Chapter I
Enabling Social Semantic Collaboration:
Bridging the Gap Between Web 2.0 and the Semantic Web

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INTRODUCTION

The concepts *Social Software* and *Web 2.0* were coined to characterize a variety of (sometimes minimalist) services on the Web, which rely on social interactions to determine additions, annotations, or corrections from a multitude of potentially minor user contributions. Nonprofit, *collaboration-centered* projects such as the free encyclopedia Wikipedia belong to this class of services, as well as commercial applications that enable users to publish, classify, rate, and review objects of a certain content type. Examples for this class of *content-centered* Web 2.0 projects are del.iciou.us (for Web links), Digg.com (for news), Flickr (for images), and YouTube (for movies). *Communication-centered* services such as MySpace or XING enable individual communication and search for and within spatially distributed communities. So-called Web 2.0 *mashups* integrate and visualize the collected data and information in novel ways, unforeseen by the original content providers. The most prominent examples of mashups are based on Google Maps and overlay external content on a map. All these developments have a common approach of collecting metadata

by making participation and contribution as easy and rewarding as possible.

Even before Social Software and Web 2.0 applications emerged, prior attempts had been made to enable rapid assembly of data on the Web into more informative content: the most well-known such project is the *Semantic Web*, although researchers had been working on "information integration for the Web" for many years prior (Mediators, TSIMMIS, Ariadne), with very different methodologies but a similar end goal. The Semantic Web is conceived as an extension of the existing Web to enable machine reasoning and inference: a prerequisite to this is that "information is given well-defined meaning" (Berners-Lee, Hendler, & Lassila, 2001). This approach is based on a standardized description model, Resource Description Framework (RDF) (Lassila & Swick, 1999) and semantic layers on top for semantic nets and taxonomies (RDF-Schema) as well as ontologies, logic axioms, and rules (OWL and SWRL). However, the Semantic Web is not ubiquitous to this point, in part because of the high level of effort involved in annotating data and developing knowledge bases to support the Semantic Web.

The Web 2.0 and Semantic Web efforts, which have largely gone on simultaneously, pose an interesting study in contrasting methods to achieve a similar goal. Both approaches aim at integrating dispersed data and information to provide enhanced search, raking, browsing, and navigation facilities for the Web. However, Web 2.0 mainly relies on aggregate *human* interpretation (the collaborative "ant" intelligence of community members) as the basis of its metadata creation, conflict resolution, ranking, and refinement; the Semantic Web relies on complex but sophisticated knowledge representation languages and machine inference (Table 1). A natural question to ask is whether the different approaches can be combined in a way that leads to synergies. We discuss in this chapter how the question is being answered in the affirmative by a number of promising research

Table 1. Similarities and differences between social software and the Semantic Web

Social Software & Web 2.0	Semantic Web
Collaboration and integration focused Based on the Web Provide enhanced means for search and navigation	
End-user and business centred Community intelligence Post-encoding of semantics Opaque, homogeneous content Light-weight S&T	Technology centred Artificial intelligence Pre-encoding of semantics Complex, heterogeneous content Heavy-weight S&T

projects. The main goal of these projects is to support collaborative knowledge engineering in social networks, with high reward and little effort. After presenting fundamental communication and collaboration patterns of Social Software, we exhibit the tool OntoWiki for social, semantic collaboration. In subsequent sections we suggest strategies for employing Social Software and Web 2.0 methods to support the creation of knowledge bases for the Semantic Web. We give an overview on further and relater work and conclude with remarks concerning future challenges.

SOCIAL SOFTWARE AND WEB 2.0

The concepts social software (Webb, 2004) and Web 2.0 (O'Reilly, 2005) were recently conceived to explain the phenomenon that computers and technology are becoming more and more important for human communication and collaboration. In particular the following aspects are important with respect to software enabling social collaboration: (1) usability, (2) community and participation, (3) economic aspects, (4) standardisation, and (5) reusability and convergence. In addition to that, a precise delimitation of the concept social software is due to heterogeneity of applications, applicants, and application domains complex. It was proposed by Shirky (2003) to define the concept of social software not just with respect

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