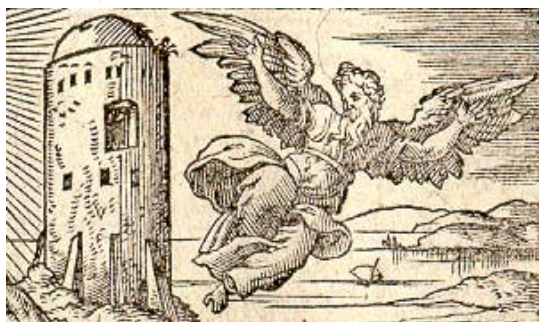


DAEDALUS:

Data providers for Academic E-content and the Disclosure of Assets for Learning, Understanding and Scholarship



*Daedalus from "Ovid: Metamorphoses", illustrated by Virgil Solis, Frankfurt 1569
Glasgow University Library, Special Collections*

1 Introduction

This three year project seeks to provide exemplars for the development of a network of different data providers for a range of institutional assets to be exploited by a local harvesting service. In doing this, we would give form to the vision set out by the Open Archives Initiative. We would explore, identify and evaluate the necessary standards to achieve institutional interoperability across a range of distinct digital assets. These assets would include academic papers, e-theses and research resource finding aids. They would be disclosed to the wider academic community and form an integral part of the JISC Information Environment.

2 Outline

DAEDALUS is a three year project which would establish a network of Open Archives compliant University of Glasgow Data Providers. These would be used for the deposit and disclosure of our rich institutional assets and would build upon our existing ePrints Demonstrator service [<http://eprints.lib.gla.ac.uk:333/>]. This service is fully Open Archives Compliant and is registered with the Open Archives Initiative [<http://www.openarchives.org>] and OAI harvesters such as ARC [<http://arc.cs.odu.edu/>].

These assets would include:

- Academic [Published] papers
- Pre-prints and Grey Literature
- e-Theses
- Research Resource Finding Aids (Archives and Special Collections)
- Institutional Management, Policy and Regulatory documents

These assets will be harvested and disclosed by a local Service Provider. They will also be made available to the wider JISC, and international community through already extant Service Providers.

During the lifespan of the project dissemination will play an integral role in informing the JISC community of the progress of the project through reports, workshops, exemplars and guides to best practice in the development of these services. We would also participate in DNER and other FAIR events.

DAEDALUS will contribute to the FAIR Programme by demonstrating the applicability of the Open Archives Initiative to a range of distinct Institutional assets. It will identify the individual challenges which apply to each of these and more critically indicate methodologies and approaches undertaken to solve these problems. Further, the range of Data Providers which will be developed will use a variety of software solutions in addition to the ePrints software from the University of Southampton. These will enable us to assess the suitability of a variety of different pieces of OAI software for particular assets. These assessments will provide the wider community with longer term options for the migration of a range of other institutional assets such as images to ensure OAI compliance.

The project would be expected to run from August-2002 for a period of three years until August-2005.

3 Project Deliverables

The deliverables of this project will be:

1. A range of OAI compliant services for the deposit of a range of institutional assets
2. The establishment of a service provider to ensure the disclosure of institutional assets
3. A program of studies, workshops and reports which chart the issues and challenges of the project and provides exemplars of best practice

These project deliverables will be of value to the JISC Community because they will provide a key knowledge base of the technical, organisational and cultural challenges which must be overcome to ensure the successful implementation of an accessible and cross-searchable corpus of institutional assets.

The opportunity to unlock these institutional assets, including publicly available policy and business documents through the Open Archives Initiative will provide a wealth of information which hitherto could not be effectively exploited [since it could not be accessed] to underpin teaching and research. This would apply not only to researchers and teachers at the University of Glasgow but across the United Kingdom as access to pre-prints [the establishment of publication priority], e-theses and academic papers becomes transparent and realisable.

Within the first few months, a detailed project plan will be developed which will provide details of staging posts, milestones and deliverables for the lifespan of the project. Evaluation will be ongoing due to the iterative nature of the project and its development. In addition, externally produced summative evaluation of the project would be provided if JISC consider this to be worthwhile [this would have an additional cost of £10,000]

3.1 Deliverable 1: The establishment of a range of OAI compliant services for the deposit of the following institutional assets:

3.1.1 Deliverable 1.1: Published Academic Publications

This will build on the existing demonstrator version using the ePrints software from the University of Southampton. This service will enable academic staff to deposit **peer-reviewed** and **published** papers in an institutional service.

The University of Glasgow is a partner with the CURL bid SHERPA and is committed to the development of institutional Open Archives services.

The ongoing development of this service will provide a valuable means of unlocking and disseminating the research papers of academics. The skyrocketing cost of journal publications and continuing cycle of retrenchment and journal cancellations in which University libraries must engage require radical alternatives and new solutions.

The implementation of a national network of Institutional ePrint services is a critical element in allowing the wider academic community to reclaim their scholarly output. Cultural change within the wider academic community is also necessary. It is not enough merely to set-up an ePrints service and to hope that “if you build it, they will come”. Experience at Glasgow and elsewhere, which we would build upon, indicates that the advantages and necessity of an ePrints service to the academic community must be demonstrated to academic colleagues to ensure the flow of academic content to populate these services.

Work has already begun in this area at Glasgow with an Advocacy Campaign designed to raise awareness amongst our academic colleagues about the Crisis in Scholarly Communication [<http://www.gla.ac.uk/createchange>]. This work is strategically aligned with that of other CURL libraries, through the SHERPA Consortia proposal.

During the course of DAEDALUS a range of technical and non-technical key issues will be explored across each of the different providers. Broadly these can be grouped as:

- Cultural
 - Concerns over access and intellectual property rights
 - Encouraging users to submit content
 - Development of institutional guidelines and policies
- Organisational
 - Submission procedures and administration
 - Criteria for deposits
 - Collection/deposit policy statements and access rights
- Technical
 - Document formats e.g. HTML, PDF, XML
 - Metadata elements / Controlled vocabulary. While Dublin Core containers are defined in OAI, there is no provision for the implementation of Controlled Vocabulary [an established Subject Scheme: Library of Congress] to facilitate cross-searching and to ensure that all relevant assets would be disclosed.
 - In line with this we would also build on the implementation of an established Subject Scheme: Library of Congress in our current demonstrator.

3.1.2 Deliverable 1.2: Academic Pre-prints and Grey Literature

We would establish a Pre-prints and Grey Literature ePrints service using version 2.0 of the ePrints software. This will provide a repository for **non-peer reviewed** and **unpublished** material.

This service will require the development of a different collection policy from that of the Academic Publications Service.

Further issues which will be explored here will include:

- Linkage between the Academic Papers ePrints service and the Pre-prints service, this would look at “cloning” the metadata for the pre-print when the published version is deposited in the Academic Papers service. There should also be a means of showing the relationship between the final Academic Papers and the earlier Pre-print(s) across the distinct ePrints services.
- Relationship between an institutional repository and that of an already established subject archive such as ArXiv. This would be explored in a case study with our Department of Physics and Astronomy.
- Copyright and Intellectual Property Issues including the changes which would be required in relationships with established journals [such as *Science* and *Nature*] and their existing embargo policies

3.1.3 Deliverable 1.3: e-Theses

The University of Glasgow is a significant producer of theses. About 370 full higher degree theses are accepted each year. In addition there is a considerable number of theses accepted in partial fulfilment of higher degrees.

The University has always had the objective of making its theses as accessible as possible to the wider academic world. We have always been part of the BL thesis deposit scheme, and contributed to the *Index to Theses accepted for higher degrees by the Universities of Great Britain and Ireland* since its inception. The University is a member of UTOG (University Theses Online Group), and became a member of the Virginia based NDLTD (Networked Digital Library of Theses and Dissertations) in 2001.

It is our intention to develop an e-Theses archive around the software provided by the Networked Digital Library for Theses and Dissertation (NDLTD). This software, ETD-db is freely available from NDLTD and is now in use in a range of institutions. The service will be OAI compliant and will be registered with the Electronic Thesis / Dissertation OAI Union Catalog [<http://rocky.dlib.vt.edu/~etdunion/cgi-bin/index.pl>].

We do not intend to digitise existing theses but aim to focus on the development of appropriate metadata for the deposit of electronic versions of theses. This would also provide an opportunity to consider different file formats and their appropriateness for both submission and long term digital preservation.

We would work with a range of different departments within the University [e.g. Computing Science, Mathematics, English and HATII (Humanities Advanced Technology and Information Institute)].

Many of these departments already host their students' e-Theses, however to further ensure disclosure and long term preservation we would explore the role of centralised service analogous to that in place for printed theses.

We would also work closely with other UTOG libraries and the British Library in the development of this service.

A range of issues will be explored, some of which, while local will be applicable to the wider community. These will include:

- Rights issues including copyright, plagiarism, use restrictions and audit trails of access
- Authenticity of original (digital signatures) Theses
- Technical formats, mixed media and metadata
- Cultural change within institution how will it be adopted

Our findings will then be disseminated during the course of the project.

3.1.4 Deliverable 1.4: Research Resources Finding Aids (Archives and Special Collections)

The strengths of the archive and manuscripts of the University of Glasgow have been widely recognised by the research community, nationally and internationally. Building on the collection of the rare books and manuscripts bequeathed by Dr William Hunter (1718-1783), the University has constantly sought to meet academic research needs by actively collecting original material. Researchers consider the University's holdings on medieval and renaissance materials, emblem literature and Scottish business records to have world significance. The University's own institutional archive is particularly rich and predates the foundation of the University in 1451 by nearly 150 years. Through extensive and dynamic web-sites high quality data is now available for most collections.

The University has two major Special Collections Catalogues: Manuscripts and the Scottish Theatre Archive that are currently not cross-searchable. The Catalogue of the Scottish Theatre Archive currently contains records for about 54,000 documents and details of 19,000 associated events. The Catalogue is publicly available at: <http://special.lib.gla.ac.uk/STA/search/index.html>. It includes a range of access points: name, document, accession and event. The Manuscripts Catalogue currently contains records for c. 65,000 documents indexed by over 20,000 names. A number of records in both catalogues now have images associated with them.

The catalogue finding aids for the University's Archive Collections are currently available at item level in a variety of formats, MS Word, SGML, and XML [the latter two using the EAD (Encoded Archival Description)] DTD. Currently it is also not possible to undertake cross-searching of these finding aids. We would look at the development of OAI compliant services for these catalogues using tools such as Open Archives in a Box that are now available to enable cross-searching of all University of Glasgow research resources finding aids and making them available to a wider academic community.

The University of Glasgow is currently contributing around 4,200 collection level finding aid description records to the Archives Hub. The Archives Hub has just begun to explore the adoption of OAI protocol and we intend to explore the issues and challenges to the user of the possible retrieval of different levels of finding aids for a collection of material.

This strand will explore the issues and software involved in turning existing databases into OAI compliant services. A range of these technologies now exist including:

- Open Archives "in a box" (OAIB) exports metadata stored in a RDBMS using the OAI protocol. Uses Java, MySQL, and Xerces. Developed by NCSA;
- ALCME: OAICat Project - OAICat is an open-source OAI protocol metadata server. OAICat can be placed on top of existing databases to turn them into OAI repositories with minimal coding effort.

Further issues will also include:

- The suitability of open-source OAI software for cross-searching these richly defined collections which have many already established access points such as Accession Number and Name.
- User evaluation of retrieval of different levels of finding aids (connecting item level finding aids to collection level finding aid – metadata implications).

3.1.5 Deliverable 1.5: Institutional Management, Policy and Regulatory (Business) Documents

The University of Glasgow currently has some 4000 committee documents available in HTML, XML, and RTF with appropriate metadata. These include minutes, agendas and related papers. Over the course of the project we would explore how these documents could be searched and accessed using OAI protocols.

In addition to an assessment of the suitability of the software previously identified for the Special Collections / Archives Finding Aids service further issues which will be explored here will include:

- Access rights for documents which are not yet in the public domain to ensure that they are not inappropriately harvested within and beyond the University.

3.2 Deliverable 2: The establishment of a service provider to ensure the disclosure of institutional assets

We will develop a local Service Provider which will provide an integrated interface to the range of OAI compliant services which will be developed. This service provider will be scalable and demonstrate the kinds of discovery and retrieval services that would be possible and sustainable.

- ALCME: OAIHarvester Project: OAIHarvester is a Java application framework that harvests metadata from OAI-compliant servers, given their BASE-URLs.
- PERL OAI Harvester: A set of object-oriented Perl modules to perform harvesting of an OAI-1.1-compliant Data Provider.

We would also aim to include a Z39.50 component to enable it to also search Z-compliant targets such as our Innopac Library catalogue. This will enable cross-searching across a much wider range of our institutional resources. This will allow us to build on our experience of Z gained from the CAIRNS project [<http://cairns.lib.gla.ac.uk/>]

3.3 Deliverable 3: A program of studies, workshops and reports which chart the issues and challenges of the project and exemplars of best practice

Over the course of the project:

- A DAEDALUS web site will provide a record of the work undertaken. It will chart and describe developments as they occur. It will provide contact details for the Project Team.
- A range of workshops and seminars will be run over the course of the project focussing on the range of different providers as they develop and set this work in the context of work undertaken elsewhere. These will also be done in conjunction with other appropriate FAIR projects.
- We would identify and approach key individuals in a range of different institutions to act as a sounding board of the cross-institutional suitability of the services under development.
- We would produce a series of papers which identify the key issues and problem areas inherent in the development of Data Providers for each of the different institutional assets we would work with; These papers would be written for submission to the appropriate professional literature. These will, of course also be deposited in the appropriate local Data Providers – and in turn provide useful case studies for the ways in which these services can be used.
- The Project will develop a series of Best Practice guides and exemplars which will be disseminated to the wider academic community.

DAEDALUS will also develop relationships with the European Open Archives Forum [<http://www.oaforum.org/>]. The project will provide a focus for European initiatives which are implementing the recently released Open Archives Initiative (OAI) metadata harvesting protocol. It will also enable European projects and national initiatives to share their experience and to co-ordinate the development of software tools and infrastructure for open archives.

3.4 Dissemination and Evaluation

During each year of the project Dissemination and Evaluation of the distinct elements of DAEDALUS will play an integral role and provide phased outputs which will be distributed to the wider community. These activities will be ongoing and will include workshops, focus group studies, published reports and

conference presentations. During the first year, detailed project plans for the implementation of each of the Data Providers and the Service Provider will be completed.

3.5 Timetable and Milestones

During the course of the Project we would anticipate that the following assets would be deposited in the Academic Papers, Pre-prints and e-Theses data providers:

Assets	Year One	Year Two	Year Three	Total
Academic Papers	50	300	400	750
Pre-prints	50	300	400	750
e-Theses	40	75	150	265

3.5.1 Year One

Deliverables 1.1 and 1.2: Academic Papers and Pre-print services

1. Secure infrastructure i.e. on a production quality server and identified as a production service [using ePrints v. 2.0]
Should be completed
2. Advocacy campaign will be further developed [in conjunction with other CURL libraries] to begin to address the issues necessary to convince Academic staff to commit to this local repository
Ongoing activity
3. Investigate the features and practices that need to be put in place in order for this to be suitable for long term access / archiving purposes e.g.: file formats, metadata, identification of individuals, management processes, range of IPR consequences
Ongoing activity

Deliverable 1.3: e-Theses [ETD-db]

1. Investigation of ETD-db software and the OAI compliance module available for it *e-Theses Demonstrator available [similar to current ePrints Demonstrator] and OAI compliant with the ETD-db OAI module*
2. Evaluation of the service across the areas of Deposit, Disclosure and Administration. This will be supplemented by focus groups and evaluations of the service itself by users
Ongoing activity
3. Identification of the various issues in convincing Institutional buy-in to this local repository e.g. voluntary / mandatory deposit, University regulations re the e-only option (can someone submit only in electronic form)
Ongoing activity
4. Consider the suitability of the software for pure Digital / non-traditional theses e.g. multimedia [This will be a mix of technical, cultural and organisation issues]
Ongoing activity
5. Further develop relationships with British Library, UTOG and NDLTD, **building upon** already established links
Ongoing activity
6. Investigate any features / practices that need to be put in place in order for this to be suitable for long term access / archiving purposes e.g. file formats, metadata, identification of individuals, management processes, IPR consequences
Ongoing activity

Deliverable 1.4: Research Resources Finding Aids

1. Investigation of appropriate software solutions e.g. Open Archives in a box (OAIB) and other available solutions
Decision on development of database
2. Develop relationship with Archives Hub, SCAN
Ongoing activity

Deliverable 1.5: Institutional Management, Policy and Regulatory (Business) Documents

1. Review of the range of Administrative Documents currently in place, the metadata used and access policies
Ongoing activity
2. Investigation of appropriate software
Decision on development of database

Deliverable 2: Local Service Provider

1. Investigation of appropriate software solutions and existing cross-searching services
Decision on which software to take forward

2. Develop relationships with other Data and Service Providers both locally across Glasgow and nationally with other CURL libraries

Ongoing activity

Deliverable 3: A program of Workshops, Studies and Reports

1. Phased dissemination of the projects progress to the wider community through workshops, seminars and publications.

Ongoing activity

3.5.2 Year Two

Deliverables 1.1 and 1.2: Academic Papers and Pre-print services

1. ePrints scaled up to full operational state
Should be completed
2. Cultural and organisational issues in convincing Academics of buy-in to this local repository
Dissemination: Provide exemplars and Best Practice guidelines
3. Investigate any features / practices that need to be put in place in order for this to be suitable for long term access / archiving purposes e.g. file formats, metadata, identification of individuals, management processes, IPR consequences

Ongoing activity

Deliverable 1.3: e-Theses [ETD-db]

1. Secure infrastructure i.e. on a production quality server and identified as a production service [ETD-db software]
Should be completed.
2. Evaluation will be ongoing and cover the 3 core elements: Deposit, Disclosure, Administration
Ongoing activity
3. Cultural issues in convincing Institutional buy-in to this local repository e.g. issues such as voluntary / mandatory deposit
Should be completed
4. Suitability for pure Digital / non-traditional theses e.g. multimedia [mix of cultural and technical issues]
Ongoing activity
5. Investigate any features / practices that need to be put in place in order for this to be suitable for long term access / archiving purposes e.g. file formats, metadata, identification of individuals, management processes, IPR consequences
Should be Completed

Deliverable 1.4: Research Resources Finding Aids (Archives and Special Collections)

1. Investigation of OAIB [or other] software
SCD / Archives Demonstrator available
2. Evaluation will be ongoing
Ongoing activity
 - a) What changes are required to the original database structure and to any inputting methodologies for OAI compliance
 - b) To what extent does the OAI means of access accurately reflect the underlying data and allow at least as good access points as any pre-existing searching tools i.e. to what extent are you compromising/reducing the functionality of the original access methods by adherence to OAI access
3. Relationship with similar projects and other OAIB users
Ongoing activity
4. Relationship with Archives Hub – Content, Metadata and Cross-searching
Ongoing activity

Deliverable 1.5: Institutional Management, Policy and Regulatory (Business) Documents

1. Development of searchable Business documents service
Demonstrator to be completed

Deliverable 2: Local Service Provider

1. Investigation of Service Provider [or other] software
Service Provider Demonstrator in development
2. Relationship with similar projects and other OAIB, or related software users
Ongoing activity
3. Evaluation of the service provider across a range of different services
Ongoing activity

Deliverable 3: A program of Workshops, Studies and Reports

1. Phased dissemination of the projects progress to the wider community through workshops, seminars and publications.
Ongoing activity

3.5.3 Year Three

Deliverables 1.1 and 1.2: Academic Papers and Pre-Print Services

1. Maintenance and Evaluation of the services
Should be completed
2. Further refinements from work on Service Provider
Should be incorporated and completed

Deliverable 1.3: e-Theses [ETD-db]

1. Maintenance and Evaluation of the service
Should be completed
2. Further refinements from work on Service Provider
Should be incorporated and completed

Deliverable 1.4: Research Resources Finding Aids (Archives and Special Collections)

1. Secure infrastructure i.e. on a production quality server and identified as a production service
Should be completed

Deliverable 1.5: Institutional Management, Policy and Regulatory (Business) Documents

1. Development of OAI Compliant Business Demonstrator
Demonstrator to be completed

Deliverable 2: Local Service Provider

1. Production Level Service Provider
Should be completed

Deliverable 3: A program of Workshops, Studies and Reports

In Year Three, with the Data Providers up and running as operational services the focus will be on further dissemination to the Community. The Service Provider will be completed and during Year Three any further refinements to the Data Providers will be completed.

1. Final Dissemination – Workshops and Conferences
Should be completed
2. Final Project Report completed and submitted to JISC
Should be completed

4 Budget

4.1 Staffing Requirements

A Project Officer (PO) would be responsible for overall project management and the implementation of the various Data Providers. The PO would report to the Project Director (PD). The PD would be a contributed post from the University of Glasgow

A Technical Support Officer / Programmer (TSO) is required to install and develop the ETD-db software and to install, configure and run the service provider. In addition, the TSO will work closely with other members of the University of Glasgow to ensure that existing services such as the Special Collections finding aids will become OAI compliant. They would also work closely with staff involved in the development of the database for institutional policy documents.

A Clerical staff member would be required to provide support to the PO and TSO in administering and running the project.

4.2 Steering Committee

The Steering Committee will be comprised of experts across each of the distinct areas of DAEDALUS. Day to day line management of the three staff members will be the responsibility of William J Nixon (Project Director), with policy directed by the whole Steering Committee. This Committee will meet 4 times per year and direct policy for DAEDALUS.

Project Director

Mr William J Nixon
Deputy Head of IT Services,
Glasgow University Library

4.2.1 Steering Committee Members

James Currall	University of Glasgow Computing Service
Mark Denham	Head of Library IT Services. Mr Denham has been closely involved in the design and development of the Manuscripts Catalogue and Scottish Theatre Archive
Colin Galloway	Head of Book Acquisitions and Bibliographic Services. Mr Galloway is our representative on the University Theses Online Group.
Lesley Richmond	Director of GU Archive Services (Information Services)

The Steering Committee will also include a number of academic members of staff from the departments with which we will develop the e-theses and other data providers.

4.3 Annual Budget Totals

	Year One	Year Two	Year Three
Staffing	£73,266	£80,133	£87,574
Hardware	£27,650	£1,000	£1,000
Travel & Consumables	£5,500	£6,750	£6,750
Annual Costs	£106,416	£87,883	£95,324

4.3.1 Breakdown of Staffing costs

	Year One	Year Two	Year Three
Project manager (AR Grade 3)	£34,943	£38,116	£41,589
Technical Support Officer (AR Grade 2)	£25,858	£28,543	£31,414
Clerical Support (UCNS Grade 2)	£12,465	£13,474	£14,571
Project Director	Contributed	Contributed	Contributed
Steering Committee	Contributed	Contributed	Contributed
Management Group	Contributed	Contributed	Contributed
	£73,266	£80,133	£87,574

Note: The staffing costs have a 5% inflation element over the course of the project, these totals also include NI and Superannuation costs

4.3.2 Breakdown of Hardware Costs

	Year One	Year Two	Year Three
Unix server for:	£20,000	N/A	N/A
<ul style="list-style-type: none"> e-Theses Service Provider 			
Unix server for:	Contributed	Contributed	Contributed
<ul style="list-style-type: none"> Academic Papers Pre-Prints / Grey Literature Finding Aids (Business) Documents 			
Server Maintenance	£1,000	£1,000	£1,000
Eprints v.2.0 Software	Free	Free	Free
ETD-db Software	Free	Free	Free
OAI Compliance	Free	Free	Free
Software for Finding Aids			
Service Provider Software	Free	Free	Free
Development	£2,000	N/A	N/A
Workstation for TSO			
Staff workstation for	£1,000	N/A	N/A

PO			
Staff workstation for Clerical Support	£1000	N/A	N/A
Networked Laserprinter	£650	N/A	N/A
Laptop for Presentations	£2000	N/A	N/A
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	£27650	£1000	£1000

4.3.3 Breakdown of Travel and Consumables Costs

	Year One	Year Two	Year Three
Telephone and Stationery	£500	£750	£750
Publications, Workshops and Dissemination	£1000	£2000	£2000
Evaluation	£1000	£1000	£1000
Focus Groups			
Travel (JISC Meetings, Workshops, Conferences)	£3000	£3000	£3000
	<hr/>		
	£5500	£6750	£6750

4.3.4 Project Totals over three years

Sub-Total for Staffing	£240973
Sub-Total for Hardware	£29,650
Sub-Total for Travel, Evaluation and Consumables	<hr/> £19,000
Project Total over 3 years	£289,623

5 Evaluators

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