How to Preserve Computergames in Archives and Libraries?

The Metadata Concept

Welcome to my presentation on the WOS 3. My Name is Karsten Huth. I am a library scientist, and for the last year, i'm working on a concept to enable the preservation of computergames in Archives and libraries.

1. The Technical Problems

- Media decay
- Hardware obsolecence
- Software obsolecence

Only feasible solution for GAMES is

EMULATION .

To weather the three problems of digital preservation, the underlying technique for my proposed strategy will be based on emulation. This is because the only proper way preserve a game, is to keep it playable in an authentic look and feel on future platforms. Because emulation is the topic of tomorrow's session, i will not lose any word on that issue today and go straight to the point of metadata.

2. Metadata

Definition:

DATA about DATA

A brief definition for the term “metadata” is: DATA about DATA. Defined by the Open Archive Information System reference-model (ISO 14721).

A little less brief and more precise is a definition by the American Library Association.

METADATA are structured, encoded data that describe characteristics of information-bearing entities to aid in the identification, discovery, assessment, and management of the described entities . (American Library Association)

Metadata in Libraries

Catalogues are the traditional Metadatacollections in Libraries.

Cataloging obeys to certain rules (e. g. AACR, RAK)

While Metadata is a new term, the collecting of “Data about Data” is an old thing for libraries and archives. Catalogues are the traditional Metadatacollections in Libraries. The rules of cataloging like the “Anglo American catalogue rules or the german “Rules of Alphabetic Cataloging” can be seen as specialised Metadata set.

Digital Objects and Catalogues

- Only one official term for all possible digital objects: ”**Electronic Resource**”
- No further distinctions between objects like Software, Pictures, e-books, databases etc.

Books and Journals are the traditional kind of objects we can expect in a library. Therefore catalogue rules are mainly designed for books and journals. Today, libraries also have to deal with non book material. For that purpose they invented some special rules for non book material like video, audio-cd and digital materials. So one of my first questions according to a metadata concept for preservation was: Can we use the catalogue rules for non book materials as a metadataset for the preservation of computergames.

It turned out that the answer to that question was no. One of the reasons is, that all digital objects, no matter how different they are, are treated same.

Example: Description of an electronic glossary in a Catalogue

Lexikon der Kunst [Elektronische Ressource] : Architektur, Bildende Kunst, Angewandte Kunst, Industrieformgestaltung, Kunsttheorie / hrsg. von Harald Olbrich
Berlin : Directmedia Publ., 2001
(Digitale Bibliothek ; 43)
ISBN 3-89853-143-0
1 CD-ROM ; 12 cm + Handbuch (12 S.)
Systemvoraussetzungen: PC ab 486; MS Windows (95, 98, ME, NT oder 2000)

So here is an example of a digital object in a catalogue. The example is an electronic glossary on CD-ROM. There is almost no difference to the way books are treated in a catalogue. Only the entries "electronic resource", CD-ROM and system requirements refer to a digital object.

So why is that kind of data insufficient for our purpose of preservation.

Rules are focused on the media (in this case CD-ROM), but to overcome media decay and hardware obsolecence the media has to change with the times. So we have to copy the original games on to newer media.

To run a digital object on future platforms you need more information than the original system requirements.

Metadataconcepts for digital objects

- Dublin Core: (ISO 15836:2003)
  Developed by a comission of librarians and providers of digital information.

So i had to look for other metadatasets. There are many more metadata frameworks on the market right now. Maybe the best known Metadataconcept is the Dublin Core, Developed by a comission of librarians and providers of digital information especially for digital objects.

Elements of Dublin Core

- Title
- Author or Creator
- Subject/Keyword
- Description
- Publisher
- Other Contributor
- Date
- Resource Type
- Format
- Resource Identifier
- Source
- Language
- Relation
- Coverage
- Rights Management

The Dublin Core consists of 15 key elements. All these elements are useful for preservation purposes, but to preserve computergames we still need more data.

What kind of data do we need to preserve Computergames?

- developing techniques for saving [...] the metadata needed to find, access, and recreate digital documents, so that emulation techniques can be used for preservation;
- developing techniques for encapsulating documents, their attendant metadata, software, and emulator specifications in ways that ensure their cohesion and prevent their corruption.

(Rothenberg, J., 1999)

So what kind of data do we actually need, to preserve computergames. The foundation of my work, was a proposition of J. Rothenberg. We have to Save all data, needed to find, access and , very important, to recreate digital objects, together with the required software (e. g. the operating system) and the emulator. That technique is known under the term encapsulation.

Encapsulation

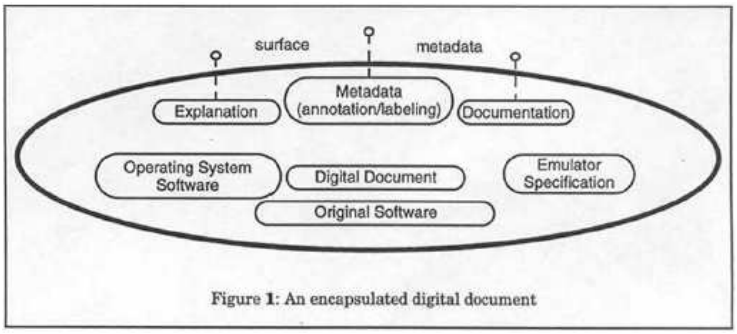


Figure 1: An encapsulated digital document

Here we can see an encapsulated digital document. In our case the digital document would be the computergame. Rothenberg proposed to use emulator specification instead of running emulator programs,

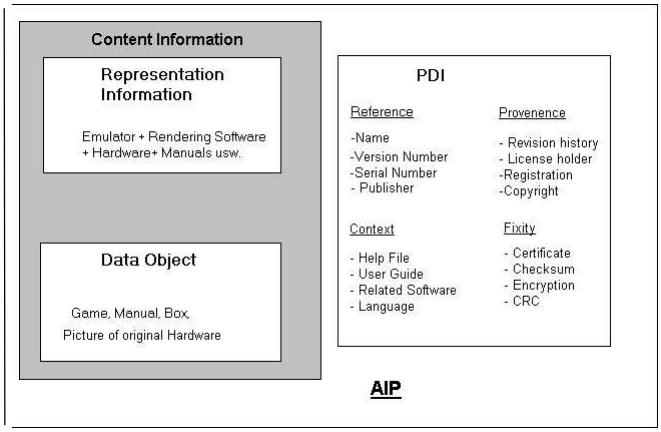
None of the available metadatasets (e. g. Dublin Core etc.) or standards fit the requirements of Rothenbergs proposal.

Solution: Build a special metadataset for the preservation of software, on the basis of existing standards.

- Dublin Core
- OCLC Digital Archive System Guides.
- Manual of Archival Description
- DIN (German Institution of Standards) 66230

As we have seen before, there is no metadata set fitting the requirements of encapsulation.And so i went on to build a new concept on the foundation of existing standards.

The Archival Information Package



So here you see my design of an "Archival Information Package". The term "Archival Information Package" came from the "Open Archive Information System", which is a reference model for an Archive and ISO 14721.

The whole Metadataset has more than 100 elements. The elements refer to the recreation of the game on future platforms, intellectual property issues, the authentic look and feel, the history of the game (including the original system requirements). The original game is saved along with a picture of his manual, the original box and a picture of hardware to provide as much from the original impression as possible.

So this is the end of my presentation.

Thank you very much for your attention.