Chapter 1.22
Social Software (and Web 2.0)

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INTRODUCTION

Social software is a class of information systems supporting the establishment and management of online communities for people in performing certain tasks. One of the first application types were bulletin boards. Social software may provide different services for community members such as finding members with similar interests, finding information on interesting subjects, discussing common problems, or simply the storing of private or publicly-accessible documents. Another similar term, *collaborative software*, applies to cooperative work systems, and is applied to software that supports working functions often restricted to private networks. *Web 2.0* is a term coined only recently, and with this concept promoters try to focus on the change of use of the Internet. While Web 1.0 was a medium where few users published information in Web sites and many users read and surfed through these publications, in Web 2.0 many users also publish their opinions, information, and documents somewhere in the Internet. By motivating large communities for submissions and by structuring the content, the body of the aggregated information achieves considerable worth. A good example for such a community project is Wikipedia, where thousands of contributors deliver millions of articles, forming an encyclopaedia that is worth millions of dollars.

MOTIVATIONS

The term *social software* was created only recently; however, applications that follow this paradigm are much older. Due to different reasons, there is some hype about these applications now. Thus, new start-up companies offering such information systems achieve a very high financial rating through their large number of users and the large body of information. However, this is only one group of social software that achieves very high volumes of users. Social software is also used to build smaller communities with a restricted access. Thus, a company may invite its customers into such a community for online support on products and services of the company. Social software is also used to support knowledge exchange between employees of companies (Wenger, 2004).

DOI: 10.4018/978-1-60566-014-1.ch178

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Technical Issues

The increasing number of social software applications is partly motivated by the progress of computer hardware, broadband communication, and the number of Internet users. Especially, progress in Internet standards, standard software, and new Internet browser technologies helped to attract a larger audience.

Web 2.0 subsumes a number of new technologies making Web browser user interfaces more user-friendly and, at the same time, reducing traffic load in the Internet. The basic HTTP-protocol that is used to fetch HTML pages from servers to clients is stateless (i.e., the client cannot store a state such as some user preferences). This means, if a user enters anything in a Web page and sends this data to the server, and the server sends in response a new page to the client, then the client software has no knowledge about what the user has entered. In recent years, different technologies were developed to hold either a state at the client by means of cookies or by managing the state at the server side. The problem with both kinds of technologies is that, after each user action, the server has to resend a new page.

New technologies of Web 2.0 support richer clients in the Internet. Thus, more control logic can be executed at the client. JavaScript was one the first solutions to control a Web client's logic. It may be used, for example, to check for correct input syntax of online forms. XML and the processing of DOM structures (the tree structure of well-formed XML or HTML documents), where the structure of XML as well as HTML documents can be changed on-the-fly, enable a more sophisticated control. *AJAX* (Asynchronous JavaScript and XML) is an approach to develop rich clients using recent HTML browsers and the XMLHTTPRequest Api (Raymond, 2007). This means that some requirements (XML, JavaScript and DOM support, Cookies and CSS) have to be met by the client to use the rich HTML client interface. The AJAX approach avoids loading the complete HTML page for every action. Layout information is loaded just once, and only the data required due to the user's action is transferred from the server to the client. This transfer may also happen during the time when the user is already reading the new page. *Web services* are a further technology applied to enable an easy integration of software components to build larger applications. One prominent example is Google Earth that can be used to translate addresses into coordinates (i.e., geo-coding) and to construct maps around a certain coordinate on-the-fly. The latest service is that a user can create his/her own maps where existing maps are enriched by user data. Geographical information systems and its components are very illustrative examples for the construction of social software systems from existing reusable components (Scharl & Tochtermann, 2007). Systems constructed from such building blocks are called *mash-ups*.

Social Issues

Communities are built around common interests. Often, it is, however, unclear what the common interests are and whether all community members share the same interests. For example, Wikipedia has only a small group of writers and a very large number of readers. For the success of Wikipedia, there are enough writers, but this may not always be the case in new community systems.

This problem is also investigated in *knowledge management* theory. A company should be interested that information is shared between its employees. Knowledge management systems have to be designed in such a way that individual members of the staff are motivated to share relevant knowledge through these systems. Davenport and Prusak (1998) describe three motivations that lead to successful knowledge sharing: reciprocity (if I submit something, then other community members are also obliged to share information), reputation (if I submit much information, I will be accepted as an expert), and altruism (I want to support this

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