

The KB's e-Depot

The KB's e-Depot: an overview

The contents

The e-Depot of the National Library of the Netherlands was originally designed to secure long-term preservation for digital publications within the context of the Dutch national deposit collection. However, it was soon realised that the e-Depot's infrastructure could be put to wider use. Presently, the e-Depot includes a national and an international section. *See also special flyer on the Facts & Figures e-Depot.*

The national e-Depot includes the following collections:

- ♦ **the national digital deposit collection.** The e-Depot contains digital publications which are deposited with the KB in the framework of the national Deposit collection.
- ♦ **the Digital archive of the Dutch academic institutional repositories.** All publications included in the renowned DARE/NARCIS initiative of the Dutch universities are harvested on a regular basis.
- ♦ **the Dutch web archive.** As of 2008 the KB regularly harvests a few thousand Dutch web sites. Selection is based on the KB's collection profile which focuses on Dutch history, culture and society.
- ♦ **the master archive of national digitisation projects.** Masters resulting from national digitisation projects carried out by the KB will be stored in the e-Depot, e.g., Dutch newspapers from 1618 and Parliamentary Papers (1814-1995).

The international e-Depot includes:

- ♦ **digital archives of major international publishers.** As the KB's remit specifies that it should serve the academic community which is intrinsically international in nature, it was decided early on that the KB would open up its e-Depot to international scientific publishers. More than eleven million articles have since found their way to the e-Depot. Access to these publications is restricted to on-site use, except of course in the case of open-access content.

Technical features

The e-Depot's core digital storage facility, the Digital Information Archiving System (DIAS) was developed jointly with IBM in line with the Open Archival Information System (OAIS) reference model. DIAS has been specifically designed to facilitate long-term preservation. Both migration and emulation are being developed as preservation strategies by KB Research and Development staff. Access regimes vary according to the collections involved.

See also separate flyers on the DIAS system, migration, emulation and characterisation.

Organisational features

The operational e-Depot is incorporated in the Acquisitions and Processing Division, where a work flow has been implemented parallel to the work flow for printed publications. Within the Research and Development Division a separate team carries out research into specific digital preservation strategies, preferably within the context of international (EU) projects such as PLANETS and PARSE.insight. Structural funding has been secured from the Dutch Government, but additional business models will be developed to build a sustainable infrastructure for the future.

National and international cooperation

The KB actively seeks cooperation in both a national and an international context. It is one of the founding members of the Netherlands Coalition for Digital Preservation (<http://www.ncdd.nl/en>) and the European Alliance for Permanent Access to the Records of Science (<http://www.alliancepermanentaccess.eu>). In addition, the KB promotes the concept of a global *Safe Places Network*. Within such a collaborative network a limited number of institutions with certified digital archives will share responsibility for complete, world-wide coverage of e-journals. *See also the flyer on the Safe Places Network.*

Further information

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Information for international publishers

The KB's e-Depot: a trustworthy steward for the digital scholarly record

Continuing research and development to secure permanent preservation of and access to digital information requires substantial financial, technical and staffing commitments that exceed the possibilities of individual publishers. Therefore, the Koninklijke Bibliotheek/National Library of the Netherlands (KB) has developed a digital repository for the digital scholarly record with a specifically long-term perspective.

Digital archive facilities

The KB's e-Depot is aimed to ensure the research community perpetual access to the published records of the arts, humanities and social sciences, science, technology and medicine, and the digital cultural heritage. The KB ensures publishers, libraries and end users that the information stored in the archive will outlast the transience of digital information carriers and formats. In addition, the e-Depot offers publishers a durability check on archived formats as well as guidance on how to create the most durable electronic publications.

As of June 2008, the e-Depot has ingested more than 11 million digital objects.

Why the KB ?

As a national library in a smaller country with an international orientation, the KB is uniquely positioned to serve as a trustworthy steward for the scholarly record, building upon its tradition as a national deposit library, and expanding this mission into the emerging international world of information provision. The KB has recognised expertise in the area of digital preservation, and it pursues no commercial targets that may conflict with careful archiving.

From the start, the Dutch Government has been supportive of this expansion of the KB's public role by providing funding for the KB's research and development activities.

Access

In and of itself the KB's e-Depot is neither a dark archive nor a light archive. The extent to which access is given to the information in the archive is determined by each individual archiving agreement. In these agreements, the KB aims to strike a balance between the justified commercial interests of publishers and its own intrinsic mission to serve its users. Generally, end-user access is restricted to on-site perusal for reasons of private research only; on-line access is denied. Full access is of course granted to publications by open access publishers.

Archiving partners

The KB's international e-Depot does not accept single publications. Organisations wishing to make use of the services provided by the e-Depot are required to conclude an archiving agreement with the KB and to deliver bulk content and specified metadata. The KB intends to conclude archiving agreements with the twenty largest publishers in the world. These publishers will follow in the footsteps of, among others, Elsevier, Springer, Blackwell, BioMed Central, Oxford University Press, Taylor & Francis, Sage, Brill and IOS Press..

Business model

The e-Depot is an intrinsic part of the Dutch National Library, and therefore the Dutch Government is the major sponsor of both the e-Depot and the R&D efforts involved. In the coming years the KB intends to develop a sustainable business model for the e-Depot

which will reflect both public and private responsibility for our digital scholarly and cultural heritage.

International cooperation

In the European arena a group of research institutes, national libraries and international publishers, coordinated by the KB, have joined forces to establish a viable and sustainable European infrastructure for access to information resources, the *European Alliance for Permanent Access* (<http://www.alliancepermanentaccess.eu>). Worldwide the KB promotes the concept of a *Safe Places Network*. The Network is intended to include a limited number of institutions with certified digital archives which collaborate to ensure that information resources published by international publishers are permanently archived and continue to be available to future generations. The essence of this collaborative effort will be to share the responsibility for complete, world-wide coverage.

Further information

For further details on archiving agreements, contact our Account Manager, Adriaan Lemmen, adriaan.lemmen@kb.nl, +31 70 314 04 68. For information on the Safe Places Network and the Alliance, please contact Els van Eijck van Heslinga, Programme Development Manager International e-Depot, els.vaneijck@kb.nl, +31 70 314 01 78.

www.kb.nl/e-depot

The KB's e-Depot system

A general overview of DIAS

The Koninklijke Bibliotheek/National Library of the Netherlands (KB) has developed a specific workflow for archiving electronic publications. Elements of this workflow are: accept and pre-process; ingest; generate and resolve identifiers; search and retrieve publications; and identify, authenticate and authorise users. The technical heart of the e-Depot system is IBM's DIAS (Digital Information Archiving System).

Archiving procedure

As the archiving process is almost fully automated, extensive and well-defined metadata should be supplied by the publisher. As a first step in the archiving process, a publisher provides a set of sample files for analysis and production planning. These samples should be representative of the content and file formats the publisher intends to archive and should include the corresponding document type description(s) (DTD) and related documentation. Based upon these samples, the e-Depot develops conversion scripts and stylesheets, and it tests the set-up of the archival ingest process. The publisher then proceeds to deliver his back content on tape, hard disk, DVD or CD-ROM. Once the back content has been archived, current content will be ingested on a regular basis via FTP.

Workflow

All publications ready for ingest are received in an electronic post office, where they are validated and checked for compliance with previously agreed technical specifications. A so-called Batch Builder combines the publications and bibliographic metadata into 'Publisher Submission Packages' (PSP's). The Batch Builder also converts bibliographic metadata provided by the publisher into the KB's internal metadata format (Dublin Core in XML, with some additional fields to facilitate hierarchical browsing), while adding a unique identifier, the National Bibliographical Number (NBN). Bibliographic metadata is stored in the KB's database to facilitate access via the KB catalogue, while technical metadata for preservation purposes is stored in a separate database.

If any errors are detected during ingest, the data is passed to a Basic Error Recovery (BER) database. Inspection of this database is currently the only manual effort involved in the process.

The DIAS solution

The DIAS solution provides a flexible and scalable archiving solution for storing and retrieving large numbers of electronic documents and multimedia files. It conforms to the ISO Reference Open Archival Information System (OAIS) standard. The DIAS solution allows the manual as well as automated ingest of digital information into the system. Once the digital object is successfully stored it will be maintained and preserved.

Further information

www.kb.nl/e-depot

Facts & Figures

Koninklijke Bibliotheek

- Founded in 1798, financed by Dutch Ministry of Education, Culture and Science
- Annual budget € 50 million, 270 fte

Costs: digital archiving, R&D digital preservation and IT

- € 1,1 million structural funds for staff and system maintenance
- € 1,2 million structural funds for research
- 20 full-time equivalents

Contents

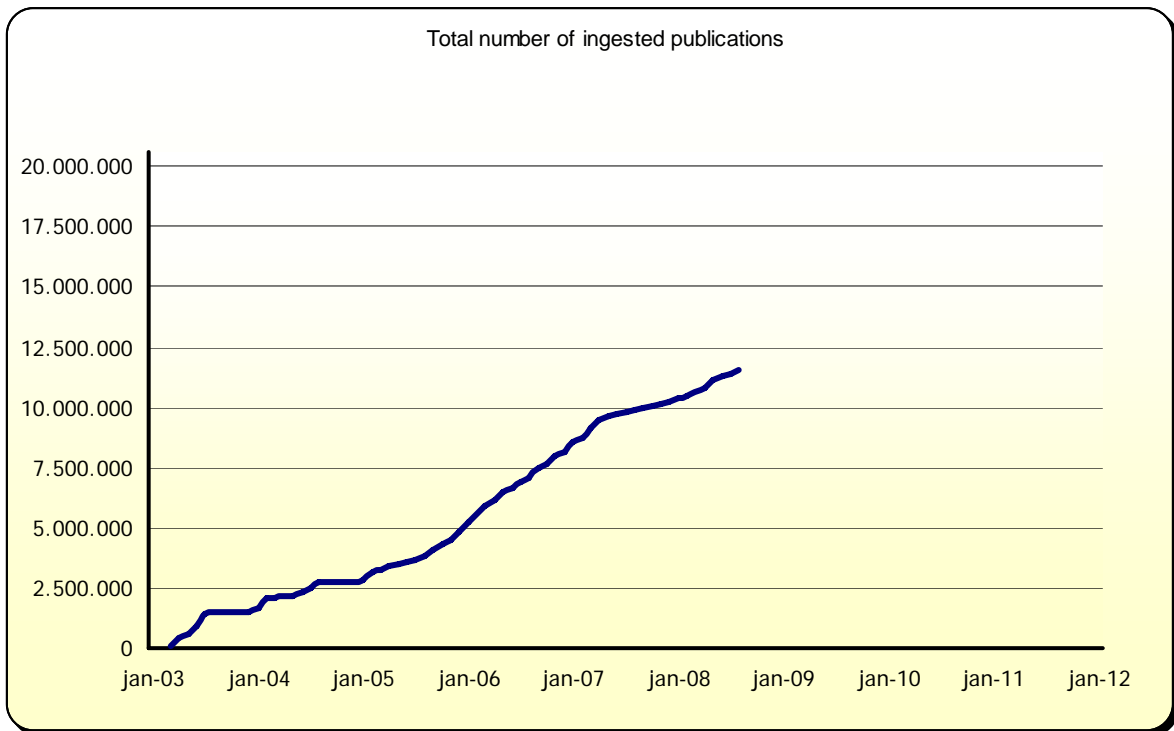
The e-Depot holds digital publications by Dutch publishers (according to the voluntary deposit agreement with the Dutch Publishers Association) as well as publications by international publishers who have concluded archiving agreements with the KB. Other collections include the scientific output of the Dutch universities as harvested from their repositories, a selection of Dutch websites, and the masters resulting from national digitisation projects carried out by the KB.

Publishers with archiving agreements

- Elsevier
- Kluwer Academic Publishers
- BioMed Central
- Blackwell
- Oxford University Press
- Taylor & Francis
- Sage
- Springer
- Brill Academic Publishers
- IUCr, International Union of Crystallography
- Atlantis Press
- IOS Press

Volume and capacity

- More than 8,000 e-journal titles, 11 million e-journal articles, approx. 11 TB
- Current storage capacity 25 TB, to be extended to 1,5 PB



System properties

- Operating system AIX 5.3
- Software: Tivoli Storage Manager, Access Manager, DB2, Content manager, Web Sphere, Java
- Hardware: IBM P570, P520, 4 Gb fibre channel switches

Further information

www.kb.nl/e-depot

Research and development at the KB

Digital preservation research

When setting up the e-Depot in 2003, the Koninklijke Bibliotheek/National Library of the Netherlands (KB) created two separate organisational units: the e-Depot Department which is responsible for the operational management of the repository, and a separate Digital Preservation Department to carry out research and development. Research topics include technology watch, (inter)national collaboration and all preservation aspects in relation to the e-Depot, such as metadata, file format research, ingest control and the development of strategies for permanent access.

Building expertise

In order to be able to ensure long-term preservation of digital objects, it is important to have a thorough knowledge about digital objects. File format research and characterisation of digital objects are therefore important areas of study. This research is generally carried out in close collaboration with international partners involved in developing tools like JHOVE and DROID, and registries such as the Global Digital Format Registry (GDFR) and PRONOM. Information about objects will be captured in technical metadata according to, e.g., the PREMIS preservation metadata standard.

Preservation Manager

The Digital Preservation Department is developing a dedicated application for the storage of technical metadata, the Preservation Manager. This Preservation Manager stores all the information needed to render a certain file format. The Preservation Manager is part of the IBM DIAS system which is the core of the KB e-Depot.

Migration and emulation

In order to realise long-term access to objects stored in the e-Depot, the KB develops strategies to render objects authentically in the future. Although new strategies may be developed in the future, at this point in time two strategies are seen as most relevant: migration and emulation. In the case of migration, the object is adapted to the future platform. When using emulation, the objects themselves will not be tampered with, but the environment will be adapted to the future platform. Both strategies have advantages and disadvantages. When documents are converted or migrated, future users will be able to view them on a platform familiar to them, but information may have been lost. Emulation is not as user-friendly, but it is the only method that ensures authenticity. In fact, for certain complex digital objects, such as websites, emulation may be the only long-term solution. Therefore, both strategies are being developed at the KB and in the context of the European project PLANETS. In 2007 a first modular emulator, Dioscuri, was developed in close collaboration with the Nationaal Archief of the Netherlands. With regards to migration a project is being carried out to implement a normalisation work flow for MS Word and WordPerfect files.

Guidance

The Digital Preservation Department offers guidance to those who create digital objects, because their choices have a significant influence on the preservation process. Guidelines published on the KB's website deal with file formats suited for digital preservation and relevant metadata.

Every time new material is offered to the e-Depot, the Digital Preservation Department assesses the consequences and risks for long-term preservation and develops an adequate preservation solution.

Collaboration

As no institution can solve the digital preservation problem on its own, it is important to collaborate on a national and international scale and to share knowledge. The KB's Digital

Preservation Team attends major digital preservation conferences to share its knowledge and discuss recent developments. Each year several publications are issued. The Team is also involved in several European projects, such as PLANETS (2006-2010), a project aimed at developing practical solutions for preservation planning. The KB also participates in DRIVER II and PARSE.insight, two European projects intended to build a European infrastructure for digital repositories.

Further information

www.kb.nl/e-depot

Permanent access to the Dutch Web

Web archiving

The purpose of the Web Archive of the Koninklijke Bibliotheek/National Library of the Netherlands (KB) is to collect and preserve a selection of Dutch websites, thereby ensuring long-term access to the Dutch cultural heritage as it is published online.

The Dutch web archive

The KB is responsible for collecting and preserving Dutch publications and for providing permanent access to them in the Netherlands Deposit Collection. In order to meet the challenge posed by the ephemerality of digital media, the KB developed the e-Depot, the KB's digital archive, which enables the KB to extend its traditional responsibility to digital objects, including websites. The purpose of the KB Web Archive is to collect a selection of Dutch websites, focusing on permanent storage and representation of archived websites. This means that websites are not only being harvested, but a strategy for long-term access is also being developed.

Selection procedure

Websites are selected by the KB on the basis of its general collection policy, which focuses on Dutch history, culture and society. The archive should give an impression of the Dutch Web as we use it today. Since the Netherlands do not have legal deposit legislation, a procedure had to be developed to seek the owners' permission. The KB decided to use a practical opt-out approach. This is based on implicit permission to archive if the owner of a website does not object. The first experiences with this approach are promising; very few website owners have raised any objections.

Although it was the absence of legal deposit legislation that first prompted the KB to choose the selective approach over a snapshot approach whereby the full Dutch web domain would be archived, it was also discovered that the Dutch web domain is far too large for a large-scale snapshot method: the .nl domain consists of over 2.5 million registered domain names, making the Netherlands the fourth largest 'country code Top Level Domain' in the world.

Tools

The KB uses a common set of web capture tools, the IIPC toolset, consisting of a set of open source tools developed under the colours of the International Internet Preservation Consortium. The acquisition tool is the Heritrix crawler. The KB uses the Wayback Machine to provide access to the web archive. The archive will be accessible by means of a full text index and through the KB catalogue. For full-text indexing the KB is testing its standard indexing software as well as the NutchWax search engine. The Web Curator Tool is employed to manage selection, harvesting and cataloguing.

Quality

Significant effort is invested in ensuring the authenticity and integrity of each archived domain. When storing a website into the archive, the policy is to maintain its 'look and feel', that is, its appearance and functionality, as well as its contents, to the fullest extent possible. This means that websites will be checked for completeness and functionality before being stored in the archive. During the ingest procedure, single files of websites are validated. Although it may not be possible to correct possible errors found in the files, it is important to store as much information about them as possible. The KB is currently working on a generic file validation procedure using JHOVE and DROID.

Preservation

After crawling and quality control, websites are stored in the e-Depot and they become subject to a long-term preservation regime. As hardware and software platforms

evolve and the need arises for preservation action, the KB will strive to maintain the 'look and feel', as well as the content. For technical and resource reasons this may not always be possible but the KB will aim for the ideal situation on a 'best efforts' basis.

The presentation of a website depends to a great extent on the browser being used as well as the plug-ins needed for the presentation of specific aspects of a website (such as Flash, video and audio). Therefore, the KB is actively researching and developing techniques and methods that will enable the e-Depot to migrate or emulate digital objects in order that they can be viewed on current computer systems.

The project runs from 1 January 2006 until 31 December 2008. During the first phase, the goal was to acquire as much knowledge and experience as possible. The second phase started in 2007 and focuses on developing the proper infrastructure and on embedding web archiving in the existing KB work flow. At the end of 2008 the KB will have an operational web archive which will regularly crawl a selection of Dutch websites, safely store its content in the e-Depot and make the archived websites accessible online to the public.

Further information

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The evolution of the KB website

KB

Koninklijke Bibliotheek



Alexicon

Op woensdag 5 november 1997 wordt de nieuwe netwerkdienst van de KB in gebruik genomen. Deze dienst vervangt zowel Alexicon, de oude netwerkdienst, als de Alfa Informatie Werkplek, die ontwikkeld was voor bezoekers van de KB. Beide namen zijn vanaf genoemde datum niet meer in gebruik. De nieuwe dienst bevat naast de onderdelen die al via Alexicon en de AIW beschikbaar waren enkele nieuwe faciliteiten.

- [Nieuw in Alexicon](#)
- [Online Publiekscatalogus \(OPC\)](#)
- [Alfa Informatie Werkplek \(AIW\)](#) (alleen met wachtwoord) [info](#)
- [Leenverkeer en landelijke catalogi](#) (o.a. NCC, OLC)
- [Informatie over de Koninklijke Bibliotheek](#)
- [Honderd Hoogtepunten uit de Koninklijke Bibliotheek](#)
- [DutchESS: Dutch Electronic Subject Service](#) [nieuws](#)
- [Publicaties van de Koninklijke Bibliotheek](#)

- [Gastinstellingen](#) op Alexicon
- Alexicon wegwijzer naar [bibliotheek- en dokumentatiediensten](#)
- SURFnet wegwijzer naar [informatiediensten](#)

english

helpdesk

(1996)

(2000)





(2007)

Migration

The Koninklijke Bibliotheek/National Library of the Netherlands (KB) has archived digital publications of national and international publishers since 2003. The publications are stored in the e-Depot, the KB's digital archive. On principle, the e-Depot accepts any file format, as long as it is in general use. However, the e-Depot does issue guidelines for deposited materials in order to stimulate the creation of durable documents. It also carries out risk assessments.

Preservation strategies

Until recently, most publications were deposited in the Portable Document Format (PDF). However, current and future projects (a.o., web archiving) are expected to generate much more heterogeneous content for the e-Depot. To prevent future obsolescence of digital objects, the KB has defined digital preservation strategies for e-Depot content.

Migration

The KB considers migration to be one of the main digital preservation strategies. Migration will be applied to ensure that the digital objects stored in the e-Depot remain accessible for the long term. Migration can be described as transferring digital objects from one software/hardware environment to another software/hardware environment. This may involve transformation of the physical storage medium and the encoding and format of the data.

The KB's migration projects focus on file format transformations. A first project, carried out in 2006, explored the possible application of migration at the KB. Based on the results of this research, the KB initiated a new migration project for the implementation of a normalisation workflow in June 2007.

Project objectives

The current project aims to implement a migration workflow which will migrate all text-based publications that are deposited in a closed format (mainly MS Office and WordPerfect documents) into the archival format PDF/A. Several PDF/A conversion tools were tested to determine their performance and results. The software which will be implemented will both facilitate migration during the ingest phase and periodical batch migrations of ingested material.

Migration on request

The migration project will also explore the possibilities of migration on request. In the case of migration on request, individual files are migrated without any need for periodical conversion. Based on the outcome of this research and on the experience gained during the implementation of the migration workflow, the KB's digital preservation strategies will be developed further.

The migration project started in June 2007 and will be completed in July 2009.

Further information

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Emulation

Information and communication technology have become an essential part of life. It is difficult to imagine education, work or entertainment without computers and networks. Yet reports of data loss due to outdated software and hardware have begun to appear at an increasing rate these past few years. A smart technique comes to the rescue: emulation.

To prevent a digital black hole, the Koninklijke Bibliotheek/National Library of the Netherlands (KB), examines several strategies to ensure that digital documents and applications remain accessible. One of these strategies is based on emulation. When applying this strategy, the current computer environment will run the original environment which was used to render the document. A sophisticated piece of software, called an emulator, enables this computer transformation. Together with the Nationaal Archief of the Netherlands, the KB embraced this powerful strategy and developed the world's first modular emulator designed for digital preservation: Dioscuri.

Designed for digital preservation

Research into the possibilities of emulation was started by the KB in 2004, building on earlier experiments in 2000. Although many emulators had already been developed, none of them were found to be durable in the sense that they would survive over time. In fact, an emulator is a computer application itself that is vulnerable to hardware and software changes. A new design was developed by the KB to solve this problem by ensuring durability while offering maximum flexibility in emulating hardware. To underpin the research, the KB and the Nationaal Archief set up a joint project in 2005 to build an emulator according to the new design. In July 2007, the first outcome was presented: Dioscuri - the modular emulator for digital preservation.

Dioscuri takes its name from the Greek myth of the Castor and Pollux twins: one of them is mortal while the other becomes immortal. The story symbolises the idea behind emulation and long-term preservation: giving mortal digital objects their immortal equals.

Dioscuri helps you remember

Dioscuri is capable of emulating an early IBM-compatible computer, consisting of an Intel 8086-based processor, support for VGA-graphics, screen, keyboard, and storage devices such as a virtual floppy drive and hard disk drive. With these components Dioscuri successfully runs 16-bit operating systems like MS-DOS and applications such as WordPerfect 5.1, DrawPerfect 1.1, Lotus 1-2-3 and Norton Commander. Furthermore, it is capable of running many nostalgic DOS-games and a Linux kernel. It allows you to reopen old WP-documents and Lotus spreadsheets or even improve your Pac Man high score from 1987. Future versions of Dioscuri will also emulate newer computers based on Intel 486 and Pentium, and capable of running modern versions of Microsoft Windows.

In addition to recreating the old computer environment and viewing old documents, Dioscuri is capable of extracting data from the original document into a current working environment by means of a common clipboard functionality that is integrated in Dioscuri.

Further information

Dioscuri is available as open source software for any institution or individual that would like to experience their old digital documents again. Download Dioscuri from:

<http://dioscuri.sourceforge.net>

Information about the KB's R&D efforts can be found at www.kb.nl/e-depot.

Characterisation

Every day large quantities of publications are ingested into the e-Depot - the digital archive of the Koninklijke Bibliotheek/National Library of the Netherlands (KB). The KB is responsible for long-term storage of these publications and for keeping them accessible for future users.

Relevant metadata

Ensuring long-term accessibility begins by gathering extensive information about the objects that are ingested into the e-Depot. These metadata can be either bibliographic, structural or technical and can serve multiple purposes, such as facilitating search and retrieval or enabling long-term access. Technical metadata, e.g., about the specific file formats that are used within a publication, is essential for choosing appropriate preservation strategies. At this moment the KB is reconsidering which specific metadata should be stored in the e-Depot.

Project goals

To collect relevant metadata from the thousands of objects that are ingested into the e-Depot each day, automatic processes have been developed. The Characterisation project will extend and improve these processes in the pre-ingest phase of the e-Depot.

Four functional modules or services will be developed. The first will be a service for identification of the file format. The second module will validate a file; it will check whether a file complies with its file format specifications, and, if not, what the consequences of the deviation are for long-term sustainability. The third module will be a characterisation module that can be used to automatically extract properties from a file that will result in technical metadata. As the validation module will not only report that a specific file does not comply with specifications, but will also assess the impact of the deviation on long-term sustainability, a fourth service will be developed that generates the information on how a deviation influences long-term sustainability.

The project team aims at developing this fourth service in collaboration with other international institutions that are involved in long-term preservation.

Making use of existing tools

For the implementation of the services, the KB will make use of existing tools such as DROID (Digital Record Object Identification), developed by the National Archives in the UK (<http://droid.sourceforge.net/wiki/index.php/Introduction>), and JHOVE, the JSTOR/Harvard Object Validation Environment developed by JSTOR and the Harvard University Library (<http://hul.harvard.edu/jhove/index.html>).

The services will be implemented in the pre-ingest phase of the e-Depot work flow, when publications received from the publisher (Submission Information Packages, or SIP's) are treated to make them suitable for ingestion into the actual archive as Archiving Information Packages (AIP's). Identification, validation and characterisation are only three steps of this pre-ingest phase. Other steps include virus-checking, performing check-sums, normalisation etc.

The project will run from 1 August 2007 until July 2009.

Further information

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A 'Safe Places Network' for digital preservation

The concept of a 'Safe Places Network' has been developed by the Koninklijke Bibliotheek (National Library of the Netherlands) in response to preservation challenges posed by the global digital information environment. It is envisaged to be a network of a limited number of institutions with certified digital archives which will collaborate to ensure that the 'records of science' published by international publishers are permanently archived and continue to be available to future generations. The collaborative effort will be geared to sharing the responsibility for complete, world-wide coverage and allocating tasks between participating institutions.

Background

Continuing research and development efforts to secure permanent preservation of and access to electronic information require substantial financial, technical and staffing commitments that exceed the possibilities of individual institutions. As it is expected that only a limited number of institutions will commit themselves to permanent archiving of the records of science, the National Library of the Netherlands, one of the first libraries to operate a digital archive, proposes that those institutions collaborate on a global scale to share resources and knowledge. Such a 'Safe Places Network' would ensure a more systematic and concerted approach to digital preservation of scientific information. In so doing, the network would also fill the gap left by national deposit arrangements.

Key requirements for Network members

- The institution has a proven performance in the field of long-term preservation and access. Its digital preservation policy, procedures and standards are well documented. Certification is obligatory.
- The institution must be capable of guaranteeing long-term funding and a stable political environment.
- The institution must have clear disclosure policies with regard to the contents of the archive and its selection criteria.
- The institution must be committed to ongoing research and development in the field of long-term preservation and must be willing to collaborate and share information with other Network participants.

Development of the Network model

The concept of a Safe Places Network is now quite well known among European and American libraries and publishers. The *implementation* of the Network, however, is expected to be a gradual process. After embracing the principles underlying the Network, potential partners could begin by sharing technical and organisational knowledge and expertise. Then perhaps one or two pilot projects could be developed to strengthen the ties.

So far, relations have been established with Portico, the US digital archive for e-journals, and with the Library of the Chinese Academy of Sciences, which is developing a system for long-term preservation. The KB and Portico agreed that an off-line copy of the Portico Archive will be held for safekeeping at the KB. Other cooperative ventures are being developed.

Further information

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