Implementation of the Data Seal of Approval

The Data Seal of Approval board hereby confirms that the Trusted Digital repository UCD Digital Library complies with the guidelines version 2014-2017 set by the Data Seal of Approval Board.
The afore-mentioned repository has therefore acquired the Data Seal of Approval of 2013 on March 8, 2015.

The Trusted Digital repository is allowed to place an image of the Data Seal of Approval logo corresponding to the guidelines version date on their website. This image must link to this file which is hosted on the Data Seal of Approval website.

Yours sincerely,

The Data Seal of Approval Board

Assessment Information

Guidelines Version: 2014-2017 | July 19, 2013
Guidelines Information Booklet: DSA-booklet_2014-2017.pdf
All Guidelines Documentation: Documentation

Repository: UCD Digital Library
Seal Acquiry Date: Mar. 08, 2015

For the latest version of the awarded DSA   http://assessment.datasealofapproval.org/seals/
for this repository please visit our website:

Previously Acquired Seals: None

This repository is owned by: **UCD Library, University College Dublin**

T +353.(0)1.716.7067
F +1.353.(0)1.716.7068
E john.b.howard@ucd.ie
W http://www.ucd.ie/library

Assessment

0. Repository Context

Applicant Entry

Self-assessment statement:

The University College Dublin Digital Library (UCD Digital Library) was established with project funding from the Irish Higher Education Authority's (HEA) Programme for Research in Third-Level Institutions (PRTLI) during the funding period January 2005 through December 2009. A specific objective of the project was to demonstrate proof of concept for a Trusted Digital Repository for cultural heritage resources and for research associated with Irish cultural heritage, including historical and newly created qualitative data.

Originally identified as the "Irish Virtual Research Library and Archive," the IVRLA was inaugurated in 2007, holding and disseminating cultural heritage and qualitative research data via a data repository and associated dissemination services. The funding for the PRTLI award was administered through the Humanities Institute of Ireland; the IVRLA digital repository was established and has been continuously administered and developed by the Library of University College Dublin (UCD Library).

In January 2010 the IVRLA began a second phase of development as a sustainable, institutionally embedded research infrastructure supported by the UCD Library. The transition was enabled through a large-scale reorganisation of UCD Library that positioned repository and digital services support in a newly formed Research Services unit. Further support is provided by the Library IT Services group and Library administration; additional IT support is provided by the Research IT division of UCD IT Services; and support for contractual, legal and regulatory concerns is provided by the UCD Corporate and Legal Affairs office. During this second stage of development supporting technologies were updated and support for the preservation remit of the IVRLA more fully developed. In May 2012 the IVRLA was rebranded and re-launched as the "UCD Digital Library." Its designated community, as identified in its mission statement, is "the University College Dublin community as well as its collaborators and partners." The audience for its services is international and extraordinarily diverse.

A third phase of development began in September 2012 with a view toward updating the software environment with further supports for digital preservation, improving and re-conceiving production workflows, and enabling support for research data more generally. During this time services were also extended to the Irish Social Science Data Archive (ISSDA), particularly with regard to establishment of a "dark archive" for anoymised microdata and refinement of discovery mechanisms for quantitative social sciences data held by ISSDA. A technical milestone was achieved in November 2014 with launch of an updated UCD Digital Library platform.

The UCD Digital Library web interface provides detailed technical and administrative information of interest to data depositors and data consumers, in particular:

- Mission Statement; administrative information; technical information; information for depositors (http://digital.ucd.ie/about/)

- Services overview; data services API documentation; Web apps documentation (http://digital.ucd.ie/research/)

Other supporting documentation is referenced with regard to individual questions in the Data Seal of Approval questionnaire.

The UCD Digital Library platform makes use of a range of external services that support and add value, but that do not represent 'outsourcing' in the generally understood sense. These services are integrated with repository workflows in general:

- Services provided by the California Digital Library enable assignment of persistent identifiers (DataCite and Crossref DOIs, registration of corresponding metadata with DataCite and CrossRef);

- Infrastructure services are supported within University College Dublin inter-departmentally; the services of DuraSpace are used to provide complemntary capacity for periodically assuring data integrity and providing an offsite mechanism for backup and recovery of data in case of a local disaster.

The relationship with each of these vendors is contractual and is supported in each case by a specific Service Level Agreement associate with the contract. These services are described in more detail in connection with other questions in the DSA questionnaire.

Links to Documentation

UCD Digital Library, About the UCD Digital Library & Repository: http://digital.ucd.ie/about/ (accessed 2015-02-05): Mission Statement and other information regarding the UCD Digital Library, comprising Administrative Information, Technical Information, and Information for Depositors.

UCD Digital Library, Services: http://digital.ucd.ie/research/ (accessed 2015-02-05). This page provides an overview on specialist services available through or associated with the UCD Digital Library.

Reviewer Entry

Accept or send back to applicant for modification:

Accept

Comments:

1. The data producer deposits the data in a data repository with sufficient information for others to assess the quality of the data, and compliance with disciplinary and ethical norms.

Minimum Required Statement of Compliance:

3. In progress: We are in the implementation phase.

Applicant Entry

Statement of Compliance:

4. Implemented: This guideline has been fully implemented for the needs of our repository.

Self-assessment statement:

The primary contributors of content to the UCD Digital Library are members of the University College Dublin community, broadly defined, including diverse cultural heritage repositories that are administered at unit-level across the University as well as research groups and individual researchers. Additional depositors include organisations external to the university that enter into service arrangements the conditions of which are described a Memorandum of Understanding between the Depositor and University College Dublin.

UCD's cultural heritage repositories work cooperatively with UCD Library with regard to agreed quality standards for production workflows. Accepted data formats are identified in the "Information for Depositors" at http://digital.ucd.ie/about/#about-depositors; quality standards for locally digitised cultural heritage materials for data providers internal to UCD are managed in a locally accessible Confluence wiki. For UCD research groups and individual researchers data is accepted that complies with the listing of data formats in the "Information for Depositors" documentation. General guidelines with regard to descriptive metadata specify that sufficient information must be provided by Data Depositors for data to be identified and its usage parameters to be understood by Data Consumers. Descriptive and administrative metadata received from Data Providers is reviewed for quality and represented in metadata formats appropriate to the type of data; see: http://digital.ucd.ie/about/#about-depositors. A full listing of supported metadata formats is provided under "Metadata Standards & Practices" in Technical Information at http://digital.ucd.ie/about/#about-documentation.

External depositors of data must agree a memorandum of understanding (MoU) with University College Dublin; a copy of the current template for the MoU is available at http://digital.ucd.ie/docs/UCDDL_MoU_template_2015.pdf. The Depositor agreement is intended to accommodate depositors of digitised cultural heritage content as well as outcomes of diverse research processes.

The MoU clarifies responsibilities of the Data Producer with regard to:

- acceptable formats;

- descriptive and administrative metadata required to enable Data Consumers to understand and assess the data;

- rights of the Data Provider with regard to data ownership as well as terms and conditions of use.

Links to Documentation

UCD Digital Library, About the UCD Digital Library & Repository: http://digital.ucd.ie/about/ (accessed 2015-02-05): Mission Statement and other information regarding the UCD Digital Library, comprising Administrative Information, Technical Information, and Information for Depositors.

UCD Digital Library, Memorandum of Understanding for external Data Depositors, http://digital.ucd.ie/docs/UCDDL_MoU_template_2015.pdf. Template for Memoranda of Understanding between University College Dublin and Data Depositors external to the University.

UCD Digital Library, Information for Depositors: http://digital.ucd.ie/about/#about-depositors (accessed 2015-02-05): Information for depositors, including Metadata Requirements, and information relating to Preferred Formats for Data.

UCD Digital Library, Technical information, "Metadata Standards & Practices": http://digital.ucd.ie/about/#technical_metadata (accessed 2015-02-05). A listing of metadata formats supported by the UCD Digital Library.

Reviewer Entry

Accept or send back to applicant for modification:

Accept

Comments:

2. The data producer provides the data in formats recommended by the data repository.

Minimum Required Statement of Compliance:

3. In progress: We are in the implementation phase.

Applicant Entry

Statement of Compliance:

4. Implemented: This guideline has been fully implemented for the needs of our repository.

Self-assessment statement:

The repository provides a list of "Preferred Formats for Data" in Technical Information (http://digital.ucd.ie/about/#about-documentation). These guidelines apply to data produced through internal workflow processes as well as to data acquired from external Data Producers.

For all files supplied by external Data Producers—data and documentation—UCD Digital Library requests that the depositor indicate filename, file format, a checksum hash value, and a description of the file contents. This is considered to be the file manifest. See the MoU template: http://digital.ucd.ie/docs/UCDDL_MoU_template_2015.pdf.

For data deposited by external data producers, a quality assurance protocol for receipt of data is followed, including:

• Verification of contents from the file manifest: that all are present, all conform to the declared file format and can be opened in associated software applications, and all can be verified via checksum values.

• If the data provider is unable to deposit data in the preferred formats, an effort will be made to derive files in preferred formats where the source file format can be reliably converted. In all cases data in their original format are preserved in the repository; all data format migrations are considered preservation events and details of migration processes, inputs and outputs are recorded in PREMIS preservation metadata.

For all data including that created through in-house production workflows, automated processes extract technical metadata and record all preservation events, providing additional means of validating data formats and assuring quality.

Links to Documentation

UCD Digital Library, About the UCD Digital Library & Repository: http://digital.ucd.ie/about/ (accessed 2015-02-05): Mission Statement and other information regarding the UCD Digital Library, comprising Administrative Information, Technical Information, and Information for Depositors.

UCD Digital Library, Memorandum of Understanding for external Data Depositors, http://digital.ucd.ie/docs/UCDDL_MoU_template_2015.pdf. Template for Memoranda of Understanding between University College Dublin and Data Depositors external to the University.

UCD Digital Library, Technical Information, "Preferred Formats for Data," in: http://digital.ucd.ie/about/#about-documentation (accessed 2015-02-05). Detailed listing of preferred data formats.

Reviewer Entry

Accept or send back to applicant for modification:

Accept

Comments:

3. The data producer provides the data together with the metadata requested by the data repository.

Minimum Required Statement of Compliance:

4. Implemented: This guideline has been fully implemented for the needs of our repository.

Applicant Entry

Statement of Compliance:

4. Implemented: This guideline has been fully implemented for the needs of our repository.

Self-assessment statement:

The UCD Digital Library requests information in various sections of the Memorandum of Understanding that are mapped to descriptive and administrative metadata:

- Information about responsible parties (named entities)

- Title and description/abstract, references, and topics

- File identification and description

- Methodology

- Temporal coverage

- Geographic coverage

The UCD Digital Library Data Acquisition Protocol specifies review of data files provided to assure that sufficient metadata is acquired to make the data useable (see UCD Digital Library, Data Acquisition Protocol: http://digital.ucd.ie/docs/UCDDL_data_acq_protocol_v01.pdf.

UCD Digital Library manages a bespoke system for the management of descriptive and administrative metadata, called the Ingest, Metadata, and Administration Database (IMAD). For data produced in-house IMAD represents a starting point in workflow that interfaces with other data capture systems and workflow tools. For data deposited by external providers, workflows may follow two separate courses: (1) when metadata is supplied in tabular format, a mapping to IMAD data elements can be made and metadata ingested to IMAD in order to integrate with preferred workflow processes. (2) In other cases data and metadata may be received in formats calling for a bespoke workflow to produce metadata in the base formats required for a particular data type.

Additional bespoke tools implemented in perl are available to extract technical metadata and to capture provenance metadata for preservation purposes. Technical metadata is defined for local purposes as the technical attributes of file assets stored in the repository that are necessary for identification and potential migration to new formats should the current preferred format become deprecated. Technical metadata is specific to file formats; wherever possible technical metadata are captured using a range of data preservation tools and formatted in accordance with pertinent XML schemas. These formats and schemas are listed on the UCD Digital Library web site in Technical Information (http://digital.ucd.ie/about/#about-documentation). Preservation metadata are captured throughout the course of the workflow process from receipt or production of data to repository ingest, as well as subsequently actions taken on data. Preservation events are identified and described in compliance with the PREMIS Data Dictionary for Preservation Metadata (v. 2.2) and the PREMIS schema (v. 2.2); see: http://www.loc.gov/standards/premis/. Preservation events as well as PREMIS object metadata (for resource identification) are serialised as XML files within a METS (http://www.loc.gov/standards/mets/) wrapper, enabling association of preservation events with individual files assets that comprise complex digital objects.

For complex objects where the relationship of individual file components is integral to making the file assets understandable or useable, structural metadata is also provided. Structural metadata may consist of a METS structure map that specifies sequence and relationship of file assets comprising a complex digital object; the structure map is also used to record semantic information pertinent to object structure. For statistical data types structural metadata is recorded in the form of codebooks and other text documentation; these metadata are typically delivered in text or spreadsheet format by Data Providers and made available for download by Data Consumers.

For all data ingested to the repository, metadata elements for descriptive metadata are represented in MODS 3.5 and OAI-compliant Dublin Core metadata. All research data are further documented using the DataCite 3.0 or DataCite 3.1 metadata schema, and are assigned DataCite DOIs. For collections of cultural heritage data the EAD (Encoded Archival Description) 2002 schema is commonly used to describe archival or hierarchically structured collections of objects. For survey data, metadata elements for descriptive metadata comply with the Data Documentation Initiative (DDI) metadata framework, version 2.1. Metadata for objects held within the UCD Digital Library's data repository are exposed through a OAI-PMH Provider service; metadata is available in OAI-complaint Dublin Core XML, MODS XML, and where applicable DataCite XML formats. The OAI-PMH

endpoint is available at http://libucd.ucd.ie/oaiprovider/.

Descriptive metadata for all research data registered with DataCite can be requested by Data Consumers in Dublin Core, MODS, and DataCite formats via the UCD Digital Library's OAI-PMH provider service; a Linked Data API also enables download of descriptive and administrative metadata in a variety of RDF serialisations. See: "Data Services APIs" (http://digital.ucd.ie/research/#services-api).

UCD Digital Library encourage maximum compliance to guidelines and requirements in the MoU. All preservation actions from the time of receipt of a Submission Information Package from the Depositor are tracked and recorded as preservation metadata (both administrative and structural metadata).This is considered to be the file manifest.

Links to Documentation

UCD Digital Library, Data Acquisition Protocol: http://digital.ucd.ie/docs/UCDDL_data_acq_protocol_v01.pdf (accessed 2015-02-05). General procedural guideline for receipt and processing of data.

UCD Digital Library, Technical Information, "Preferred Formats for Data," in: http://digital.ucd.ie/about/#technical_formats (accessed 2015-02-05). Detailed listing of preferred data formats.

UCD Digital Library, Technical information, "Metadata Standards & Practices": http://digital.ucd.ie/about/#technical_metadata (accessed 2015-02-05). A listing of metadata formats supported by the UCD Digital Library.

UCD Digital Library, OAI-PMH Service Provider endpoint: http://libucd.ucd.ie/oaiprovider/.

UCD Digital Library, Data Services APIs: http://digital.ucd.ie/research/#services-api (accessed 2015-02-05). Documentation of public APIs made available by UCD Digital Library.

Reviewer Entry

Accept or send back to applicant for modification:

Accept

Comments:

4. The data repository has an explicit mission in the area of digital archiving and promulgates it.

Minimum Required Statement of Compliance:

4. Implemented: This guideline has been fully implemented for the needs of our repository.

Applicant Entry

Statement of Compliance:

4. Implemented: This guideline has been fully implemented for the needs of our repository.

Self-assessment statement:

The UCD Digital Library mission statement is publicly available and reads: "The Mission of the UCD Digital Library is to capture digital cultural resources and research outputs of the University College Dublin community as well as its collaborators and partners, to preserve and sustain the usability of these assets, and to enable their broad dissemination." Its mission is promulgated under the authority of University College Dublin, and realised through the supporting activities of the Research Services unit of UCD Library, as well as the technical infrastructures which it supports and develops.

Should circumstances evolve that the UCD Digital Library be unable to complete its mission or that its responsibilities be assigned elsewhere, arrangements for transfer of assets to a trusted service provider will be put into place.

Promotional activities are undertaken in the form of communications services on the Web (UCD Digital Library web site; UCD Library web site; UCD Digital Library twitter account; promotional activities are also undertaken through several public presentations annually throughout Ireland and abroad.

Links to Documentation

UCD Digital Library Mission Statement: http://digital.ucd.ie/about (accessed 2015-02-05)

UCD Library web site: http://www.ucd.ie/library (accessed 2015-02-05)

UCD Digital Library twitter site: https://twitter.com/UCDDigital (accessed 2015-02-05)

Reviewer Entry

Accept or send back to applicant for modification:

Accept

Comments:

5. The data repository uses due diligence to ensure compliance with legal regulations and contracts including, when applicable, regulations governing the protection of human subjects.

Minimum Required Statement of Compliance:

4. Implemented: This guideline has been fully implemented for the needs of our repository.

Applicant Entry

Statement of Compliance:

4. Implemented: This guideline has been fully implemented for the needs of our repository.

Self-assessment statement:

UCD Digital Library and Repository was established initially in 2007 as the Irish Virtual Research Library and Archive with support the Irish Higher Education Authority's Programme for Research in Third-Level Institutions (IVRLA); the goal of the IVRLA was to provide proof of concept for creation of a Trusted Digital Repository for Irish cultural heritage resources and social sciences data, as well as to demonstrate, through new research activities, the operational role of a Trusted Digital Repository in the overall research lifecycle. Following the close of the grant-supported project, the IVRLA shifted from being a sponsored projected to being an institutionally embedded service within the UCD Library. This shift intended to leverage UCD Library's capacity to support (1) the significant technical work required to establish trusted digital repository services with a preservation focus and (2) availability of staff with a range of relevant skills who are able to provide administrative, technical, and end-user support services. UCD Library and its constituent units function as an administrative unit of University College Dublin. Agreements for deposit of data are therefore made between Depositors and University College Dublin.

Conditions of use of resource are determined by the Data Provider and articulated in rights statements embedded in MODS metadata. These statements may include a waiver of rights by the Data Producer under the Creative Commons CC0 license; they may also include an explicit Creative Commons end-user license. Where restrictions are imposed under the license agreement the terms of use are described explicitly in statements in the descriptive metadata that are exposed to Data Consumers. In addition, all digital objects include a rights metadata file asset; these documents instantiate rights information in machine-readable format that can be mapped to repository security policies to enable online access management.

End users are generally not required to agree to an explicit end-user license to access data in the UCD Digital Library; instead they are made aware of specific license conditions and terms and conditions of use via statements within descriptive and rights metadata that are made available via the web dissemination of objects. In the case of digital resources for which access is restricted, as is the case with some qualitative and quantitative data within the UCD Digital Library, users are required to complete an end-user registration form specific to the owning repository (i.e., the Data Producer) to gain approval to view the restricted data. In addition, a general Terms and Conditions of Use document (http://digital.ucd.ie/terms/) provides further information that applies to use of data within the repository.

Institutional bodies regulate protection of copyrighted materials and other intellectual property, as per the Copyright and Related Acts, 2000 (http://www.irishstatutebook.ie/2000/en/act/pub/0028/). Data Protection is regulated via the Irish Data Protection Act 1998 and its amendments (https://www.dataprotection.ie/ViewDoc.asp?fn=%2Fdocuments%2Flegal%2FLawOnDP.htm&CatID=7&m=l).

Non-conformance to terms of use, which apply to restricted access resources, would result in termination of access to such resources; additional actions to be taken would be left to the discretion of the repository with an ownership interest in the resources in question, and may include legal action against the user.

Data depositors are responsible for compliance with any pertinent legal regulations in the area where the data is collected, whether within the Republic of Ireland or elsewhere. Depositors agree to this requirement and accept responsibility for compliance in concluding the Memorandum of Understanding for external Data Depositors (see "Regulatory compliance").

Staff involved with transactions with Data Providers and Data Consumers are oriented to issues relative to the nature of both qualitative and quantitative survey and other demographic and ethnographic data as well as anonymised microdata, and conditions governing their use.

Links to Documentation

UCD Digital Library, Memorandum of Understanding for external Data Depositors, http://digital.ucd.ie/docs/UCDDL_MoU_template_2015.pdf (accessed 2015-02-05). Template for Memoranda of Understanding between University College Dublin and Data Depositors external to the University.

UCD Digital Library, Terms and Conditions of Use: http://digital.ucd.ie/terms/ (accessed 2015-02-05). Details on general terms and conditions of use, comprising Copyright & Legal Statement (Copyright; Alternative Use; Reproduction of Materials; Rights Owners; Rights Disclaimer; Metadata and Database), Content Disclaimer, Takedown Notice, Appropriate Citation.

From the Ireland Data Protection Commissioner's web site:

Personal Data Security Breach Code of Practice:
http://www.dataprotection.ie/docs/07/07/10_-_Data_Security_Breach_Code_of_Practice/1082.htm

-

Details of training programmes:
http://dataprotection.ie/ViewDoc.asp?fn=%2Fdocuments%2FTrainingAndAwareness%2Ehtm&CatID=20&m=t

-

Reviewer Entry

Accept or send back to applicant for modification:

Accept

Comments:

6. The data repository applies documented processes and procedures for managing data storage.

Minimum Required Statement of Compliance:

4. Implemented: This guideline has been fully implemented for the needs of our repository.

Applicant Entry

Statement of Compliance:

4. Implemented: This guideline has been fully implemented for the needs of our repository.

Self-assessment statement:

Preservation is among the core functions identified in the UCD Digital Library's mission statement, and preservation best practices have been implemented with regard to compliance with the principles of the OAIS Reference Model and practical implementation of data acquisition workflows and processing of Submission Information Packages (SIP), creation of Archival Information Packages (AIP) (including creation of DDI metadata, technical metadata, and PREMIS-compliant preservation metadata). The UCD Digital Library Preservation Policy is available at: http://digital.ucd.ie/publications/#help-topic5. See also the UCD Digital Library Data Acquisition Protocol: http://digital.ucd.ie/docs/UCDDL_data_acq_protocol_v01.pdf.

Data received is stored and processed on Network Attached Storage (NAS) media that is accessible only from local UCD subnets through the point of receipt or creation of Submission Information Packages (SIPs). Automated ingest processes move SIPs into the Archival Information Packages that comprise complex digital objects within a Fedora Commons repository.

A comprehensive strategy for data redundancy, verification, and recovery has been implemented. UCD Digital Library integrates DuraCloud (http://www.duracloud.org/) services to automatically back up and preserve both data stored on the NAS device and production repository content that is maintained in a Fedora Commons repository. Amazon S3 storage is employed to hold a primary backup copy of content that is then archived to Amazon Glacier. There exists automatic synchronisation of content between primary and secondary storage and automatic file recovery is maintained between both backup copies. All storage services brokered by DuraSpace are from EU Safe Harbour certified service providers. These services further provide regular data integrity checks based on MD5 checksum hash values.

The majority of resources within the UCD Digital Library are available on an Open Access basis. In the case of materials to which access is rectricted, in accordance with Data Depositors' requirements, a bespoke acess control mechanism based on access control lists, a registered users database, and issuance of GUID-based access tokens is currently in placed. A replacement mechanism that will enable authentication via Edugate (http://www.heanet.ie/services/identity-access/edugate), the authentication federation for the Irish higher education sector, is under active development.

Links to Documentation

UCD Digital Library, Data Acquisition Protocol:
http://digital.ucd.ie/docs/UCDDL_data_acq_protocol_v01.pdf (accessed 2015-02-05). General procedural guideline for receipt and processing of data.

UCD Digital Library, Preservation, UCD Digital Library Preservation Policy: http://digital.ucd.ie/publications/#help-topic5 (accessed 2015-02-05).

Reviewer Entry

Accept or send back to applicant for modification:

Accept

Comments:

7. The data repository has a plan for long-term preservation of its digital assets.

Minimum Required Statement of Compliance:

> 3. In progress: We are in the implementation phase.

Applicant Entry

Statement of Compliance:

> 4. Implemented: This guideline has been fully implemented for the needs of our repository.

Self-assessment statement:

> Digital preservation is core to the mission of the UCD Digital Library as expressed in its mission statement (http://digital.ucd.ie/about/) and Preservation Policy document (http://digital.ucd.ie/publications/#help-topic5).

> Provisions have been made to guard against format obsolescence in several ways. Data providers are asked to submit data only in formats that are ubiquitously used, well-documented formats that are amenable to format transformation; these formats are identified in a publicly accessible list of "Preferred Formats for Data" in Technical Information (http://digital.ucd.ie/about/#about-documentation).

> Creation of descriptive metadata in OAIS-compliant Dublin Core and MODS 3.5 formats for all digital assets created or received by UCD Digital Library also contribute to long-term durability of digital resources. Technical and preservation metadata are also captured using software tools identified from best practices in the digital preservation community are used, along with metadata representation formats for serialization of these metadata (namely, PREMIS for tracking of preservation events; METS and DDI to represent structural metadata, etc.). A full list of supported metadata formats can be found at the UCD Digital Library web site, see "Metadata Standards & Practices" in Technical Information (http://digital.ucd.ie/about/#about-documentation).

> Maintaining the usability of data and information is the essence of digital preservation. The processes outlined above are deployed to enable active management of the data lifecycle.

> **Links to Documentation**

> UCD Digital Library, About the UCD Digital Library & Repository: http://digital.ucd.ie/about/ (accessed 2015-02-05): Mission Statement and other information regarding the UCD Digital Library, comprising Administrative Information, Technical Information, and Information for Depositors.

UCD Digital Library, Publications, "Preservation" http://digital.ucd.ie/publications/#help-topic5 (accessed 2015-02-05). UCD Digital Library Preservation Policy.

UCD Digital Library, Technical Information, "Preferred Formats for Data," in: http://digital.ucd.ie/about/#about-documentation (accessed 2015-02-05). Detailed listing of preferred data formats.

UCD Digital Library, Technical information, "Metadata Standards & Practices": http://digital.ucd.ie/about/#about-documentation (accessed 2015-02-05). A listing of metadata formats supported by the UCD Digital Library.

Reviewer Entry

Accept or send back to applicant for modification:

Accept

Comments:

8. Archiving takes place according to explicit work flows across the data life cycle.

Minimum Required Statement of Compliance:

3. In progress: We are in the implementation phase.

Applicant Entry

Statement of Compliance:

4. Implemented: This guideline has been fully implemented for the needs of our repository.

Self-assessment statement:

Development of documentation of policies and procedures has a high priority of the UCD Digital Library since its inception in 2007 as the Irish Virtual Research Library and Archive. Comprehensive documentation is maintained to describe and support workflow practices under the following headings:

- Repository policies

- Descriptive metadata

- Batch workflow software tools

- Repository technical architecture

Documentation of policy for receipt of data is described in the Data Acquisition Protocol (http://digital.ucd.ie/docs/UCDDL_data_acq_protocol_v01.pdf), which specifies formal procedures for review, verification and assessment of workflow and data modelling requirements for digital resources created locally or received from external contributors. In the parlance of the OAIS Reference Model, the procedures focus on that aspect of the data lifecycle involving the Submission Information Package (SIP).

Guidelines for the creation of descriptive metadata for digital resources is maintained in a locally accessible Confluence wiki. These guidelines document general descriptive practices and identify preferred vocabularies and authoritative resources for standardisation of literal string and URI references for personal, corporate and geographic named entities.

Documentation of workflow processes relating to the creation of Archival Information Packages (AIP) is maintained in a local confluence wiki. This documentation identifies and prescribes usage of locally developed software tools that cover a range of data processing tasks involved in creating the AIP.

Current operational staff members have project, information and data management skills, regulatory and legal compliance skills, digitisation and descriptive metadata skills, IT and programming skills, as well as customer relations skills. There is additional support from technical services at local (UCD Library) and University level, as well as data analysis support at University level.

The repository holds heterogeneous data types whose formats are reflected in the listing of "Preferred Formats for Data" in Technical Information (http://digital.ucd.ie/about/#about-documentation). All named data types can be handled by existing workflow procedures. As new data types are proposed for registration staff undertake research on best preservation practices relating to the data type as well as data attributes, desirability of reformatting to an equivalent but more ubiquitous format, etc. New practices are documented within the local confluence wiki.

Data Producers are informed of repository practices and policies by documentaiton on the UCD Digital Library web site, as well as the depositor Memorandum of Understanding. The Data Producer holds responsibility for assuring anonymity of subjects in datasets lodged with the repository, or of identifying access controll requirements for qualitative datasets (such as photographs and ethnographies) in which subject identity may be apparent.

Links to Documentation

UCD Digital Library, Data Acquisition Protocol: http://digital.ucd.ie/docs/UCDDL_data_acq_protocol_v01.pdf (accessed 2015-02-05). General procedural guideline for receipt and processing of data.

UCD Digital Library, Technical Information, "Preferred Formats for Data," in: http://digital.ucd.ie/about/#about-documentation (accessed 2015-02-05). Detailed listing of preferred data formats.

Reviewer Entry

Accept or send back to applicant for modification:

Accept

Comments:

9. The data repository assumes responsibility from the data producers for access and availability of the digital objects.

Minimum Required Statement of Compliance:

4. Implemented: This guideline has been fully implemented for the needs of our repository.

Applicant Entry

Statement of Compliance:

4. Implemented: This guideline has been fully implemented for the needs of our repository.

Self-assessment statement:

All Data Collections received by UCD Digital Library from data producers external to University College Dublin are controlled by a Memorandum of Understanding (http://digital.ucd.ie/docs/UCDDL_MoU_template_2015.pdf); all Data Collections received from depositors affiliated with UCD are subject to the general UCD Digital Library Terms and Conditions expressed on the web site (http://digital.ucd.ie/terms/), or explicit terms and conditions determined by the Data Producer.

The Memorandum of Understanding, and general practice for depositors internal to UCD, awards UCD Digital Library permission to catalogue, store, copy, reformat, preserve and disseminate Data Collections. The Memorandum of Understanding is a non-exclusive agreement, wherein the Depositor retains rights and responsibilities for the Data Collection including making Data Collections available through whatever means they choose.

In the majority of cases Data Producers make digital resources and data available on an Open Access basis. In cases where data are restricted, the Data Depositor retains the responsibility for management of applications for access and for notification of the repository manager of information pertinent to the Access Control Lists and policies to enable online authorisation of access. The Data Producer may, at their discretion, block access or take other independent action arising from violations of agreements that have been made directly with the Data Producer.

The UCD Digital Library subscribes to the Crisis and Disaster Management Plan organised by UCD Library and other cultural heritage repositories within University College Dublin.
See: http://www.ucd.ie/library/using_the_library/policies/disasterplan.

Links to Documentation

UCD Digital Library, Memorandum of Understanding for external Data Depositors,
http://digital.ucd.ie/docs/UCDDL_MoU_template_2015.pdf (accessed 2015-02-05). Template for Memoranda of
Understanding between University College Dublin and Data Depositors external to the University.

UCD Digital Library, Terms and Conditions of Use: http://digital.ucd.ie/terms/ (accessed 2015-02-05). Details on
general terms and conditions of use, comprising Copyright & Legal Statement (Copyright; Alternative Use;
Reproduction of Materials; Rights Owners; Rights Disclaimer; Metadata and Database), Content Disclaimer,
Takedown Notice, Appropriate Citation.

UCD Library Crisis and Disaster Management
Plan, http://www.ucd.ie/library/using_the_library/policies/disasterplan (accessed 2015-09-05)

Reviewer Entry

Accept or send back to applicant for modification:

Accept

Comments:

10. The data repository enables the users to discover and use the data and refer to them in a persistent way.

Minimum Required Statement of Compliance:

3. In progress: We are in the implementation phase.

Applicant Entry

Statement of Compliance:

4. Implemented: This guideline has been fully implemented for the needs of our repository.

Self-assessment statement:

Data is provided in formats widely used across a range of cultural heritage, academic and research communities. These formats are identified in the "Preferred Formats for Data" documentation in Technical Information (http://digital.ucd.ie/about/#about-documentation).

Digital resources may be referenced via persistent URLs. These include DataCite Digital Object Identifiers (DOIs), Crossref DOIs, and Archival Resource Keys. UCD Library subscribes to the California Digital Library's EZID service (see http://ezid.cdlib.org/) to enable assignment of these identifiers.

Digital resources can be discovered through a wide variety of interfaces. Metadata search via the UCD Digital Library web site is based on the Apache Solr full-text search engine; Solr's search functionality is also made available via an OpenSearch interface. An OAI-PMH Service Provider is provided that exposes OAI-PMH sets in OAIS-compliant Dublin Core, MODS, and (when available) DataCite 3.0 or 3.1 formats. RDF manifestations of descriptive metadata are made available via a SPARQL endpoint; this service is based on the Virtuoso Universal Service software.

Various means are provided for export of metadata and download of digital assets. Descriptive metadata can be exported in formats native to the repository (OAIS-compliant Dublin Core; MODS; various RDF serialisations) and in standard citation formats (RIS, BibTeX, RefWorks). Provision is made via the Web API for download of image file assets for visual resources, PDF and other document formats, etc.

Links to Documentation

UCD Digital Library, Technical Information, "Preferred Formats for Data," in: http://digital.ucd.ie/about/#about-documentation (accessed 2015-02-05). Detailed listing of preferred data formats.

California Digital Library's EZID service: http://ezid.cdlib.org/ (accessed 2015-02-05)

UCD Digital Library OAI-PMH endpoint: http://libucd.ucd.ie/oaiprovider/ (accessed 2015-02-05)

UCD Digital Library SPARQL endoint: http://data.ucd.ie:8890/sparql (accessed 2015-02-05)

UCD Digital Library OpenSearch documentation: http://digital.ucd.ie/research/#opensearch-api; OpenSearch
Description Document: http://digital.ucd.ie/opensearchdescription.xml (accessed 2015-02-05)

UCD Digital Library Data Services APIs: http://digital.ucd.ie/research/#services-api (accessed 2015-02-05)

Reviewer Entry

Accept or send back to applicant for modification:

Accept

Comments:

11. The data repository ensures the integrity of the digital objects and the metadata.

Minimum Required Statement of Compliance:

3. In progress: We are in the implementation phase.

Applicant Entry

Statement of Compliance:

3. In progress: We are in the implementation phase.

Self-assessment statement:

The Memorandum of Understanding for external Data Depositors
(http://digital.ucd.ie/docs/UCDDL_MoU_template_2015.pdf) indicates that data be delivered with MD5 checksum values from clients outside of University College Dublin so that integrity can be verified upon receipt. All original data received from UCD and non-UCD clients are stored on Network Attached Storage, situated on a private subnet; it is further verified during workflow processes and archived in secure storage managed by a Fedora Commons repository. The repository manages all original and derivative forms of data and data documentation.

The Fedora Commons repository supports a versioning framework that (1) maintains an audit trail identifying changes to the state of stored objects and (2) calculates checksum hash values for all data objects within the repository. All changes to file assets make use of this versioning framework.

Software tools will be put into place as part of the 2015 workplan to periodically validate stored file assets in the Fedora Commons repository by the stored checksum hash values.

Data is also stored redundantly on external file services. For details see the response to Question 6.

Links to Documentation

UCD Digital Library, Memorandum of Understanding for external Data Depositors,
http://digital.ucd.ie/docs/UCDDL_MoU_template_2015.pdf (accessed 2015-02-05). Template for Memoranda of Understanding between University College Dublin and Data Depositors external to the University.

Reviewer Entry

Accept or send back to applicant for modification:

Accept

Comments:

12. The data repository ensures the authenticity of the digital objects and the metadata.

Minimum Required Statement of Compliance:

3. In progress: We are in the implementation phase.

Applicant Entry

Statement of Compliance:

4. Implemented: This guideline has been fully implemented for the needs of our repository.

Self-assessment statement:

With cultural heritage materials, data changes have related less to versions of data than to the organisation of data within collections of related information. Such changes have occurred, and will inevitably recur, when analogue collections have been digitised in disjunct phases or when related collections have been integrated. In such cases care is taken to preserve repository identifiers for data objects so as not to undermine permanency of URL references. The repository also has capacity for description and storage of multiple versions of a dataset or data object.

Provenance data is recorded in descriptive metadata, i.e., holding repository and any known prior owner/custodians of the data are identified. Additional provenance information pertaining to the state of the data are also recorded as provenance metadata, generally comprising a record of preservation events that apply to the data (for example, creation of derivative files in new formats to facilitate data use); preservation events are identified with reference to the PREMIS Data Dictionary and instantiated in XML conformant to the PREMIS schema. An audit trail is also maintained within the Fedora Commons repository and is expressed within the FOXML metadata schema; this audit trail captures all transactional events associated with an Archival Information Package (AIP) and accepts annotations to qualify these transactions. See also UCD Digital Library, "Metadata Standards & Practices" in Technical Information (http://digital.ucd.ie/about/#technical_metadata).

Links to metadata are provided through the UCD Digital Library web interface (http://digital.ucd.ie/) and are expressed as menu links when descriptive records are displayed. The UCD Digital Library Web API also exposes metadata via content negotiation in a range of formats (DC, MODS, various RDF serialisations of descriptive metadata); RDF serialisations of metadata include links to external datasets (as Linked Data references). See UCD Digital Library, "Metadata Standards & Practices" in Technical Information (http://digital.ucd.ie/about/#about-documentation).

UCD Digital Library does not conduct an identity check on the depositors/data producers. This is because depositors to date have been exclusively cultural heritage repositories at the host institution, University College Dublin, or partner organisations that are well known to the repository administrators.

Links to Documentation

UCD Digital Library, Technical Information, "Metadata Standards & Practices": http://digital.ucd.ie/about/#about-documentation (accessed 2015-02-05). A listing of metadata formats supported by the UCD Digital Library.

Reviewer Entry

Accept or send back to applicant for modification:

Accept

Comments:

13. The technical infrastructure explicitly supports the tasks and functions described in internationally accepted archival standards like OAIS.

Minimum Required Statement of Compliance:

3. In progress: We are in the implementation phase.

Applicant Entry

Statement of Compliance:

4. Implemented: This guideline has been fully implemented for the needs of our repository.

Self-assessment statement:

UCD Digital Library's technical and organisational development, described at http://digital.ucd.ie/about/, is guided by the principles of the Open Archival Information System Reference Model (ISO 14721:2003). Compliance to the OAIS model is visualised in Technical Information at http://digital.ucd.ie/about/#about-documentation, under "Systems".

Planning is also informed by additional best practices frameworks that relate to digital preservation and that focus on specific aspects of data curation and management of the data life cycle. These include the Digital Curation Centre's Curation Lifecycle Model, DigitalPreservationEurope's PLATTER: Planning Tool for Trusted Digital Repositories, and the Trusted Digital Repository Checklist (TDR; ISO 16363).

UCD Digital Library is supported organisationally within UCD Library, a permanent administrative structure of the University, with operational governance provided locally by a committee framework within UCD Library and organisationally by a Library and Information Technology Board, with representatives of all major administrative and academic divisions of the University. The technical implementation of the OAIS model identifies Submission Information Packages (SIPs) as the data as received from Data Producers or as created through production processes, typically within UCD. Data comprising the SIP are subject to workflow processes that validate data and add additional metadata of various kinds to create the Archival Information Package (AIP), which is instantiated using the Fedora Object Model and Fedora Object Model XML (FOXML), in which form it is ingested to the data repository. Dissemination Information Packages (DIPs) are conceived flexibly. Descriptive metadata is made available in native OAIS-compliant Dublin Core and MODS XML formats as well as formatted views of metadata made available through a responsive web site. The Web API provides download functionality for data objects, which may be made available in the original format and/or in derivative formats (e.g., JPEG derivatives from original TIFF image files; CSV format for original Excel data).

UCD Digital Library has a work plan that identifies a technical development roadmap for the period 2015; documentation is maintained on an internal Confluence wiki. Further technical development planned includes deployment of tools developed for support of the UCD Digital Library, namely: ongoing enhancement of tools to support data preservation, particularly validation of integrity of file assets stored in the Fedora Commons repository; transition from the current Fedora Commons version 3.5 repository software to Fedora Commons version 3.8; and development of a technical roadmap for transition to the newly released Fedora Commons version 4.X repository software.

Links to Documentation

UCD Digital Library, About the UCD Digital Library & Repository: http://digital.ucd.ie/about/ (accessed 2015-02-05): Mission Statement and other information regarding the UCD Digital Library, comprising Administrative Information, Technical Information, and Information for Depositors.

UCD Digital Library, Technical Information, "Metadata Standards & Practices": http://digital.ucd.ie/about/#about-documentation (accessed 2015-02-05). A listing of metadata formats supported by the UCD Digital Library.

UCD Digital Library, Technical Information, "Systems": http://digital.ucd.ie/about/#about-documentation. Statement of compliance to principles of the OAIS Reference Model.

Reviewer Entry

Accept or send back to applicant for modification:

Accept

Comments:

14. The data consumer complies with access regulations set by the data repository.

Minimum Required Statement of Compliance:

4. Implemented: This guideline has been fully implemented for the needs of our repository.

Applicant Entry

Statement of Compliance:

4. Implemented: This guideline has been fully implemented for the needs of our repository.

Self-assessment statement:

End users are generally not required to agree to an explicit end-user license to access data in the UCD Digital Library; instead they are made aware of specific license conditions and terms and conditions of use via statements within descriptive and rights metadata that are made available via the web dissemination of objects. In the case of digital resources for which access is restricted, as is the case with some qualitative and quantitative data within the UCD Digital Library, users are required to complete an end-user registration form specific to the owning repository (i.e., the Data Producer) to gain approval to view the restricted data. In addition, a general Terms and Conditions of Use document (http://digital.ucd.ie/terms/) provides further information that applies to use of data within the repository.

UCD Digital Library encourages use of Creative Commons standard licenses from the version 4 family of licenses; choice of license rests with the Data Producer or UCD repository.

If conditions for use of restricted resources are not complied with, it is the practice of UCD Digital Repository, at the request of the Data Producer, to block access via the local access management framework to specific users.

Links to Documentation

UCD Digital Library, Terms and Conditions of Use: http://digital.ucd.ie/terms/. Details on general terms and conditions of use, comprising Copyright & Legal Statement (Copyright; Alternative Use; Reproduction of Materials; Rights Owners; Rights Disclaimer; Metadata and Database), Content Disclaimer, Takedown Notice, Appropriate Citation.

Reviewer Entry

Accept or send back to applicant for modification:

Accept

Comments:

15. The data consumer conforms to and agrees with any codes of conduct that are generally accepted in the relevant sector for the exchange and proper use of knowledge and information.

Minimum Required Statement of Compliance:

4. Implemented: This guideline has been fully implemented for the needs of our repository.

Applicant Entry

Statement of Compliance:

4. Implemented: This guideline has been fully implemented for the needs of our repository.

Self-assessment statement:

As most data residing within the UCD Digital Library is made available on an Open Access basis, data consumers are not generally asked to complete an end user license. With the small number of resources to which access is restricted, users are asked to complete a registration form that requests access to resources; upon approval users details are added to local Access Control Lists and an access token issued to enable access to specified resources.

Institutional bodies regulate protection of copyrighted materials and other intellectual property, as per the Copyright and Related Acts, 2000 (http://www.irishstatutebook.ie/2000/en/act/pub/0028/). Data Protection is regulated via the Irish Data Protection Act 1998 and its amendments (https://www.dataprotection.ie/ViewDoc.asp?fn=%2Fdocuments%2Flegal%2FLawOnDP.htm&CatID=7&m=l).

Non-conformance to terms of use, which apply to restricted access resources, would result in termination of access to such resources; additional actions to be taken would be left to the discretion of the repository with an ownership interest in the resources in question.

Links to Documentation

Irish Copyright and Related Acts, 2000, http://www.irishstatutebook.ie/2000/en/act/pub/0028/

Irish Data Protection Act 1998 and its amendments, https://www.dataprotection.ie/ViewDoc.asp?fn=%2Fdocuments%2Flegal%2FLawOnDP.htm&CatID=7&m=l

UCD Digital Library, Terms and Conditions of Use: http://digital.ucd.ie/terms/ (accessed 2015-02-05). Details on general terms and conditions of use, comprising Copyright & Legal Statement (Copyright; Alternative Use; Reproduction of Materials; Rights Owners; Rights Disclaimer; Metadata and Database), Content Disclaimer, Takedown Notice, Appropriate Citation.

Reviewer Entry

Accept or send back to applicant for modification:

Accept

Comments:

16. The data consumer respects the applicable licences of the data repository regarding the use of the data.

Minimum Required Statement of Compliance:

4. Implemented: This guideline has been fully implemented for the needs of our repository.

Applicant Entry

Statement of Compliance:

4. Implemented: This guideline has been fully implemented for the needs of our repository.

Self-assessment statement:

The majority of data held in the UCD DIgital Library is made available on an Open Access basis. In many cases, specific licenses from the Creative Commons 3.X and 4.X family of licenses have been applied; repositories that hold original analogue or digital resources determine applicable licenses. In a small number of cases, access to resources has been restricted by the Data Producer and completion of an end-user registration to view requested data must be completed. In such cases the specific terms expressed in the resgitration form apply. In all other cases, the range of conditions identified in the UCD Digital Library Terms and Conditions of Use apply (http://digital.ucd.ie/terms/); these relate to copyright and other regulatory matters that apply to information resources generally.

The Irish Data Protection Commissioner provides guidelines for Personal Data Security Breach Code of Practice applicable to all Data Providers. It is the responsibility of the Data Provider, as indicated in the Memorandum of Understanding, to assure that in appproving access to data that appropriate steps have been taken to protect rights of individuals. End-users of data are advised of specific terms of use of restricted resources in the registration form that must be completed to access such materials.

UCD Digital Library, Terms and Conditions of Use: http://digital.ucd.ie/terms/ (accessed 2015-02-05). Details on general terms and conditions of use, comprising Copyright & Legal Statement (Copyright; Alternative Use; Reproduction of Materials; Rights Owners; Rights Disclaimer; Metadata and Database), Content Disclaimer, Takedown Notice, Appropriate Citation.

Links to Documentation

Irish Copyright and Related Acts, 2000, http://www.irishstatutebook.ie/2000/en/act/pub/0028/

Irish Data Protection Act 1998 and its
amendments, https://www.dataprotection.ie/ViewDoc.asp?fn=%2Fdocuments%2Flegal%2FLawOnDP.htm&CatID=7&m=l

UCD Digital Library, Terms and Conditions of Use: http://digital.ucd.ie/terms/ (accessed 2015-02-05). Details on general terms and conditions of use, comprising Copyright & Legal Statement (Copyright; Alternative Use; Reproduction of Materials; Rights Owners; Rights Disclaimer; Metadata and Database), Content Disclaimer, Takedown Notice, Appropriate Citation.

Reviewer Entry

Accept or send back to applicant for modification:

Accept

Comments: