Chapter 18
Semantic–Awareness for a Useful Digital Life

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ABSTRACT

In this book chapter the authors address two main challenges for building compelling social applications. In the first challenge they focus on the user by addressing the issue of building dynamic interaction profiles from the content they produce in a social system. Such profiles are key to find the best person to contact based on an information need. The second challenge presents their vision of "object-centered sociality", which allows users to create spontaneous communities centered on a digital or physical object. In each case, proof-of-concept industrial prototypes show the potential impact of the concepts on the daily life of users. The main contribution of this chapter is the design of conceptual frameworks for helping users to take maximum advantage from their participation in online communities, either in the digital web ecosystem or real-life spontaneous communities.

INTRODUCTION

With Web 2.0 practices such as collaborative tagging, social networking and bookmarking, where users are able to easily generate content and make it immediately available for others, users were

supposed to increase their social connectedness, as those practices related to content sharing allow them to be permanently aware of others' activities, thoughts, plans and preoccupations. However, this participation requires effort, but there is rarely an added-value for users, as in current systems there is no seamless way to access content relevant to a specific information need. This often leads to

a phenomenon called "social network fatigue"[1], i.e. the situation where users have lots of connections and thus lots of corresponding notifications that are not relevant to their current information needs (information overload). One possible consequence is that users will not participate as much as before in the life of the virtual community, as the added-value is constantly low compared to the effort needed to share interesting and quality content with others. In order to avoid this issue, and increase the motivation of users to be active members of online communities, social applications should have the ability of better analyzing social activities of users (in particular interactions), in order to recommend them the right people or communities at the right moment as information providers for their current information needs.

In this book chapter, we aim at providing a framework for the implementation of compelling social applications, intended to facilitate the access of users to the right information in real time, depending on their current information needs. Our approach is based on an analysis of the constituents of online communities, namely users and "objects" (i.e. user-generated content or any resource) and to exploit each of them as two directions to leverage the semantics of user interactions within communities: (1) focusing on the user constituent of communities, how to better understand their interactions through their social streams and recommend appropriate people of the same community to interact with? In order to do that, we propose to study how to build dynamic user interaction profiles from user content production and sharing; and (2) focusing on the "objects", how to build paths between the communities these objects are creating, so that users can easily move cross different communities; i.e. more specifically, how to use object-centered sociality as a paradigm for user communication making possible the interlinking of communities.

Thus, the next section introduces these two pillars of social applications – users and objects. Users are characterized by a profile, activities, connections, whereas objects are characterized by annotations that users put and that serve as starting point for interactions between users. Then, we explain how the need of awareness of people interactions motivates the two challenges for social applications we are addressing in this chapter: first, discovering new connections based on the semantic similarity of social awareness streams, and second, enable seamless and dynamic links between communities. The following section introduces how to build dynamic user interaction profiles. We present the specificities of dynamic user interaction profiles compared to usual user profiles, how to build such profiles from social streams and how to use them to recommend the best people to interact with in order to maximize successful communications. We illustrate the usefulness of such profiles through an application called the "Social Adviser". Then, we propose to look at social networks through the angle of objects. Therefore, we introduce and define object-centered social networks (OCSN) and how to make people participate in pertinent communities by the semantic interlinking of those kinds of communities. This social network paradigm is illustrated by an example of application, the sBook. Finally, as conclusion we present a set of remaining challenges to make this vision and concepts real.

THE SOCIAL WEB ECOSYSTEM

In this section we present an upper-view of the social web ecosystem. We first discuss online communities and its main pillars. Finally, we examine the nature of content productions in these communities and corresponding challenges to extract knowledge from it.

Online Communities

As mentioned before, online communities are the building blocks of almost any social system. Com-

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