland's Culture Team. However, these have to yet been finalised.

*Recommendation:*

*The proposed resource creation guidelines for cultural web-sites should be completed and disseminated by the Scotland's Culture Team as and when time allows.*

### **Results Achieved**

Operational software and a database for a pilot landscaping facility have been successfully developed and implemented in the Scotland's Culture service.

The facility provides an interface for creating and maintaining vocabulary sets with full thesaurus relationships (broader, narrower, see, use for, and see also), and associating terms with canned searches. The facility accommodates canned searches on multiple services, including Scotland's Culture, CAIRNS and SCONE. Provision for additional services requires programmer intervention, but a draft specification for upgrading the software to allow the use of SCAMP to add services at will has been developed. The Scottish Music Centre catalogue has been identified as suitable for inclusion in the Scotland's Culture landscaping service.

The facility also provides for 2 separate vocabulary sets, for cultural topics, and persons associated with Scottish culture. Provision for additional sets also requires programmer intervention.

*Recommendation:*

*The pilot landscaping facility should be developed for integration with SCAMP to allow the flexible addition of canned searches of other services, and to allow multiple vocabulary sets to be maintained. Research and development work should be carried out to make the facility available to other Scottish portals.*

The landscaping facility displays the vocabularies for cultural topics and persons within the Browse section of Scotland's Culture. Topics can be found in three ways:

- By browsing the cultural facets and topics in hierarchical order.
- By browsing topics in alphabetical order.
- By searching for keywords in topics.

Every topic is related to at least one other, so everything can be browsed in context. All relationships are displayed as hyperlinks.

Appropriate topics are associated with canned searches on one or more of the Scotland's Culture catalogue, CAIRNS catalogues, or SCONE collections. If more than one search is available, it is listed in a drop-down box for selection.

All canned searches are displayed as hyperlinks.

The result is a point-and-click interface for searching Scotland's Culture and associated SCIE components. The only text entry required from the user is when searching for topic keywords.

The persons facet and topics vocabulary is under development.

The Scotland's Culture development team has successfully applied the methodologies and workflows for creating and maintaining topics and canned searches. It was agreed to use the top level terms of DDC as the basis of a top level for a facet of cultural topics, to ensure that terms created for new canned searches could always be linked to a higher term.

A series of contextual essays supplied by the SAC has been integrated into the Browse section of Scotland's Culture. Hyperlinks have been added for direct access to and canned searches for appropriate resources in the catalogue. The essay topics are high level, and form the basis of a landscape for the infrastructure of Scottish cultural activity.

A clickable map of Scotland has been added to the Browse section of Scotland's Culture. The local authority areas on the map are labeled with the same set of terms used in the SCONE thesaurus for Scottish towns. The map does not provide for "drill-down" searches for resources about specific towns, although canned searches for several towns have been created for use in the "in your area" pages of Scotland's Culture.

A set of web pages under the collective title of "Scotland's Culture in your area" have been produced. Each page contains links to a dynamic landscapes of Scotland's Culture resources about a local authority area and some towns within it, and SCONE collections located within the local authority. Pages also contain links to other data services which use canned searches which can be specified by local authority. The page produced for City of Glasgow is an example<sup>31</sup>.

An information pack promoting the pages and giving information about SCIE components has been sent to every public library service in Scotland.

A general requirement for the use of a GIS in the SCIE is emerging. Scotland's Culture and SCONE would benefit from using a GIS for searches for resources associated with specific towns. Several external services presented at EC2004 are developing GIS interfaces which could usefully interoperate with the Scotland's Culture service and other elements of the SCIE.

*Recommendation:*

*The feasibility of implementing a GIS for general use by elements of the SCIE and Scottish portals should be investigated and a suitable system developed and implemented.*

- 2.2.5** Preparation of a specification for the development of a pilot user-type landscaping facility, and implementation of a working pilot as part of the portal. Associated guidelines on resource creation and metadata to allow the presentation of different versions of documents for different user levels (e.g. primary school children, life long learners, researchers, tourists).

### **Methodologies**

The landscaping parameters of SCONE and CAIRNS were assessed for suitability in profiling different types of user.

<sup>31</sup> Available at: <http://www.scotlandsculture.org/places/authority/glasgow.htm>

The CC-interop report on output formats for SCONE<sup>32</sup> recommended upgrading the values of the education level attribute in the database, to adopt the UK Education Levels in place of the draft MEG levels. This is of relevance to Scotland because the UKEL values are closely tied to the Scottish education curricula<sup>33</sup>.

The use of filters, local codes added to catalogue records, and variant HIP profiles to create portal landscapes aimed at different users was investigated. The application of the virtual Z server facility (see 2.3.8) to user landscapes was considered.

The potential of the SCIE to support professional LIS users was also investigated.

The use of user-type landscapes in the CDLR's Victorian Times project was analysed and written up to inform developments in this area<sup>34</sup>.

It did not prove possible in the time available to the project to create 'associated guidelines on resource creation and metadata to allow the presentation of different versions of documents for different user levels', nor would this have been appropriate given the stage reached in respect of developments in this area within SPEIR.

### Results Achieved

The current SCONE service can generate landscapes for general users categorised by:

- geographical location.
- education level.
- Language.
- membership of a library sector (see 2.2.6).

The main SCONE service can be used to landscape by the educational level of the user. Adoption of the UKEL standard would improve this service by providing a closer fit with Scottish education levels.

#### *Recommendation:*

*The SCONE database values should be amended to substitute UKEL levels for the current MEG levels. This does not require changes to the SCAMP updating interface or the SCONE public interface.*

It is possible to create canned searches of the Scotland's Culture catalogue using the MARC21 fixed-field codes for target audience and the MARC21 general field for target audience note (tagged as field 521). Development of such a facility requires:

- Addition of target audience codes and notes to the cataloguing standard used by Scotland's Culture.
- Identification of appropriate records in Scotland's culture, and addition of new records.
- Ensuring appropriate records contain the correct codes and notes.
- Formulation of a canned search strategy to extract the appropriate records using the codes and notes.
- Implementation of a suitable interface for using the landscape.

There is potential for this approach to be integrated with the use of UKEL in SCONE, as MARC21 field 521 can contain educational grade information.

<sup>32</sup> See <http://cdlr.strath.ac.uk/pubs/dunsireg/CCISCONEOOutput.pdf>

<sup>33</sup> See <http://www.ukoln.ac.uk/metadata/education/ukel/>

<sup>34</sup> See Appendix 6.

One potential application of this approach is the development of a cultural information service for children. This should take into account the facilities of Horizon Kid's Information Portal (see 2.1.5).

Greater control over the creation of user landscapes in Scotland's Culture can be achieved by the use of variant HIP profiles and the tagging of catalogue records with special codes. A prototype methodology is:

- Identify existing and new records in the Scotland's Culture catalogue which meet the needs of a specified type of user.
- Attach a local code specifying the type of user to the MARC21 records identified. More than one code can be used, allowing any record to appear in more than one user landscape.
- Create a HIP profile which applies the local code as a generic filter on the catalogue. This restricts all searches and displays to the records identified for the type of user. The HIP profile can be connected to any existing cultural landscape offered by the portal.

The set of Scotland's Culture catalogue records identified for the type of user can also be included as a separate member of CAIRNS, by creating a virtual Z server:

- Create and build the standard set of indexes specified by CAIRNS, but with a filter using the local code. The indexes will only contain entries for records with the correct code.
- Implement a Z server in HIP using the filtered indexes. This requires the assignation of local Z39.50 attributes to avoid conflict with the standard Z39.50 attributes for similar indexes in the unfiltered, complete Scotland's Culture catalogue.
- Add the virtual Z server to CAIRNS and SCONE using the SCAMP updating interface.

This methodology can be used to present different versions of resources aimed at different categories of user. One potential approach is:

- Identify and catalogue different versions of a resource using the standard approach for maintaining the Scotland's Culture catalogue.
- Add the appropriate local code for type of user to the catalogue records of each version. The records will appear in the correct landscapes associated with different types of user, and all records for all versions of the resource will be accessible in the general landscapes of Scotland's Culture.

The SCIE is of potential importance as a reference tool for LIS professionals. The SCONE mini-landscape and CAIRNS mini-clump facilities can be used to create specific landscapes for professional users, such as Ucablis (see 2.1.6 and 2.2.2).

The SLAINTE service offers a portal for use by LIS professionals in Scotland. The interface does not currently provide links to components of the SCIE, and does not exploit the landscaping facilities of CAIRNS, SCONE or, indeed, the SLAINTE catalogue itself.

*Recommendation:*

*The SLAINTE service should find appropriate ways of linking to components of the SCIE, and investigate and apply the landscaping facilities offered by CAIRNS, SCONE and the SLAINTE catalogue.*

## **2.2.6** Specification and pilot facilities to enable CAIRNS to offer dynamic landscaping facilities suited to Public Library requirements.

## Methodologies

Landscaping requirements of public libraries were assessed in consultation with SLIC. Landscapes based on geographical areas were recommended to support the public library role as a centre for local information. Landscapes based on education level were also deemed useful in supporting the educational role of public libraries.

The dynamic landscaping options developed for SCONE and CAIRNS during the CC-interop project were considered and found to be applicable to public libraries. It was agreed that SCONE would meet requirements and that it was not necessary to develop a separate facility for public libraries.

The addition of a landscape based on library sector was suggested by SLIC. Research was undertaken to determine where an attribute for sector could be best accommodated within the SCONE database structure, and what range of standard values could be established.

It was decided that sector information applied to the administration of collections and locations, and should be added as an attribute of the agent record in the database structure, with accommodation for multiple values when a library service operated in more than one sector.

The SCONE database was developed accordingly, along with the SCAMP updating interface. An initial set of values was agreed with SLIC and implemented in the database. The database and interface were tested using live data from SCONE.

Work remains to be done to add library sector as a search option to the public SCONE interface and the URL interface for the SCONE portlet (see 2.2.3).

The SCONE portlet facility was assessed for suitability for public libraries. The portlet is designed to access information about Scottish collections and does not provide a link other services such as CAIRNS in order to improve integration with the client service (see 2.2.3). The SCONE portlet therefore has limited functionality as a dynamic landscaper for CAIRNS catalogues.

The draft protocol for client use of the portlet was disseminated to several public libraries at the SPEIR roadshows and EC2004.

Requirements for geographical landscaping of CAIRNS were identified during the development of the "Scotland's Culture in your area" service (see 2.2.4).

The CAIRNS mini-clump facility was used to create a static landscape of public library catalogues for one-stop-searching.

## Results Achieved

Documentation on linking the SCONE dynamic landscaper to client websites has been circulated to all public libraries in Scotland.

Public libraries can use SCONE to create dynamic landscapes of collections and online catalogues based on local authority area and educational level, as well as other parameters including language and subject.

Documentation on using the SCONE portlet for dynamic landscaping using canned searches has been circulated to all public libraries in Scotland.

The SCAMP updating interface has been successfully developed to allow multiple library sectors to be assigned to a library administration team in the SCONE database. Although data has been added for most public libraries in Scotland it remains incomplete for other sectors.

*Recommendation:*

*SCAMP should be used to complete the assignation of library sectors in the SCONE database.*

A draft set of standard values for library sectors has been implemented in SCONE. The set includes:

- Further education.
- Higher education.
- Public.
- School.
- Special.

SCONE also records whether the library team is involved in administration or service delivery within the sector.

Information about library sectors is not available in the public or portlet interfaces of SCONE.

*Recommendation:*

*The SCONE public and portlet interfaces should be developed to allow landscaping by library sector for users and client services.*

The “Scotland’s Culture in your area” service uses the SCONE portlet which does not currently function as a dynamic landscaper for CAIRNS catalogues. The link to CAIRNS has been removed to provide more focused integration with client services, but there are no technical reasons why this functionality cannot be added to the portlet software.

*Recommendation:*

*The SCONE portlet facility should be upgraded to integrate with CAIRNS and improve its functionality as a dynamic landscaper.*

A static landscape of public libraries is available as a mini-clump in CAIRNS.

- 2.2.7** Analyse and document the LIS expert’s view on what users require of portal interfaces (CP, Regional DLs, Public Libraries); Feed results into other requirement headings.

**Methodologies**

Work done in this area was of two kinds:

- Investigations by AS of generally agreed user requirements in portals<sup>35</sup> and by GM of Portal Standards and Protocols for Interaction between Portals and Central Services for the JISC Information Environment<sup>36</sup>.
- Feedback from various demonstrations of SCIE user interfaces (see, for example, work described at 2.1.4 above).

**Results Achieved**

A general awareness of the area documented in reports on the above topics by AS and GM and of specifics related to SCIE user interfaces documented in various parts of this report as appropriate and incorporated into SPEIR and Scotland’s Culture work

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<sup>35</sup> See Appendix 4

<sup>36</sup> See Appendix 5

## 2.3 Shared Central Services

### *Summary of Coverage*

The aim of work undertaken within this heading of the CoSMiC Joint R&D Plan is to instigate and co-ordinate initiatives designed to guide SCIE work related to identifying a need for, and creating, developing, evaluating and improving 'Shared Central Services' – services best and most efficiently provided central as a community effort rather than locally, with a particular focus on the provision of common support services for local portals. Within SPEIR, key foci under this heading were:

- The effort to upgrade and integrate CAIRNS and SCONE and develop them to support local portals, including, in particular, Scotland's Culture.
- Related work on collection and collection strength databases.
- The creation of an embryonic Scottish Distributed Digital Library (SDDL).
- The creation of an illustrative Scottish terminologies server pilot.
- The creation of a Ucablis mini-clump.
- The addition of SCRAN to CAIRNS
- Central server end facilities to support the use of CAIRNS, SCONE and the SDDL by local portals.

This heading is also taken to include Inter-library loans and document delivery services and authentication services and also includes physical as opposed to electronic services.

### **Specific Objectives/Deliverables**

- 2.3.1** Upgrade of CAIRNS software and enhancement of functionality of CAIRNS, SCONE and associated services.

#### **Methodologies**

The Z client for broadcast searching used by the Horizon cataloguing module was replaced with HIP which includes a more sophisticated Z client.

A specific profile for CAIRNS was created in HIP. This profile registers all CAIRNS Z servers, indexes, and display mappings for search results. The profile provides a single point of exit from the results display back to the CAIRNS interface, and does not allow access to other features of HIP which are not required.

The CAIRNS Z server selection interface developed by CLDR for static mini-clumps and dynamic clumping was amended to output the machine-to-machine parameters required to specify a search to the HIP Z client.

The CAIRNS results display page was amended to integrate the HIP display within the CAIRNS interface.

A standard method of naming HIP control records for Z servers and indexes was implemented to ensure consistency and provide a mnemonic for identifying all records associated with a particular Z server. A four-letter code is assigned to the Z server. The code is then used to create standardised filenames for the HIP records.

The SCONE data table for Z servers associated with SCONE collections and catalogues was amended to incorporate the standard code. Records in this data table supply the search parameters required by the HIP Z client; the code identifies the specific Z server to be searched.

#### **Results Achieved**

The CAIRNS Z client is more robust than before. HIP is less prone to downtime than the previous broadcast client, and has a better development strategy.



It is considerably easier to create and maintain records for servers, indexes, and results displays. There is a larger range of default records for the most common Z server systems, particularly those sourced in the USA.

The relationship between SCONE and Z server records can be readily determined through the use of the standard identifiers, making general system maintenance easier to carry out.

The machine-to-machine interface between the CAIRNS user interface and the broadcast searching software remains seamless and transparent to the user.

#### **Note on HIP software problem**

A standard upgrade to the HIP software applied during the project introduced a bug which has a significant negative impact on the stability of the CAIRNS service. Catalogues are selected for searching using the CAIRNS interface software developed by CDLR, rather than the less functional interface supplied with HIP. Search parameters are then passed from the CAIRNS user interface to HIP as if they had been generated within HIP. This is a standard feature of HIP, and is detailed in the HIP administration manual.

The bug causes HIP to return a page filled with error messages intended for the system administrator if a requested Z server is not responding. HIP should display a user-friendly error message if this occurs, and does so correctly for searches generated from within HIP. It is likely that the problem is caused by the absence of a HIP session number in the search parameters passed to HIP from the CAIRNS interface. Internal HIP searches always have a session number, and HIP is supposed to add one for externally-specified searches such as those coming from CAIRNS.

Dynix have been informed of the problem, and acknowledge that is a fault in the HIP software. It is likely that the bug will be removed for the next major upgrade to the software which is due to be applied in September 2004.

The CAIRNS interface has been developed to trap the HIP error message and substitute a more helpful one.

In the meantime, CDLR and SLIC staff monitor CAIRNS to identify any Z servers which are not responding correctly. Any which cause the crash are de-activated using the SCONE database record. This automatically excludes the server from the CAIRNS user interface, so it cannot be included in searches. The server is re-activated when it resumes a normal response to client requests.

#### **2.3.2 Inclusion of Public Libraries, SCRAN and Ucablis in the CAIRNS distributed catalogue<sup>37</sup>.**

##### **Methodologies**

A separate profile for testing new CAIRNS catalogues was created in HIP.

Z parameters for each new catalogue were obtained through consultation with system suppliers and service developers, and by checking generic information published on the Internet.

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<sup>37</sup> Although progress in this area was limited (SCRAN and three public library authorities are available at time of writing, and three public library authorities and one FE library are planned for inclusion over coming months), the slow speed of development was expected because of the various technical, organisational and political difficulties involved.

A standard identifier was assigned to each new Z server. Server parameters were registered in the SCONE database and the HIP test profile, using the standard identifier to link each set of records.

Where available, default HIP records were created for the Z server, index and results display parameters for each new catalogue.

The test profile was used to attempt connection to the new Z servers. Where a test was unsuccessful, further consultation with suppliers and developers took place to amend and re-test the parameters stored in the control records. This process was repeated until correct results were being received for searches on all standard CAIRNS indexes.

While testing was being carried out, the SCONE database records were flagged as inactive, to prevent the new catalogues being listed in the CAIRNS interface.

Control records from the HIP test profile were then copied over to the CAIRNS profile and given a final test. The corresponding SCONE records were then flagged as active, and the new catalogues then became available for public searching in CAIRNS.

Consultation with system administrators of Ucablis members identified additional Z servers not already in CAIRNS, including those of the Scottish Endeavour Consortium<sup>38</sup>.

### Results Achieved

A facility for testing potential additions to CAIRNS has been created. Features include:

- Incremental testing of Z server parameters.
- Availability of default control records for most LMS used in Scotland.
- Fine-tuning of index specifications and results displays.
- Simple copying of control records from the test profile to operational service profiles.

A draft methodology and workflow for testing and adding new catalogues to the CAIRNS service has been established.

A number of new catalogues have been successfully added to the CAIRNS service:

- BDS Scottish bibliography online.
- East Ayrshire Library, Registration and Information Services catalogue.
- East Renfrewshire Cultural Services OPAC.
- Edinburgh College of Art Library Service online catalogue.
- Falkirk Council Community Services catalogue.
- Heriot-Watt University library catalogue.
- Midlothian library catalogue.
- Renfrewshire Libraries' catalogue.
- Royal Observatory Library catalogue.
- Scotland's Culture catalogue.
- Scottish authors in Scotland's Culture catalogue.
- Scottish Bibliographies Online (SBO).
- Scottish poetry index in Scottish Poetry Library catalogue.
- SCRAN catalogue.
- Shetland Library catalogue.

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<sup>38</sup> Available at: <http://www.nls.uk/sec/>

- 2.3.3** Determination of requirements and working mechanisms for the seamless integration of a significant number of Public Library catalogues into CAIRNS and the web enabling of the catalogues in question (likely to entail a single process).

#### **Methodologies**

Consultation with public library system administrators and LMS suppliers (see 2.3.6)

#### **Results Achieved**

At time of writing, successful integration of 6 public library catalogues into CAIRNS had been achieved (see 2.3.2) and work to integrate further public library catalogues continues.

- 2.3.4** Similar integration of Public Libraries into related initiatives such as the SCONE collections facility, the collection strengths landscaper and the SCAMP updates facility.

#### **Methodologies**

The institutional collections of all Scottish libraries, including public libraries, are checked and amended in SCONE as part of the procedures for the annual updating of SLIR, a printed directory which is derived from the SCONE database.

Public libraries were additionally asked to check existing SCONE entries for special collections as part of the annual updating, and to notify SCONE of any amendments and additions.

Special, named collections for public libraries were added and amended during the course of other development and maintenance work on SCONE.

Public library websites were reviewed on several occasions to identify information about special collections and online catalogues and other finding aids for inclusion in SCONE. Relevant information has been added to SCONE, and broken links identified and corrected.

Desk research was undertaken to determine the suitability for public libraries of the Conspectus scheme used by the RCO service.

The structure of the RCO tables in the SCONE database was amended to accommodate Conspectus levels 1 and 2, in addition to levels 0 and 3-5 already used by SCURL libraries.

#### **Results Achieved**

SCONE records for public library institutional collections are current, and never more than 12 months out-of-date.

Several public libraries notified SCONE of amendments and additions to their special, named collections after checking during the annual updating of SLIR.

Further amendments and additions for special collections and online catalogues of some 8 public libraries were identified from their websites and applied to the SCONE database.

It is feasible to apply Conspectus to public library collections<sup>39</sup>.

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<sup>39</sup> Davis, B. How the WLN Conspectus works for small libraries. *The Acquisitions Librarian*, no.20. 1998.

The SCONE database will now accommodate subject strengths at any Conspectus level.

- 2.3.5** Upgrade and extend CAIRNS to encompass Public Libraries, FE Libraries, CP related services such as SCRAN, Ucablis sites not already included, and some illustrative sites beyond Scotland.

### **Methodologies**

Default results display mappings have been reviewed and amended to improve the quantity and quality of information displayed in CAIRNS. This work is incomplete.

See 2.3.2 for information about extending CAIRNS to encompass public libraries, SCRAN, and Ucablis members.

The UHI Millennium Institute and Glasgow Colleges Group were contacted for information about their Z servers for inclusion in CAIRNS.

Online directories of Z servers, and FE library websites were reviewed to identify other potential members of CAIRNS.

The CURL OPAC (COPAC) Z server was added to CAIRNS as part of the CC-interop project work.

### **Results Achieved**

Displays of results from several CAIRNS catalogues have been improved in appearance and completeness. In particular, details of specific copies of holdings and their current availability status are now displayed for over half of the CAIRNS libraries.

The UHI Millennium Institute was unable to join CAIRNS during the project because of ongoing dataloads from constitute college library catalogues, although future participation has not been ruled out.

The Glasgow Colleges Group intends to join CAIRNS, but does not currently have the local technical skills required.

No other FE libraries or cultural institutions in Scotland were identified as having Z servers.

It is possible that catalogues offering non-Z39.50 client-server connectivity will be incorporated into CAIRNS following an enhancement to the HIP broadcast client planned for late 2004 or early 2005.

The COPAC server acts as a back-up if the Z servers of any of the Scottish members of CURL are de-activated in SCONE. This applies to Aberdeen University, Edinburgh University, Glasgow University, and the National Library of Scotland. If any of these library Z servers is taken off-line for maintenance, and the SCONE record flagged appropriately, then the COPAC Z server automatically appears as the CAIRNS catalogue for the library. Further details are available in a CC-interop report on collection landscaping<sup>40</sup>.

- 2.3.6** Advise Public Libraries on Web enabling, Z servers, and related issues such as firewalls.

### **Methodologies**

<sup>40</sup> Available at: <http://cdlr.strath.ac.uk/pubs/dunsireg/CCICLDLandscapeing.pdf>

A review of all public library websites was undertaken to determine the availability of general library information and online catalogues.

Generic advice on improving the machine accessibility of public library websites and catalogues was published in Information Scotland<sup>41</sup>.

During the addition of public library Z servers to CAIRNS, the client-server links were tested to ensure connectivity. Where required, local system administrators and IT departments were contacted to negotiate the opening of port numbers and firewalls. This often involved the provision of information about Z39.50, CAIRNS, and the Scottish Cooperative Infrastructure to public authority staff.

Standard CAIRNS searches were tested against each public library Z server to ensure consistent and meaningful results. Where required, local system administrators were contacted to ensure the availability of standard indexes for CAIRNS.

### **Results Achieved**

Where relevant, local authority firewalls have been opened for the CAIRNS IP address.

Where relevant, local Z server ports and routers have been activated.

Where relevant, appropriate CAIRNS indexes have been created or implemented.

There is a higher level of awareness in some public authorities of Z server and OPAC technologies and their relevance to the SCIE.

There is a higher level of awareness in Scottish library professionals of some of the issues affecting accessibility and interoperability of online public library services, including the use of frames, design for local users which excludes wider access, and terminology used to describe catalogues and collections.

- 2.3.7** Creation of a pilot Scottish Distributed Digital Library (SDDL), based initially on three databases, and cooperative cataloguing through the OCLC CORC (now Connexion) subscription (currently only SLIC and CDLR);
- Core database can be 'viewed' as a whole via a range of front ends (e.g. BUBL or SLAINTE or GDL look and feel; pupil, student or researcher or lifelong learner interface).
  - Core database can be viewed selectively – e.g. just GDL or White pages materials.
  - Core, accredited, and partner databases can form an SDDL landscape via the dynamic clumper and suitable collection level descriptions.
  - RCO type collections strength-based dynamic landscaping is feasible – probably based on DDC indices
  - The various functions above integrate elegantly with a future terminologies server.

### **Methodologies**

The requirements for viewing the core SDDL database were incorporated into the creation of the basic infrastructure of a pilot SDDL (see 2.5.1).

Work was undertaken to investigate the feasibility of creating selective views of the database using HIP and CAIRNS.

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<sup>41</sup> Available at: [http://www.slainte.org.uk/publications/serials/infoscot/vol1\(6\)/make.html](http://www.slainte.org.uk/publications/serials/infoscot/vol1(6)/make.html)

An infrastructure and methodology for creating partial Z39.50 indexes on a HIP database and making them available in CAIRNS was developed by CDLR and the Scotland's Culture development team. This was tested using records in Scotland's Culture and the Scottish Poetry Library catalogue.

A methodology for using functional granularity to create collection-level descriptions for virtual Z servers in SCONE was developed.

The potential of Connexion to create selective views of the WorldCat database was investigated.

A methodology for using the Connexion "pathfinder" facility to create and maintain a selection of WorldCat records was developed and tested during the White List project (see 2.5.4).

Desk research was undertaken to assess the applicability of the RCO collection strengths landscaping facility to the SDDL databases.

Desk research was also undertaken to determine the requirements for integrating different modes of viewing the SDDL with terminologies services.

Documentation was developed to encourage use of the CAIRNS SDDL mini-clump portlet and the SCONE SDDL mini-landscape, and ways sought of disseminating it to Scottish client services.

### **Results Achieved**

The SDDL database can be accessed as a whole via the CAIRNS mini-clump. The CAIRNS portlet interface can be used to incorporate local themes for viewing and using the database.

Most of the metadata records created for Scotland's Culture and SLAINTE have been created using the Connexion service and are available for cooperative cataloguing in the SDDL.

A methodology and work plan for making BUBL records available for cooperative cataloguing has been developed and is in the process of implementation.

A successful methodology for using HIP to create virtual Z servers for parts of a catalogue database was developed and implemented:

- HIP indexes are created for the specified part of the catalogue by using filters and other parameters.
- Records can be specified for inclusion by existing content, or through the addition of a specific filter code.
- The indexes are assigned a non-standard Z39.50 attribute number.
- A HIP Z server is created to use the non-standard attributes.

Virtual Z servers have been implemented for:

- The Scottish Poetry Index of the Scottish Poetry Library.
- The GDL Aspect collection of Scottish election ephemera incorporated in Scotland's Culture.
- The SLAINTE Scottish authors materials transferred to Scotland's Culture and subsequently augmented.

It is possible to implement a virtual union catalogue within CAIRNS by creating a mini-clump of virtual Z servers with a common theme or purpose. It is not known whether software supplied with other LMS is capable of implementing such virtual Z servers.

Descriptions of the virtual Z servers for the Scottish Poetry Index and Scottish authors have been added to SCONE and integrated with the SCIE.

The use of Connexion to create selective lists of online digital resources has been successfully developed and tested.

It is feasible to incorporate SDDL collections into the RCO service by defining mappings from the Conspectus scheme to appropriate elements of the SDDL databases. Not all of the three databases use LCSH itself (on which the Conspectus divisions are based), but they do all use DDC numbers, so existing mappings in the HILT demonstrator server from LCSH to DDC could be used. This will allow division of the catalogue records into Conspectus subjects. What has not been established is a way of measuring strength in a particular subject, because the Conspectus levels depend on the numbers of resources catalogued relative to the total published output; it is not feasible to ascertain how many digital resources are available in a particular subject.

SLAINTE illustrates some of the issues. Records in the SLAINTE catalogue are aimed at supporting the LIS professional community, and the great majority of them are classified within the 020 class of DDC. There are some 40 topics in the library and information sciences division of Conspectus which map to the 020 class, out of 2000 topics SLAINTE will therefore have a Conspectus level of 0 for most subjects, with the occasional 1 for subjects related to librarianship, such as publishing. Most of the core 40 subjects will be set to level 3 (instructional support) or, occasionally, 4 (research support). On the other hand, BUBL and Scotland's Culture will have a Conspectus level of 0 for library subjects, while BUBL (eventually) will also have levels of 0 for subjects with Scotland as the root concept, such as Scottish history and geography.

The modes of access to SDDL records which were investigated use the functionality of existing elements of the SCIE which in turn are interoperable with the pilot terminologies server developed for HILT. There are not likely to be any major issues in integrating the SDDL with a Scottish terminologies server in the future.

A text document explaining the embryonic SDDL services and how to link to them from client web pages has been developed. It covers CAIRNS, SCONE and Scotland's Culture. Print copies were disseminated to all delegates at the SPEIR road shows and EC2004, and an online digital copy is available<sup>42</sup>.

- 2.3.8** Specification and instantiation of an illustrative pilot terminologies server for Scotland, including implementation of illustrative facilities.

### **Methodologies**

As agreed with SLIC, the approach taken to this was based on the pilot terminologies server created for JISC in the context of the HILT Phase II Project<sup>43</sup>. The detailed specification for this is available online as part of (Appendix I) the HILT Phase II Final Report<sup>44</sup>. In essence, the service works by mapping subject schemes likely to be found in the distributed environment to DDC21. This is used as a spine for the mappings in the service and as a mechanism for mapping user search terms to collections in the distributed environment and to then to the appropriate terms in the subject schemes utilised locally by these services.

For the user, the HILT pilot works like this:

- User enters subject term.

<sup>42</sup> Available at: <http://cdlr.strath.ac.uk/pubs/speirroad/sddlconnection.pdf>

<sup>43</sup> See <http://hilt.cdlr.strath.ac.uk/>

<sup>44</sup> Available at: <http://hilt.cdlr.strath.ac.uk/hilt2web/finalreport.htm>

- The term is matched to terminology set in the server (based on the whole of DDC21, on extensive mappings of this to LCSH and on illustrative mappings to UNESCO and Mesh) and mapped to DDC.
- The user is offered a set of possible DDC subjects and asked to choose which is relevant to the search.
- The identified DDC number is used to identify appropriate collections for the user's search
- The server then provides the user with information on which subject scheme is used by the collections identified and with sample retrieval from the collections.

Worked examples (with screen shots) of this process can be found on the HILT website<sup>45</sup> and can be tried out on the pilot server itself<sup>46</sup>.

With the HILT pilot as a starting point, work was done by AS to identify a set of terms peculiar to Scotland and to enter these into the HILT pilot through a mapping to DDC<sup>47</sup>. This allowed the HILT demonstrator to serve as an illustrative pilot for a Scottish terminologies service. The Scottish terms identified and mapped could be entered by a user and would then be mapped to an appropriate scheme in the SCIE (usually LCSH in the pilot). This term could then be used to search appropriate Scottish collections. For the pilot, no attempt was made to identify single collections (although this mechanism could easily be made to work through SCONE). Instead, it was recognised that a mapping to selected services in CAIRNS might better illustrate issues in the SCIE.

### Results Achieved

An illustrative pilot for the SCIE was created. Worked examples (with screen shots) of this process can be found in this report<sup>48</sup>. These can also be tried out on the pilot server itself<sup>49</sup>.

#### 2.3.9 Determination of Public Library terminologies server requirements.

##### Methodologies

The Local studies thesaurus developed by GD and LOCSCOT in 1996 was reformatted to MS Access from dBase III and circulated to ALF and West Dunbartonshire Libraries for comment.

AS identified a list of illustrative Scottish terms for use in the pilot Scottish terminologies server<sup>50</sup>.

Terminologies server requirements were discussed at a CIGS seminar on Scottish terminologies held in September 2004. Delegates from 7 Scottish public library services attended. It was agreed that a group be formed to discuss ongoing work in this area and that a CoSMiC e-forum be set up to help coordinate the work of this group.

##### *Recommendation*

*CoSMiC should be asked to coordinate the creation of a group to discuss ongoing work on Scottish terminologies via a CoSMiC e-forum.*

<sup>45</sup> Available at: <http://hiltipilot.cdlr.strath.ac.uk/pilot/examples/>

<sup>46</sup> Available at: <http://hiltipilot.cdlr.strath.ac.uk/pilot/top.php>

<sup>47</sup> See Appendix 8

<sup>48</sup> See Appendix 8

<sup>49</sup> Available at: <http://hiltipilot.cdlr.strath.ac.uk/pilot/top.php>

<sup>50</sup> See Appendix 8



## **Results Achieved**

Initial comments on the LOCSCOT thesaurus were favourable.

ALF intend to use the thesaurus as a basis of their own terminology set, and are willing to work collaboratively with others.

The Scottish terms identified by AS were mapped into the HILT pilot terminologies server enabling it to also function as an illustrative Scottish pilot terminologies server (see 2.3.8 above).

### *Recommendation*

*Future work on a Scottish terminologies server should look into how best to integrate a Scottish terminologies server facility with HILT and with the facility for creating and maintaining vocabulary sets described at 2.2.4 above. It should also work with the terminologies group proposed above.*

## 2.4 Interoperability Forum

### *Summary of Coverage*

The aim of work undertaken within this heading of the CoSMiC Joint R&D Plan is instigate and co-ordinate initiatives designed to guide work related to interoperability in all relevant aspects of the SCIE (including technical, metadata, and content packaging). Within SPEIR, key foci under this heading were:

- The creation of a Scottish Interoperability Forum web-site.
- The re-examination of the cataloguing standards for CAIRNS of the needs of public and FE libraries.
- The development of similar standards for electronic materials  
The use of NACO, SACO, and Connexion local authority files in managing Scottish subject terms.

### **Specific Objectives/Deliverables**

#### 2.4.1 Research leading to guidelines to ensure international interoperability.

##### **Methodologies**

Research was undertaken to identify international standards for ensuring interoperability of metadata and systems in the development of the SCIE and Scotland's Culture.

The application of standards already adopted for elements of the SCIE to Scotland's Culture was assessed in consultation with CPAG, SLIC, CDLR and the NLS.

The use of interoperability standards in development projects associated with the SCIE was monitored. Projects included CC-interop and HalRST.

The potential of OCLC's Connexion service for collaborative cataloguing to support international standards was investigated.

##### **Results Achieved**

The Scotland's Culture catalogue has successfully adopted a number of international standards to ensure interoperability of item-level metadata with SCONE and CAIRNS. These include:

- DDC, the classification scheme used by SCONE, SLAINTE, and a range of catalogues in CAIRNS.
- LCNAF, the name authority file used by SCONE, SLAINTE, and many higher education and research catalogues in CAIRNS.
- LCSH, the subject name authority file used by SCONE, SLAINTE, and a range of catalogues in CAIRNS including the NLS.
- MARC21, one of the bibliographic formats specified by CAIRNS.
- Z39.50, the communication protocol specified by CAIRNS.

Item-level metadata for Scotland's Culture is created using the Connexion service. Records are copied to OCLC WorldCat before downloading to the Scotland's Culture catalogue. This enables a number features for re-using the data:

- WorldCat records are available for download to the catalogues of other users of Connexion, including thousands of libraries world-wide.
- Development of the SDDL collaborative cataloguing service will expose these records for download by other Scottish libraries.
- WorldCat records are available for searching via Google.
- Connexion records can be exported in standard Dublin Core formats.

- Connexion records can be used to generate pathfinders, or sets of hyperlinks for selected digital resources, for use in local websites (see 2.3.8).

CC-interop developed a facility in SCONE to output Scottish collection-level metadata in a variety of interoperable formats<sup>51</sup>. A number of these formats are recommended by JISC for information environments in the UK:

- RSLP.
- IESR.
- Dublin Core Collection Description.

The SCONE database schema is a superset of these formats, and there is no loss of information resulting from translation to the output format.

HaIRST has identified the use of OAI standards for item-level metadata in open access repositories. Tests have demonstrated the successful output of OAI format metadata from MARC21 catalogues, allowing Scotland's Culture metadata to interoperate with institutional repositories.

The specifications for encoding searches of SCONE and SLAINTE in URLs to create canned searches follow international standards for name/value pairs. The machine-to-machine interfaces can be upgraded to meet the ongoing development of standards for labelling types of search.

The structure of the SCONE database meets requirements for emerging interoperability standards such as SOAP and SRW. The tools used to develop database interfaces for the SCIE are capable of creating machine-to-machine interfaces meeting these standards. In particular, the Macromedia ColdFusion MX development software includes built-in functions for interoperating with many standard protocols.

- 2.4.2** A pilot Cultural Portal Pilot 'interoperability focus' that aims to ensure interoperability within the portal environment at all levels, including, in particular, technical standards such as Z39.50, metadata standards and terminologies

### **Methodologies**

Discussion of issues leading to agreement that a general 'interoperability forum' would serve Cultural Portal specific issues and other issues, such as those relating specifically to public libraries referred to in 2.4.3 below.

Use of research into standards described in 2.4.1 above to gather link for a (general) interoperability forum web-site.

Investigation of the potential of the embryonic CoSMiC online electronic forums facility as a possible basis for coordinating the work of an 'interoperability forum' group with an SCIE-wide focus.

### **Results Achieved**

Initial CoSMiC web page to advise the SCIE community on interoperability issues<sup>52</sup> set up.

Test run of CoSMiC e-fora facility successful<sup>53</sup>.

Interoperability e-forum set up ready for future set-up of proposed interoperability forum group.

<sup>51</sup> See <http://cdlr.strath.ac.uk/pubs/dunsireg/CCISCONEOOutput.pdf>

<sup>52</sup> Available at: <http://cosmic.cdlr.strath.ac.uk/interop/index.htm>

<sup>53</sup> See Appendix 9

- 2.4.3** A pilot Public Libraries 'interoperability focus' that aims to ensure interoperability at all levels, including, in particular technical standards such as Z39.50, metadata standards and terminologies.

#### **Methodologies and Results Achieved**

See section 2.4.2 above

- 2.4.4** Extension of the CAIRNS cataloguing standards for use in Public Libraries.

#### **Methodologies**

The progress of the CC-interop work on developing the CAIRNS cataloguing guidelines was monitored. The project sought to review the current applicability of the guidelines and assess their suitability for adoption by a wider range of libraries, including public libraries. The project methodology included a meeting of Scottish cataloguers at which public libraries were represented.

The project concluded that the adoption of guidelines by libraries in general would significantly improve interoperability in distributed catalogues like CAIRNS. It also identified the need to significantly extend the existing guidelines before they could be used by libraries beyond the original CAIRNS members. The project report made a number of recommendations for carrying out this work<sup>54</sup>.

One of the recommendations is for union catalogues to provide help to users about the nature, coverage and search facilities of component catalogues. Preliminary work on upgrading the SCONE database and the SCAMP updating interface to maintain such information was carried out by CDLR and John Robertson, a student on placement from an MSc course.

The existing CAIRNS guidelines were amended during the project to include current information about the use of the Bath Profile for Z39.50 conformance, and to remove specific references to CAIRNS.

The potential for discussing the guidelines with the staff of public libraries joining CAIRNS was monitored. A suitable time for engaging in discussion was not identified because of the delays experienced in implementing such libraries in CAIRNS. The effect of local cataloguing decisions on distributed catalogues cannot be demonstrated until the local catalogue is properly connected, leaving insufficient time for this approach to be usefully explored.

#### **Results Achieved**

The original guidelines remain useful as a guide to interoperability issues in distributed catalogues, and are available to public libraries<sup>55</sup>.

The CC-interop report on the guidelines contains useful additional information about these issues, and is also readily available to Scottish public libraries via SLAINTE. The report includes the updated, generalised guidelines which could be used as a basis for the development of cataloguing guidelines for public libraries in Scotland.

#### *Recommendation:*

*Further work should be carried out to raise awareness of interoperability issues in Scottish public libraries, using the CAIRNS guidelines and CC-interop report as a basis. This might involve the CoSMiC forums, the SLIC E-content group, and CIGS.*

<sup>54</sup> Available at: <http://cdlr.strath.ac.uk/pubs/dunsireg/CCICatInterop.pdf>

<sup>55</sup> Available at: <http://cairns.lib.gla.ac.uk/docs/CAIRNSCatStrat.pdf>

The SCONE database and the SCAMP updating interface have been upgraded to store and maintain information about:

- how much of a collection is covered by the catalogue.
- the availability of browse and search indexes.
- how search terms are matched in the indexes.
- what kinds of help are available.
- what kinds of limits can be applied to searches.
- what kinds of sorting and processing can be carried out on search results.

Only test data has been added to the database, and the SCONE and CAIRNS services have not been upgraded to display this information.

*Recommendation:*

*Further work should be carried out on developing the SCONE database and the SCAMP updating interface along these lines. A project to gather and enter appropriate data for Scottish online catalogues should be undertaken. The SCONE service interface should be upgraded to display this information to support users of the SCIE, in collaboration with local cataloguers and system administrators.*

- 2.4.5** Create an appropriate conformance levels grid for participants to commit to some level of – aiming to cover formats, fields, index mapping, content standards.

#### **Methodologies**

Desk research was undertaken to identify relevant resources and activities.

Practical development of a conformance grid was recognised to be dependent on the outcomes of other areas of the SPEIR project (see 2.4).

#### **Results Achieved**

Useful sources for developing a conformance grid include:

- The mappings of MARC tags to indexes created during the original CAIRNS project<sup>56</sup>.
- The Bath Profile<sup>57</sup>.
- Default index mappings supplied with LMS Z servers used by CAIRNS members.

*Recommendation:*

*Further work should be carried out to develop a conformance grid for CAIRNS and other components of the SCIE.*

- 2.4.6** Create ongoing two-way links to CIGS and CoSMiC Cataloguers Group.

#### **Methodologies**

The involvement of CIGS representatives in developing CAIRNS and other components of the SCIE was identified and discussed in consultation with CIGS.

Further development of links was recognised to be dependent on the creation of a CoSMiC Cataloguers Group.

#### **Results Achieved**

<sup>56</sup> Appendix F of the CAIRNS final report. <http://cdlr.strath.ac.uk/pubs/nicholsond/cairnsfinal.pdf>

<sup>57</sup> <http://www.ukoln.ac.uk/interop-focus/bath/1.1/>

The Chair of CIGS is GD and acts as a liaison between CIGS, CoSMiC and the SPEIR project. CIGS was closely involved in the development of the original CAIRNS cataloguing guidelines and the subsequent work carried out as part of the CC-interop project (see 2.4.4).

The Secretary of CIGS and another CIGS committee member are staff of the Scotland's Culture team at SLIC, and act as a liaison between CIGS and Scotland's Culture.

CIGS has hosted a number of events disseminating information about the development of the SCIE and its elements.

CIGS and other co-ordinators of the annual Information for Scotland conference have invited representation from CoSMiC in the organisation of the 2004 conference to be held in November.

## 2.5 Collaborative Activities

### *Summary of Coverage*

The aim of work undertaken within this heading of the CoSMiC Joint R&D Plan is instigate and co-ordinate initiatives designed to guide, evaluate and improve SCIE work related to 'Collaborative Activities', whether online or offline in nature. Particular areas of interest are held to be collaboration in collecting and cataloguing, purchase and storage, digitisation, course development, training, and quality control, but no area is ruled out. Within SPEIR, key foci under this heading were:

- Collaborative cataloguing based on Connexion in the context of the SDDL Pilot.
- The development and use of SCAMP to support collaborative collecting in SDDL.
- The investigation conferencing facilities (e-fora) as an adjunct to SCAMP.
- Pilot investigations of the use of SCAMP to update aspects of the collections database.
- The identification of digital and non-digital collections relevant to Scotland's Culture.

### **Specific Objectives/Deliverables**

- 2.5.1** Creation of a pilot Scottish Distributed Digital Library (SDDL), based initially on three databases, and cooperative cataloguing through the OCLC CORC subscription (currently only SLIC and CDLR).

#### **Methodologies**

Desk research was undertaken to locate catalogues of accessible, online resources of Scottish interest. This identified the BUBL Link and SLAINTE catalogues.

The contents of BUBL Link and SLAINTE were compared with each other and the likely scope of the pilot Scottish cultural portal. Potential requirements of the People's Network in Scotland were also taken into account, including the need for quality, approved online resources for inclusion in 'white pages' on local authority and public library websites.

The review identified significant overlap in the current scope of the existing and developing catalogues, with potential confusion for users and cataloguers. Further analysis suggested a minimum of three catalogues would be required to initiate the SDDL: a catalogue of resources to support LIS professionals, based on the SLAINTE catalogue; a catalogue of websites and other digital resources created and located in Scotland, along with resources located elsewhere on Scottish topics, as a basis for the Scotland's Culture catalogue; and a catalogue of non-Scottish, non-LIS resources based on BUBL Link.

The review also identified differences in metadata format. SLAINTE contained records created in UKMARC reformatted by machine to MARC21; Scotland's Culture administrators intended to create records in MARC21; BUBL Link contained records created in a proprietary format automatically output in MARC21 format.

Each catalogue was processed separately to create the three catalogues for the SDDL.

The SCAMP updating interface was used to create a CAIRNS mini-clump of catalogues and other analytic finding-aids for open, online digital resources. The SDDL was initially populated with the Scotland's Culture and SLAINTE catalogues.

The SCAMP updating interface was used to create a SCONE mini-landscape (see 2.2.2) for collections of digital resources which are openly and freely accessible. The SDDL landscape was initially populated with the Scotland's Culture and SLAINTE resources.

Scotland's Culture, SLAINTE and BUBL administrators were asked to identify collections for inclusion in the SDDL landscape. Desktop research was undertaken by CDLR to identify suitable collections created by Scottish digitisation projects.

Suitable collections were checked in SCONE, and added where necessary using the SCAMP updating interface.

A basic homepage for the SDDL was designed, created and added to the CoSMiC website.

A CAIRNS portlet (see 2.2.3) for the SDDL mini-clump was created and implemented on the SDDL homepage.

A SCONE portlet (see 2.2.3) for the SDDL mini-landscape was created and implemented on the SDDL homepage.

## **Results Achieved**

### **SLAINTE**

Records in the SLAINTE catalogue on non-LIS topics were removed, and the remainder checked against OCLC Resource Catalog for upgrading to full MARC21 format and the addition of LCSH and DDC subject fields.

Some 200 new records were added to the catalogue, encompassing articles published in the online version of Information Scotland, selected articles from Ariadne and D-Lib magazine, reports from the CAIRNS, SCONE, and HILT projects, and presentations made at SLIC and CILIPS related conferences.

A SLAINTE catalogue search interface was developed using HIP, and integrated with the SLAINTE website.

### **Scotland's Culture**

Records for approximately 200 Scottish resources removed from SLAINTE were copied to the cultural portal catalogue, checked, and upgraded.

New records have been added, and a HIP search interface developed, as part of development of the portal.

### **BUBL**

All BUBL Link records were checked for broken links and currency, and amended accordingly.

Some 11,000 records were exported in MARC21 format to the third SDDL catalogue. These records have not yet been de-duplicated against SLAINTE and Scotland's Culture, although this work is planned.

A HIP search interface will be developed for the BUBL records.

A HIP Z server will be created for the BUBL catalogue and subsequent incorporation into CAIRNS.

### **SCONE**

Some 40 collection-level descriptions of digital collections of Scottish interest have been added to the SCONE database.



A further 35 descriptions already in the database have been identified as collections of online, freely accessible digital resources, checked and amended where necessary.

## **SDDL**

An embryonic SDDL service has been implemented<sup>58</sup>.

The service offers one-stop-shop searching for online digital resources which can be freely accessed by standard web browsers without the need for licenses or passwords, via a CAIRNS portlet<sup>59</sup>. The portlet includes the Scotland's Culture and SLAINTE catalogues, and a Scotland's Culture sub-catalogue for Scottish authors. The BUBL catalogue will be added before the end of 2004.

The service offers access to collections of online digital resources which can be freely accessed by standard web browsers without the need for licenses or passwords, via a SCONE portlet<sup>60</sup>. The portlet includes some 70 collections from a wide range of sources and on a variety of topics of Scottish interest. Several of the sources are located outside of Scotland.

The service also offers access to a canned search of SLAINTE for online reports, presentations, etc. of the development of the SDDL.

### **2.5.2** Pilot investigations of the use of SCAMP to update aspects of the collections database.

#### **Methodologies**

RCO updating by clients was tested at the beginning of SPEIR.

Problems associated with individual organisational amendment of collection and catalogue data using the SCAMP updating interface were identified during discussions with SLIC about extension of professional access to the interface (see 2.5.11)

#### **Results Achieved**

There are no technical or interface barriers to allowing clients to update their own RCO records. Central administration is required to initialise a collection new to the RCO service; this task can be largely automated, but is a useful authorisation/approval device. The main operational problem lies in preventing one client from amending the data of another. This should not be difficult to implement, as the SCAMP workflow for updating RCO starts with the selection of the relevant collection.

#### *Recommendation:*

*Development work should be carried out on SCAMP if clients are to be allowed to update their own RCO subject strengths landscaper. This should include the implementation of a simple authentication interface which selects the collection to be updated, and the creation of updating screens which are secured from the rest of SCAMP and the SCONE database.*

The situation with SCONE updating is more complex, as the SCONE database employs a rich set of data dependencies to maximise re-use of collection, location and agent information. This makes it difficult for a client to distinguish between "their"

<sup>58</sup> Available at: <http://CoSMiC.cdli.strath.ac.uk/ci/SDDL.htm>

<sup>59</sup> Available at: <http://cairns.lib.strath.ac.uk/CAIRNSService/ZCatSrchport.cfm?uMiniID=7>

<sup>60</sup> Available at: <http://scone.strath.ac.uk/service/portal/landscape.cfm?li=1>

data and shared data. Preliminary analysis indicates that a number of elements of a collection-level description may be shared with other records:

- Names and other data associated with personal and corporate agents as collectors and subjects.
- DDC numbers.
- LCSH topics.
- Towns of physical locations.
- Related collections, other than sub- and super-collections and catalogues (treated in SCONE as collections of metadata).
- Other standard terminologies such as language, library sector, and educational level.

- 2.5.3** Establish and report on the best mechanisms for exploiting the CORC shared cataloguing facility for collaborative working and standards assurance in the Cultural Portal Pilot.

#### **Methodologies**

The Connexion service was used extensively during the development of the Scotland's Culture catalogue. Facilities were tested in a variety of modes and combinations to determine best use for efficient and effective maintenance of the catalogue.

Connexion was used to create and amend records for Scotland's Culture by a range of staff including the Scotland's Culture team, CILIPS and CDLR staff. The service was used in a variety of working environments including the SLIC/CILIPS office, CDLR, home, and at least one foreign institution (by GD).

A manual of procedures for cataloguing Scottish online resources using Connexion was developed by the Scotland's Culture team. The draft manual was circulated for comment to CIGS and NLS.

#### **Results Achieved**

Collaborative working and standards assurance in Scotland's Culture are supported by Connexion facilities in a number of ways:

- Identification of existing records in the WorldCat database.
- Downloading records for local processing and use.
- Use of save files and processing statuses to coordinate workflows.
- Application of LCNAF and LCSH authority files for names and subjects.
- Use of WebDewey to determine DDC numbers.
- Use of templates to apply repeating information without re-keying.
- Context-sensitive online access to standards manuals for MARC21.

A cataloguing manual for Scotland's Culture is in operational use. It is updated as and when required. It is available online for general use<sup>61</sup>.

- 2.5.4** Establish and report on the best mechanisms for exploiting the CORC shared cataloguing facility for collaborative working and standards assurance in Public Libraries, with particular reference to the cataloguing of internet resources.

#### **Methodologies**

A project to identify the potential use of catalogue records available in the Connexion service by public libraries was carried out by the Scotland's Culture team. The White List project was carried out in consultation with the SLIC e-Content Group. Lists of

<sup>61</sup> Available at: <http://www.slainte.org.uk/files/pdf/slic/sculcatguide.pdf>

online information resources approved for access through local authority firewalls, so-called white lists, were obtained from Scottish public library services. The lists were compared for coverage and overlap.

The potential of using Connexion to create “walled gardens” of approved resources suitable for most public libraries was investigated in collaboration with Inverclyde Libraries. The public library service wanted to offer a selection of web resources suitable for children under 12 years of age. Resources were identified from white lists and by searching WorldCat. Web pages containing metadata for these resources were generated using the Connexion Pathfinder facility.

A pathfinder is a pre-formatted web page populated by static and dynamic sets of formatted metadata extracted from WorldCat records for electronic resources. Several pathfinders demonstrating different features were created and assessed.

The Connexion service was used during the development of the SDDL (see 2.5.1) to rationalise the distribution of catalogue records between SLAINTE and Scotland’s Culture. This investigated a number of Connexion facilities, including those identified as useful for Scotland’s Culture (see 2.5.3):

- Merging duplicate records.
- Uploading records for processing in Connexion.
- Application of shared and local authority files for names and subjects
- Use of templates for multiple catalogues.
- Identification of catalogue service in save files, processing statuses, and bibliographic records created by SDDL members.

Guidelines for collaborative use of Connexion by SLAINTE and Scotland’s Culture were drafted and tested during live operations.

The cataloguing manual (see 2.5.3) was applied to SLAINTE and White list resources to assess its relevance to a range of resources.

### **Results Achieved**

Comparison of white lists shows that many public libraries approve and recommend similar sets of online digital resources. Duplication of effort in creating metadata for retrieval of these resources can be avoided through a collaborative approach using a service such as Connexion.

A web page of online resources suitable for children under 12 was created for Inverclyde Libraries<sup>62</sup>. 10 sets of 5 resources were identified, many from WorldCat. The page is manually maintained, and does not use any of the bibliographic metadata from Connexion. This is largely because the terminology and coverage of title, description and notes metadata are not aimed at children, even though the associated resource is. This is a general issue in international metadata standards. Other approaches to using the Connexion service to create client services for information for children are being investigated, including Horizon Kid’s Information Portal (see 2.1.5) and a HIP virtual Z server (see 2.3.8).

There is potential for use of Connexion pathfinders by public libraries:

- Metadata can be re-used without duplication of effort.
- Different visual themes can be applied to the same pathfinder, allowing it to be shared but locally-branded.
- Pathfinder contents can be dynamically generated by any authorised operator, and up-to-date versions are easily and readily created.
- No special technical knowledge of HTML is required by the operator.

<sup>62</sup> Available at: <http://www.slainte.org.uk/kidsspace/inverclyde/index.htm>

Effective use of Connexion services by public libraries requires development of:

- Agreed common criteria for selection of suitable resources.
- Agreed categories of coverage to specify pathfinders and collection focus.

*Recommendation:*

*Public library authorities should implement a working group to develop a common approach to the selection and exploitation of online digital resources. The group should consider the quality assurance offered by WorldCat generally, and contributions from members of the SDDL including Scotland's Culture.*

The draft guidelines for collaborative use of Connexion by SLAINTE and Scotland's Culture are in operational use and can form the basis of general guidelines. They include:

- Scoping for each catalogue to identify separate areas of collection focus and agreements on avoiding duplication in overlapping boundaries.
- Standard methods for labelling and using constant data templates.
- Standard methods for labelling and using save files and statuses during record processing.
- Use of authority files.

*Recommendation:*

*The draft guidelines should be tested by public library and other user of Connexion within the SDDL, and developed for general use.*

- 2.5.5** Ensure integration with NACO, SACO and local authority file approach to terminology control.

### **Methodologies**

The Connexion facility for access to LCNAF and LCSH authority files was investigated during the development of Scotland's Culture (see 2.5.3).

Procedures for notification of new name and subject authority headings were identified in the NACO and SACO manuals.

Methods for contributing new authority headings to NACO and SACO by Scotland's Culture and other SDDL users of Connexion were assessed in consultation with Strathclyde University Library and NLS, who are authorised for direct access to NACO and SACO notification services.

A set of some 200 new name authority records from Scotland's Culture were used to pilot and test NACO notification via Strathclyde University Library. The names came from new catalogue records added to WorldCat by the Scotland's Culture team, and included some 25 names conflicting with existing LCNAF headings. Each name on the list was accompanied by the identification number of the relevant WorldCat record. The list was emailed to the cataloguer at the university library, who processed the names in batches of varying size as and when time permitted. The cataloguer was not asked to notify Scotland's Culture as each new authority was added to LCNAF; instead, the team checked for new additions at intervals.

The Connexion facility for maintenance of local authority files was investigated by CDLR during the development of automated methods for integrating GDL metadata with Scotland's Culture. The aim was to determine whether it was feasible to use this as part of a process that would (a) allow new name and subject headings to be utilised quickly in services should they be needed, (b) ensure authority control of

these headings on one of two levels. The idea was that new headings agreed locally would be recorded in a Connexion local authority file but also passed on for consideration in global authority files through NACO and SACO. If they were accepted into the global authority files, they would be deleted from the local authority file and would continue to be used by services. If they were rejected, and were still felt to be needed locally, they would continue to be used by services and controlled and managed through the local authority file. The assumption behind this was that a number of services would be sharing one SLIC subscription to Connexion and would therefore share local authority files. The process was examined in depth and felt to be a reasonable approach. However, it has not yet been implemented.

#### *Recommendation*

*Future work on Scottish terminologies should investigate a possible role for the use of the Connexion local authority file in the fashion just described.*

The Scotland's Culture team were asked to keep a record all personal and corporate names which were not found in LCNAF during the authority control process.

#### **Results Achieved**

Scotland's Culture and other SDDL users of Connexion can check continuously updated versions of LCNAF and LCSH to avoid unnecessary NACO and SACO notifications.

SACO notification and acceptance takes six months and requires expert skills.

There are likely to be few acceptable SACO notifications arising from SDDL activities. LCSH is not a suitable method of control for Scottish terminologies (see 2.2.4).

#### *Recommendation:*

*SACO notifications from the SDDL should be processed by the NLS with appropriate additional resourcing.*

The test NACO notifications were successfully processed and added to LCNAF. The test identified a number of issues to be considered for full integration of NACO with the SDDL:

- The process of NACO notification can be distributed and shared because the SDDL is concerned with online digital resources. NACO requires the source of a new name heading to be checked during authentication; SDDL records all contain a hyperlink to the resource, so SDDL NACO sources can be checked immediately irrespective of the cataloguer's location.
- Special arrangements will be required if access to the SDDL resource is restricted by license.
- Although online authentication of a new heading saves considerable time, the full process of NACO notification requires significant resources. It is not feasible to add SDDL notifications to an existing procedure without additional staffing.
- The process of notification often results in a significant change to the local authority heading used in the SDDL catalogue record. It is therefore necessary to verify the final form of the heading in LCNAF with the relevant catalogue record in the SDDL.

Participation in NACO can benefit the SDDL and its contributors in several ways:

- It ensures that local catalogue records contain international standard forms of name, improving searchability and interoperability.

- It reduces duplication of effort by making the locally-created heading available to others.
- It establishes Scottish headings in the international standard authority file.
- It corrects errors in existing headings for Scottish names.

Some 900 names for possible NACO notification have been recorded. This suggests that one name in every three catalogue records is not likely to be found in LCNAF, which is unusually high. The likely reason for this lies in the high number of small publishers of open access digital resources, including institutions, societies, groups and individuals. In most instances they are the creators, and often the subjects, of resources which are not published elsewhere. They are therefore under-represented in the standard authority file which is based largely on print media.

*Recommendation:*

*A process for SDDL participation in NACO should be established:*

- *This will require specific training and a probationary period during which the notification rate will be significantly lower while double-checking is applied.*
- *The volume of work may warrant a specific post.*
- *There is considerable flexibility in how staff can be effectively located and work efficiently scheduled.*

*The scope of Scotland's Culture ensures that the correct form of name for Scottish cultural institutions and groups of all types and sizes is established in the international standard database. It is essential that Scotland's Culture participation in NACO is co-ordinated with the NLS.*

#### **2.5.6** Identification of digital and non-digital collections relevant to the Cultural Portal for SCONE.

##### **Methodologies**

The Scotland's Culture development team noted information about potential SCONE collections while searching and identifying cultural resources for the portal catalogue. This information was passed to CDLR for consideration for SCONE. Where appropriate, collection-level descriptions were added to SCONE.

Practical guidelines on distinguishing digital collections from learning objects and other sets of web pages were developed by CDLR. Such distinctions are necessary because the SCONE metadata schema is not designed to be applicable to individual resources.

Scotland's Culture treats all resources, including collections, as item-level resources. There is therefore some overlap between collections recorded in the Cultural Portal and SCONE. This does not usually constitute unnecessary duplication, as many digital collections can be used as a set of individual digital objects, or as a whole.

The Scottish Museums Council (SMC) was asked to supply information about museum collections in Scotland. SMC publishes an online directory of museum locations and contact details, with brief descriptions of the main collections.

Desk research was undertaken to verify the SMC data against museum websites, and to identify additional museum collections.

Desk research was also undertaken to identify high-level information about Scottish archive collections from the SCAN directory and catalogue.

Additional digital collections were identified during the implementation of the pilot SDDL (see 2.5.1).

## Results Achieved

A number of digital and non-digital collections of relevance to Scotland's Culture were identified:

- 200 museum collections from the SMC directory.
- 20 collections from national museums.
- 30 archive collections from the SCAN website.
- 40 digital collections.

Some observations on the overlap in organisational collection data found in domain-scope directories have been published in WIDWISAWN<sup>63</sup>.

A preliminary set of operational guidelines for selecting the appropriate metadata schema and catalogue to describe types of online resource is in production.

It addresses the issues involved in distinguishing different modes of aggregation of digital information objects:

- Where the objects have permanence and are intended to be used out of the context of their aggregation on the website, the aggregation is treated as a digital collection.
- Where the objects have permanence and are intended to be used as a contextual group, often supported by narrative text, the aggregation is treated as a single learning object.
- Where the objects are frequently updated or replaced, the aggregation is treated as a single digital resource.

### 2.5.7 Expansion of SCONE collections database in areas such as cultural and public library collections.

#### Methodologies

A copy of the MS Access database containing the SMC directory information was processed by CDLR for uploading to SCONE. The methodology employed was the same as used for the processing of the SLIR and ESH directories during the development of SCONE<sup>64</sup>. The database was processed to extract agent and location records in the format required by SCONE; collection records were derived using functional granularity. These elements were automatically uploaded to the SCONE database, and then linked manually using the SCAMP updating interface to create standard collection-level descriptions.

Information about other collections identified as relevant to Scotland's Culture (see 2.5.6) was used to create or amend records in the SCONE database via the SCAMP updating interface.

SCONE records for public library catalogues were created as they were integrated into CAIRNS (see 2.3.4).

SCONE records for other CAIRNS catalogues and associated OPACs were created as they were identified and integrated into CAIRNS (see 2.3.5).

#### Results Achieved

Some 400 records have been added to the SCONE database.

<sup>63</sup> Available at: [http://widwisawn.cdlr.strath.ac.uk/issues/issue1\\_2.html](http://widwisawn.cdlr.strath.ac.uk/issues/issue1_2.html)

<sup>64</sup> Available at: <http://cdlr.strath.ac.uk/pubs/dunsireg/SCONEFPNXB1.pdf>

### 2.5.8 Implementation of a closed access cooperative environment for possible use in collaborative collection management and other joint activities.

#### Methodologies

The use of the TikiWiki open source software<sup>65</sup> was investigated as a possible basis for this, or as an adjunct to existing facilities (SCAMP updates).

A number of 'in-house' tests were run to acclimatise staff to the use and configuration of the software. Investigation of configuration requirements revealed a need for a re-write of the code relating to permissions. This was required because it was impossible to achieve the level of control needed under the existing code. In particular, it was possible to disallow access to specified e-fora to specified users or groups but not to hide these for a altogether from these users or groups. The code in that area was re-written by AJ to provide the necessary control.

Using this new system, together with other facilities already in the code, a CoSMiC 'closed access' web-site was set up as an illustration of what was possible<sup>66</sup>. Inside this, various user menus were set up with options that could be turned on and off according to user and group permissions. In addition, a number of e-fora were set up to test possible mechanisms to support communication for collaborative collection management and other joint activities.

A test of these facilities was run using members of the CoSMiC Task Group as participants. At a specified time and date, they were asked to sign on using usernames and passwords allocated to them. These enabled access to the site and provided particular facilities related to the username and group assigned. In particular, there was access to a tailored menu of some but not all web-sites and to some but not all e-fora. An experimental 'discussion' on a particular topic was undertaken to test how well the system performed as a communication mechanism in the context of performing a shared task (discussion changes to the text of the CoSMiC response to the Scottish Executive's 'Cultural Commission').

#### Results Achieved

The results were generally regarded by the participants as positive and taught the SPEIR team a good deal about the use of the system. It was agreed that the system had potential to support collaborative work and communication in general<sup>67</sup>. As a result, there is an intention to use the system to take forward a number of CoSMiC agendas – collaborative collection discussions, interoperability work, discussions on the next update of the CoSMiC Joint R&D Plan, and CoSMiC terminology Group coordination.

Specification for, and development of, extension of SCAMP pilot facilities to facilitate a multi-domain mechanism for professionals involved in building and sustaining cultural 'collections' to collaborate online is underway.

#### Methodologies

Professional library and information services staff were trained in the use of SCAMP facilities for updating the SCONE database using live data, as and when opportunities arose.

The potential of SCAMP for the museum domain in Scotland was assessed in consultation with the Scottish Museums Council.

<sup>65</sup> Available at: <http://tikiwiki.org/>

<sup>66</sup> See <http://tiki.cdjr.strath.ac.uk/cosmic/tiki-index.php>

<sup>67</sup> See Appendix 9



A web-page of links of relevance to collaborative collecting was set up with a view to supporting ongoing discussion and work in collaborative collecting in Scotland. This will become an initial focus of discussions on the collaborative collecting agenda, with ongoing work being co-ordinated through a collaborative collecting e-forum. An early focus of this work will be to consider likely future work on the RCO collection strengths database.

### Results Achieved

The SCAMP updating interface has been used by a range of professional staff during the course of its development:

- Systems administrators of the RIDING (Yorkshire) and CAIRNS clumps.
- Scotland's Culture team.
- Staff of the SLIC/CILIPS office.
- CDLR staff working with SPEIR and the development and administration of CAIRNS, RCO, SCONE and SLIR online.
- MSc students on placement from the University of Strathclyde Department of Computer and Information Studies.

A manual for maintaining collection information in the SCONE database was published as part of CC-interop and is available online<sup>68</sup> via SLAINTE. The contents of the manual are integrated with the SCAMP updating interface to provide context-sensitive help and an overview of collection-level description and its implementation in SCONE.

SMC are currently reviewing the management of their directory of museums and database of collection strengths, and will take into account the implications of the successful integration of museums information in the SCONE database and the availability of SCAMP for maintaining it.

The implementation of SCONE and CAIRNS portlets for Ucablis allows access to online catalogues and collections of SVAG (see 2.2.2) to support the group's collaborative activities. The SCAMP updating interface can be used to create any number of similar portlets for professionals involved in the management of cultural collections.

The successful test of the e-fora facility offers a mechanism to take forward discussion and action as regards collaborative collecting in the SCIE context.

#### 2.5.9 Specification for, and development of, extension of SCAMP pilot facilities for Public Libraries.

### Methodologies

The potential of SCAMP for use by public libraries was assessed by desk research and consultation with the SLIC e-Content Group.

### Results Achieved

There is similar scope for professional use of SCAMP as for cross-domain collaboration (see 2.5.9).

Actual and potential use of by public libraries of SCIE services maintained by the SCAMP updating interface and SCONE database is shown throughout this report.

#### 2.5.10 Extend the SCAMP pilot to incorporate a multi-domain updates mechanism for professionals involved in building cultural 'collections' to collaborate online and

<sup>68</sup> Available at: <http://cdlr.strath.ac.uk/pubs/dunsireg/SCONECLDGuide.pdf>

facilities to support collaborative collecting in Public Libraries, GDL, Ucablis, and elsewhere.

### Methodologies

The technical requirements of updating the SCONE database were assessed in relation to extending direct access to the interface. The updating of SLIR was discussed with SLIC.

The use of the SCAMP updating interface was discussed with NLS staff during the development of a facility to output SCONE data in the MARC21 format specified by the NLS<sup>69</sup>.

Use of the interface was also discussed with SMC staff in relation to the maintenance and storage of information about museum collections (see 2.5.9).

Any interest in the use of the interface by other groups associated with SPEIR developments was noted, but not prompted.

### Results Achieved

Discussions with NLS and SMC remain at a very preliminary stage.

Little interest in direct access to updating SCONE mini-landscapes and CAIRNS mini-clumps has been shown by other groups because their membership tends to be stable, and they appreciate the low level of resource required to notify and process the addition and deletion of organisational collections and catalogues.

The structure of the SCONE database is optimised for data sharing so that, for example, a change in the URL of an online catalogue is immediately applied to all relevant SCIE services. Maintenance of the database to meet agreed standards requires:

- Training of operators to ensure the global impact of updates is appreciated.
- Quality assurance monitoring to ensure that all standards are met.
- A means of conflict resolution.
- Restriction of access to data critical to SCIE services.

The annual updating of SLIR reveals a number of pertinent issues:

- Quality control is difficult when updating is carried out ad hoc at infrequent intervals. It takes an hour or so for SLIC staff to familiarise themselves with the full detail of standard workflows and data entry.
- Significant numbers of the paper updating forms supplied by libraries contain misplaced content, requiring interpretation by the operators.
- The format of existing content is altered from the general standard, usually in the form of addition or deletion of punctuation.
- Organisations occasionally submit conflicting content, often in the form of organisation or departmental name; the name on the form differs significantly from the name on the letterhead on accompanying documentation, and both differ from the name on the organisation's website. This is resolved by SLIC staff through personal contact.
- Proof-reading of the printed directory produced after the annual update identifies significant errors despite quality control applied during the update.

This suggests that direct access to the SCAMP updating interface should not be made generally available to individual institutions. Maintenance is best carried out by a small group of authorised operators.

<sup>69</sup> See <http://cdlr.strath.ac.uk/pubs/dunsireg/CCISCONEOOutput.pdf>

The SLIR updating procedure can be adapted for the maintenance of data for organisations in other domains, and is similar to current practice for the maintenance of domain-scoped directories:

- Updating is co-ordinated on an annual or other regular basis by a national organisation.
- Current entries are distributed to individual organisations for review, via paper forms or online look-up.
- Forms or other amendment notifications are returned by notified deadline.
- Updates are carried out by one or two trained operators.
- Ad hoc amendments are notified to the operators.

#### **2.5.11** Implement facilities to support collaborative collecting in the SDDL.

##### **Methodologies**

Access to the content of collections was identified as a requirement for supporting collaborative collecting activities within the CoSMiC environment and SCIE. The CAIRNS mini-clump and SCONE portlets developed for the SDDL (see 2.5.1) provide several ways of providing such access.

##### **Results Achieved**

The SDDL website contains links to the CAIRNS and SCONE SDDL portlets. These portlets can be used to:

- Check if digital resources have already been catalogued.
- Identify and copy metadata for local re-use.
- Identify the content of existing collections of digital resources.
- Access the content of digital resources.

#### **2.5.12** Establish agreements on collecting responsibilities within the group of Public Libraries and other services (CP, GDL, BUBL, SLAINTE) willing to catalogue electronic resources collaboratively.

##### **Methodologies**

Progress with the development of work in this area was slow due to factors outwith the control of the SPEIR team. Matters did not develop sufficiently to enable agreements of collecting responsibilities to be developed. As indicated below, however, some progress was made in this area.

##### **Results Achieved**

A collecting scope was defined for each of the three core catalogues of the SDDL (Scottish material, LIS material, other material). In addition, it was established that it would be possible to undertake a preliminary analysis of likely collecting interests from SLIC e-Content Group, white lists, and Scottish EARL experience.

#### **2.5.13** Determine associated functionality requirements for SCAMP. What facilities are needed to support collaborative collecting in the SDDL?

##### **Methodologies and Results Achieved**

Most of the work done in this area is reported in Section 2.5.8 above and in areas relating to improving CAIRNS and SCONE and investigating the use of collections database updating facilities (Sections 2.5.7, 2.5.8, 2.5.9, 2.5.10, 2.5.11).

The ability to allow local sites to take advantage of collaborative collecting through 'canned searches' of SCONE, CAIRNS, the SDDL and Scotland's Culture is an additional feature developed within SPEIR that would be needed to support collaborative collecting.

## 2.6 Professional Support

### *Summary of Coverage*

The aim of work undertaken within this heading of the CoSMiC Joint R&D Plan is instigate and co-ordinate initiatives designed to guide, evaluate and improve SCIE work related to 'Professional Support', whether online or offline in nature. Particular areas of interest are current awareness and general support services for staff via online facilities for professionals, email lists, journals and e-journals, the SCAMP staff collaborative collecting portal, the CoSMiC e-fora facility, conferences and meetings, the engagement of professional groups. Within SPEIR, key foci under this heading were:

- The provision of advice to Public Libraries on Zservers, firewalls etc.
- The provision of LIS support services through BUBL and SLAINTE.
- The promotion and use of the WIDWISAWN e-journal and the Scotslink e-mail list.
- SPEIR dissemination 'roadshows'.
- The creation of a list of CoSMiC contacts in libraries throughout Scotland.
- The work of the CoSMiC e-fora facility.
- The creation of CoSMiC explanatory leaflets.

### Specific Objectives/Deliverables

- 2.6.1** Widespread dissemination of project developments and outcomes through the SPEIR website, SPEIR staff publications, SPEIR roadshows, presentations, leaflets and meetings, and a variety of mechanisms external to SPEIR (Scotslink email list, WIDWISAWN, the CoSMiC website and two 'Electric Connections' conferences).

#### Methodologies

A dissemination plan entailing the above was agreed informally and discussed at regular intervals and the various elements were implemented as and when appropriate. An additional development was the use of SLAINTE canned searches to provide professionals with useful materials on particular topics<sup>70</sup>.

#### Results Achieved

These are detailed in Appendix 2.

- 2.6.2** Send key progress reports to all relevant organizations and institutions in Scotland and elsewhere.

#### Methodologies

This was primarily achieved through the creation and dissemination of leaflets on aspects of the developing SCIE and through regional SPEIR Roadshows and SPEIR updates through WIDWISAWN and Information Scotland.

#### Results Achieved

Three SCIE leaflets were created and sent to an extensive list of relevant organisations in Scotland in two mailings.

Articles on SPEIR were written for WIDWISAWN and Information Scotland and other publications.

Regional 'roadshows' were held in Aberdeen, Edinburgh and Glasgow<sup>71</sup>.

<sup>70</sup> Examples of SLAINTE canned searches to provide LIS professionals with useful materials on particular topics can be observed from the OAISIS service (<http://hairst.cdlr.strath.ac.uk/oaisis/OAI.htm>) and the SSISWG Open Access website (<http://scuri.ac.uk/WG/SSISWGOA/bgground.htm>) respectively.

<sup>71</sup> See Appendix 2

In addition, a special SPEIR roadshow presentation was given to the NLS E-services team in June 2004 and a presentation of SCIE services for public libraries was given to the SLIC e-Content Group in August 2004.

- 2.6.3** Identify contacts in every relevant Scottish library or similar institution and ensure close contact with these staff.

**Methodologies and Results Achieved**

SPEIR identified a contact in every library authority in Scotland and put them on an e-mail list (SPEIR-PROJECT@JISCMail.AC.UK). Questionnaires were then sent to these contacts and the results used to inform SPEIR developments (although mainly through follow-up questions). Individual contacts are available at: <http://speir.cdli.strath.ac.uk/publib.htm>. SPEIR contacts outwith the public sector were identified and they are also listed on the same page.

- 2.6.4** Create a hybrid of BUBL and SLAINTE services to provide online support for LIS and related professionals in Scotland. Base on existing SLAINTE LIS services, existing BUBL LIS support services and the new BUBL LIS Research service.

**Methodologies and Results Achieved**

See 2.5.1 for information on the creation of a support service for Scottish LIS professionals in SLAINTE.

BUBL upgraded various aspects of its service and became involved in the E-LIS international LIS documents archive.

- 2.6.5** Agree training needs for SPEIR (e.g. Connexion training, SCAMP training, and standards and interoperability training); Tailor to suit resources available; Roll out training programme.

**Methodologies and Results Achieved**

Most of this was done via the Roadshows and through specific training sessions for targeted purposes.

## 2.7 Summary: Outcomes; Progress In Key Areas of The SCIE

The project has made solid progress in all of the various areas of the CoSMiC Joint R&D Plan, as follows:

- Successful determination of requirements and working mechanisms for the seamless integration of the Cultural Portal Pilot into CAIRNS and related initiatives such as the SCONE collections facility, the collection strengths landscaper, and the SCAMP updates facility; investigations to ensure applicability in other areas as in public, FE, and other library systems (Local User Environments; Shared Central Services).
- Inclusion of Public Libraries and SCRAN in the CAIRNS distributed catalogue<sup>72</sup> (Shared Central Services).
- Specification and instantiation of an illustrative pilot terminologies server for Scotland, including implementation of illustrative facilities (Shared Central Services; Interoperability Forum).
- Creation of a pilot Scottish Distributed Digital Library (SDDL), based initially on three databases, and cooperative cataloguing (currently only SLIC and CDLR) through the OCLC CORC subscription (Shared Central Services; Collaborative Activities; Interoperability Forum).
- Research and development work to permit embryonic services such as CAIRNS, SCONE, SCAMP, and the SDDL to serve as central facilities and data sources for the Cultural Portal Pilot and other Scottish portals (Shared Central Services).
- Identification of digital and non-digital collections relevant to the Cultural Portal for SCONE (Shared Central Services).
- Development of a pilot cultural facets (from heritage to ballet to football to street theatre) landscaping facility (Local User Environments; Interoperability Forum).
- The integration of CAIRNS, SCONE, RCO and SLIR into a single service (Shared Central Services).
- Expansion of SCONE collections database in areas such as cultural and public library collections (Shared Central Services).
- Implementation of an illustrative closed access cooperative environment for possible use in collaborative collection management and other joint activities (Shared Central Services; Collaborative Activities).
- Embryonic mechanisms to support ongoing community management of research and development in the SCIE through the CoSMiC Joint R&D Plan process (Coordination and Management).
- Widespread dissemination of project developments and outcomes through the SPEIR website, SPEIR staff publications, SPEIR roadshows, presentations, leaflets and meetings, and a variety of mechanisms external to SPEIR - Scottslink email list, WIDWISAWN, the CoSMiC website and two 'Electric Connections' conferences (Professional Support).

Additional outcomes of note arose from work with other projects. These are detailed in the body of the report. Areas where progress was more limited than originally hoped are also covered there.

### Additional Outcomes

- Progress towards integrating the HaIRST open access repositories metadata harvester pilot with CAIRNS and (as a result) the SDDL (HaIRST is JISC-funded and does not end for another year).
- Inclusion of a pilot service offering online access to electronic journals or digitised journals produced by small Scottish publishers in the common information environment (based on SAPIENS project - funded by SHEFC).

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<sup>72</sup> Although progress in this area was limited (SCRAN and three public library authorities are available at time of writing, and three public library authorities and one FE library are planned for inclusion over coming months), the slow speed of development was expected because of the various technical, organisational and political difficulties involved.

### 3 Critical Appraisal, Value, Wider Relevance to the LIS Community

#### *Introduction*

Inevitably in a project of this complexity, forward movement was sometimes achieved with difficulty and often led to the identification of problems as well as to achievements representing real progress. Noteworthy points under this heading are presented in this section of the report as a prelude to the final section covering conclusions and future R&D requirements.

#### *Issues, Barriers, Actions Needed at Local and Central Level*

The following list of issues, barriers and actions needed was identified by the project. The list is not prioritised:

1. The work done on the Cultural Portal project and the related support infrastructure (CAIRNS, SCONE, SCAMP and other shared services) would benefit from being 'proved' in a second subject area. One possibility here arises from the suggestion from SCURL, a member of CoSMiC, that Scotland needs a Science Portal.

#### *Recommendation:*

*Consideration should be given to the creation of a second pilot portal in another subject area identified by the community as a key area. A Science Portal tailored to suit the needs of a range of user types (school children, socially excluded groups, researchers, the business community and so on) as proposed by the Scottish Science Information Strategy Working Group Portal Group is one possibility worth considering.*

2. Progress has been slow and difficult in the area of formal collaborative collecting work. A basic infrastructure for development of this - based in essence on the early collection strength measurement work done by the NLS and SCURL using Conspectus, and later work done in the RCO, SCONE, SEED, and SPEIR projects - is in place, but there is a need for organisational leadership from key players such as SLIC, CoSMiC, NLS, SCURL and others if progress is to be made on real collaboration. Without a coordinated approach to the development of the distributed Scottish collection, a coherent approach to information and resource provision in Scotland is impossible.

#### *Recommendation:*

*CoSMiC and SLIC should initiate an online discussion group in this area using the CoSMiC electronic for a facility with a view to formulating an agreed way forward on the collaborative collecting front. This group should help guide the work on SCAMP, the staff collections management portal, which should be continued, preferably on a funded basis.*

3. A significant barrier to the addition of Public Library catalogues to CAIRNS has been the problem of obtaining agreement to allow the CAIRNS client to communicate with local OPACs through local authority firewalls. This continues to be an issue in some areas and needs to be tackled at an appropriate managerial level.

#### *Recommendation:*

*SLIC should consider raising this issue at the highest level with a view to establishing that access to Public Services such as OPACs through firewalls is a mandatory requirement.*

4. Interoperability of metadata continues to be an issue (for example, subjects in SCRAN and across Scotland generally). Good standards-based inter-compatible metadata is essential if the SCIE is to be a coherent environment providing effective user services. This should be tackled sooner rather than later, since the cost of tackling it rises with every passing year.

#### *Recommendation:*



*An online discussion group on interoperability issues should be set up with a remit to make this an area of ongoing priority and propose specific actions. These should include actions to ensure that funders are aware of these issues, that new initiatives funded take account of metadata quality and interoperability issues in ways agreed at national level in Scotland, that funds are identified to tackle existing interoperability or metadata quality issues on an ongoing basis, and that a planned approach is taken to long-term issues such as the recommendations of Full Disclosure. Where appropriate, required actions should be included in the CoSMiC R&D Plan.*

5. Although significant progress has been made in the creation of a pilot terminologies server, work in this area of the basic infrastructure remains a priority. A number of developments are occurring in Scotland in respect of developing local terminologies which, if not co-ordinated within a national scheme, will result in a further degradation of subject-based cross-search and cross-browse services in Scotland.

*Recommendation:*

*An online group to guide SCIE terminologies work should be set up by SLIC and CoSMiC as a matter of priority. The work of SPEIR on the creation of an illustrative pilot terminologies server for the SCIE should be taken forward to the next stage – the creation of an operational terminologies and semantic interoperability support service - as a matter of priority as soon as resources permit. The proposed project should work closely with the online group.*

6. Early progress on the development of the SDDL was slower than anticipated. It is essential that the work be built on, particularly in the light of ongoing digitisation and developments such as institutional repositories and the NLS.

*Recommendation:*

*Work on the development of a Scottish Distributed Digital Library should be taken forward by the best means available. At minimum, the proposed online groups on interoperability and terminologies should aim to agree and promote agreed standards across developing electronic repositories in Scotland, with the proposed Virtual NLS a particular focus for the work. Ideally, funds should be found to take the work forward towards an operational shared service.*

7. The usefulness of CAIRNS, SCONE, the SDDL, and facilities such as 'canned searches' has only begun to be exploited in local services across Scotland. Work needs to be done to bring their benefits to the community at large.

*Recommendation:*

*SLIC and CoSMiC and funded SCIE projects should actively promote the use of these services in local portals and should work, where possible, with the proposed SCIE user group (see 2.11.4 above).*

8. Collaborative collecting discussions and forward movement ought to encompass issues sometimes seen as unrelated - for example, the question of national digitisation priorities and the question of collaboration in the provision of electronic learning materials.

*Recommendation:*

*The proposed online group for discussion of the collaborative collecting agenda (see 2 above) should take the widest possible view of what is included in an agreed approach to collaborative collecting, aiming to encompass joint approaches to collecting and creating electronic learning materials and to digitisation amongst other things.*

9. Early work on the CoSMiC R&D Plan and on consideration of the updates process suggests that it may take several years for the process to become embedded in

institutional and organisational cultures. Once working to the satisfaction of all parties, the Plan can provide SLIC and its members with a mechanism for (a) managing the development of the SCIE on an ongoing basis (b) influencing the agendas of the funding agencies who can help fund its development.

*Recommendation:*

*SLIC and CoSMiC should continue to pursue the goal of fully embedding the R&D plan in institutional and organisational cultures and of bringing the mechanism, together with specific identified R&D priorities, to the attention of funding agencies.*

10. Although SCONE is well-developed, it is far from complete. There are also many catalogues not yet accessible via CAIRNS.

*Recommendation:*

*Work to encompass all Scottish Collections in Scone and all services in CAIRNS should continue, slowly and gradually if there is no funding, as quickly as possible if there is.*

11. Although CoSMiC has made good progress on involving Scottish organisations in its work, a good deal of additional work is required to ensure both an awareness of the work and a 'buy-in' to the process to ensure community-wide involvement and representation.

*Recommendation:*

*CoSMiC and SLIC should continue to work towards making CoSMiC and its initiatives as inclusive as possible in respect of encompassing the views and needs of all organisations relevant to the SCIE in all relevant domains.*

12. Although CDLR (through SPEIR and other mechanisms) and CoSMiC and SLIC and others (SCURL, for example, and CIGS) have done much to disseminate information about SCIE developments and issues to the community at large, many professionals remain unaware, either of the work itself, or of the key details relating to their own areas of work. More needs to be done on this front – particularly in the sphere of electronic communication.

*Recommendation:*

*CoSMiC and SLIC should continue to work towards making the community full aware of the work of CoSMiC and its initiatives.*

13. Although an awareness of the needs of users, and particularly those of the socially excluded, was a key element in the development of the Cultural Portal and of terminology and other issues tackled by SPEIR, it remains true that little is known in-depth of the needs of the various user groups likely to use the SCIE.

*Recommendation:*

*There is a need for in-depth research into the user interface needs of key Scottish user groups (School and HE and FE students, socially excluded groups, lifelong learners, the business community, tourists and potential tourists, and so on). Funding should be sought on this front as a matter of priority. Initiatives in this area should work closely with the proposed SCIE user group.*

14. As indicated in various of the recommendations above, there is a needed for greater communication and community involvement in SCIE work. Rather than set up new sets of meetings which will stretch the resources available, it is proposed that, wherever possible, work be done through the embryonic e-fora set up by SPEIR using the TikiWiki software.

*Recommendation:*

*Improved communication mechanisms, based on the pro-active use of e-fora should continue to be a priority for SLIC and CoSMiC.*

15. There is now a need to protect operational facilities (e.g. CAIRNS) from ongoing R&D work in the SCIE.

*Recommendation:*

*The creation of a fully operational and stable pilot infrastructure, together with a mirroring facility to support ongoing R&D work without impacting on service levels should be a priority in future funded work.*

#### 4. Conclusions (including future R&D requirements)

##### *Future Actions; Stability And Achievable Progress*

SPEIR has brought the goal of a stable and coherent *common information environment* for Scotland a step closer. The degree of further development required is significant, and completion will take many years of work, but an embryonic infrastructure now exists that can be the basis of gradual development in line with available resources. With this as the backdrop, recommendations for future actions fall into two categories. The minimum requirement is to provide a level of funding that will permit development and support of existing facilities and joint investigation by SLIC and CDLR of how more stable infrastructural elements such as CAIRNS and SCONE might be embedded within existing organisations and services. The ideal – assuming more significant levels of funding can be found – is to couple these actions with major research and development work aimed at developing the infrastructure further, with the following being perceived priorities:

- Creation of a Scottish Terminologies and Semantic Interoperability support service
- Further development of existing shared services, particularly the Scottish Distributed Digital Library and the staff collaborative collection management portal.
- The creation of at least one additional pilot portal for Scottish citizens (One possibility would be a Science portal tailored for a range of groups – school children, socially excluded groups, researchers, the business community etc. – but the plan would be to consult the community on the preferred focus for this work)
- Intensive research into the user interface needs of key Scottish user groups (School and HE and FE students, socially excluded groups, lifelong learners, the business community, tourists and potential tourists, and so on).
- The creation of a fully operational and stable pilot infrastructure, together with a mirroring facility to support ongoing R&D work without impacting on service levels.
- Improved communication mechanisms, including the pro-active use of e-fora.
- The creation of a programme to tackle existing interoperability or metadata quality issues.

The existence of the CoSMiC joint R&D plan mechanism should help ensure wide consultation on R&D priorities. It should also help fund R&D priorities through bids to a wider range of funders.

Other recommendations noted in section 3 above should be tackled as and when resources permit. A number of more detailed recommendations are included in the text of the report. These should be tackled as resources allow – usually when funded work under the appropriate R&D Plan heading is being undertaken.

All recommendations should be fed into the updating process for the CoSMiC R&D Plan.

## Note on Annexes

Several Appendices are included with this report (see below).

In addition, the SPEIR team may publish more detail as electronic annexes to this report in future on topics such as 'Upgrade to CAIRNS and SCONE' and 'The Scottish Distributed Digital Library'. If so, these will be published on the SPEIR web-site (<http://speir.cdlr.strath.ac.uk/>) and announced via SLAINTE (<http://www.slainte.org.uk/>) and the Scotslink email discussion list ([Scotslink@jiscmail.ac.uk](mailto:Scotslink@jiscmail.ac.uk)).



## References

### **Appendix 1 Final Report to the Scottish Library and Information Council (SLIC) on the SPEIR Project**

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## **Dissemination**

### **Appendix 2 Final Report to the Scottish Library and Information Council (SLIC) on the SPEIR Project**

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## Appendix 2: Dissemination

Throughout the duration of the project, SPEIR has aimed to disseminate project aims, objectives, research and findings via publication in a mixture of academic and practitioner orientated journals. However, significant steps were also undertaken to disseminate SPEIR activity via conferences, road shows, websites, and so forth.

A list of this dissemination activity is listed below:

### SPEIR Publications

Throughout the duration of the project, SPEIR has aimed to disseminate project aims, objectives, research and findings via publication in a mixture of academic and practitioner orientated journals. Details of these publications can be found below:

Dunsire, G. & Macgregor, G. (2003). SPEIR: Make it Easy. *Information Scotland*. Vol.1 No.6. Available: [http://www.slainte.org.uk/publications/serials/infoscot/vol1\(6\)/make.html](http://www.slainte.org.uk/publications/serials/infoscot/vol1(6)/make.html) (Visited 03 August 2004)

Dunsire, G. & Macgregor, G. (2003). Clumps and Collection Description in the Information Environment in the UK, with particular reference to Scotland. *Program*. Vol.13 No.4.

Macgregor, G. (2003). The SPEIR Project. *ScotFEICT*. Spring. Available: <http://www.scotfeict.ac.uk/journal/Spring2003/CDLR/index.htm> (Visited 03 August 2004)

Nicholson, D. & Macgregor, G. (2003). Developing the Scottish Cooperative Infrastructure - The What, Who, Where, When and Why of SPEIR. *WIDWISAWN*. Vol.2 No.1 Spring. Available: <http://widwisawn.cdlr.strath.ac.uk/Issues/issue2.html> (Visited 03 August 2004)

### Conference Dissemination

Dawson, A. *Components of a Scottish Distributed Digital Library (SDDL)*. Presented at Electric Connections, CoSMiC/SPEIR Joint Conference 2003, Perth College, Perth, 21st August 2003.

Dunsire, G. *The Scottish Collections Network framework*. Presented at Electric Connections, CoSMiC/SPEIR Joint Conference 2003, Perth College, Perth, 21st August 2003.

Dunsire, G. *CAIRNS and SCONE: shaping the Scottish information environment*, the CoFHE Conference, at Heriot-Watt University, 14-17 April 2003.

Macgregor, G. *SPEIR: introduction, issues, trends, and developments*. Presented at the Graduate School of Informatics, University of Strathclyde, Glasgow, 1st April 2004.

Macgregor, G. *CDLR: While the Cats are Away - The SPEIR Project*. Presented at Departmental Seminar, Department of Computer & Information Science, University of Strathclyde, Glasgow, 26th November 2003.

Macgregor, G. *SCAMP: A Staff Portal to Support Collaborative Collecting*. Presented at Electric Connections, CoSMiC/SPEIR Joint Conference 2003, Perth College, Perth, 21st August 2003.

Nicholson, D. *Electric Connections CoSMiC and SPEIR Joint Conference on the Scottish Cooperative Infrastructure*. Presented at Electric Connections, CoSMiC/SPEIR Joint Conference 2003, Perth College, Perth, 21st August 2003.

Nicholson, D. ***Current state of play: Conspectus, CATRIONA, RCO, CAIRNS, SCONE, SEED, CC-Interop, HalRST - but mainly SPEIR.*** Presented at IFLA 2003, Berlin, Germany, August 2003.

Nicholson, D. ***Collaborative Collecting in Scotland - the current state of play: Conspectus, RCO, CAIRNS, SCONE, CC-interop HalRST, but mainly SPEIR.*** Presented at the CONUL / ALCID Committee on Cooperative Collection Management, Trinity College, Dublin, Ireland, 29th May 2003.

Nicholson, D. ***Local Studies, CIGS, and the developing Scottish Cooperative Infrastructure.*** Presented at the CIGS/ LOCSCOT: Enriching Access to Local Materials Conference, Baird Hall, Glasgow, 21st May 2003.

Nicholson, D. ***SPEIR.*** Presented at the SFEU Conference, Stirling Management Centre, Stirling University, 7th March 2003.

## **SPEIR Events**

Several specific dissemination vehicles were also established by SPEIR:

- **Electric Connections Conference 2003**

Organised by SPEIR and CoSMiC, the Electric Connections conference, held on 21st August 2003 at Perth College, was primarily aimed to disseminate widely regarding SPEIR's aspirations for a Scottish Distributed Digital Library (SDDL) and a SCIE. Although the programme was punctuated with contributions from SPEIR project staff, speakers attended from SLIC, the NLS, SCAN, SMC and SCURL.

Details of the programme and presentations delivered at Electric Connections 2003 is available at: <http://CoSMiC.cdrl.strath.ac.uk/pastevents/ec2003.htm>

- **Electric Connections Conference 2004**

The overwhelming success of Electric Connections 2003 has stimulated the organisation of a follow-up conference for 2004. Organised by CoSMiC and SLIC, the second annual Electric Connections conference took place on 26th August 2004 at the University of Stirling and followed a similar theme as 2003, but further emphasised activity surrounding the SCIE.

Contributions were received from several SPEIR project staff, SLIC, the NLS, What Clicks?, MoPark, SAPIENS, NAS, the BL, the Scottish Civic Trust, but to name a few.

Details of the programme and presentations delivered at Electric Connections 2004 is available at: <http://CoSMiC.cdrl.strath.ac.uk/pastevents/ec2004.htm>

- **SPEIR Workshops 2004**

Between 26th - 30th April 2004 SPEIR organised a series of workshops. These workshops (held in Glasgow, Edinburgh and Aberdeen) aimed to raise awareness of developments connected with the SPEIR Project and included online demonstrations of key Scottish Distributed Digital Library components (SDDL), such as CAIRNS, SCONE, Scotland's Culture, and SLAINTE. This event also functioned as a consultation exercise whereby delegates provided invaluable feedback on how the SDDL should develop and suggestions were collected for improvements to the constituent components of the SDDL.

An extensive range of LIS professionals registered for the SPEIR workshops, with 58 Scottish delegates from the NLS, HE, FE and public library sectors, as well as professionals from the NGfL and LearnDirect Scotland, in attendance.

## **Other Dissemination**

### Websites

Dissemination was also propagated via the Web.

- The SPEIR project website (<http://speir.cdlr.strath.ac.uk/>) was established in March 2003. Containing project information, relevant documentation, details of dissemination activity, and progress reports, the SPEIR website has been well cited throughout other dissemination activity and continues to be developed.
- The CoSMiC website (<http://CoSMiC.cdlr.strath.ac.uk/>) has been significantly enhanced and developed under the auspices of SPEIR and now contains information pertaining to the Scottish Cooperative Infrastructure, the SDDL, the CoSMiC R&D Plan, SPEIR, Electric Connections, as well as details relating to the work of other CoSMiC members. The CoSMiC website now also offers access to a pilot projects database and interoperability forum.

### Leaflets

Three leaflets were produced under the auspices of SPEIR to aid dissemination<sup>73</sup>. These leaflets have each been distributed widely at national and international conferences and were entitled:

- Scottish Cooperative Infrastructure.
- Joint R&D Plan 2004.
- Shared Central Services 2004.

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<sup>73</sup> See Appendix 10 for a facsimile of these leaflets.



## **Financial Statement**

### **Appendix 3 Final Report to the Scottish Library and Information Council (SLIC) on the SPEIR Project**

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### Appendix 3: SPEIR Financial Statement

#### SPEIR Project Expenditure

Category	Initial Allocation	Amount Expended	Final Balance	Notes
Staffing	£104350	£111500.52	<b>-£7150.52</b>	CDLR staffing costs
Equipment	£8000	£8339.72	<b>-£339.72</b>	Includes cost of server and publicity materials
Travel and Subsistence	£8050	£3245.76	<b>£4804.24*</b>	Travel and subsistence for CDLR staff, SG and MG members
<b>Total</b>	<b>£120400</b>	<b>£123086</b>	<b>-£2686</b>	

\* Note that £4500 originally allocated to the 'travel and subsistence' fund was redesignated to cover salary costs.



## **Portal User Requirements**

### **Appendix 4 Final Report to the Scottish Library and Information Council (SLIC) on the SPEIR Project**

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**Published: CDLR, Glasgow, 2004**



## Appendix 4: Portal User Requirements

The following user requirements are drawn from a number of different sources, which have been listed at the end of the document.

<b>Portal User Requirements</b>
<b>Search</b>
Search a single collection
Cross-searching various resources
Advanced search functionality
Search using subject terms derived from subject schemes
Metadata-enhanced search features
Save search queries for re-rerunning
Search the local Web site
Search Bibliographic databases
Search e-Journals
Access to search engines other than the site's standard one
Search favourite resources
Search Tables of Content
Spell checking facility
Search reformulation facility
<b>Browse</b>
Browseable hierarchical directories
Cross-browsing multiple resources
Subject-based browse tools
<b>Display</b>
How to present and displays results
Default presentation format
Highlight search terms
Ranking of results
<b>User profiling and personalisation</b>
Authentication
Personalise the site according to their own preferences
Authorised access to certain resources
Distinction between different authorisation passwords and user Ids
Results screens and presentation of search results (short or long record)
A facility for adding annotations
Search profiles (search history)
Organising, storing, printing, e-mailing or downloading records (downloading in different formats)
Privacy of end-user personal details
Updating personal account details
Customisation of the interface features and layout (e.g. font size)
Personal Information Storage Space
Creation of User Profile(s) of interests
Search the local OPAC
Review of bookmarks
Bookmark Manager
<b>Usability</b>
Overall purpose of the portal should be clarified
No jargon or terminology
Search screen icons
Context specific help
Site map
Accessibility

<b>Education features</b>
Web-based learning resources
Reuse of the data for lecturers
Shared areas for documents and teaching and learning materials
Deadline alerts (for students and researchers)
Access or update teaching materials
Access or update reading lists
Curriculum information
<b>Community communication</b>
E-mail and chat
Online discussion forum
Email account facilities (Address Book)
Instant messaging
Bulletin and message board
Newsgroups
Online surveys
Online voting
Announcements
<b>Miscellaneous</b>
Data export
Facilities for Inter library loan services for librarians and information professionals
Statistics of users
FAQs
ePrint archive
Links to related Web sites
Forms and documentation
<b>Utilities</b>
General and specific news
Library and quality internet resources alert
New items added
Automatic Notification of new resources
Calendar/ scheduling
Diary/Planner
Newsletter and eZine
Career information
Conference alerts

**Features highly valued by different user groups in an institutional portal (Pearce et al., 2003)**

*For FE HE undergraduate students*

- Deadline alerts
- Career information
- Access or update teaching materials
- Review of bookmarks
- Search favourite resources
- Library and quality internet resources alert
- Access or update reading lists
- Conference alerts

*For FE and HE staff*

- Staff development
- Access or update teaching materials
- Search favourite resources
- Library and quality Internet resources
- Personal information

Access institutional e-mail  
Forms and documentation

Some other requirements were:

Announcements  
Security  
Reliability  
Accessibility  
Curriculum information

## User requirements study for a moving pictures and sound portal (Asensio, 2003)

### 1 Educational Requirements

**Materials must be meaningful for education**

**Up-to-date material**  
Quality control

### 2 Technical Requirements

Easy to use and download  
User orientated  
Easy searching and browsing based on metadata or standard descriptions.  
Quick and efficient, create resources as brief and segmented as possible  
Copyright cleared materials  
Intelligent searching  
Ability to download resources for local use e.g. for distribution on CDs  
FAQs, including support for systems and hardware.

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## **Portals: Standards, Protocols, Requirements**

### **Appendix 5 Final Report to the Scottish Library and Information Council (SLIC) on the SPEIR Project**

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**Published: CDLR, Glasgow, 2004**

## Appendix 5: Portals: Standards, Protocols, Requirements

### Portal Standards and Protocols for Interaction between Portals and Central Services for the JISC Information Environment

#### Scope of this appendix

This document aims to provide a basic summary of the portal standards and protocols for interaction between portals and central services within the JISC Information Environment. To inform the deployment of such technologies within the SPEIR project and the associated Scottish Distributed Digital Library (SDDL), it remains imperative that sufficient acknowledgement be given to the JISC's position on these technologies, not only to ensure future interoperability, but to facilitate the growth of the SDDL within the wider remit of the JISC Information Environment also.

Before identifying the key technologies being used to facilitate portals and portlets within the Information Environment, it is worthwhile to undertake a series of brief definitions and contextualisations.

#### Portals?

From a technical perspective, a portal is a web-enabled service that assimilates information from disparate distributed resources using web-based tools such as cross searching and harvesting, and gathers this into an amalgamated form for the end user. The end user typically experiences the information gathered by the portal via a standard web browser, although other means are also becoming possible and increasingly popular (e.g. Personal Digital Assistant (PDA)). In essence, a portal is a common point of access, occasionally personalised, where searching can be undertaken across one or more resources simultaneously, and where the receipt of retrieved search results is presented in an amalgamated form. Given the heterogeneous nature of digital collections, in particular those developed by JISC for Higher and Further Education community for instance, the obvious need has arisen to be able to search across these resources via a single interface without the need to search collections individually, which would of course be extremely arduous.

Portals differ from 'gateways' and 'hubs' in that the latter two concepts tend to be web sites providing access to descriptions of and/or links to other web-based resources. Obviously similarities between gateways and hubs can be identified and do exist, particularly the fact that they pull information together for the user. However, these similarities remain decidedly superficial as whilst they do bring information together, this information merely describes content and does not provide the information itself. As Powell (2001) succinctly notes, gateways and hubs allow the end user to discover where the content is, but portals bring the content to the end user.

#### The JISC Information Environment

Portals constitute an integral component of the JISC Information Environment (IE). The Information Environment technical architecture diagrams depict portals as the point where content is brought together for display to the user (Powell, 2001). The corollary dictates that the JISC portals be involved in a variety of fusion and presentation tasks. This approach has indeed been incorporated into the IE Draft Development Strategy via the Portals and Fusion Programme, which is building and developing portals / portal technologies for deployment within the JISC IE (JISC, 2001). Interoperability is paramount to interaction between all of the JISC's distributed components, and all parts of the IE are being developed with this in mind.

The key technologies being utilised by JISC to support interoperability between the portals and content providers within the IE are:

- Z39.50.
- Open Archives Initiative - Protocol for Metadata Harvesting (OAI-PMH).
- Simple Object Access Protocol (SOAP).
- Universal Description, Discovery and Integration (UDDI).
- Research Description Network (RDF).

Of the protocols and standards mentioned above, SLIC and CDLR are especially acquainted with Z39.50 and OAI-PMH, and no further discussion of these standards is required.

### **Web Service Technologies (WST)**

Recent years have witnessed the unprecedented proliferation, in their various permutations, of Web Service Technologies Protocols (WST). As software firms and developers compete for market domination in a new, emerging field of web-based software applications, the choice and functionality of WSTs is rapidly increasing. Promising standards and development frameworks include Simple Object Access Protocol (SOAP), Universal Data Description and Integration (USSI), Web Service Definition Language (WSDL), Web Services for Remote Portal (WSRP), Web Services Security (WSS), and frameworks such as Java 2 Platform Enterprise Edition (J2EE) and Microsoft '.NET', but to mention a few.

WST developments first gathered pace due to the publication of proposed vendor specifications. Whilst this facilitated rapid development, the lack of co-ordination of standards and the influence of commercial interests was of obvious concern. Consequently, in 2002 the World Wide Web Consortium (W3C) assumed control of evolving standards development and is at least attempting to ensure that WSTs integrate into the overall structure of the WWW. Regrettably, this has meant the introduction of the W3C committee structure, which, in turn, is now creating inevitable delays in progressing the development of standards.

Despite the plethora of standards, JISC has chosen to utilise and promote internationally supported protocols like SOAP and UDDI.

### **Brief WST Background**

The impetus behind WST comes from the corporate sector. Business is gradually divorcing itself from 'transactional-based' business processes to a more 'service oriented' approach, often necessitating the collaboration of numerous organisations in order to supply an integrated and seamless service to customers. In addition, the advent of a global economic downturn has instilled a collective business pressure to, where possible, consolidate information systems and capitalise on existing investment. This has consequently precipitated the need to utilise effective technologies capable of reusing system components and integrating services, not only within business-to-business (B2B) and client-to-business (C2B) applications and services, but within businesses themselves.

Discounting WSTs momentarily, the existing methods of reuse and application integration require costly, time consuming, often bespoke developments, usually dictating that all interested parties deploy interoperable, heavyweight object model infrastructures. The software vendors have therefore been compelled by the corporate fraternity to develop a lightweight framework that could be easily deployed.

The emerging framework of WST potentially offers solutions. An enabling technology rather than an entirely new technology, WST is an industry led initiative with many of the leading players such as Microsoft, SUN, HP and IBM actively involved. In essence, WST is a "framework of self contained, modular applications, which can be discovered and executed over the network by remote programs. These distributed applications are created using lightweight protocols, which allow organisations to build communicating applications without the requirement that both ends run the same heavyweight environments" (McDonald, 2003, p.2). Established protocols like HTTP, SMTP, and XML have been combined with emerging developments such as SOAP to allow services to interact with one other over the network, creating the concept of WST.

### **SOAP**

Most current implementations of WST use the SOAP protocol for communications between Web Service Registries, remote Web Services and client applications. SOAP (formerly known as Simple Object Access Protocol) was originally developed by Microsoft, Userland and DevelopMentor, but is now embraced by the W3C (W3C, 2003). SOAP is a lightweight, XML-based protocol for the transfer of structured data and type information over a network in a

'stateless' way. SOAP messages can be transported, perhaps via intermediaries, by adopting HTTP, SMTP, or other suitable network protocols.

The latest version of SOAP (version 1.2) consists of an envelope for encapsulating data and a request-response mechanism for transfer documents. Optional components include extensibility features, a Remote Procedure Calling (RPC) feature for invocation of remote services and methods binding to certain network protocols. Whilst SOAP is fundamentally stateless, it is possible to use it to execute complicated interactions involving the SOAP requester, intermediaries, and receive nodes, by utilizing the 'Message Exchange Patterns' (MEPs) templates. MEPs use control mechanisms in the underlying network transfer protocols or specific information contained in the SOAP header, to enable more sophisticated interactions.

The adoption and promotion of SOAP by JISC is based primarily on the broad international acceptance of SOAP, firstly by the corporate sector, but also by the W3C. Moreover, SOAP has been built on the existing protocols of XML and HTTP, and is particularly suitable for building distributed applications that use multiple servers running different operating systems and /or development environments.

### **UDDI**

The Universal Description, Discovery and Integration Standards and Initiative (UDDI) is an initiative championed by Ariba, IBM and Microsoft for developing a global registry of web services. UDDI accepts that in order for an effectual bazaar to thrive there needs to be an appropriate discovery mechanism in place so that suitable electronic services can be easily identified. UDDI therefore provides a directory, with a simple discovery interface for use by developers and computer systems, and other mechanisms for describing the computer interfaces a client application would use to communicate with that service. A broker, for example, would use this directory to locate relevant electronic services for the user and interact with them on the users' behalf. UDDI also spearheads a global initiative (with support from over 280 industrial partners) to construct a single global registry.

UDDI is also attractive to JISC since it takes advantage of standards such as XML (this partly why the standard has developed so rapidly and because JISC are so attracted to it), and HTTP and Domain Name System (DNS) protocols. Additionally, cross platform programming features are addressed by adopting early versions of SOAP. Whilst UDDI is a new standard, it has been developing rapidly and over 280 companies have agreed to support the initiative since it was announced in September 2000. At time of writing, UDDI is on version 3.0.

UDDI is relevant in any application requiring the locations of services. Within the JISC's remit, these might include:

- Service registry for the JISC Information Environment/RDN Architecture.
- Collection-level description and service level description services within UK national union catalogue contexts, as exemplified by the work of CC-interop.
- Discovery of UK Government services.
- Discovery of Academic Courses both online and traditional.
- Discovery if IMS based course modules and components for combining to building online courses.
- Integration with, say, University purchasing systems for automatically locating and purchasing equipment.

Dovey (2001, p.2) provides an excellent example to summarise the possible application of UDDI:

*A users wishes to purchase a widget (for example a book or CD). The global UDDI directory is then searched for companies that sell of provide widgets. In addition to locating such companies and providing the user with contact details (such as name, address, phone numbers, web pages and other services), the UDDI directory also provides some technical information on how to buy a widget electronically. One company may offer a web forms based approach so that a widget can be purchased*

*by sending the buyer's details over an HTTP connections; another company may use EDI (Electronic Data Interchange); a third may use a published SOAP Application Programming Interface (API). In theory, enough information should be available via UIIS for the software being used to be able to automatically configure itself to interact with those services. From the perspective of the user, the purchase of a widget happens transparently despite different companies offering similar services via different interfaces.*

### **Resource Description Framework (RDF) & the JISC**

Most are by now familiar with the Resource Description Framework (RDF). Although the standard will not directly impinge upon the work of SPEIR, it is probably worthwhile acknowledging the wide spread deployment of the standard by the JISC.

The RDF is a universal format for data on the Web. By using a simple relational model, RDF allows structured and semi-structured data to be mixed, exported and shared across different applications. RDF data describes a wide variety of 'things', and where XML schemas merely describe documents, RDF (and 'OWL' schemas too) describe actual things. This expedites greater re-usability. Indeed, XML may provide interoperability within one application; RDF provides interoperability across applications.

RDF essentially began as a framework for metadata; providing interoperability between applications that exchange machine-understandable information on the Web. RDF emphasises facilities to enable automated processing of Web resources and as such provides the basic foundations for supporting the Semantic Web. RDF can be applied to improve search engine capabilities, or in cataloguing for describing the content and content relationships available at a particular Web site, page or digital library. RDF can also be applied by intelligent software agents to facilitate knowledge sharing and exchange.

In essence, RDF provides the following features (W3C, 2000):

- Interoperability of data.
- Machine understandable semantics for metadata.
- Better precision in resource discovery.
- The ability to future proof applications as schemas evolve.

Further RDF development will soon - if not already - yield the following:

- A uniform query capability for resource discovery.
- A processing rules language for automated decision-making about Web resources.
- Language for retrieving metadata from third parties.

In summary, RDF provides the basis for generic tools for authoring, manipulating, and searching machine understandable data on the Web thereby promoting the transformation of the Web into a machine-processable repository of information. An example is included below for illustrative purposes. The following code would be inserted into the <head> of an HTML or XHTML document:

```
<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:dc="http://purl.org/dc/elements/1.1/">
  <rdf:Description rdf:about="http://doc"
    dc:creator="Harry Potter"
    dc:title="Harry's Wizardry Document"
    dc:description="My best spells with which to defeat a Dementor."
    dc:date="2004-07-15" />
</rdf:RDF>
```

### **Other Developments: SRW & SRU**

Although the current JISC IE architecture is based on the aforementioned technologies, JISC have acknowledged that future reappraisals will probably incorporate greater use of other



Web services, particularly the use of SRW and SRU (Powell, 2004). It should be noted, however, that although these technologies are relatively new, the overriding concepts underpinning the IE architecture remain much the same. Nevertheless, it is worthwhile taking note of both standards.

The 'Search/Retrieve Webservice' (SRW) is an XML oriented protocol designed to eliminate those barriers normally associated with conducting distributed searches and other information retrieval operations across the Internet. It uses existing, tried and tested, and easily available technologies such as SOAP and XPath in order to perform what hitherto has been executed using proprietary solutions. The design and development of SRW has been informed by 20 years of experience with the Z39.50 information retrieval protocol, and is reputed to be both robust and easy to understand, whilst simultaneously retaining those aspects of Z39.50 that made it so popular.

The protocol can be transported in one of two ways, either via SOAP or as parameters in a URL. The latter form of transportation is known as 'SearchRetrieve by URL' (SRU). Since SRU does not assimilate the request via a series of elements embodied in an XML form, the request is encoded in the URL parameter ('Request Parameters').

Of course, the primary function of SRW is to allow an end user to search records residing on a remote database. This is achieved using the 'searchRetrieve' operation, in which the client sends a 'searchRetrieveRequest' and the server responds with a 'searchRetrieveResponse'. The request has several parameters, most of which are optional. The response is primarily a list of XML records that matched the search, along with the number of records matched.

Currently, record schemas used in SRW include Dublin Core, Online Information Exchange (Onix), Metadata Object Description Schema (MODS), and MarcXml. However, other schemas can be defined locally. Further details on SRW and SRU, the specification, and guidance on implementation can be gleaned at the ZING SRW website. (See References)

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## **User Profiling: Victorian Times Case Study**

### **Appendix 6 Final Report to the Scottish Library and Information Council (SLIC) on the SPEIR Project**

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**Published: CDLR, Glasgow, 2004**

## Appendix 6: User Profiling: Victorian Times Case Study

### 1. What is Victorian Times?

Victorian Times (<http://www.victoriantimes.org/>) is a web-based archive of digitised materials relating to social, political, and economic conditions in Victorian Britain. These materials are complemented by educational resources which cover a wide range of user levels - from primary school pupils, to University researchers and lifelong learners. The service is implemented via the Index+ Content Management System. This is an off-the-shelf software package with bespoke elements developed for the project by System Simulation Ltd.

### 2. How is user profiling implemented in VT

As Victorian Times is intended to cover a wide range of user levels, some sections of the site are designed to deliver content tailored to the educational level of the user. This is achieved through a system of user profiling based on educational levels which are defined in a controlled vocabulary within the Index+ database.

(1) A2 Level	(1) AS Level
(1) Further / Higher Education	(1) General Interest
(1) Scottish Secondary (15-18)	(2) GCSE
(2) NC Key Stage 3 (Levels 5-10)	(2) Scottish Secondary (11-14)
(3) NC Key Stage 2 (Levels 3-5)	(3) NC Key Stage 3 (Levels 3-5)
(3) Scottish Primary (5-7)	(3) Scottish Primary (8-11)
default	

When a user begins a session on the Victorian Times site, they are automatically assigned a session ID and a session file is created which holds a small amount of internal CMS information, including the current level of the user e.g.

```
v1;T_57;0;T%00+timestamp%00T_08/07/2004
19:09:08%00+level%00T_default%00;
```

At the start of a session, the level variable is set to "default" and is updated as and when the user selects an explicit educational level in the course of navigating the site e.g.

```
v1;T_57;0;T%00+timestamp%00T_18/08/2004 10:56:00%00+level%00T_(1)
Scottish Secondary (15-18)%00;
```

As the user navigates through the site, their session ID is passed as a URL parameter whenever an HTTP connection to a new page is made e.g.

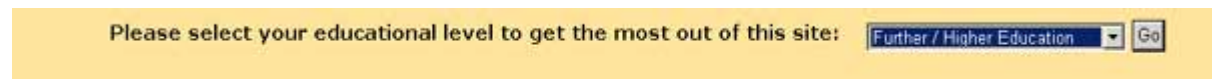
```
http://www.victoriantimes.org/ixbin/hixclient.exe?_IXSESSION_=tU0ty23GYiG&
 IXACTION_=file&_IXFILE_=/topics/health.html
```

Some page templates within Victorian Times contain conditional expressions which control the display of pages based on the value of the **level** variable. Further details are given below.

### 3. How is user profiling used in Victorian Times?

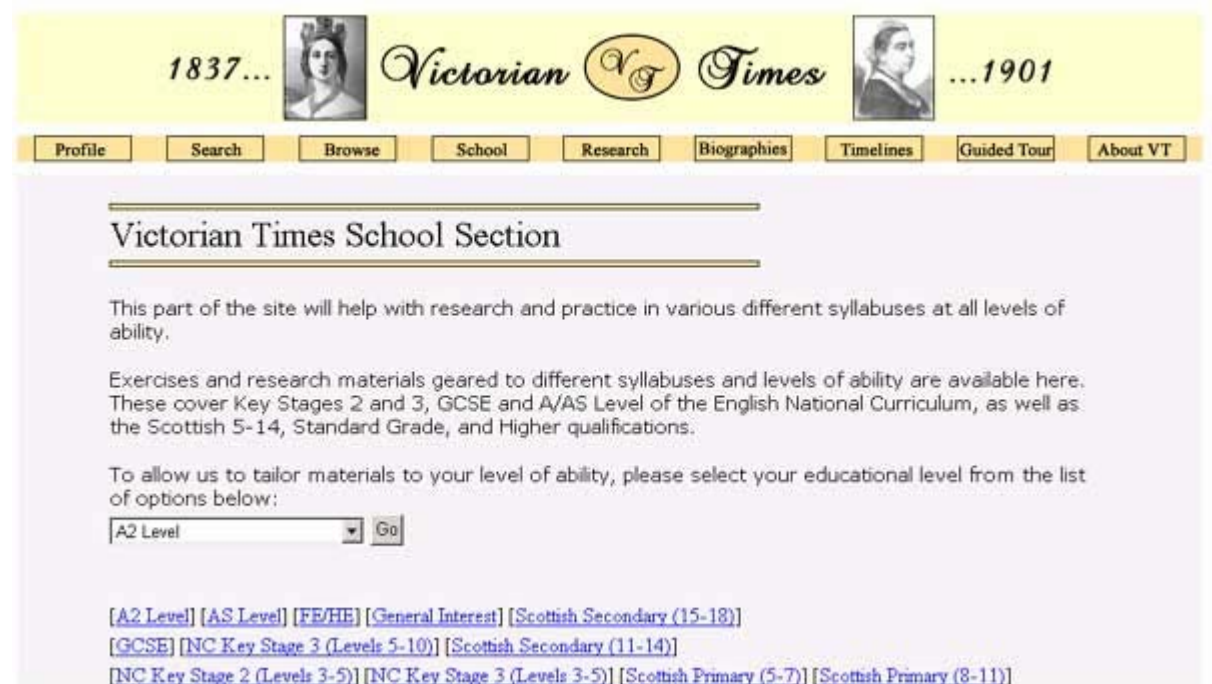
User profiling is used to enable or restrict the delivery of some content to users of the Victorian Times service within the **School** section of the site, and to tailor the difficulty of document extracts delivered to the educational level of the user.

When a user first visits the front page of the service they are offered a chance to set the level of material they are interested in:



Users can choose to set their educational level at this stage, or can browse the site without setting an explicit level. However, when the user enters the **School** section of the site, the CMS checks the value of the **level** variable within the users session file. If no explicit value has been set for **level**, then the user is compelled to enter a user level before they can proceed further into the **School** section.

A user can change their user profile at any time by clicking on the **Profile** button.



The user is then taken to a standard frontpage for the **School** section,

---

## Victorian Times School Section

---

This part of the site will help with research and practice in various different syllabuses at all levels of ability. When you click on the link below, you will be taken to the syllabus which most closely matches your educational level.

Exercises and research materials geared to different syllabuses and levels of ability are available here. These cover Key Stages 2 and 3, GCSE and A/AS Level of the English National Curriculum, as well as the Scottish 5-14, Standard Grade, and Higher qualifications.



**Pupil Pages**



**Teacher's Guide**

Click on the image of the pupils to view educational resources, or on the teachers head to view the teachers guide to *Victorian Times*.

When this page is generated by the CMS, the link attached to the **Pupil Pages** icon is determined by the contents of the **level** (i.e. the current user level) in order to direct the user to the home page of the appropriate curriculum.

One of the core components of the **School** section is a collection of extracts from the digitised documents within Victorian Times. These are accompanied by a series of questions for learners to consider when reading the extracts. To cater for the wide range of educational levels involved, 2-3 different versions of each extract are available, and tailored to different reading ages.

When the user arrives at one of these pages, their educational level is checked via their session ID, and the version of the extract which is most suitable to their level is displayed.

3. Besides poor health, what other effects on the inhabitants would these houses have had?

**Extract:**

" Mr. William Rayner, the medical officer of the Heaton Norris district of the Stockport union describes the condition of a part of the population of that place:

The places in which fever mostly occurs in my district, are Shepherd's Buildings and Back Water Street, both in the township of Heaton Norris. Shepherd's Buildings consist of two rows of houses with a street seven yards wide between them. Each row consists of what are called back and front houses - that is two houses placed back to back. There are no yards or out-door toilets. The privies are in the centre of each row, about a yard wide. Over them there is part of a sleeping-room. There is no ventilation in the bedrooms. Each house contains two rooms, i.e., a living room, with a sleeping room above; each room is about three yards wide and four long. In one of these houses there are nine persons belonging to one family, and the mother just about to give birth. There are 44 houses in the two rows, and 22 cellars, all of the same size. The cellars are let off as separate dwellings. These are dark, damp, and very low, not more than six feet between the ceiling and floor. The street between the two rows is seven yards wide, in the centre of which is the common gutter, or more properly sink, into which all sorts of refuse is thrown. "

[Simpler Version of Extract](#)

[Harder Version of Extract](#)

[How to read a source](#)

A simpler version of this extract is available. Click on the icon to view it.

A harder version of this extract is available. Click on the icon to view it.

Below the extract, there are links to simpler or more complex versions of the extract so that, if necessary, the user can move to a level they are comfortable with.

#### 4. How might user profiling be extended?

As currently implemented, user profiling plays a relatively small but significant part in the delivery of the Victorian Times service. However, the functionality of the Index+ software is such that user profiling could be extended in a number of ways to enhance service delivery.

- Currently, the same basic set of page templates are used for each user level, with some display features determined by the user level. It is feasible for there to be much more extensive variation in the template display depending on the user level.
- Currently, a standard CSS (Cascading Style Sheet) is utilised for all user levels. Index+ allows different Style Sheets to be automatically associated with different user levels.
- Each users profile is ephemeral, and lasts only as long as their session on the Victorian Times site. However, the Index+ system is capable of supporting permanent user profiles based on a username/password system. This functionality would potentially allow for the development of a personal learning environment within Victorian Times.
- At the present time, no restrictions are placed on the educational levels which users can select. The CMS has inbuilt functionality which could, if desired, restrict access to higher user levels to those users who successfully complete a series of quiz questions.



**CPAG: Scotland's Culture Web Testing**

**Appendix 7  
Final Report to the Scottish Library and  
Information Council (SLIC) on the SPEIR  
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**Published: CDLR, Glasgow, 2004**



## Appendix 7: CPAG: Scotland's Culture Web Testing



A series of tests were commissioned from an external organisation (CC Technology Ltd) to ensure that the portal web pages met criteria outlined by guidelines such as, W3C WAI accessibility standards and the e-Government Framework (e-GIF). It was felt the issues raised by testing would help inform the portals ongoing development and ensure the accessibility to the widest possible audience.

The tests were to look in detail within the criteria listed below, at a selection of web pages/templates:

- Accessibility and Usability.
- Browser compatibility.
- Download times.
- W3C html/ xhtml and Cascading Style Sheet standards compliance.

A decision was made that the 'search' section (Dynix IPAC) should not be tested in detail at this stage.

### Summary

The report comments that *"significant consideration and effort has been applied during the design of the templates and their implementation in the content management system to create a website that is navigable, accessible, correctly coded and compatible with a range of browsers"*.

Minor alterations will increase the usability and accessibility of the site, but "none of these will cause express difficulty for visitors to the site; they are required for completeness, they do not impinge upon the functionality of the site".

Overall the site was felt to be a unique facility, and will meet accessibility standards by adding access keys (for example: pressing *Ctrl* and 'S' to open the sitemap) and links at the top of all pages, to allow those with screen readers to 'skip repeated navigation' within the graphic version. The site will meet the requirements of the W3C WAI 'A' or Priority 1 standards, once the changes have been implemented. [Changes now implemented.](#)

If these changes are made to the graphic version, the point has been raised whether it is necessary to offer a text version.

Some of the main points raised by the testing that may need further consideration:

### Clarity of purpose

- Purpose and scope of site is unclear from the homepage.

*"After a brief browse of the site users found it easy to understand that the portal is a searchable resource of Scotland's Culture, however they found it difficult to understand the scope of what they were searching against and therefore, what they could best use the site for"*.

- The tag line is confusing – Creating the future...minding the past.
- The report comments that *"the site function is not to be creative"*.

### Design

- Commented that the site needs a slicker design to compete favourably.

- Banner image uses a cold palette and does not reflect the warmth and vibrancy of the nations culture – Prominent use of the banner (in this colour way) required by the Executive.
- Homepage: The page fits comfortably on an 800x600 screen size, but should not restrict the information that could be presented vertically.

### **Usability**

- Unclear whether links would take them out of site or further into the portal, particularly in homepage and browse pages. The report mentioned that some of the Spotlights on the homepage take the user away from the portal, rather than deeper into its content.

This has now been amended; 2 top spotlights now take the user out of the site. A separate spotlight section has been added highlighting resources within the portal.

Sub pages have since been developed to include a warning that, 'links within this page will open in a new window'.

### **Functionality**

#### **Search**

- It may require an explanation of scope of current content on the search page/lpac home, whilst in its developmental state.

#### **Browse/ Directory**

- Presented logically and works well – note comment about links opening in new windows.
- 'Go' - buttons to include 'Cairns' and 'Scone', to be made clearer of scope of search performed. This may cause space problems as more specialist searches are added and has now been replaced by the Topic Directory.

#### **Help**

- Pages are well written and explain the function of the site well.

#### **Efficiency**

- Download times for the page average from 20 -12 seconds, depending on connection rate.
- lpac searches execute with very fast response times.
- Cairns search can be slow, this is a known problem. The report stated, "*In mitigation this is a specialist search and is unlikely to gain the casual use that the ...lpac search may receive*".

#### **Navigation**

- Navigation within the site is clear, with the use of 'bread crumbing',
- Sitemap link could be moved to the top navigation bar.

### **Text Only Version**

- "It is the policy of the W3C that text only sites are recommended only when a website does not meet the basic standards of accessibility, as it sets out in the WAI guideline. Scotland's Culture meets and exceeds these standards...It is our opinion that the text version of the website is not required ... As long as the development of the website continues to use good accessibility practices the website will achieve more for all the community, disabled or active, through a single accessible interface."



## **Scottish Pilot Terminologies Server**

### **Appendix 8 Final Report to the Scottish Library and Information Council (SLIC) on the SPEIR Project**

**A. Shiri || G.Macgregor  
Centre for Digital Library Research  
Strathclyde University**

## Appendix 8: Scottish Pilot Terminologies Server

### Scottish Terms mapped to DDC

The terms in the following table have been drawn from a range of different Scots dictionaries and Scottish Bibliographies Online. All of the terms have been searched for in the CAIRNS database in order to ascertain their literary and use warrant within a Scotland-focused resource. As such they can be viewed as good illustrative examples of Scots terms within Scottish portals and resources.

Scottish	English	DDC	DDC No
<b>Aliment</b> (CAIRNS) In Scots Law, <i>aliment</i> is maintenance or support claimed by one person from another, especially money paid by one spouse to another when a couple is separated but not divorced.	Alimony	Alimony	346.01663
<b>Bairn</b> (CAIRNS)	Child, baby	Children	<b>T1—0833</b> T1--0834
<b>Kirk</b> (CAIRNS)	Church	Church- - ecclesio logy	<b>262</b>
<b>Kist</b> (CAIRNS)	Chest, Box	Boxes and cartons	676.32
<b>Kye</b> (CAIRNS)	Cows, cattle	Animals raised for eggs and milk Ruminants and Camelidae Bovidae Cattle	636.08842  636.2
<b>Kyle</b> (CAIRNS)	A narrow sea channel	Canals and straits	<b>341.446</b>
<b>Laddie</b> (CAIRNS)	Boy	Boys	155.432
<b>Loch</b> (CAIRNS)	Lake	Lakes, ponds, freshwater lagoons	<b>T2--1692</b>
<b>Hogmanay</b> (CAIRNS)	New year's eve	New year	394.2614
<b>Machair</b> (CAIRNS)	Low-lying coastal land formed from sand and shell fragments deposited by the wind	Nearshore ecology	577.78
<b>Provosts</b> (CAIRNS)	Mayors	Mayors—public administration City managers—public administration	352.23216
<b>Reivers</b> (CAIRNS)	Pirates, plunderers	Pirates	910.45
<b>Hert</b> (CAIRNS)	Heart	Heart	612.17
<b>Hairst</b> (CAIRNS)	Harvesting	Harvesting	631.55
<b>Brae</b> (CAIRNS)	A steep bank or hillside	Coastal regions	551.457
<b>Bannock</b> (CAIRNS)	A round, flat loaf	Cakes	641.8653

## Scottish Pilot Terminologies Server (Screen Shots and annotations)

For illustrative purposes, all Scottish terms mapped to DDC in the table above can be searched for at the Scottish pilot terminologies server. The Scottish pilot terminologies server is available at: <http://hilt pilot.cdlr.strath.ac.uk/pilot/top.php>

Below are the screen shots and annotations for the Scottish term, 'Aliment'.

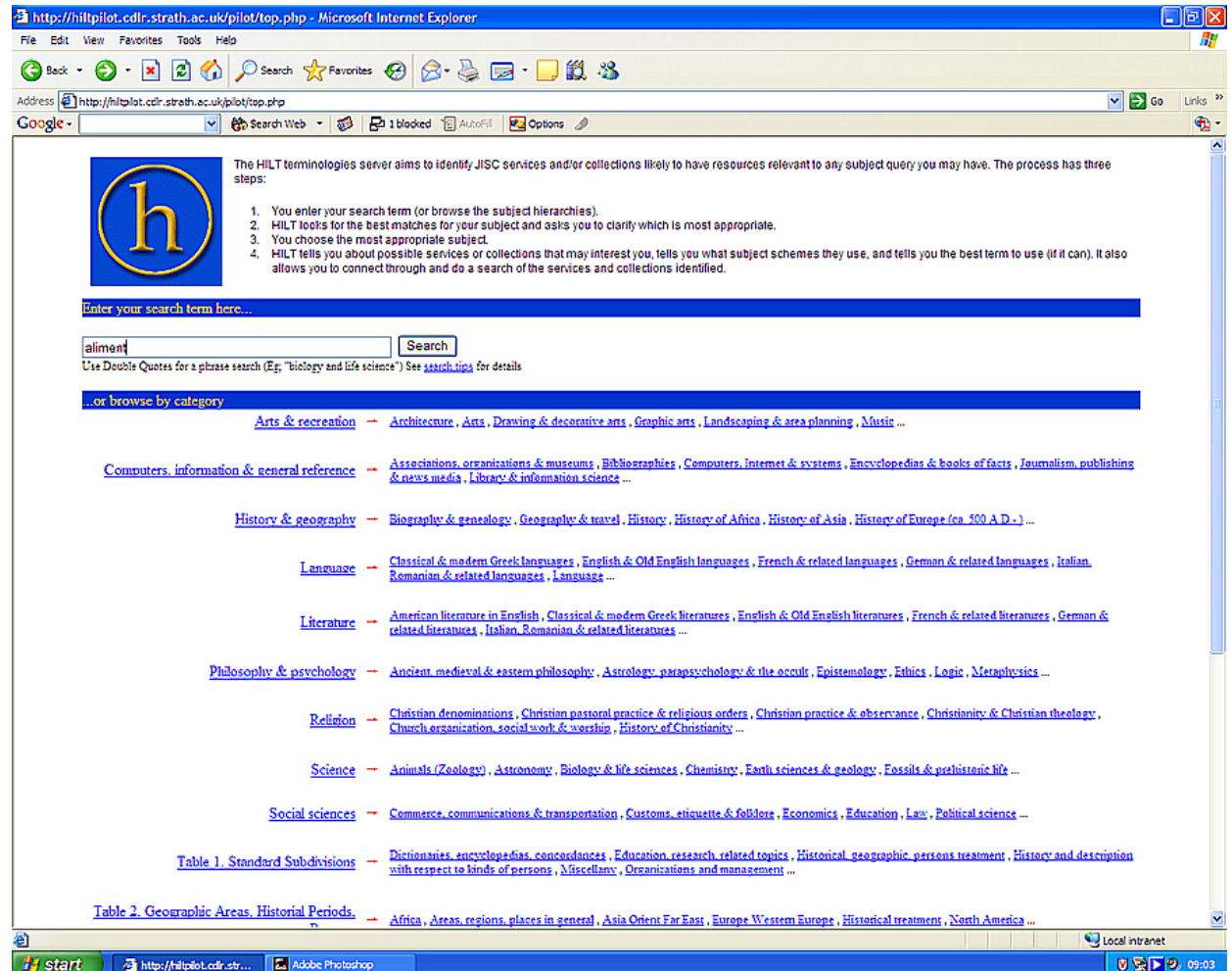


Figure 1 - Home page of the pilot Scottish terminologies server. Search for Scots term 'aliment'.

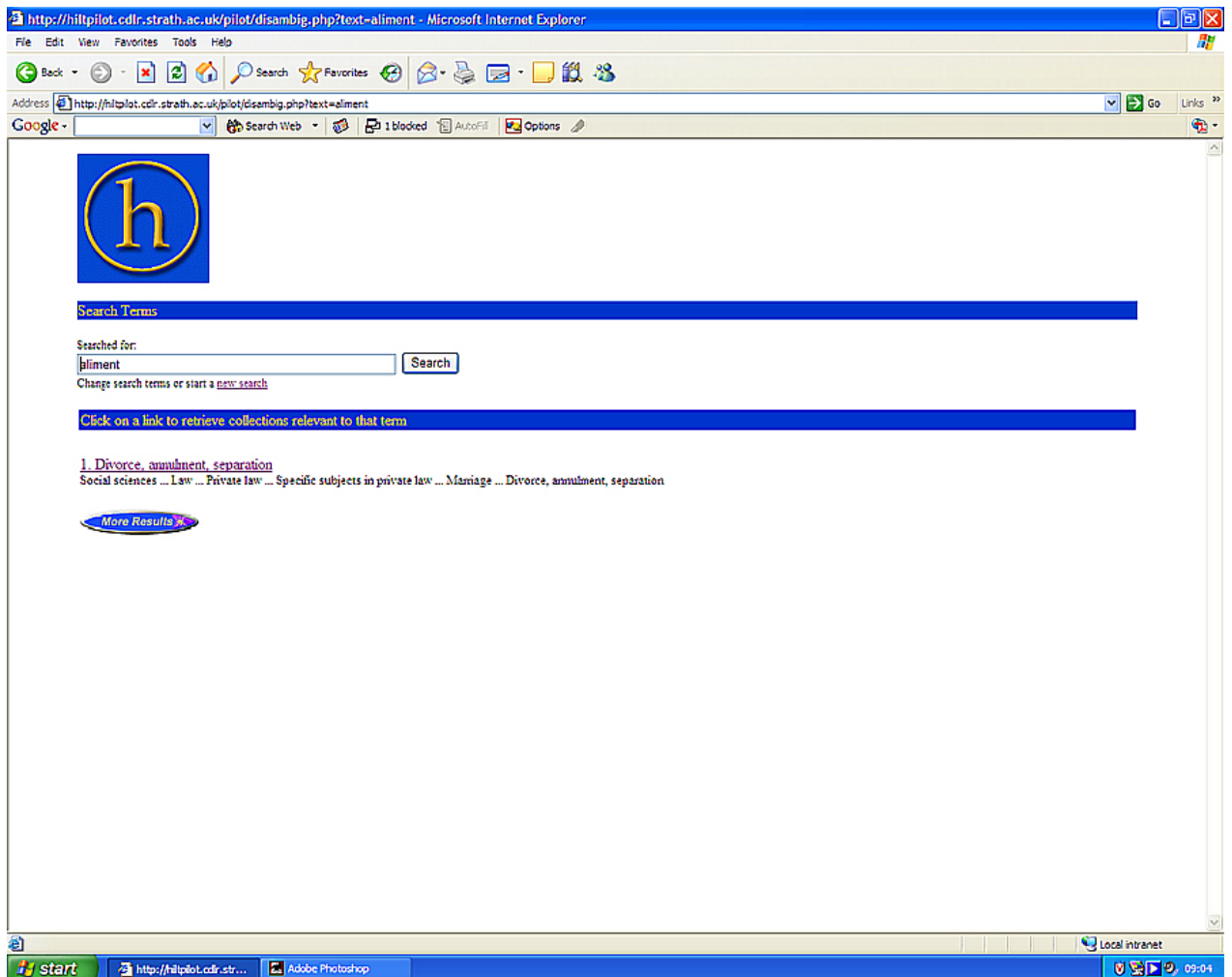
Figure 1 (above) is a screen shot of the pilot Scottish terminologies server home page.

The term 'Aliment', along with other Scots terms that were used for testing, were drawn from a range of different Scots dictionaries and Scottish Bibliographies Online. All of the terms were searched for in the CAIRNS database in order to ascertain their literary and use warrant within a Scotland-focused resource. As such they can be viewed as good illustrative examples of Scots terms within Scottish portals and resources, as well as sound terms with which to test the pilot Scottish terminologies server.

The purpose of these screen shots is to illustrate the disambiguation process used in the pilot Scottish terminologies server implemented by SPEIR and based on the HILTII architecture.

### Aliment (CAIRNS)

In Scots Law, *aliment* is maintenance or support claimed by one person from another, especially money paid by one spouse to another when a couple is separated but not divorced.



**Figure 2 – Disambiguation page of the pilot Scottish terminologies server for the term, ‘aliment’.**

**Figure 2** (above) is a screen shot of the disambiguation page HILT Terminologies server.

As can be observed from the screen shot, the Scots term, ‘aliment’, has been disambiguated by the server and mapped to the DDC equivalent: ‘Divorce, annulment, separation’.

Search results from JISC collections/services database - Microsoft Internet Explorer

Address: <http://h1201ot.cdr.stath.ac.uk/pilot/searchjiscdb.php?id=1375418&sense=1&text=Divorce,%20annulment,%20separation>

Google Search

**h**

**Search Terms**

Searched for:  
   
 Change search terms or start a [new search](#)

**Selected subject:**  
[Dewey: 21](#) > [Social sciences](#) > [Law](#) > [Private law](#) > [Specific subjects in private law](#) > [Marriage](#) > Divorce, annulment, separation

**Words mapped under:**  
 Divorce, annulment, separation  
[Annulment](#)  
[Separation](#)

**Subject terms in LCSH and their relationship:**  
 Support (Domestic relations) (statistical mapping)  
 Alimony (statistical mapping)

**Results from JISC collections / services database**  
 Searched for: Divorce, annulment, separation (Dewey No: 346.0166)

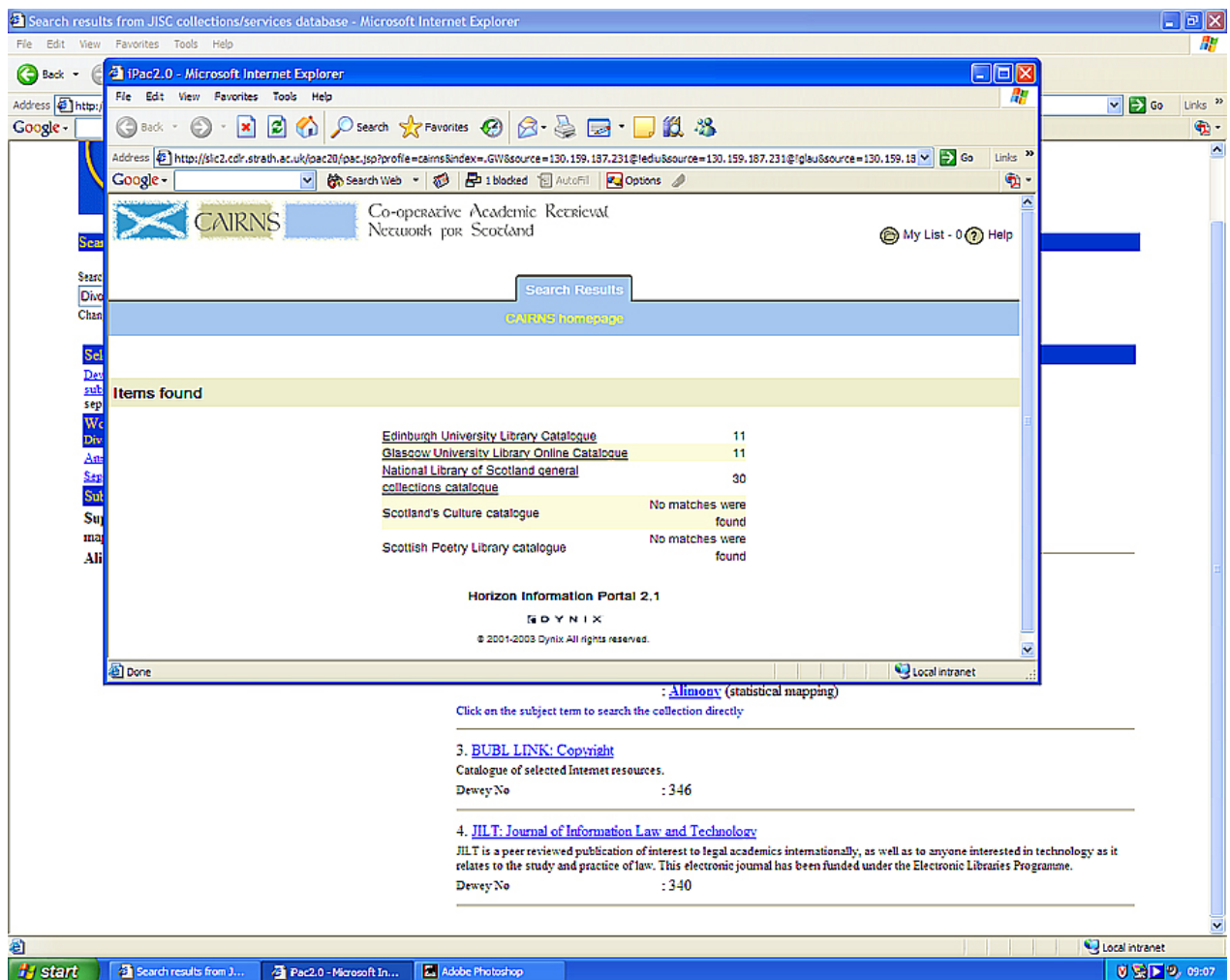
- CAIRNS general keyword search: [alimnet](#)**  
 Co-operative information retrieval network for Scotland  
 Dewey No : 346.0166  
 Associated Taxonomy : SPEIR  
 Subject Terms in Speir and their relationship : [Alimnet](#) (concept match)  
 Click on the subject term to search the collection directly
- CAIRNS subject keyword search: [alimony](#)**  
 Co-operative information retrieval network for Scotland  
 Dewey No : 346.0166  
 Associated Taxonomy : LCSH  
 Subject Terms in LCSH and their relationship : [Support \(Domestic relations\)](#) (statistical mapping)  
 : [Alimony](#) (statistical mapping)  
 Click on the subject term to search the collection directly
- BUBL LINK: Copyright**  
 Catalogue of selected Internet resources.  
 Dewey No : 346
- JILT: Journal of Information Law and Technology**  
 JILT is a peer reviewed publication of interest to legal academics internationally, as well as to anyone interested in technology as it

**Figure 3 - Collection selection page of the pilot Scottish terminologies server for the term, 'alimnet'.**

**Figure 3** (above) is a screen shot of the collection selection page of pilot Scottish terminologies server.

The server, having mapped the Scots term 'Alimnet' to a corresponding DDC subject heading and DDC number, has indicated that there are several collections in which pertinent resources could be found.

As can be observed from the screen shot, the server has provided a possible result in CAIRNS for a concept match for 'Alimnet' and a statistical mapping ('Support (Domestic relations' and 'Alimony'). Possible matches have also been found in a variety of JISC services and collections.



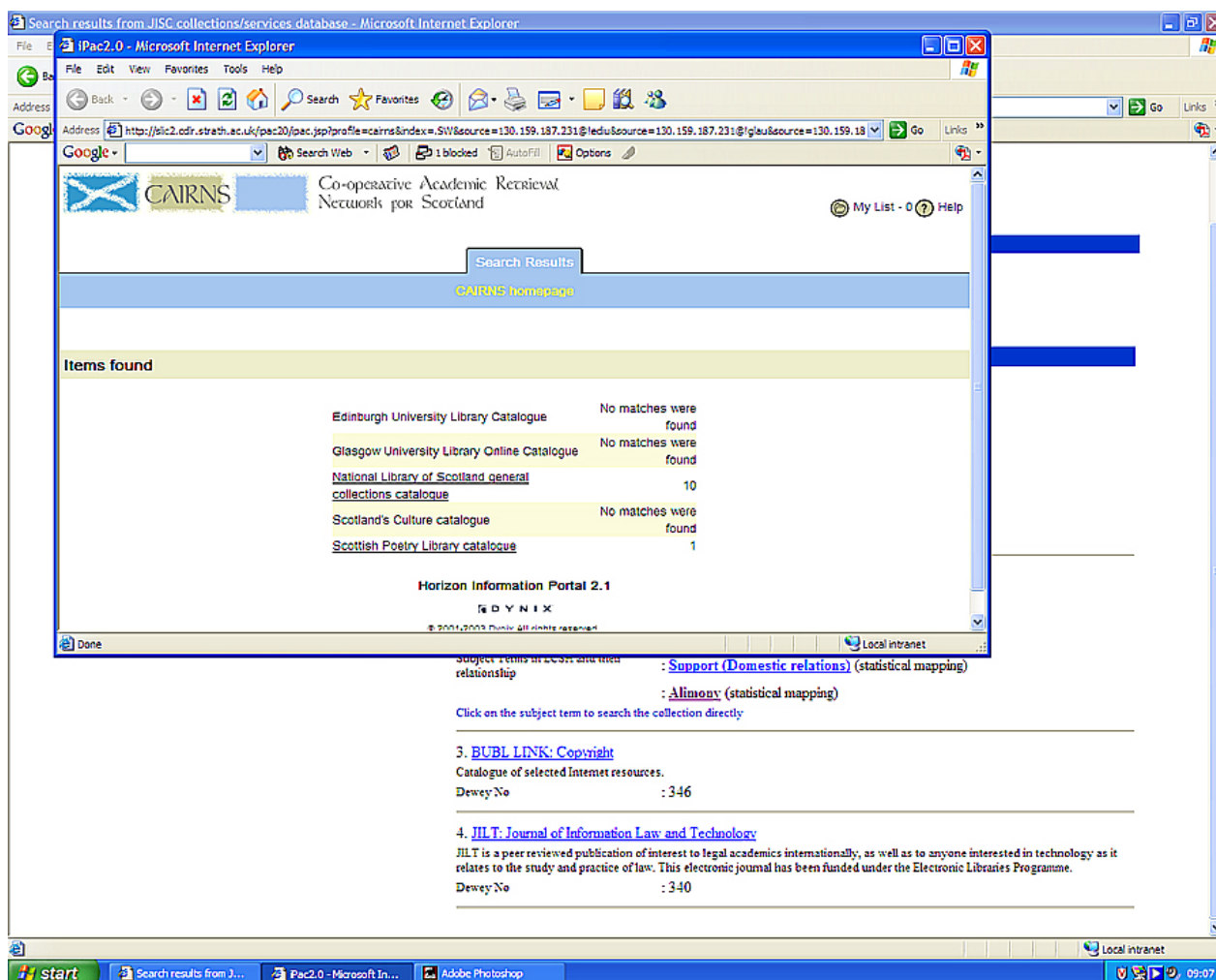
**Figure 4 -** Screen shot of the pilot Scottish terminologies server illustrating a series of found items in CAIRNS.

**Figure 4** (above) is a screen shot of the pilot Scottish terminologies server, after conducting a search on CAIRNS.

The user, having 'clicked' on the concept match heading of 'Aliment' to automatically initiate a search on CAIRNS, is now presented with a series of results, including hits at Edinburgh University Library OPAC, Glasgow University OPAC and the NLS OPAC.

From this screen the user is left to navigate at his/her discretion within CAIRNS and explore the items that were found via this service.





**Figure 5 - Screen shot of the pilot Scottish terminologies server illustrating a series of found items in CAIRNS using mapped term.**

**Figure 5** (above) is a screen shot of the pilot Scottish terminologies server, after conducting an automatic search on CAIRNS using the mapped term, 'Alimony'.

The user, having 'clicked' on the statistical mapping of 'Alimony', automatically initiates a search on CAIRNS. As can be seen, whilst Figure 4 indicated hits at Edinburgh University Library OPAC, Glasgow University OPAC and the NLS OPAC, this search has different hits the NLS OPAC and the Scottish Poetry Library catalogue.

From this screen the user is left to navigate at his/her discretion within CAIRNS and explore the items that were found via this service. More significantly, these results highlight peaks in the information landscape that the user would hitherto have neglected for want of suitable retrieval tools.



## **CoSMiC Online Forum Facilities**

### **Appendix 9 Final Report to the Scottish Library and Information Council (SLIC) on the SPEIR Project**

**D. Nicholson || G. Macgregor  
Centre for Digital Library Research  
Strathclyde University**

**Published: CDLR, Glasgow, 2004**

## Appendix 9: CoSMiC Online Forum Facilities

### COSMIC E-Fora Experiment, 09/09/2004

#### Introduction

It is hoped that electronic forums or e-fora will play a key role in future communications within the SCIE and that they can also be used to involve professional groups in areas requiring analysis, discussion and agreement (interoperability issues, terminologies, collaborative collecting, the CoSMiC R&D Plan and similar). With this end in mind, CDLR set up a closed access CoSMiC site based on open source software called TikiWiki. This is function-rich and highly configurable software and was used by CDLR to explore controlled access to group-specific menus, e-fora, web-pages, and documents. The CoSMiC closed-access was configured to limit TikiWiki functionality to these areas, then used to field test the idea of using e-fora and other facilities to support SCIE communications and co-operative work.

The test was run on 9<sup>th</sup> September 2004 and lasted approximately 3 hours. The results are reported in this appendix under the various headings below.

#### Issues and oddities

The experiment highlighted several issues relating to the efficient and effective operation of the fora and the closed access site generally. These can be listed as follows:

Older browsers have difficulties displaying TikiWiki pages correctly. This appears to particularly affect early Netscape Navigator and Microsoft Internet Explorer browsers (versions 4.9 and below). These versions do not support CSS and more advanced Java scripting as they were released circa 1997/1998. This should not pose insurmountable difficulties since it is unlikely that large amounts of users will use a browser 7 years out of date. Indeed, the difficulties experienced by certain users were only highlighted because Navigator 4.76 was set their default browser, not because they used Navigator 4.76 as standard. Said one user:

*"I had a wee bit difficulty logging in this morning. When I clicked the URL in George's reminder email I was taken into Navigator 4.76 with much of the home page missing. I'm on here because I switched to Explorer. Anyone else experience difficulties?"*

Problems were occasionally encountered when participants were distracted at their host institution and consequently (and suddenly) withdrew from the discussion altogether. It was agreed via the forum that discussions should continue regardless and that not responding to a discussion should not be interpreted by other participants that they agreed with opinions stated. If a participant agrees with a point made then they should post a comment to that effect. Comments regarding these included:

*"Disappearing people: My view is when this happens we should probably just get on with it. Could be all sorts of reasons for people not replying, but they might want to re-join later in the discussion".*

*"What we should expect is that silence does NOT mean consent. If a participant agrees with what is being said, please reply saying "I agree" or whatever".*

*"I think you just get on with it. Presumably someone who has dropped off the forum for technical or other reasons can check the message archive and catch up that way".*

#### General Issues and Comments

Most participants involved felt it was a worthwhile exercise and are keen to embark in more involved discussions and meetings. However, some indicated that it would take them some time to feel confident in using the technology.

**Other specific comments:**

*"Doesn't seem to be too onerous in terms of attention - it's good to have it going on in the background, and not be hassled.*

*Ergonomics, etc. are ok - I guess it's a case of pressing buttons.*

*Having to enter a password for each reply/message is a pain - can't we get rid of it?<sup>74</sup>*

*Suggest we create a FAQ with hints, tips, etiquette, etc. for future reference and help others use the service.*

*Who is the housekeeper? Suggest we delete pilot message threads, etc. and try to keep things tidy".*

**Discussion Topic: the Draft COSMIC Response to the Cultural Commission**

The e-fora experiment highlighted several issues for discussion relating to, or impinging upon, COSMIC. These included:

1. What's wrong with COSMIC. How could we improve it?
2. The COSMIC response to the Cultural Commission.
3. Discuss new entries for the COSMIV R&D plan for next year.
4. Discuss the proposed Scottish Declaration on Open Access.
5. Discuss ways to improve WIDWISAWN.
6. Discuss terminology interoperability issues in Scotland.
7. Discuss a national policy for digitisation.

After deliberation via the forum it was decided participants would discuss topic #2. Several opinions were noted:

- o COSMIC should strive to give a response that was compatible with the views of all of the entailed domains, as well as undertaking an institutional response. However, it was recognised that providing a truly holistic response was difficult given the minimal input from the archives community.

*"There's not much going into the SPEIR final report about positive engagement by the archives domain (but a good deal about museums, due to SMC and Dylan Edgar, and about libraries). Also, at EC2004 the presentation from SCAN didn't seem to mention interoperability with other Scottish domains, and I got the impression that they favoured a UK-wide approach which, in my opinion, cannot be effectively sustained without some form of regionalisation.*

*Would it be possible to ask SCAN or NAS via CoSMiC if they are intending to respond to the CC, and what that response might be?"*

- o The phrase 'Scottish Common Information Environment' should be incorporated into the response. Comments included:

*"It helps to relate our work with the concepts of "information environments" emerging from JISC and UKOLN, and the not-quite-certain-if-nation-means-UK office for the Common Information Environment set up by JISC and MLA, amongst others. Also, SPEIR final report uses the phrase and explains the change of terminology, and that informs, in turn, the CoSMiC R&D plan".*

*"I agree totally about mentioning the "Scottish Common Information Environment". Shows that we are looking beyond Scotland in our thinking, and also shows how in*

<sup>74</sup> The answer is yes, we can. In fact, leaving the password 'on' was an oversight.

many respects we are leading the way in practice”.

- Suggestions were made as to how the Scottish Common Information Environment could be introduced into the response text:

“On the Common Information Environment, easy to add as follows:

*CoSMIC is a collaborative organisation supported by a wide range of key players active in archives, museums and libraries in Scotland. Working within a ‘Scottish Cooperative Infrastructure’ (see enclosed leaflet), it aims to co-ordinate and integrate collaborative work in the various domains to build and develop a well-organised, coherent, and interoperable ‘Virtual Scotland’ and to maximise the use of existing resources.*

*becomes*

*CoSMIC is a collaborative organisation supported by a wide range of key players active in archives, museums and libraries in Scotland. Working within a ‘Scottish Cooperative Infrastructure’ (see enclosed leaflet)>>, towards the creation of a multi-domain Scottish Common Information Environment.”*

*“I agree with the foregoing statements about the Common Information Environment.*

*I’m not so sure about the final paragraph of the submission though. I support the argument for a coordinating body or mechanism for libraries, archives, museums and galleries, but the final paragraph reads more of a sales pitch for CoSMIC I think that it undermines the preceding argument... it be worthwhile suggesting other options, or would you see that as a form of suicide note for CoSMIC”.*

## Screenshot

This is Tiki v1.8.2 (CVS) -Polaris- © 2002–2004 by the Tiki community Mon 23 of Aug, 2004 [19:43]

### COSMIC Menu

- Discussion Lists
- Forums
- Web Pages
  - COSMIC Web-site
  - WIDWISAWN
  - Interoperability Web
  - SCAMP
  - Projects Database

### Forums

name	topics	posts	ppd	last post	visits	Actions
<b>COSMIC_Collections</b> <i>COSMIC Collections - list for discussion and developmetn of Scottish collaborative collecting issues, including RCO/collection strengths, joint subscriptions, Open Access collections, digitisation, and so on</i>	0	0	0.00	Thu 22 of Jul, 2004 [16:48] by	17	
<b>Cosmic_Contacts</b> <i>Closed list for meetings dates, minutes of member groups, R&amp;D plan discussions, projects updates etc</i>	2	6	0.18	Mon 09 of Aug, 2004 [22:00] Re: First post... by imleod	67	
<b>COSMIC_Interoperability</b> <i>List for members of the COSMIC Interoperability forum - primarily to discuss content and ongoing maintenance of the COSMIC web pages associated with interoperability issues</i>	0	0	0.00	Thu 22 of Jul, 2004 [16:44] by	12	
<b>COSMIC_Issues</b> <i>COSMIC Issues - monthly or 3-monthly discussions on key topics (Strategy for Scottish Materials, RCO, CARMS and SCONE feedback, National Digitisation Policy, Terminologies, The SDDL, METS)</i>	0	0	0.00	Thu 22 of Jul, 2004 [16:41] by	6	

Page: 1/1

### Login

logged as: dnicholson  
Logout

[RSS](#)
[Wiki](#)
[RSS](#)
[Blogs](#)
[RSS](#)
[Articles](#)
[RSS](#)
[Image galleries](#)
[RSS](#)
[File galleries](#)
[RSS](#)
[Forums](#)
[RSS](#)
[Maps](#)

Übersetzen Sie diese Seite ins Deutsche

Done

Start | Inbo... | ECDL 200... | Mozilla F... | Microsoft... | 98% | 11:57



## **CoSMiC Leaflets**

### **Appendix 10 Final Report to the Scottish Library and Information Council (SLIC) on the SPEIR Project**

**D. Nicholson||G. Dunsire||A. Dawson||G. Macgregor  
A. Shiri||A. Joseph||A. Williamson||E. Jones**

**Centre for Digital Library Research  
Strathclyde University**

## **Appendix: 10 CoSMiC Leaflets**

The next six pages show images of three CoSMiC leaflets created as part of the SPEIR project. Each leaflet is an A4 page in landscape with printing on both sides of the page and folded in three to create the final product. The pages shown are as follows:

- CoSMiC Scottish Cooperative Infrastructure Leaflet – Front, back, and fold-over inside leaf;
- CoSMiC Scottish Cooperative Infrastructure Leaflet – Inner pages;
- CoSMiC Joint R&D Plan Leaflet – Front, back, and fold-over inside leaf;
- CoSMiC Joint R&D Plan Leaflet – Inner pages;
- CoSMiC Shared Central Services Leaflet – Front, back, and fold-over inside leaf;
- CoSMiC Shared Central Services Leaflet – Inner pages.

## The Scottish Cooperative Infrastructure

### function

To coordinate and integrate collaborative work in Scottish archives, libraries and museums, aimed at building and developing 'Virtual Scotland' and maximising use of available resources.

### current status

The COSMIC task group is working with the SLIC-funded SPEIR project and the Centre for Digital Library Research to develop various technical and organisational aspects of the infrastructure.

### future plans

A COSMIC joint R&D plan is under development and a mechanism to allow institutions and groups to contribute to its content is being discussed.

Future development will be driven by the R&D plan, via bids for funding (from the usual sources) from COSMIC groups or institutions.

### in a nutshell

#### What is the Scottish cooperative infrastructure?

A set of embryonic offline and online mechanisms to support collaborative work aimed at building and developing 'Virtual Scotland'.

#### Who supports it?

It is supported by the Confederation of Scottish Mini-Cooperatives (COSMIC), an organisation supported by a wide range of the key players active in the areas of archives, libraries and museums.

Visit COSMIC at the following URL:  
<http://cosmic.cdl.strath.ac.uk/>

#### Why is it necessary?

Users increasingly use and need distributed resources and finding tools, so cooperation is now essential as well as desirable.

Coherent distributed virtual libraries won't just happen. We must cooperate to manage retrieval and user environments.

#### How can I make contact?

By visiting the following URL:  
<http://cosmic.cdl.strath.ac.uk/contacts.html>

#### Where is this happening?

In the Scottish corner of the developing global information environment.



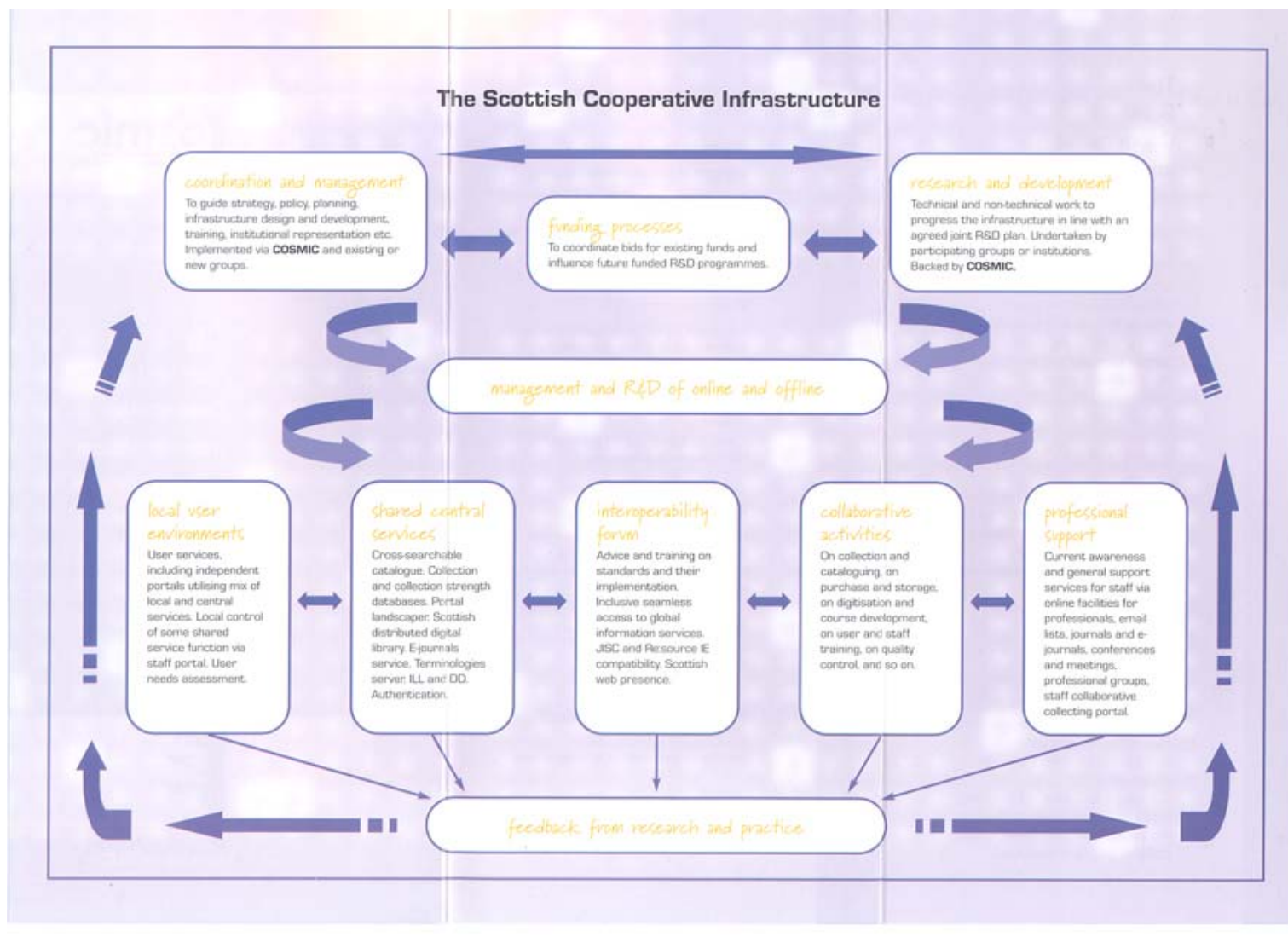
## The Scottish Cooperative Infrastructure

function  
current status  
future plans



Funded by SLIC





## in a nutshell

### What is COSMIC?

**COSMIC** is the Confederation of Scottish Mini-Cooperatives, an organisation supported by a wide range of key players active in the areas of archives, libraries and museums in Scotland.

### Why a COSMIC joint research and development plan?

**COSMIC** members are working to build and develop 'Virtual Scotland', a jointly managed distributed information environment serving all Scottish citizens. The **COSMIC** RSD plan is a statement of the agreed research and development priorities for the year it covers.

### How and when is the plan reviewed?

The plan will be reviewed annually by the **COSMIC** task group. A new draft will be agreed and circulated to accredited representatives of **COSMIC** member organisations. Feedback received will be utilised in finalising the revised plan.

### What is the primary focus of the plan?

The current focus is the development of a Scottish Cooperative Infrastructure (see leaflet on this topic for further information).

## the COSMIC joint R&D plan

### What is it?

The **COSMIC** RSD plan is a statement of the agreed research and development priorities for the year it covers.

### How is it used?

The RSD plan is used in two ways:

**COSMIC** organisations and their members seek funding from the usual sources to pursue aspects of the joint plan and receive backing from **COSMIC** when doing so.

**COSMIC** aims to encourage funding agencies to allocate resources to the priority areas specified in the plan.

### What is the current status of the plan?

The priorities in the current plan are being developed within the SLIC-funded **SPEIR** project (see <http://speir.cdlr.strath.ac.uk/>).

### Is there a more detailed version of the plan available?

Yes. On the **COSMIC** website at: <http://cosmic.cdlr.strath.ac.uk/Plan>

**Cosmic**  
The Confederation of  
Scottish Mini-Cooperatives

<http://cosmic.cdlr.strath.ac.uk/>

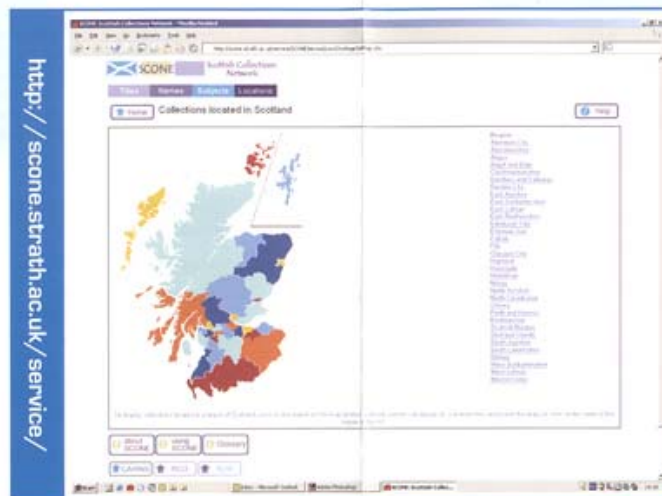
**Joint  
R&D Plan  
2004**

functions  
current summary  
review mechanisms

Funded by SLIC



**SCONE** is the **Scottish Collections Network**. It provides descriptions of collections of all kinds held in libraries, museums and archives in Scotland, as well as collections about Scottish topics held elsewhere. It also allows cross-searching of collections via **CAIRNS** where local Z-servers exist and access to stand-alone networked catalogues where these exist. Some of the many ways in which you can search and browse **SCONE** are listed below under *Guide*.



### Guide

The shot above is the "Map of all Regions" screen (click Map option under Location on home page). Other options include:

- The **Title** button allows you to search for words in the collection titles.
- The **Names** button allows you to browse the names of persons and organisations associated with collections.
- The **Subjects** button allows you to browse the collection subjects.
- The **Locations** button allows you to browse collection locations by selecting regions in Scotland.
- The **Home** button allows you to access further searching and browsing tools in **SCONE**.
- **RCO** is Research Collections Online, a browsable and searchable analysis of the subject strengths of the larger general libraries in Scotland. click the **RCO** button to link to the service.
- **SLIR Online** is the web version of Scottish Library and Information Resources. It provides addresses and contact details of libraries and other information services located in Scotland. Use the links below to search for libraries and contacts.
- The **CAIRNS** button links to the **CAIRNS** service. Further information on **CAIRNS** is available overleaf.



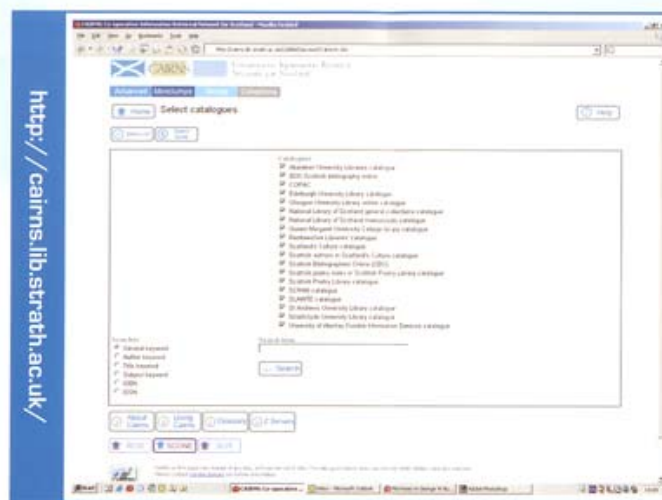
CAIRNS/SCONE, the SDDL and SCAMP

Shared  
Central  
Services  
2004/2005

Function  
Current Status  
Future Plans



**CAIRNS** is the Co-operative Information Retrieval Network for Scotland. It provides descriptions of information resources of all kinds held in libraries in Scotland, and online resources of interest to Scotland and its people. You can find items by searching many library catalogues simultaneously. See [Guide](#) below for more details.



## Guide

- The **Advanced** button takes you to the screen shown above, letting you select the catalogues you wish to cross-search. Catalogues are searchable by General Keyword, Author Keyword, Title Keyword, Subject Keyword, ISBN and ISSN.
- The **Miniclumps** button allows you to search a set of pre-defined **CAIRNS** catalogues for a special group of **CAIRNS** users. Groups include projects, library partnerships and cooperatives.
- The **Simple** button takes you to the simple search screen where you can keyword search all **CAIRNS** catalogues.
- The **Collections** button links you to **SCONE** where you can search Scottish collections (see details overleaf).
- The **Help** button in the top right hand corner of the screen will tell you how to get the most out of **CAIRNS**.
- If you are unsure of any of the jargon, click the **Glossary** button for thorough explanations.
- **RCO** is Research Collections Online, a browsable and searchable analysis of the subject strengths of the larger general libraries in Scotland. Click the **RCO** button to link to the service.
- **SLIR Online** is the web version of Scottish Library and Information Resources. It provides addresses and contact details of libraries and other information services located in Scotland. Click the **SLIR** button to use the service.
- The **SCONE** button also links you to **SCONE**. More information on **SCONE** is available overleaf.

## Shared Central Services

### Function

To minimise duplication of effort and enhance integration across the Scottish Common Information Environment by providing those facilities everyone needs as jointly managed shared central services – portal access to the **SCONE** collections database for example, or to the **CAIRNS** cross-searchable catalogue.

### Current Status

The SLIC-funded SPEIR project is:

- Upgrading and integrating **CAIRNS**, **SCONE** and **SCAMP**, **RCO** and **SLIR**.
- Extending their coverage to public libraries, FE and digital services.
- Creating a pilot version of a Scottish Distributed Digital Library (**SDDL**).
- Working with the **SAPIENS** e-Journal project.
- Building on an illustrative terminologies server.

Other relevant developments include the work of **NLS**, **SCURL** and **SLIC** to develop collaborative storage through **CASS** and the **SLIC ILL** initiative which will link a Scotland-wide pilot to **CAIRNS**.

### Future Plans

Further Scottish Common Information Environment development will be managed via the **COSMIC R&D Plan** see:

<http://cosmic.cdlr.strath.ac.uk/Plan/>

For further information on shared central services or any of the above please visit:

<http://cosmic.cdlr.strath.ac.uk/shared/>