Chapter 13
Social Semantic Bookmarking with SOBOLEO

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ABSTRACT
The novel paradigm of social semantic bookmarking combines the positive aspects of semantic annotation with those of social bookmarking and tagging while avoiding their respective drawbacks; drawbacks such as the lacking semantic precision of tags or the cumbersome maintenance of ontologies. Social semantic bookmarking tools allow for the annotation of Internet resources based on an ontology and the integrated maintenance of the ontology by the same people that use it. This chapter motivates social semantic bookmarking by examining the respective problems of tag based bookmarking and semantic annotation. Social semantic bookmarking is then introduced and explained using the SOBOLEO application as an example. It also gives an overview of existing applications implementing this new paradigm and makes predictions about its movement into the mainstream and remaining research challenges.

INTRODUCTION
An important challenge for today’s internet users is the recovery of internet resources that they had once found interesting and useful; as well as the discovery of new interesting information. Social bookmarking systems (such as delicious\(^1\)) can aid in these tasks by supporting users in the collection, management and sharing of bookmarks; i.e. references to such resources and information. For organization, navigations and searching these systems utilize tags.

Tags are arbitrary keywords that are used by the users to further describe the internet resources in order to aid their retrieval. Tags are renowned for their flexibility and ease of use, because just any tag can be used and there is no overhead for vocabulary management. However, this missing structure is also the root cause for a number of problems plaguing tagging and hampering tag-based retrieval:

\(^{1}\) delicious: delicious.com
problems such as typos, tags on different levels of abstraction, or synonyms. Replacing tags with annotations based on a controlled vocabulary or ontology can help alleviate these problems.

Systems that use ontologies as source for annotating internet resources are, however, also not without their problems. For one they are often cumbersome to use; but more importantly, they view ontology creation as a process separate from its use; a process performed by people different from those that use it. Another problem is that these systems often assume that the ontology stays unchanged for prolonged periods of time and requires only occasional updates. All this leads to unsatisfied users being confronted with out-of-date, incomplete, inaccurate and incomprehensive ontologies that they cannot easily use for annotation; this problem is particular acute in fast changing domains (Hepp, 2007).

The novel paradigm of Social Semantic Bookmarking combines the positive aspects of semantic annotation with those of social bookmarking while avoiding their respective drawbacks. Social semantic bookmarking tools allow for the annotation of internet resources with respect to an ontology and the integrated maintenance of the ontology by the same people that use it. Through the use of state-of-the-art web technologies such as bookmarklets and AJAX (e.g., for autocomplete functionality), these systems make ontology-based annotation of web documents as simple as tagging. Through easy-to-use, lightweight web ontology editors that are integrated into the system, the barrier between ontology creation and use is removed; users who annotate with the help of the ontology are the same who continuously evolve this ontology. Because internet resources are annotated with concepts (and not keywords), the problems of homonyms, synonyms etc. are avoided.

We present Social Semantic Bookmarking using the example of our system SOBOLEO (SOcial BOokmarking and LiGhtweight EnGiNeering of Ontologies) – a system combining the above mentioned features with an innovative search engine and functionality supporting the discovery of experts on specific topics based on their interaction with the system. We also shortly discuss other social semantic bookmarking systems such as Bibsonomy, int.ere.st, GroupMe!, Fuzzy, and Annotea. Finally, we sketch the trends that shape the future of social bookmarking – one of the most visible and best known developments of the Web 2.0 world.

**BACKGROUND: (LINGUISTIC) TAGGING VS. SEMANTIC ANNICATION**

(Linguistic) Tagging and Its Problems

Social bookmarking systems allow their users to annotate bookmarks with several arbitrary tags they find most suitable for describing them. In this way – in contrast to the traditional folder structure like browser favorites – users can organize their bookmarks according to more than one category. This facilitates the organization, navigation and search in the bookmark collection.

These systems make collecting bookmarks a social experience by allowing the users to share their bookmarks with others. Furthermore, not only are the bookmarks visible to other users but also the tags used to describe them. That means, you can share your own tags and use the other users’ ones. You can see which tags and annotated resources you have in common with other users or what they annotated with the same tags. In this way, you can find people with similar interests and discover new interesting resources.

Social bookmarking systems give users the possibility to have their own view on the resources and to express their opinion or present themselves without any restriction (cf. Marlow 2006). The users do not have to learn complex and predefined schemata or syntax, and problems of controlled vocabularies can be avoided (cf. McGregor 2006).
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