QQML 2009
International Conference on
Qualitative and Quantitative Methods in Libraries
26 - 29 of May 2009 Chania Crete Greece   www.isast.org

Various Approaches towards Digital Preservation and Their Implications on User-Related Issues

Milena Dobreva and Dennis Nicholson
Centre for Digital Library Research, Information Resources Directorate, University of Strathclyde, United Kingdom
{milena.dobreva | d.m.nicholson}@strath.ac.uk

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. Having this reference framework for long-term digital preservation systems already played a positive role on the development of a common professional understanding and vocabulary, but there are still substantial differences between the approaches of different practitioner communities.

In this paper 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. We will present examples of these approaches and will summarize the user roles they suggest and the basic characteristic of digital objects and DP system as a whole. This work is largely motivated by the need to understand what are the minimum requirements which every DP system needs to implement; what functions within the DP system can be automated and what properties of digital objects the DP system should be able to store and trace over time. A checklist of commonly accepted principles and requirements in digital preservation would help to understand better the object models and the basic transformations which need to be supported in a preservation system.

As a result of our analysis we identified the following needs for further research.
– 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.
– Need to address the case of preservation systems which are interoperable with legacy information systems.
– Need to achieve consensus on the basic policy elements in DP.
– Need to model in detail security-related components which take into account the specifics of DP.
– Need to address the difference between digital documents, records and data in the DP model.
– Need to define in detail the structure of preservation description information which is not specified in OAIS.
– Need to analyze the package information structure in the current information environments which would require to study in detail how to address the challenges of distributed storage and 'big data'.

This paper is not suggesting a novel model which would provide a solution to these open areas for further research – this is a major undertaking which will require the cooperation of multiple professionals. Yet, we believe that the systematic presentation and discussion of the current state and differences in the professional points of view will be of benefit to the research community in the DP field.