Applying the DCC Curation Lifecycle Model

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Lifecycle Approach to Digital Curation and Preservation

• digital materials are fragile and susceptible to change from technological advances from creation onwards
• activities (or lack of) at each lifecycle stage influence ability to manage and preserve materials in subsequent stages
• reliable re-use of digital materials is only possible if materials are curated in such a way that their authenticity and integrity are retained
• requires significant input and buy-in from the range of stakeholders – creators, curators, IT staff, management
• helps maximise initial investment made in creating or gathering data
• supports verification of provenance
• facilitates continuity of service

From: Pennock, Maureen (2007),

*Digital Curation: A Life-Cycle Approach to Managing and Preserving Usable Digital Information*
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The Curation Lifecycle

The DCC Curation Lifecycle Model provides a graphical high level overview of the stages required for successful curation and preservation of data from initial conceptualisation or receipt.

The model can be used to plan activities within an organisation or consortium to ensure all necessary stages are undertaken, each in the correct sequence.
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1. Full Lifecycle Actions
2. Sequential Actions
3. Occasional Actions

http://www.dcc.ac.uk/docs/publications/DCCLifecycle.pdf

www.dcc.ac.uk
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Using the DCC Curation Lifecycle Model

The model enables:

- identification of additional actions required
- identification of actions which are not required
- identification of roles and responsibilities
- adequate documentation of processes and policies
- building frameworks of standards and technologies to implement
- granular development of the above
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Selected DCC Applications

- DCC curation training tool
- immersive case studies
- curation policies
- DCC DIFFUSE Standards Frameworks
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DCC Curation Training Tool

The DCC runs regular workshops, tutorials and information days highlighting issues and tools relevant to curation. The Model formed the basis of a number of recent events:

- DCC Curation 101 Workshops
- conference workshops
- ½ day introductions to the Model
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Immersive Case Studies

DCC case studies inform the community about disciplinary approaches to digital curation. The Model is used to help particular domains identify specific problems and risks, and recommend steps for their mitigation:

- The Carmen eScience Longitudinal Study
- SCARP Project
## Curation Lifecycle Risks and Mitigation Steps

<table>
<thead>
<tr>
<th>Full Lifecycle Actions</th>
<th>Main Risks Identified</th>
<th>Mitigation Steps in Progress</th>
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| Description and representation information | ▪ Loss of integrity of information i.e. links between dataset elements & study docs. | ▪ Ontology to describe data  
▪ Standard ‘master file’ documentation.  
▪ Data documentation system to link and describe study files and representation information.* |
| Preservation planning                   | ▪ Preservation failure  
▪ Loss of key member(s) of staff  
▪ Funding bodies may misperceive the level of infrastructure for local curation | ▪ Seeking funding for preservation activity  
▪ Develop data policy to include dataset appraisal and migration.* |
| Community watch and participation       | ▪ None                                                                                  | ▪ Active participation in e-Science consortia, multi-centre projects and professional networks |
| Curate and preserve                    | ▪ Data integration unmanageable                                                          | ▪ Establish extent of data cleaning needs, using sampling approach.*                         |

Curation Policies

Effective policies to support curation ensure open access to research data. The DCC has:

- analysed UK research funders’ curation requirements
- made recommendations for curation policy creation
- identified gaps in existing UK policies using the Model to analyse both content and stakeholders
- drawn together existing policy guidance
- tools for creating policies, such as policy templates, will be made available soon.

See: Jones, Sarah (2009), *A Report on the Range of Policies Required for and Related to Digital Curation*
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The Model Mapped with Policies and Stakeholders

Main policy areas
- Data creation
- Appraisal
- Storage
- Preservation
- Access & reuse

Stakeholders
- creators
- curators
- users

Main policy areas
- Conceptualise
- Data creation
- Storage
- Preservation
- Access & reuse

Main policy areas
- Appraisal
- Ingest
- Metadata
- Storage
- Preservation/Transform
- Access & reuse
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DCC DIFFUSE Standards Frameworks

Frameworks of standards for curation and preservation activities

- contextualised according to lifecycle action supported
- domain recommendations
- helps informed choice on standards implementation

www.dcc.ac.uk/diffuse
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Other Selected Applications

• developing curation strategy
• curation project planning
• curation education
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Developing Curation Strategy

• UK Research Data Service (UKRDS) Feasibility Study ¹
  • model used to identify the requirements of a national research data service for effective research data management

• South African Council for Scientific and Industrial Research (CSIR) ²
  • model recommended as the strategic basis of a digital curation and preservation strategy

1. UKRDS (2009), *The Data Imperative: Managing the UK’s Research Data for Future Use: a Summary of the Report of the UK Research Data Service Feasibility Study*

2. Merwe, Adèle van der and Deventer, Martie van (2009), *Planning an effective digital preservation strategy for a research organization*
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Curation Project Planning

• University of Oxford Research Data Management Project
  • Mapped their Framework of Research Data Management Services against the Model to identify areas of their service which need further development \(^1\)
  • Mapped data management activities, of 2 research groups against the Model in their Data Audit Framework (DAF) case study \(^2\)


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University of Oxford: Framework of Research Data Management Services mapped against the Model
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University of Oxford: Data Management and Curation Workflow of the Cardiac Mechano-Electric Feedback Group (CMEFG) Mapped to the Model
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Curation Project Planning

Florida State University Libraries and Digital Library Center is applying the Model to plan the curation of digital objects.¹

Some JISC data management project funding calls use the model as a reference point.²

¹ Smith, Plato L (2009), *MetaArchiving Diatomscapes and FSU “Flying High” Circus: Aspects of The DCC Curation Lifecycle Model*

² JISC (Joint Information Systems Committee)
Curation Education

Some Library and Information Science programmes teach curation concepts using the Model eg:

- Simmons College Graduate School of Library and Information Science
- University of North Carolina School of Information and Library Science
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Curation Education

University of North Carolina at Chapel Hill:

• identifying gaps and overlaps between the curricula being developed by the Digital Library Curriculum Project and the Digital Curation Curriculum Project (DigCCurr)

Pomerantz, Jeffrey et al. (2009), *Comparing Curricula for Digital Library and Digital Curation Education*
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Coverage in the Digital Curation Curricula

Coverage in the Digital Library Curricula
Curation Education

Recommending improvements in curation education

- JISC uses the Model to examine the role of data scientists, and make recommendations about curation training for the research community. 

- UKOLN uses the Model to recommend the inclusion of integrated curation training in all stages of the student curriculum in the Digital Britain Interim Report.


2. Lyon, Liz (2009), *Digital Britain Interim Report: A Response from UKOLN*
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