Semantic Community Portals

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INTRODUCTION

Many virtual communities have surfaced and come together on the World Wide Web. Web-based community portals serve as a one-stop place for all information needs serving a group of users that have common interests. As organizations become highly dynamic and the people that join them become more geographically dispersed, the need for improved ways to share and distribute data and information amongst the community or organization members has increased dramatically.

These communities of practice (CoPs) or knowledge collaborators often share similar backgrounds, work activities and information, i.e., they share similar ontology items speaking in terms of the Semantic Web (Berners-Lee, Hendler, & Lassila, 2001). Semantic community portals can make use of Semantic Web technology and these shared community terms to create connections between people and people and also between people and the information that they produce. Frequent communal use of Semantic Web-based portals and other ontologically-annotated environments affirm the ever growing importance of the topic.

In the late 1990s and early 2000s, a number of community portals were set up where people and their relationships were explicitly defined through the use of "online social networking" (e.g., SixDegrees.com, Friendster, Tribe, Ecademy, LinkedIn, and Orkut acquiring millions of users). There has been such a rapid turnover and mass production of these online social networking services (SNS) that the term YASNS (yet another social networking service) has emerged to highlight the saturation of the Internet with these sites. Despite an initial surge and swell of interest, however, the growth of SNS sites has tended to level off (Aquino, 2005).

Just as HTML was embraced, it is expected that the number of shallow and useful ontologies will be developed and used on the Semantic Web as people are encouraged to (re)use and develop them. To avoid the limitations of pre-defined ontologies, community-driven Semantic Web portals are expected to come in place whereby a community's goals and structure can be defined and maintained by the community. In these portals, the type of profile information held about members can be added to or modified following an administrative or community consensus-reached decision. Such an application can be referred as a "Semantic Web portal with community-driven ontology management," or more simply as a "people's portal."

The article is organized as follows. In the next section, we present a background on the topic. State of the art and trends in the area of semantic community portals are discussed in the section Semantic Community-Driven Web Portals. In the Future Trends section, we identify challenges in this area. Finally, we conclude the article.

BACKGROUND

Community portals are hubs of exchange where globalization becomes localized and the communities of the world become networked and polarized virtually anywhere. They are ever evolving, constantly growing, embraced by many and yet sometimes abandoned by others. Networks can also be perceived as valuable by connecting together a wide range of experts who can sense market or customer needs, thereby framing any problems identified and rapidly coordinating expertise to meet those needs (Cross, Liedtke, & Weiss, 2005). There are a number of challenges facing the new digital age and also the digital divide within these communities. The "augmented social network" calls for identity within the digital age to be configured to support civil society, and to treat the Internet (in the form of a public territory) as an open and integrated system that the citizens of the planet can hold in common (Hauser, Foster, & Jordan, 2003).

The Semantic Web provides us with tools to create a global dictionary of all shared terms to facilitate the finding of information that is online and is of interest to individuals. The use of ontologies and taxonomies makes searches for matching persons, communities and interests based on meaning and not on the use of keywords.

There is a strong connection between social networking services and semantic community portals. The FOAF[1] (Friend

of a Friend) Semantic Web ontology has been utilized by a number of SNS sites, including Tribe and Ecademy, for describing member profiles and their relationships. The use of the FOAF ontology is leading to interoperability between the various standalone social networking spaces. This will in turn increase the number of happy chances, or serendipity, occurring between people using these online worlds by bringing them all together in a universal social network (as a sum of its SNS parts). For this to become a reality, more SNS sites will be required to use FOAF, SIOC (Semantically-Interlinked Online Communities) and other related ontologies, making the data within them distributed and decentralized as opposed to being locked in to proprietary sites or applications.

SEMANTIC COMMUNITY-DRIVEN WEB PORTALS

In this section, we will describe the type of shallow, widespread ontologies lying in the core area of semantic community portals, list popular community portals which are potentially crucial in respect of the large-scale adoption of Semantic Web technology. Further, we will detail the movement of Web communities towards the establishment and evolution of their own ontologies in semantic community portals.

Ontologies in the Core of Semantic Portals

In this subsection, we describe popular ontologies, which are most typical for semantically-enabled community portals, and are used for information aggregation as well as the descriptions of communities and social networks.

vCard, FOAF, Dublin Core, RSS

There are several examples of ontologies that became widely accepted and reused for the purpose of distributed data exchange and integration for semantic community portals. Very often these ontologies were organically grown and quickly found a large number of creative users, even though for a long time they were not endorsed by any of the popular standards committees. Two examples of the most often described domains are represented by ontologies describing a *person* and ontologies describing a *document*. We provide typical examples of the person and document ontologies that gained a high degree of popularity:

- Person ontologies:
  1. **VCard**[2] is a schema to specify electronic business card profile. Factually, vCard is a simple ontology to describe a person with 14 attributes such as family name, given name, street address, country, etc. The ontology provides a precise way to describe the instance data using RDF.
  2. **FOAF** (Friend of a Friend, as mentioned above) is a schema which is similar to VCard in a way that FOAF also is a wide-spread ontology to describe a person. FOAF schema provides 12 core attribute types, that are similar to the attribute vCard provides: first name, last name, e-mail address, etc., and the precise way to describe the instance data using RDF is also proposed by the FOAF-project.
- Document/Web publication ontologies:
  1. **Dublin Core**[3] stands for a vocabulary aimed to be used to semantically annotate Web resources and documents. The vocabulary consists of 15 attributes to describe a document or a Web resource and contains parameters that express the primary characteristics of the documents (e.g., title, creator, subject, description, language, etc.).
  2. **RSS**[4] is variably used as a name by itself and as an acronym for RDF site summary, rich site summary, or really simple syndication. The RSS ontology specifies the model, syntax, and syndication feed format and consists of four concepts: channel, image, item, and text input, each of them having some attributes like title, name, description.

The reasons why staying within the scope of simple ontologies (e.g., exchanging FOAF profiles and posting cross linked news stories from RSS) is not enough and far too limited for the existing Web are as follows:

- Embedding and personalizing rich content and behavior from remote Web applications are becoming necessity for catering to specific user needs.
- Extension of simple ontologies, discovery and communication of these extensions are becoming necessity for bringing semantics to a larger amount of Web content.
- Mapping between simple ontologies and their alignment with other extendible ontologies are becoming necessity for large–scale data integration.

Thus, preserving the successful approach of simple usable ontologies and resolution of the issues above are clearly to be considered as major challenges in the practical state-of-the art semantic community portals. These challenges start to be addressed by initiatives in the area (e.g., SIOC).

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