

# Chapter 46

## Representing and Sharing Tagging Data Using the Social Semantic Cloud of Tags

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### ABSTRACT

*Social tagging has become an essential element for Web 2.0 and the emerging Semantic Web applications. With the rise of Web 2.0, websites that provide content creation and sharing features have become extremely popular. These sites allow users to categorize and browse content using tags (i.e., free-text keyword topics). However, the tagging structures or folksonomies created by users and communities are often interlocked with a particular site and cannot be reused in a different system or by a different client. This chapter presents a model for expressing the structure, features, and relations among tags in different Web 2.0 sites. The model, termed the social semantic cloud of tags (SCOT), allows for the exchange of semantic tag metadata and reuse of tags in various social software applications.*

### INTRODUCTION

With the rise of Web 2.0, websites which provide content creation and sharing features have become extremely popular. Many users have become actively involved in adding specific metadata in the

form of tags and content annotations in various social software applications. While the initial purpose of tagging is to help users organize and manage their own resources, collective tagging of common resources can be used to organize information via informal distributed classification systems called *folksonomies* (Mathes, 2004; Merholz, 2004).

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Studies of tagging and folksonomies can be divided into two main approaches: (a) semantic tagging concentrates on folksonomies that are inconsistent and even inaccurate because a large group of untrained users assign free-form terms to resources without guidance. Since this approach aims to resolve tag ambiguities, a wealth of ideas and efforts is emerging regarding how to use and combine ontologies with folksonomies (Weller, 2007); (b) social networking focuses on a community of users interested in a specific topic that may emerge over time because of their use of tags (Mika, 2005). The power of social tagging lies in the aggregation of information (Quintarelli, 2005). Aggregation of information involves social reinforcement by reinforcing social connections and providing social search mechanisms. Thus, a community built around tagging activities can be considered a social network with an insight into relations between topics and users.

Using freely determined vocabularies by a participant is less costly than employing an expert (Sinclair & Cardew-Hall, 2007) and a cognitive load of tagging in comparison with taxonomies or ontology is relatively low (Merholz, 2004). However, tagging the data from social media sites without a social exchange is regarded as an individual set of metadata rather than a social one. Although tagging captures individual conceptual associations, the tagging system itself does not promote a social transmission that unites both creators and consumers. To create social transmission environments for tagging, one needs a consistent way of exchanging and sharing tagging data across various applications or sources. In this sense, a formal conceptual model to represent tagging data plays a critical role in encouraging its exchange and interoperation. Semantic Web techniques and approaches help social tagging systems to eliminate tagging ambiguities.

## **BACKGROUND**

### **Social Tagging**

Social tagging and folksonomies have received much attention from the Semantic Web and Web 2.0 communities as a new way of information categorization and indexing. Among the most popular websites that employ folksonomies are Del.icio.us<sup>1</sup> (social bookmarking system) and Flickr<sup>2</sup> (photo-sharing network). CiteULike, using a similar approach to Del.icio.us, focuses on academic articles.<sup>3</sup> There are a number of multimedia sites that support tagging, such as Last.fm<sup>4</sup> for music and YouTube<sup>5</sup> for video.

Although the idea of a *tag* is not new, most people agree that a tag is no longer just a keyword. There is semantic information associated with a tag (Weller, 2007). A tag represents a type of metadata used for items such as resources, links, web pages, pictures, blog posts, and so on. Tagging can be defined as a way of representing concepts through keywords and cognitive association techniques without enforcing a categorization. The term *folksonomy* is a fusion of the two words *folk* and *taxonomy* (Vander Wal, 2004); it became especially popular with the proliferation of web-based social software applications, such as social bookmarking or annotating photographs. Building on the above definitions, folksonomy can be considered as a collaborative practice and method of creating and managing tags for the purpose of annotating and categorizing content (Mathes, 2004).

Advantages and disadvantages of social tagging present an issue for discussion. Although social tagging and folksonomies have much to offer users who utilize tags in various social media sites, there are important drawbacks inherent within the current tagging systems: for example, there is no formal conceptualization to represent tagging data in a consistent way and no interoperability support for exchanging tagging data among different applications or people (Marlow et al., 2006; Kim et al., 2007). The simplicity and accessibility of

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