Preface

Collaborative work has been increasingly viewed as a good practice for the organizations to achieve value for money and efficiency. Organizations that work well in collaboration may have access to new sources of funding, deliver new, improved, and more integrated services, and make efficiency savings costs that could be shared. Working in collaboration can strengthen organizations of all levels and allow them to share knowledge, information, and expertise. As such, collaborative working environments have been developed for providing the capabilities of sharing information and exchanging views in order to reach a common understanding. Some examples are instant messaging, email, application sharing, videoconferencing, collaborative workspace and document management, task and workflow management, Wikis, and blogging.

Over time, the collaborative view has moved from the typical organizational context to the everyday life, generating an increasing attention to the so-called social networking that is a social structure made up of individuals or organizations, which are connected by one or more specific types of interdependency, such as friendship, common interest, financial exchange, dislike, business, or professional interests. Although social networking is possible in person, especially in the workplace, universities, and high schools, it has known a wide development as an online web-based service, platform, or site that focuses on building and reflecting of social networks or social relations among people.

A social network service essentially consists of: a representation of each user as a profile, the specification of the social links among the users (profiles), and a variety of additional services. These services/sites cover specific interests such as Flickr (for photo sharing), Blogster (for the blogging community), Delicious (for Social bookmarking allowing users to locate and save websites that match their own interests), LinkedIn (for Business and professional networking), or general interests such as Google+, Facebook, and MySpace. Overall, the common goal is bringing people together to interact with each other (for instance by offering searching services for finding other users with similar interests) to encourage sharing of personal information and ideas. For this aim, easy-to-use publishing tools are generally provided. Furthermore, profiles that can be potentially connected to a given user are also suggested by the use of social network analysis methods.

Among the others, a service that is widely offered in the context of social network websites is tagging. A tag is a keyword (or term) assigned as an annotation to a piece of information or to a resource such as Internet bookmark, image, file, picture. A tag is a kind of metadata that is used for describing an item and allows it to be found again by browsing or searching. Tags are generally chosen informally and personally by the creator of an item and/or by its viewer (indeed annotations can be added on the personal profile or also on other connected profiles/resources). For instance, Delicious provides a way for its users to add tags to their bookmarks (as a way to help find them later) and also provides browseable
aggregated views of the bookmarks of all users featuring a particular tag; Flickr allows its users to add free-form tags to each of their pictures, constructing flexible and easy metadata that make the pictures highly searchable. Tags expressed by the users are useful both to them and to the larger community. Websites that include tags often display collections of tags as tag clouds. The adoption of tags in a collective or collaborative way is named folksonomy. Thus, a folksonomy is a system of classification derived from the practice of collaboratively creating and managing tags to annotate and categorize content. This practice is also known as collaborative tagging, social classification, social indexing, and social tagging.

Tags may be a bottom-up type of classification, opposite to the hierarchies that are top-down. Indeed, in a traditional hierarchical system (taxonomy), a limited number of terms are considered to be used for classification, and there is almost one correct way to classify each item. In a tagging system, there are several ways to classify an item, and there is no wrong choice since instead of belonging to one category, an item may have several different tags. The flexibility of tagging allows users to classify their collections of items in the ways they find useful. However, the personalized variety of terms that can be used as tags can constitute a potential issue when searching and browsing. Even if there are some studies which prove that the distributions of the tags tend to converge over time to stable distributions that could be considered for assessing stable vocabularies, the absence of any standard still represents a source of issues. Indeed spelling errors, tags that can have more than one meaning, or unclear tags due to synonym/antonym confusion could by hardly retrievable or erroneously retrieved. This is because, in a typical tagging system, there is no explicit information about the meaning (semantics) of each tag. The adoption of the Semantic Web principles, technologies, and techniques could be of help in solving this problem, besides potentially opening interesting perspectives in collaborative and social networking.

The Semantic Web is the new vision of the Web, introduced in the last decade by Tim Berners-Lee. The main goal is to make the Web contents machine-readable and processable in addition to being human-readable. In this way, the available knowledge can be reused and/or integrated in different contexts. For achieving this goal, resources are enriched with metadata, namely semantic annotations referring to shared ontologies. An ontology is the formal conceptualization of a certain domain that is shared and reused across domains, tasks, and group of people. An ontology acts as a shared metadata vocabulary, making semantics explicit. Hence, the Semantic Web is not a separate Web but an extension of the current one, in which information is given well-defined meaning, better enabling computers and people to work in cooperation. This peculiarity is missing in the collaborative and social environments.

The primary goal of this book is to showcase the cutting edge research on the intersection of Semantic Web, collaborative work, and social media. Social media and the Semantic Web mainly co-existed in the past, but when these developments became massively popular, they began to have an influence on collaborative working. Learners and online workers now have a variety of knowledge resources at hand. Integrated semantic applications, linked data, social networks, and networked digital solutions can now be used in collaborative learning environments and present participants with the context-aware information that they need. Semantic technologies have shown their potential for integrating valuable knowledge bases and information systems, and they are being applied to the composition of digital learning and working platforms. These semantic technologies not only have potential for solving the semantic heterogeneity of knowledge resources, trust, and accountability, but also provide solutions for contemporary data quality management cycles, which are necessary to ensure the high-quality integration of shared knowledge resources.
The vision of the book is to put together social and collaborative environments with the Semantic Web principles and techniques to improve both contexts. Specifically, the Semantic Web could benefit from the collaborative and social environment in addressing important problems such as ontology learning. For instance, given the tag clouds emerging from a folksonomy, they can be clustered and an intentional definition for them could be learnt. The result can be considered a sketch of an ontology that could be aligned with an existing domain ontology. In this way an enriched ontology can obtain with the advantage of having a knowledge base that is emerging from the behavior of the users or annotators. On the other hand, collaborative and social environments could benefit from the availability of semantic tools, for instance, for annotating resources with a controlled vocabulary emerging from the social and collaborative environment. Furthermore, suitable semantic tools for matching requests and offers in collaborative environments could be also realized (i.e. finding a CV that is suitable for a specific job requirement), resulting in useful tools for several domains such as education, healthcare, and business-to-business activities.

Following this twofold perspective, the book is organized as follows. Section 1 introduces on the importance of knowledge sharing and collaborative environment focusing on collaborative paradigms for creating and managing knowledge and information. Section 2 focuses on the adoption and exploitation of semantic technologies and principles for supporting and improving collaborative and social environment. Section 3 focuses on knowledge acquisition from collaborative and heterogeneous sources of information and on querying and discovering knowledge from collaborative and social environments. Section 4 concludes the book by considering specific applications, specifically: the exploitation of ontologies for improving collaborative software engineering, the adoption of ontologies for supporting the decision making process, and measuring the productivity in collaborative environment.

The book is intended for researchers and practitioners in the fields of Semantic Web, knowledge management, and collaborative and social networking by summarizing recent research results in the fields.

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