

On the Knowledge Management Aspects of Digital Preservation

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Abstract. The current digital preservation (DP) landscape is dominated by the ISO standard 14721:2003 (OAIS). This poster will present several approaches to digital preservation (policy-centric, functional, life-cycle management, constructivist, business-oriented, operational research, as well as highly specialised) and will seek to outline the connection between digital preservation and knowledge management. It will look especially into the place of the OAIS concept of “knowledge base” within the digital preservation system.

Keywords: digital preservation, essential properties, OAIS, knowledge base, representation information.

The current digital preservation (DP) landscape is dominated by the ISO standard 14721:2003 (Space data and information transfer systems – Open archival information system – Reference model), widely known as OAIS. It suggests the main functional components and identifies the basic data flows within a DP system; OAIS also introduces the concepts of users of the archive (producers, consumers and management), designated community and a knowledge base (see [1]). One of the key assumptions is very close to the area of knowledge management: “Since a key purpose of an OAIS is to preserve information for a Designated Community, the OAIS must understand the Knowledge Base of its Designated Community to understand the minimum Representation Information that must be maintained. The OAIS should then make a decision between maintaining the minimum Representation Information needed for its Designated Community, or maintaining a larger amount of Representation Information that may allow understanding by a larger Consumer community with a less specialized Knowledge Base. Over time, evolution of the Designated Community’s Knowledge Base may require updates to the Representation Information to ensure continued understanding.”

The continuous understanding and use of digital objects is clearly identified as a basic requirement to the preservation process; however the researchers and practitioners’ communities still have to define what this requirement means in the implementations of preservation systems.

In this poster we will present a survey of current standards and projects in the DP field. We grouped them in several groups according to their approach:

policy-centric, functional, life-cycle management, constructivist, business-oriented, operational research, as well as *highly specialised* approaches concentrating on one specific aspect of preservation (see 2-11). As a result of our analysis we identified the following needs for further research.

- Need to understand the knowledge base as (1) a necessary set of resources which guarantee the future use and understanding of the digital object and (2) a tool to model the preservation environment as a knowledge modelling environment.
- Need to reach consensus on the essential characteristics of preservation systems and to find which of them guarantee a reliable and measurable preservation process.
- Need to define the connections between the essential properties of the digital objects and the preservation system as a whole which would help to implement preservation systems which support the storage and management over time of the essential properties.
- Need to define metrics for the essential properties of the digital objects.

This poster will help to understand the areas of overlap of the different approaches and the connection between knowledge management and digital preservation.

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