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## **Learning Lessons Holistically in the Glasgow Digital Library**

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### **A Developing Digital Library**

The Centre for Digital Library Research (CDLR) [1] at Strathclyde University [2] in Glasgow takes an approach to research and development in digital library projects to help ensure that both lessons learned, and mechanisms and technologies developed are readily transferable from one project to another. One beneficiary of this approach is the Glasgow Digital Library (GDL) [3] project, an embryonic city-wide initiative, based initially around Glasgow [4], Glasgow Caledonian [5] and Strathclyde Universities [6], the Glasgow Tele-colleges Network, and Glasgow City Council Libraries and Archives [7], but aiming to make itself a virtual co-library of the majority of public institutions in Glasgow.

Initially financed through funding from the Research Support Libraries Programme (RSLP) [8] in the UK, the member organisations are working on a number of fronts to:

- Enhance existing collaboration in Glasgow,
- Explore the potential of the Clydenet metropolitan area network (MAN) as a delivery vehicle for content,
- Create a wholly digital library based in the first instance on electronic resources created by the institutions, public domain information, joint purchases and digitisation initiatives, but aiming in time to be a major digital resource library, and

- Support teaching, learning and research at all levels in the city, serving every kind of user with every (relevant) kind of resource in an intelligent, user-adaptive environment.

A key aim of the project is to focus on mechanisms rather than simply accumulating content. This involves:

- Development of a joint collections policy, informed by a collaborative approach to collection development, with eventual co-ordination through the (currently embryonic) Scotland-wide SCAMP [9] collections management portal. The goal of the joint collections policy is to avoid duplication of resources accessible elsewhere.
- Creation and development of a distributed cross-searchable GDL catalogue based on the software technologies utilised in the Scotland-wide CAIRNS [10] distributed catalogue, with agreed adherence to, and promotion of, CAIRNS metadata and technical standards to ensure ongoing interoperability.
- Reliance on a lightweight management team to agree upon, monitor and guide progress, as well as to plan future development.

To quote an early promotional text, the GDL aims to:

- Be a consortium for the city,
- Offer a distributed regional resource,
- Be part of the whole not an end in itself,
- Be standards-based,
- Negotiate cost-cutting via city-wide licences,
- Provide every possible useful resource from data sets to electronic course materials and e-prints,
- Identify digitisation opportunities and priorities,
- Encourage electronic content creation (e.g., electronic learning modules), and
- Focus on gradual integrated development not just content accumulation.

## **1. The GDL in Context**

The decision to create the GDL was a response to a specific set of environmental contexts, all of which continue to influence its development to a greater or lesser extent.

Globally, we are at the dawn of the 'Information Age', and the desire to be at the forefront of developments, on the one hand, and to provide seamless access to everything

everywhere for everyone, on the other hand, is as strong in Glasgow as it is in Sydney, Washington or Helsinki.

## **The United Kingdom (UK)**

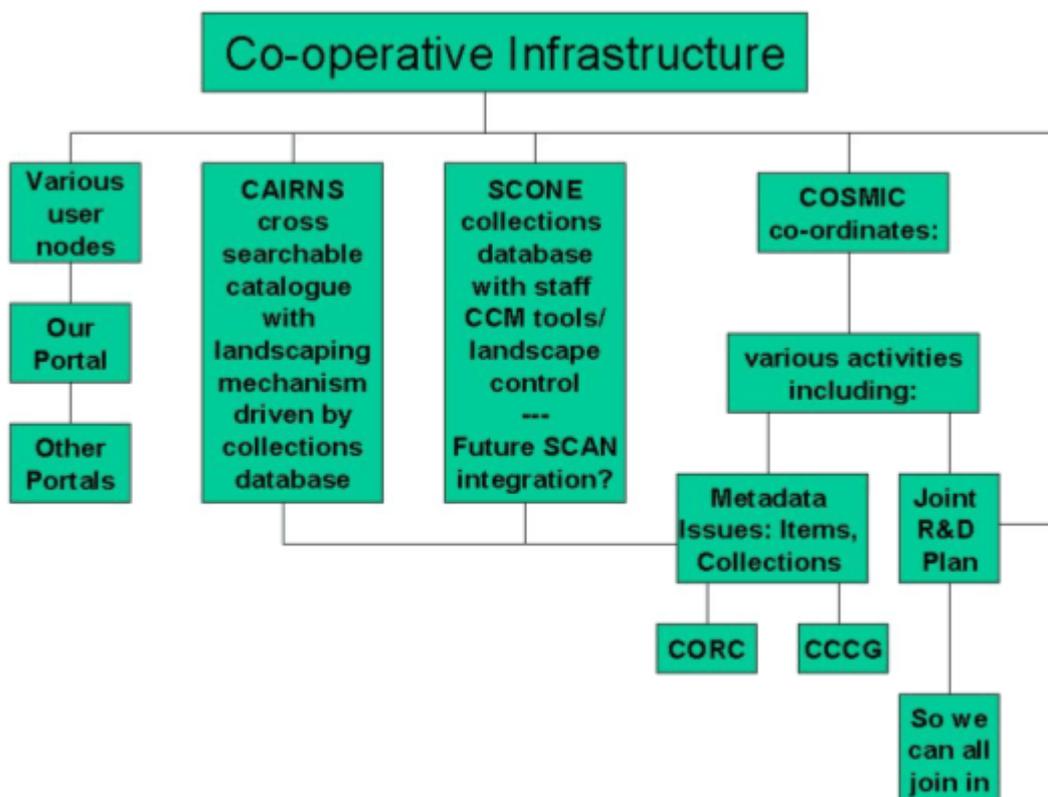
In the UK, Higher Education (HE) and Further Education (FE) institutions are developing the distributed national electronic resource (DNER) and designing the JISC Information Environment [11], whilst in the public library sector, the Peoples Network [12] is being rolled out as a core element in a political agenda to improve social cohesion and social inclusion through greater access to online learning. The GDL includes all these sectors and is pooling their expertise to facilitate the creation of a learning continuum in Glasgow.

## **Scotland**

Social inclusion and democracy are major issues in Scotland—where we have a parliament sitting in Edinburgh for the first time in 300 years—and we are increasingly looking for ways to do things for ourselves, believing that small can be beautiful if projects such as the GDL stay neat and nimble. One positive result of these efforts is the existence of an operational link between the Scottish Executive [13] and the information community through the Scottish Library and Information Council (SLIC) [14]. SLIC has already been consulted on matters such as how best to organise information in 'Digital Scotland' [15] and has been asked to take the lead in key initiatives like the development of a Scottish Cultural Portal—signs that the Executive is keen to make our presence and culture felt in the new virtual environment.

We also have a fairly widely accepted vision for moving forward in the Scottish information networking scene. This vision is built around a developing co-operative infrastructure that has four key elements (see [Figure 1](#) below):

1. A Z39.50 distributed union catalogue system based on a collections database with a dynamic landscaping facility. Amongst other things, the catalogue is designed to be cross-sectoral and cross-domain, to cover both hard-copy and electronic resources, and to be globally interoperable.
2. A collections database or databases with a staff management portal to support collaborative collection management and landscaping control.
3. A range of institution-, organisation-, or group-specific portals sharing these central services
4. Co-ordination at human and inter-organisational levels through the Confederation of Scottish Mini-Co-operatives (CoSMiC) [16].



**Figure 1: Scottish Co-operative Infrastructure**

The GDL and other regional co-operatives are key players in CoSMiC, facilitating the development of a co-operative infrastructure by agreeing on metadata standards, promoting collaborative cataloguing of electronic resources, and developing an integrated set of joint R&D plans for the various sectors, domains, regions, and special interest groups, one of which is the Glasgow Digital Library.

## Glasgow

As a city, Glasgow promotes a new socially inclusive and digitally driven educational vision and strategy, and pilots the concept of "The Learning City" [17]—breaking down traditional sectoral boundaries such as primary or tertiary education to encourage a seamless regional approach to education. Technology such as the Clyde Virtual University [18], developed for Higher Education (HE) in Scotland, is being used to enable access to learning materials in both schools and Further Education (FE). The creation of the GDL was strongly influenced by 'The Learning City' agenda, and GDL also takes an active role in breaking down sectoral boundaries.

## 2. Holistic Research and Development

Although it is a city-wide collaboration, the current focus of Glasgow Digital Library developments is the CDLR at Strathclyde University. Set up in 1999 to 'do quality research with a focus on practical outcomes on a wide spectrum of digital library and digital learning issues', the Centre is a collaboration between the practitioners of the University's Information Resources Directorate and the academics of the Computer and

Information Sciences Department. The CDLR approaches research and development of the distributed information environment in a holistic way. 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, this 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. One practical implication of this is that projects such as the Glasgow Digital Library are undertaken in an R&D environment rich in a range of inter-related projects and initiatives that study, feed on, and inform each other and influence the development of the whole.

### **3. How Other Projects Inform the GDL**

A look at some of the other CDLR projects currently in place will help show how the holistic approach benefits the GDL.

#### **HaIRST and the Digital Information Office**

The HaIRST project [19], and the related Digital Information Office [20] have no direct links with the GDL, yet they have an impact on GDL because these projects are concerned with locally created electronic teaching and research resources in HE and FE institutions in Scotland and, hence, in Glasgow. Between them, HaIRST and the Digital Information Office are concerned with managing these electronic resources, harvesting related metadata, integrating OAI based e-prints catalogues with Z39.50 catalogues, developing institutional and inter-institutional collection policies and, above all, fostering the institutional conditions that encourage their creation. As such, HaIRST and the Digital Information Office look beyond the simple provision of GDL resources to the wider context of the environment in which the resources are developed, and help encourage and extend a supportive backdrop in which the GDL can flourish.

#### **Aspect, Springburn, and Red Clydeside**

Aspect [21], Springburn [22], and Red Clydeside [23] are three small digitisation initiatives.



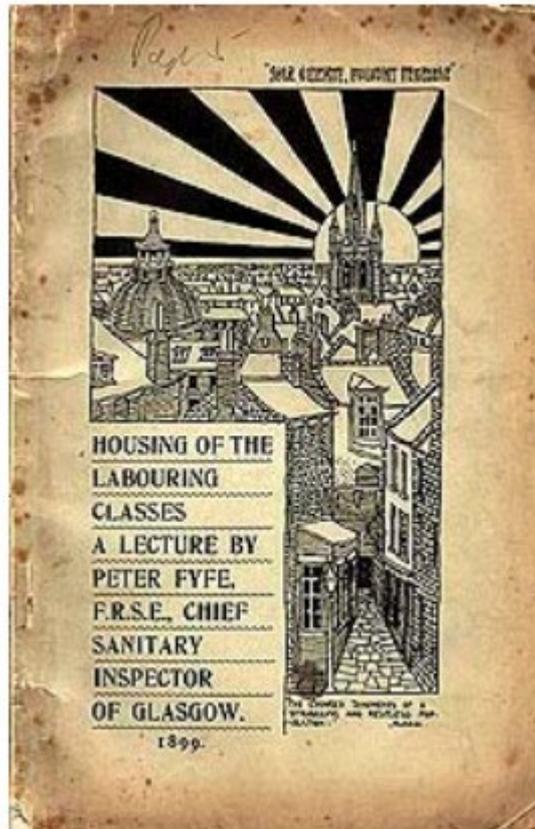
**Candidates from Aspect (left) and Party Logos from Aspect (right)**

Aspect is digitising political pamphlets from the first Scottish parliament elections in 300 years.



**Caledonian Railway engine no.123, built 1886, from Springburn Community Museum**

Springburn is digitising photographs and documents from the Springburn Community Museum in Glasgow.



### Image from the Red Clydeside Digitisation Project

Red Clydeside is digitising materials related to a widely known Scottish socialist movement.

Funding for all three projects was secured through the efforts of the GDL librarian, Jane Barton, but they are distinct collections with their own catalogues. Their existence in the Centre allows us not only to add distributed digitised content to the GDL, but also to tackle technical and metadata related interoperability issues that arise in a number of other contexts, given the distributed nature of the GDL vision.

### Victorian Times

The Victorian Times project [24]—a collaborative project involving CDLR, London School of Economics [25], the Stationery Office [26], and Argonaut Communications Ltd.—has only one connection with the GDL. It is a digital collection based in Glasgow. As such, it is viewed as a potential part of the GDL, and efforts are being made to ensure that the Victorian Times project becomes a coherent part of the interoperable Glasgow-wide environment. The project is digitising British parliamentary reports from the Victorian era (1837- 1901), a period during which (amongst other things):

- Emerging nations fought for freedom and independence;
- The American Civil War, the Transvaal and Boer Wars, and the Franco-Prussian War caused great changes to the developing world;

- Electoral reform, through the reform bills, brought voting power to the (male) masses;
- Living, health and social conditions improved, with large-scale public health initiatives and advances in medical research; and
- Great technological advances in engineering, communication and transport, brought the world, the nation and the nation's people closer together.

The Victorian Times project focuses particularly on the themes of housing, health, industry and the work place, labour and trade unions, transport, and education in order to serve a range of users, from primary school students to university researchers, as well as to bring in journalists, politicians, and life-long learners. The project provides lessons about how best to serve different user groups, landscaping the same digital environment for different groups with the different terminologies favoured by such groups, and (again) provides lessons about metadata requirements and interoperability—lessons that benefit the GDL because of our holistic or whole environment approach. Another key area where experience and technologies will be shared is that of digital libraries as digital learning environments. The Victorian Times project does more than simply providing access to the texts of historic parliamentary materials; the Victorian Times project is also integrating these texts with relevant pictorial materials from regional environments, such as London and Glasgow. This means incorporating intelligent links to materials in other overlapping initiatives such as:

- The Centre for Political Song [\[27\]](#)
- The Heatherbank Museum of Social Work [\[28\]](#)
- TheGlasgowStory NOF Project (including, but not limited to, the Victorian era)
- East Dunbartonshire Public Library Local History collections (including, for example, over 30,000 Forth & Clyde Canal photographs from 1860) [\[29\]](#)
- The British Library [\[30\]](#) (including Victorian music hall songs from Scotland, northern England and London, and the Evanion collection of late 19th-century ephemera, the Penny Illustrated Paper 1861- 1913).

It also means embedding these resources in a progressive learning environment in order to support all levels of education and research, upwards and outwards from primary school students, and to allow progression from one level to the next—an approach particularly suited to The Learning City concept and the educational continuum it implies.

### **GAELS and SAPIENS**

GAELS [\[31\]](#) and SAPIENS [\[32\]](#) focus, in very different ways, on subscription content likely to impact on the GDL. SAPIENS assists small learned publishers in Scotland to make their journals available electronically on subscription, and GAELS is examining journals' overlap in the holdings of two GDL institutions, with a view to reallocating the significant level of funding that could be saved in Engineering alone. GAELS has also discovered that identifying the overlap is the easy part. Agreeing on ways to achieve

savings is much harder—another lesson the GDL must learn if it is to collaborate successfully in the longer term.

### **CORC and HILT**

The SLIC-funded joint OCLC CORC [33] subscription is being used to facilitate a collaborative approach to collecting and cataloguing electronic resources in all parts of Scotland, including Glasgow. The OCLC CORC subscription is also being used—through global and local name and subject authority files, and a process to submit local headings for inclusion in global files through NACO [34] and SACO [35]—to help standardise the terminologies describing these resources. The HILT [36] project is a JISC-funded, UK-level project to create a 'terminologies route map', or TeRM, to facilitate subject searching in a distributed environment where different schemes (LCSH, AAT, DDC, and UNESCO are the main schemes incorporated) and practices are in place in different services. Since many of the distributed services on the outer ring of the GDL will almost certainly utilise different schemes and practices, the GDL expects to learn useful lessons on subject-based interoperability from the HILT project.

### **CAIRNS, SCONE, SCAMP, SEED, SPI, COPAC/Clumps and CoSMiC**

Finally, CAIRNS, SCONE [37], SCAMP [38], SEED [39], the Scottish Portals Initiative [40], the COPAC/CLUMPS project [41], and CoSMiC are providing the co-operative infrastructure and technologies within which the GDL can operate and develop. As a working element of this infrastructure, the GDL will both contribute and benefit in a number of ways. It will:

- Influence—and be influenced by—the development of infrastructure and associated standards, collections policies, and R&D plans through its participation in CoSMiC;
- Participate in collaborative collecting, cataloguing, and standards development and maintenance through CORC and standards groups;
- Have its own R&D plan, co-ordinated with the total CoSMiC plan;
- Maintain GDL collections and co-ordinate its collaborative collecting through the SCONE collections management portal, SCAMP;
- Use CAIRNS cross-searching and landscaping technologies in its own distributed catalogue;
- Be one of the CAIRNS sub-landscapes, generated via the SCONE collections database; and
- Be one portal within CAIRNS using shared services like the cross-searching mechanism and the collections database, and the staff landscaping and collections database control functions.

#### **4. A Focal Point for Research, Development and Learning in the Distributed Information Environment**

Seen from this perspective, the GDL is more than just the 'distributed digital library based in Glasgow that aims to produce a coherent digital learning and information environment for Glasgow's citizens' described in its own literature. In this holistic context, it is:

- One facet of the problem of developing a user-responsive, distributed information environment,
- One set of embryonic user, staff, and service cultures growing up in a new world,
- One perspective on requirements,
- One portal or view on the global information environment, and
- One focal point for research, development, and learning in the distributed information environment.

As one of a group of increasingly integrated CDLR projects, the GDL is not only being informed by, and is drawing on, the results of whole environment research, it is, itself, teaching us lessons about the distributed information environment, lessons applicable—but not necessarily limited—to the GDL:

- That coherent distributed virtual 'libraries' won't just happen—we must co-operate to manage retrieval and user environments as well as to implement sustainable mechanisms to support these processes;
- That distributed networked collections need collaborative management;
- That people interoperability is a pre-requisite of technical and metadata interoperability;
- That co-operation is hard work; and
- That work like this is crucial to social inclusion and cohesion, democracy and equal opportunities.

Nor are the lessons learned focused purely on content, metadata, interfaces, technologies, and systems. A key lesson learned is that information professionals themselves must develop appropriate new perspectives to deal with this new multidimensional, distributed, multifaceted environment. This means expanding their skills, understanding, know-how—even consciousness—to encompass this environment. Above all, it means learning as a matter of course to 'think globally before acting locally'. We often use this slogan to stress the need for metadata standards in a coherent distributed environment, but it is also a slogan that, in a very real sense, sums up the entire holistic approach taken in the Glasgow Digital Library and CDLR projects.

## 5. Notes

- [1] Centre For Digital Library Research (CDLR) <<http://cdlr.strath.ac.uk/>>.
- [2] University of Strathclyde <<http://www.strath.ac.uk/>>.
- [3] Glasgow Digital Library <<http://gdl.cdlr.strath.ac.uk/>>.
- [4] Glasgow University <<http://www.gla.ac.uk/>>.
- [5] Glasgow Caledonian University <<http://www.gcal.ac.uk/>>.
- [6] Glasgow Colleges Group <<http://www.glasgowcolleges.ac.uk/>>.
- [7] Glasgow City Council Library and Archives Online <<http://www.mitchelllibrary.org/>>.
- [8] Research Support Libraries Programme (RSLP) <<http://www.rslp.ac.uk/>>.
- [9] SCAMP (Scottish Collections Access Management Portal) <<http://scone.strath.ac.uk/scamp>>.
- [10] Co-operAtive Information Retrieval Network for Scotland (CAIRNS) <<http://cairns.lib.strath.ac.uk>>.
- [11] Joint Information Systems Committee - Information Environment <<http://www.jisc.ac.uk/dner/development/IEstrategy.html>>.
- [12] The Peoples Network <<http://www.peoplesnetwork.gov.uk>>.
- [13] Scottish Executive <<http://www.scotland.gov.uk/pages/default.aspx>>.
- [14] Scottish Library and Information Council (SLIC) <<http://www.slainte.org.uk/Slic/slichome.htm>>.
- [15] Digital Scotland <<http://www.scotland.gov.uk/digitalscotland/>>.
- [16] Confederation of Scottish Mini Co-operatives (CoSMiC) <<http://cosmic.cdlr.strath.ac.uk/>>.
- [17] Glasgow - The Learning City <<http://www.intoreal.com/>>.
- [18] Clyde Virtual University <<http://cvu.strath.ac.uk/>>.
- [19] Harvesting Institutional Resources in Scotland Testbed (HaIRST) <<http://cdlr.strath.ac.uk/projects/projects-hairst.html>>.
- [20] Digital Information Office <<http://dio.cdlr.strath.ac.uk/>>.

- [21] Access to Scottish Parliamentary Election Candidate Materials 1999 (ASPECT) <<http://gdl.cdlr.strath.ac.uk/aspect/>>.
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- [23] Red Clydeside <<http://gdl.cdlr.strath.ac.uk/redclyde/>>.
- [24] Victorian Times <<http://vt.cdlr.strath.ac.uk/>>.
- [25] London School of Economics <<http://www.lse.ac.uk/>>.
- [26] The Stationery Office <<http://www.tso.co.uk/>>.
- [27] Centre for Political Song <<http://polsong.gcal.ac.uk/>>.
- [28] The Heatherbank Museum of Social Work <<http://www.lib.gcal.ac.uk/heatherbank/>>.
- [29] See, for example, <<http://www.slainte.org.uk/edpdalm/n24065b.jpg>>.
- [30] The British Library <<http://www.bl.uk/>>
- [31] Glasgow Allied Electronically with Strathclyde (GAELS) <<http://gaels.lib.strath.ac.uk/>>.
- [32] Scottish Academic Periodicals: Implementing an Effective Networked Service (SAPIENS) <<http://sapiens.cdlr.strath.ac.uk/>>.
- [33] Cooperative Online Resource Catalog (CORC) <<http://www.oclc.org/corc/>>.
- [34] NACO (Name Authority Component of the Program for Cooperative Cataloging) <<http://lcweb.loc.gov/catdir/pcc/naco.html>>.
- [35] SACO (Subject Authority Component of the Program for Cooperative Cataloging) <<http://lcweb.loc.gov/catdir/pcc/saco.html>>.
- [36] High Level Thesaurus (HILT) <<http://hilt.cdlr.strath.ac.uk/>>.
- [37] Scottish Collections Network Extension (SCONE) <<http://scone.strath.ac.uk/>>.
- [38] SCAMP (Scottish Collections Access Management Portal) <<http://scone.strath.ac.uk/scamp/>>.
- [39] Scottish Executive Education Department (SEED) <<http://seed.cdlr.strath.ac.uk/>>.
- [40] Scottish Portals Initiative <<http://cosmic.cdlr.strath.ac.uk/spi/>>.
- [41] COPAC/CLUMPS Project <<http://cdlr.strath.ac.uk/projects/projects-copacclumps.html>>.

