

Design, Implementation, and Evaluation of the Use of Annotations in Interactive and Collaborative DL Access

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Project description

In most contemporary digital library (DL) management systems the contents are conveyed to the user as a “collection of information items” which can be searched or browsed. However, this paradigm is often not sufficient to cope with embedded usage, for which access to the contents is not seen as an isolated activity, but as part of a larger work process, where tasks like interaction with other users, extraction of knowledge, and analysis or evaluation of documents need to be integrated. Most of these scholarly activities result in new texts or multimedia objects which refer to the already existing documents as “annotations”.

Up to now, annotations have been - in most cases - stored together with the documents they are related to in a central DL repository. With the advent of decentralised DL architectures in Grid or Peer-to-Peer environments, but also in Service-oriented architectures, these design choices need to be revised by solutions which allow us to manage annotations independently from a particular DL management system.

Thus, the main goals of this project are:

- to develop an annotation DL service and to define a set of API to allow the access to this service from different DLs. The annotation service will also provide an infrastructure for advanced annotation-based retrieval functionality;
- to integrate the service into the DAFFODIL system (<http://www.daffodil.de>) and the BRICKS (<http://www.brickcommunity.org>) system;
- to evaluate the use of the annotation system as a new way to interact with a DL and to establish collaboration among DL users and stakeholders, performing a study of their behaviour, of the system usability, and of the impact on the DL development and use.

The proponents, listed below, can base their work on experiences gathered in developing a general purpose annotation system, called MadCow [6], and a collaboratory system for the Humanities (COLLATE) [8, 9].

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They already collaborated on the definition of a comprehensive annotation model [1, 3] and the architecture for an annotation service [2] which will serve as design guidelines for the specification and implementation of a DL annotation service compliant with contemporary interface standards. Finally, the proponents have cooperated in proposing methods which integrate annotations in the information retrieval process [3, 4, 7, 8, 9].

The most important requirements that should be fulfilled by the annotation service are the following:

- it should support nested annotations, meaning that not only documents or document parts can be annotated, but also other annotations;
- each annotated object must be referable by an handle – for example, the Uniform Resource Identifier (URI) will be one of the schemes to be supported;
- sign (e.g., textual, graphical, referential or a combination of these) and meaning of an annotation should be represented. This way, different annotation types can be supported;
- different scopes of annotations (private, public, shared) must be considered;
- support for annotation indexing – as annotation threads made of nested annotations form a linked structure, some basic functionality to support incremental indexing of annotations and the structural context should be provided. Services indexing the annotation corpus for annotation-based retrieval should be able to access the repository appropriately.

A test of the usage of annotations by DL users is going to be performed in order to assess:

- how and to what extent DL users annotate the DL content pages for their personal use;
- how and to what extent do they co-operate using annotations;
- if DL users search annotations and navigate related annotations in order to discover new content.

References

1. M. Agosti, N. Ferro. Annotations: Enriching a Digital Library. In: T. Koch, I.T. Sølvsberg (Eds). *Proc. of the 7th European Conference on Research and Advanced Technology for Digital Libraries (ECDL 2003)*. Springer LNCS 2769, 2003, 88-100.
2. M. Agosti, N. Ferro. An Information Service Architecture for Annotations. In [5], 115-126.
3. M. Agosti, N. Ferro, I. Frommholz, U. Thiel. Annotations in Digital Libraries and Collaboratories - Facets, Models and Usage. In: R. Heery, L. Lyon (Eds). *Proc. of the 8th European Conference on Research and Advanced Technology for Digital Libraries (ECDL 2004)*. Springer LNCS 3232, 2004, 244-255.
4. M. Agosti, N. Ferro. Annotations as Context for Searching Documents. In F. Crestani, I. Ruthven (Eds). *Proc. 5th International Conference on Conceptions of Library and Information Science (Colis5)*. Springer LNCS 3507, 2005, 155-170.
5. M. Agosti, H.-J. Schek, and C. Türker (Eds). *Digital Library Architectures: Peer-to-Peer, Grid, and Service-Oriented, Pre-proceedings of the 6th Thematic Workshop of the EU Network of Excellence DELOS*. Edizioni Libreria Progetto, Padova, Italy, 2004.
6. P. Bottoni, R. Civica, S. Levialdi, L. Orso, E. Panizzi, R. Trinchesi. Digital Library Content Annotation with the MADCOW System. In T. Catarci, S. Christodoulakis, and A. Del Bimbo (Eds.). *Proc. Audio-Visual Content and Information Visualization in Digital Libraries (AVIVDiLib'05)*. Centromedia, Viareggio, Italy, 2005, 111-116.
7. P. Knezevic, B. Mehta, C. Niederée, T. Risse, U. Thiel, I. Frommholz (2004). Supporting Information Access in Next Generation Digital Library Architectures. In [5], 49-60.
8. I. Frommholz, U. Thiel, and T. Kamps. Annotation-based Document Retrieval With Four-Valued Probabilistic Datalog. In T. Rölleke and A.P. de Vries (Eds.). *Proc. First SIGIR Workshop on the Integration of Information Retrieval and Databases (WIRD'04)*, 2004, 31-38.
9. U. Thiel, H. Brocks, I. Frommholz, A. Dirsch-Weigand, J. Keiper, A. Stein, E. Neuhold. COLLATE - A collaborative supporting research on historic European films. *Int. J. on Digital Libraries* 4(1): 8-12 (2004) .