Digital Preservation – The Planets Way: Annotated Reading List

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The documents listed below, a variety of leaflets, papers and reports, supply an overview and introduction to the technical, organisational and financial issues relating to the preservation of digital objects, and the activities and the tools developed by the Planets project to provide assistance and solutions to those issues.

The documents in the first two sections will provide an introduction to the notion of digital preservation, and then to some fundamental principles. The documents in the third section provide more detailed coverage of the solutions developed by the Planets project. The fourth section provides links to Planets tools websites and the last section, 'Further Reading', offers detailed documentation of the digital cultural heritage landscape.

For each resource, the format, length and file size have been indicated, as well as the Planets-hosted online location and an alternative URL where available.

A. Introduction to digital preservation

A1. An Introduction to Digital Preservation
http://www.planets-project.eu/events/sofia-2009/pre-reading/docs/JISC_Intro%20to%20DP.pdf
JISC Digital Media. January 2009
Digital Preservation in a nutshell. A very short introduction to the main issues and approaches to the preservation of digital objects
[leaflet, 3 pages, PDF, 53KB]
Also available at: http://www.jiscdigitalmedia.ac.uk/crossmedia/advice/an-introduction-to-digital-preservation/

A2. A Manager's Guide to the Long-term Preservation of Electronic Documents
Pitman, N. and Shipman, A. 2008. British Standards Institution.
This publication provides guidance for the adoption of practices and standards that will enable organisations to have confidence their digital documents will be preserved for the long-term.
[book, 110 pages, ISBN 978-0-580-61351-7]

B. Some important principles of digital preservation

B1. Preservation Management of Digital Material
http://www.planets-project.eu/events/sofia-2009/pre-reading/docs/DPC_HandbookDigPres.pdf
Digital Preservation Coalition. November 2008
A more detailed introduction to the main issues and approaches to the preservation of digital objects. It contains a good distinction between the three major categories of issues (i.e. technological, organisational, legal).
[handbook, 17 pages, PDF, 130KB]
Also available at: http://www.dpconline.org/advice/digital-preservation-handbook.html

B2. The Open Archival Information System Reference Model
http://www.planets-project.eu/events/copenhagen-2009/pre-reading/docs/lavoie_OAIS.pdf
Brian F. Lavoie, OCLC Online Computer Library Center. January 2004
This report provides a brief history of the OAIS reference model and an introduction to the three separate but related parts that constitute a OAIS compliant archive. The first part describes the external environment within which the OAIS operates; the second part describes the functional components, or internal mechanisms, which collectively fulfil the OAIS's preservation responsibilities. The third part describes the information objects which are ingested, managed, and disseminated by the

OAIS.
[report, 20 pages, PDF, 372KB]
Also available at: http://www.dpconline.org/technology-watch-reports/download-document/91-introduction-to-oais.html

For the full original specification of the OAIS model, please also see:
B2a. Reference Model for an Open Archival Information System (OAIS) (the 'Blue Book')
http://www.planets-project.eu/events/copenhagen-2009/pre-
reading/docs/OAIS_REF_MODEL_BLUE_BOOK.pdf
The Consultative Committee for Space Data Systems (CCSDS)
[technical recommendation, 148 pages, PDF, 639KB]
Also available at: http://public.ccsds.org/publications/archive/650x0b1.pdf

B3. Avoiding Technological Quicksand: Finding a Viable Technical Foundation for Digital Preservation
http://www.planets-project.eu/events/copenhagen-2009/pre-
reading/docs/Ross_Avoiding_Technological_Quicksand.pdf
Jeff Rothenberg. January 1998
This report explores the technical depth of the problem of long-term digital preservation, analyses the
author's views on limitations of proposed solutions, and articulates an argument for the emulation
strategy. The central idea of the emulation strategy is to emulate obsolete systems on future, unknown
systems, so that a digital document's original software can be run in the future despite being obsolete.
[report, 37 pages, PDF, 329KB]
Also available at: http://www.clir.org/pubs/reports/rothenberg/introduction.html

B4. Guidelines for the preservation of digital heritage
http://www.planets-project.eu/events/copenhagen-2009/pre-
reading/docs/UNESCO_GUIDELINES_FOR_DIGITAL_HERITAGE.pdf
UNESCO - prepared by the National Library of Australia. March 2003
This report, prepared for UNESCO by the National Library of Australia, introduces general and
technical guidelines for the preservation and continuing accessibility of the ever growing digital heritage
of the world.
[guidelines, 170 pages, PDF, 642KB]
Also available at: http://unesdoc.unesco.org/images/0013/001300/130071e.pdf

B5. Modelling Organisational Preservation Goals
http://www.planets-project.eu/events/copenhagen-2009/pre-
reading/docs/Modelling%20Organizational%20Preservation%20Goals_Angela%20Dappert.pdf
Angela Dappert, Adam Farquhar. British Library. September 2008
This paper introduces a conceptual model for expressing the core concepts and requirements that
appear in preservation guiding documents. It defines a specific vocabulary that institutions can reuse
for expressing their own policies and strategies. In addition to providing a conceptual framework, the
model and vocabulary support automated preservation planning tools through an XML representation.
[paper, 8 pages, PDF, 152KB]
Also available at: http://www.bl.uk/ipres2008/ipres2008-proceedings.pdf#page=14

C. Introduction to Planets tools and services

C1. Planets: Integrated Services for Digital Preservation
http://www.planets-project.eu/events/copenhagen-2009/pre-
reading/docs/The%20Planets%20Project_Adam%20Farquhar_Helen%20Hockx-Yu.pdf
Adam Farquhar, Helen Hockx-Yu: British Library. November 2007
This article introduces the motivation for the Planets project, describes the extensible technical
architecture and places the Planets approach into the context of the Open Archival Information System
(OAIS) Reference Model. It also provides a scenario demonstrating Planets' usefulness in solving real-
life digital preservation problems.
[paper, 12 pages, pdf, 290KB]
Also available at: http://www.ijdc.net/index.php/ijdc/article/viewFile/45/31

C2. How to Choose a Digital Preservation Strategy

http://www.planets-project.eu/events/copenhagen-2009/pre-reading/docs/p29-strodl.pdf
Stephan Strodl, Christoph Becker, Robert Neumayer, Andreas Rauber, Vienna University of Technology. June 2007
This paper presents the Planets Preservation Planning approach. It provides an approved way to make informed and accountable decisions on which solution to implement to optimally preserve digital objects for a given purpose. It is based on Utility Analysis to evaluate the performance of various solutions against well-defined requirements and goals. The viability of this approach is shown in several case studies for different settings. The paper presents its application to two web-archive scenarios, two collections of electronic publications, and a collection of multimedia art.
[paper, 10 pages, PDF, 503KB]
Also available at: http://www.ifs.tuwien.ac.at/~strodl/paper/FP060-strodl.pdf

C3. A Service Oriented Decision Support System for Preservation Planning
http://www.planets-project.eu/events/sofia-2009/pre-reading/docs/Becker_etc_PlatoSOA.pdf
Christoph Becker, Hannes Kulovits, Andreas Rauber, Vienna University of Technology; Hans Hofman, National Archive of the Netherlands. June 2008
This paper presents a service-oriented architecture and decision support tool (the Plato tool) that implements a solid preservation planning process. The architecture and Plato tool integrate services for content characterisation, preservation actions and automatic comparison of objects before and after treatment to provide maximum support for preservation planning endeavours.
[paper, 4 pages, PDF, 1142KB]
Also available at: http://publik.tuwien.ac.at/files/PubDat_170832.pdf

C4. Significance is in the Eye of the Stakeholder
http://www.planets-project.eu/events/copenhagen-2009/pre-reading/docs/Significant%20Characteristics_Angela%20Dappert.pdf
Angela Dappert, Adam Farquhar, British Library. September 2009
The concept of significant characteristics has become prominent within the digital preservation community to capture the key goal of preserving the most relevant aspects of the content of a digital object, even at the cost of sacrificing less important ones. However, the term has become over-loaded and very often it remains ill-defined. In this paper, the domain of significant characteristics is analyzed, and a clear terminology is introduced.
[paper, 12 pages, PDF, 132KB]
Also available at: http://www.planets-project.eu/docs/papers/Dappert_Significant_Characteristics_ECDL2009.pdf

C5. A Generic Language for Characterising Objects
http://www.planets-project.eu/events/copenhagen-2009/pre-reading/docs/Characterisation%20Languages_Christoph%20Becker_Volker%20Heydegger_Jan%20Schasse_Manfred%20Thaller.pdf
Christoph Becker, Andreas Rauber, Vienna University of Technology. March 2008
Volker Heydegger, Jan Schnasse, Manfred Thaller, University of Cologne
This paper presents the eXtensible Characterisation Languages (XCL) that support the automatic validation of document conversions and the evaluation of migration quality by hierarchically decomposing a document and representing documents from different sources in an abstract XML language. The paper presents the context of the development of these languages and tools and describes the overall concept and features of the languages and how they can be applied to the evaluation of digital preservation solutions.
[paper, 5 pages, PDF, 132KB]
Also available at: http://www.ifs.tuwien.ac.at/~becker/pubs/becker_sac08.pdf

For a more detailed presentation of the eXtensible Characterisation Description Language (XCDL) and the eXtensible Characterisation Extraction Language (XCEL) please also see:

Characterisation of Digital Objects: the XCL Languages
http://www.planets-project.eu/events/london-2010/pre-reading/docs/PubDat_174216.pdf
Christoph Becker, Andreas Rauber, Vienna University of Technology Volker Heydegger, Jan Schnasse, Manfred Thaller, University of Cologne, October 2008
Also available at: http://www.jucs.org/jucs_14_18/systematic_characterisation_of_objects

The eXtensible Characterisation Languages – XCL
Thaller, M.2009. Verlag Dr. Kovac.
This book provides an overview of the work of the Computer Science for the Humanities development team at the University of Cologne to develop the eXtensible Characterisation Languages (XCL) within Plantes.
[book, 479 pages, ISBN 978-3-8300-4766-7]

C6. The Planets Interoperability Framework
http://www.planets-project.eu/events/copenhagen-2009/pre-reading/docs/King_etal_Planets_IF.PDF
Ross King, Rainer Schmidt, Austrian Research Centers GmbH – ARC; Andrew Jackson, Carl Wilson, British Library; Fabian Steeg, University of Cologne. September 2009
The design of the Planets Framework was driven by the requirements of logical preservation in the domain of libraries and archives, which include durable and scalable infrastructures for the characterisation and migration of digital documents, and emulation of digital environments. The IF is a Java-based software suite built on a number of open source components and Java standards, according to the Service Oriented Architecture principles. It includes a workflow engine for the execution of flexible preservation plans, and a Job Submission Service (JSS) for managing computationally intensive preservation actions on millions of digital objects.
[paper, 12 pages, PDF, 132KB]

C7. Report on Comparison of Planets with OAIS
http://www.planets-project.eu/events/copenhagen-2009/pre-reading/docs/Planets_PP7-D1_ReportOnComparisonOfPlanetsWithOais.pdf
Barbara Sierman, National Library of the Netherlands. June 2007
This paper examines the Planets view of Preservation Planning within a repository, with the main purpose of identifying any missing elements within the Planets Project in relation to the OAIS model, and at the same time in order to provide well articulated and justified feedback to OAIS for future revisions of the standard.
[Planets Deliverable, 24 pages, PDF, 366KB]
Also available at: http://www.planets-project.eu/docs/reports/Planets_PP7-D1_ReportOnComparisonOfPlanetsWithOais.pdf

C8. The Planets Testbed: Science for Digital Preservation
http://www.planets-project.eu/events/copenhagen-2009/pre-reading/docs/HATII_The%20Testbed.pdf
Brian Aitken, Petra Helwig, Andrew Jackson, Andrew Lindley, Eleonora Nicchiarelli, Seamus Ross, HATII at University of Glasgow. June 2008
Until recently digital preservation has been characterised by practices and processes that could best be described as more art and craft than science. The Planets Testbed provides a controlled environment where preservation tools can be tested and evaluated, and where experiment results can be empirically compared. This paper presents an overview of the Testbed application, an analysis of the experiment methodology and a description of the Testbed's web service approach.
[paper, 13 pages, PDF, 1283KB]
Also available at: http://journal.code4lib.org/articles/83

C9. Planets project: Template for Preservation Plan
http://www.planets-project.eu/events/copenhagen-2009/pre-reading/docs/Planets_project_Template_for_Preservation_Plan.pdf
The Plato team, Vienna University of Technology. April 2008
A preservation plan defines a series of preservation actions to be taken by a responsible institution, due to an identified risk for a given set of digital objects or records (called a collection). The Preservation Plan takes into account the preservation policies, legal obligations, organisational and technical constraints, user requirements and preservation goals and describes the preservation context, the evaluated preservation strategies and the resulting decision for one strategy, including the reasoning for the decision. It also specifies a series of steps or actions (called preservation action plan) along with responsibilities and rules and conditions for execution on the collection. Provided that the actions and their deployment as well as the technical environment allow it, this action plan is an executable workflow definition.
[template, 3 pages, PDF, 24KB]

C10. Service Developer Guidelines
http://www.planets-project.eu/docs/reports/Planets_IF6-D3_Service_Developers_Guidelines.pdf
Carl Wilson, Andrew Jackson, British Library. March 2010
This document presents the final version of the Planets Service Wrapping Guidelines. It is targeted at software developers - within the Planets consortium but also third parties - working in Digital Preservation, who would like to integrate their tools with the Planets software environment, and make use of applications for Preservation Planning, Testing, and Workflow Orchestration and Execution.
[Planets Deliverable, PDF, 985KB]

D. Links to Planets tool websites

D1. The website of the Plato tool
http://www.ifs.tuwien.ac.at/dp/plato/intro.html
The Plato Team, Vienna University of Technology
The site contains an introduction to Plato, as well as complete documentation and a few case studies.

D2. The website of the Planets characterisation tools
http://planetarium.hki.uni-koeln.de/planets_cms/
The XCL Team, University of Cologne
The site contains an introduction to XCL (the eXtensible Characterisation Language) and additional documentation of the various tools.

D3. The website of the Planets Testbed tool
https://testbed.planets-project.eu/testbed/
The Testbed Team, National Library of the Netherlands, HATII at the University of Glasgow
The site is the entry point to using the Testbed tools and the Corpus of digital documents that can be used for benchmarking or for testing. Please note that in order to use the tools you need to login. Registration of new accounts can be requested at helpdesktb@planets-project.eu

Please also see the Planets Sourceforge page at http://sourceforge.net/projects/planets-suite/.

E. Further reading

E.1 Progress on the digitisation of cultural material in Europe
http://www.planets-project.eu/events/sofia-2009/pre-reading/docs/EU_DigitizationCulturalMaterial.pdf
Commission of the European Communities. August 2008
Europe's Cultural Heritage at the Click of a Mouse summarises progress on the digitisation and online accessibility of cultural material and digital preservation across the EU.
[report, 11 pages, PDF, 92KB]
Also available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0513:FIN:EN:PDF

E.2 Market survey for long-term management of digital information
http://www.planets-project.eu/events/sofia-2009/pre-reading/docs/Planets_DT11-D1_SurveyReport.pdf
Lewis Jardine and Pauline Sinclair, Tessella on behalf of British Library. May 2009
Planets conducted a market survey in spring 2009 to ascertain the status and requirements of long-term management of digital information by European organisations that create or hold digital content. Over 200 responses were received from a wide range of organisations with respondents representing a variety of different fields. Overall, two-fifths were from libraries and one third from archives. This document summarises the findings.
[report, 57 pages, PDF, 716KB]
Also available at: http://www.planets-project.eu/market-survey/reports/