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Draft DCC Curation Lifecycle Model

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Summary

Lifecycle management of digital materials can help conceptualisation of the stages required to successfully curate digital material. A number of discipline specific models, and more generally applicable standards, have been developed which can be used as a basis when planning and implementing organisational management of digital material. The generic Draft DCC Curation Lifecycle Model identifies curation actions applicable either across the whole digital lifecycle or sequentially throughout it. Domain specific models, with greater granularity, will be developed to ensure readily accessible advice.

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A lifecycle approach to the management of digital materials enables visualisation of the processes, activities and relationships required for successful curation and long-term preservation. A number of disciplines and projects have developed lifecycle models for digital assets, which serve as the framework for the detailed planning activities required by particular domains. Personal Digital Archives are served by the Paradigm Project's *Lifecycle for the long-term preservation of digital archives* (Paradigm Project, 2006). Institutional repositories can look to the work of the SHERPA DP Project (Knight, 2006) and the LIFE Project (Wheatley, Ayris, Davies, Mcleod, & Shenton, 2007). The InterPares *Chain of Preservation Model* (InterPARES 2 Project, 2007) provides both high-level overviews, and comprehensive granular diagrams describing the detailed processes required for electronic records management. Similar work is being undertaken in the areas of e-Science (Humphrey, 2006) and e-Research (Lyon, 2003).

Lifecycle planning for digital material can be underpinned by adherence to relevant standards and specifications. OAIS (ISO 14721:2003 *Space data and information transfer systems — Open archival information system — Reference model* (International Organization for Standardization [ISO], 2003)) provides a generic conceptual framework for building a complete archival repository. ISO 15489 parts 1 and 2 (ISO 15489: 2001 *Information and documentation. Records management* (ISO, 2001)) provide both a best practice framework and implementation guidelines for the management of both digital and physical information. The forthcoming revision of the MoReq Specification (2007) (*Model Requirements for the Management of Electronic Records Update and Extension, 2007*) considers the administrative stages required, and applicable standards to implement, when developing technical solutions for digital curation in a corporate environment.

The Draft DCC Curation Lifecycle Model (see Figure 1 below) provides a generic graphical high-level overview of the stages required for successful curation and preservation of digital material from initial conceptualisation. The model can be used to plan curation and preservation activities within an organisation or consortium to ensure that all necessary stages are undertaken, each in the correct sequence. The model enables granular functionality to be mapped against it to define roles and responsibilities, and build a framework of standards and technologies to implement. It can help with the process of identifying additional steps which may be required, or actions which are not required by certain situations or disciplines, and of ensuring that processes and policies are adequately documented.

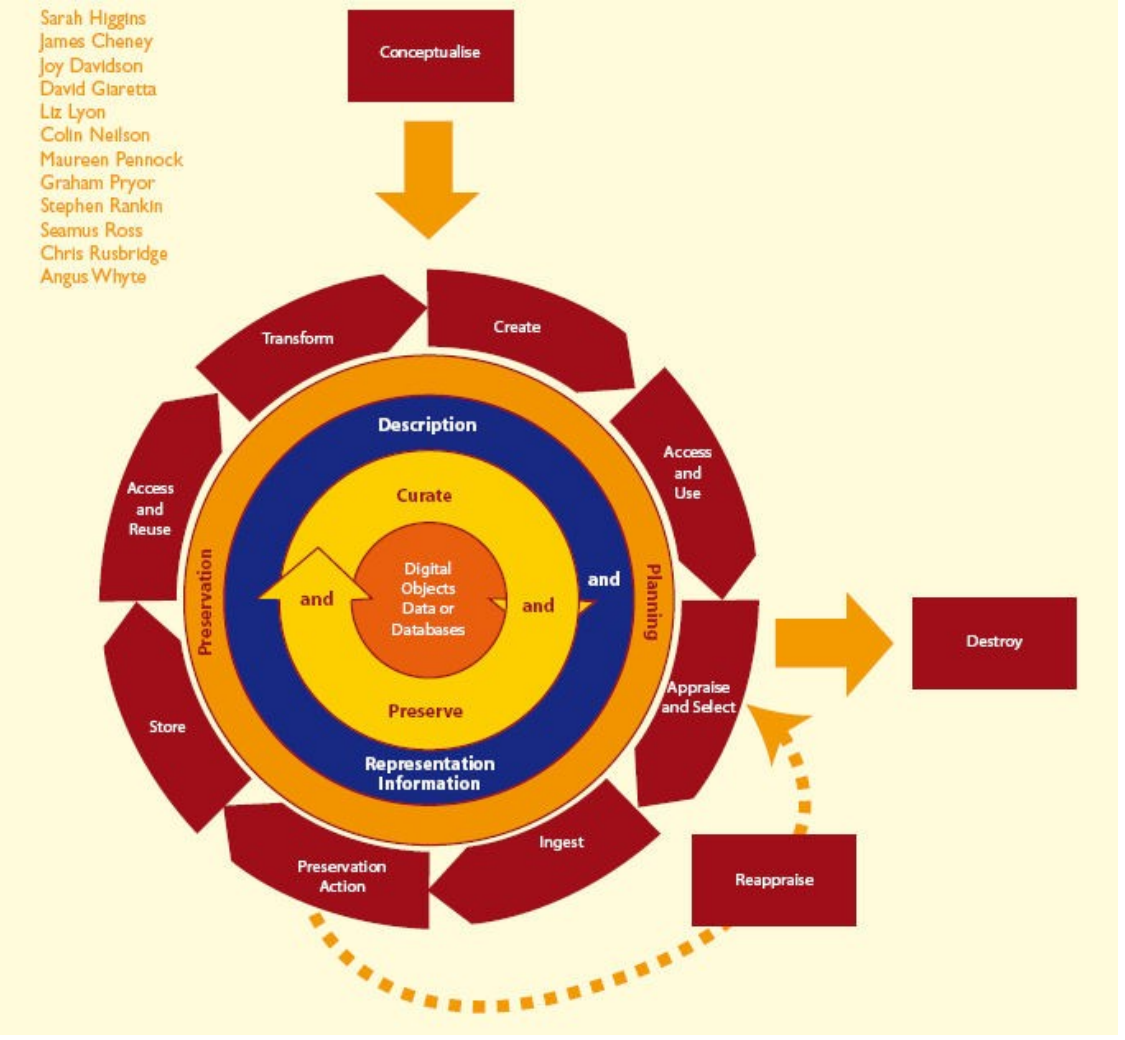

Figure 1. Draft DCC Curation Lifecycle Model.

The two tables below outline full lifecycle and sequential actions:

Full Lifecycle Actions	
Preservation Planning	Plan for preservation throughout the lifecycle of digital material.
Description and Representation Information	Assign administrative, descriptive, technical, structural and preservation metadata, using appropriate standards, to ensure adequate description and control over the long term. Collect and assign Representation Information required to understand and render both the digital material and the associated metadata.
Curate and Preserve	Be aware of, and undertake actions to promote curation and preservation throughout the lifecycle.

Sequential Actions	
Conceptualise	Conceive and plan the creation of digital material, including capture method and storage options.
Create	Create digital material including administrative, descriptive, structural and technical metadata.
Access and Use	Ensure that digital material can be actively accessed by the designated users on a day-to-day basis. This may be in the form of publicly available published information, and robust access controls and authentication procedures may be applicable.
Appraise and Select	Evaluate digital material and select for long-term curation and preservation. Adhere to documented guidance, policies or legal requirements.
Destroy	Destroy material which has not been selected for long-term curation and preservation. Documented policies, guidance or legal requirements may require that this be done securely.
Ingest	Transfer material to an archive, repository, data centre or other custodian. Adhere to documented guidance, policies or legal requirements.
Preservation Action	Undertake actions to ensure long-term preservation and retention of the authoritative nature of digital material. Preservation actions should ensure that material remains authentic, reliable and usable while maintaining its integrity. Actions include validation, assigning preservation metadata, assigning representation information and ensuring acceptable data structures or file formats.
Reappraise	Return digital material which fails validation procedures for further appraisal and reselection.
Store	Store the data in a secure manner adhering to relevant standards.
Access and Reuse	Ensure that data is accessible to both designated users and reusers. This may be in the form of publicly available published information. Robust access controls and authentication procedures may be applicable.
Transform	Create new digital material from the original, for example - by migration into a different form - by creating a subset by selection or query to create newly derived results, perhaps for publication.

The Digital Curation Centre will shortly start to use this draft model to ensure that information, services and advisory material cover all areas of the lifecycle. Domain-specific variations will be developed, with greater levels of granularity, to help ensure that advice and information are easily accessible from the website.

This draft model is now open for public consultation. We welcome comments on both the model and domain-specific variations by February 29, 2008. Such feedback can be emailed to Sarah.Higgins@ed.ac.uk or posted on the DCC Curation Lifecycle Model topic on the DCC Forum at http://forum.dcc.ac.uk

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