

# Annotation: what we learned from DELOS

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**Abstract**— Starting from a clear and shared definition of annotation, this work shows different points of view on the use of annotation in digital libraries, as they emerged from the collaboration of three different DELOS working group.

**Index Terms**— annotation, digital libraries, information retrieval, human-computer interaction

## I. INTRODUCTION

An annotation is ‘a note, added by way of comment or explanation to a document’<sup>1</sup> or to a part of a document [1]. An example of annotation is shown in Fig. 1.

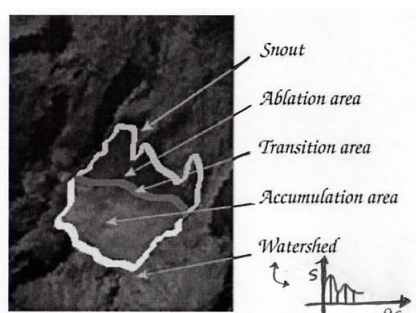


Fig. 1. An inscription resulting from a human scientific interpretation of a Landsat image of Vedrette Glacier

written in different languages, organized with different goals and according to different reading habits.

\*  
*Example 2.* The inscription of Fig. 1 is embedded in an e-document written in English for the glaciologist community in Fig. 3 and in Fig. 7, while it is embedded in an e-report for Italian clerks of an environmental protection agency in Fig. 4. The glaciologist and clerk communities share a common interest in glaciological data: the glaciologist interprets the image, and interpretations are used by clerks in their activities. The two communities can be seen as two sub-communities of the more general Earth Scientist and Technologist community, and their two notations as dialects of a more general notation of this larger community. ♦

Fig. 1 Multimedia annotation of a multimedia document [1]

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<sup>1</sup> Merriam-Webster Dictionary, online available at <http://www.m-w.com>

In digital libraries, annotation is an effective way to capture, organize and provide additional information about resources [2]. Such information might be users’ opinion about the resource itself, or a professional opinion (e.g. medical diagnosis) from domain expert, or automatically extracted metadata.

In this context, annotations are not only a way of explaining and enriching an information resource with personal observations, but also a means of transmitting and sharing ideas to improve collaborative work practices [2]. Furthermore, annotations allow users to naturally merge and link personal contents with the information resources provided by a *Digital Library System* (DLS) [3].

Annotation management systems can provide several benefits to a DLS:

- improvement of user collaboration and data sharing [4];
- involvement of users in contributing, with their information resources, to the library according to their expertise [5];
- improvement of data reuse;
- improvement of search capabilities by exploiting annotations for retrieving annotated documents [6] [7].

In DELOS – The European Network of Excellence on Digital Libraries<sup>2</sup> – different research groups are facing issues related to annotation from different viewpoints in order to solve complementary problems, which in some cases may also overlap. This poster aims at discussing the approaches of three different research groups (University of Milan, University of Padua, and University of Rome) with respect to annotation.

## II. APPROACHES TO ANNOTATION

Annotations can be approached from many different points of views, among which the research carried out in DELOS has highlighted:

- *Annotation modeling, management, and access*: is focused on the issues concerning how to represent and model annotations, how to automatically manage them, and how to exploit them to provide effective information access strategies. In this context, we focus our attention on: (a) models for annotations which cover a wide range of usages of annotations, from metadata to documents [3] [8]; (b) management of annotation for dynamic documents and persistency [4]; (c) search algorithms which exploit annotations in

<sup>2</sup> <http://www.delos.info>

order to retrieve more and better ranked documents in response to a user query [6] [7]; (d) annotations as tools to support users collaborations and reasoning [2] [9].

- *Annotation management system architectures*: concerns the design and development of flexible and modular architectures to easily integrate annotation services into different DLS. Examples of such services and systems are DiLAS [10], FAST [11], MADCOW [12] and BANCO [5];
- *annotation as a tool for supporting user collaboration and reasoning*: regards how to exploit annotations as a mean for improving the collaboration among users and how to design user interfaces suitable for this kind of task [13], [3], [14];
- *annotation usability and user interaction*: deals with studying the effectiveness of the usability of the annotations management systems and how users interact with them in order to provide guidelines for the design of next generation annotation management systems [10], [2].

### III. CONCLUSION

The poster discusses some of the relevant aspects concerning annotations which have been highlighted during the research activities conducted in the context of the DELOS Network of Excellence.

This research work provides us with a solid background in order to deepen our study on annotations and achieve a better integration between the results obtained by the different research groups.

As an example, since annotations have a high personal value, the study of search algorithms that exploit annotations may benefit from a tighter coupling with the study of the user interaction with annotation management systems and of user interfaces tailored on the way the user use annotations. This would allow us to design search algorithm that better fit the actual user needs, and the search results would be presented in a more effective way, by means of user interfaces adequate to the symbolic language and culture of their users.

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