Metasocial Wiki - Towards an interlinked knowledge in a decentralized social space

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Abstract. This paper introduces a new approach to semantic wikis. In this approach users coming from different social networks can be merged into a common space to enable collaboration. This approach makes use of the user's identity representation and keeping track of the user's interests according to the type of annotations encountered in the content they add.
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1 Introduction

According to Metcalfe's law[1], the larger the network the more valuable it becomes. Although individual thinkers invent and discover, it is groups, which typically refine and extend innovations. Moreover, highly developed ideas rarely emerge from single and isolated thinkers, they usually come as a result of a process of interaction [2]. Even though semantic wikis have proven to be a successful tool for collaborative working, there is still a long way to go to fully exploit users collective intelligence. In this paper we describe a new approach to semantic wiki systems. In this approach the skills from users coming from different social networks are merged into a common collaborative space called MetaSocial. The MetaSocial project (a resarch proposal) introduces this approach and some of the challenges it presents.

1.1 Social Networks and Semantic Wiki Systems

Work by [2] and [3] report that users prefer to establish friend relationships with other similar users in a social space, regarding for instance socio-cultural traits. This has lead to the aggregation of people from different backgrounds into common spaces where they share similar interests and tastes. Social networks (SN) differ in the services they provide, targeting different demographics with different purposes. All SN are valuable in terms of aggregating people with distinguishable features. For instance LinkedIn[1] aims for professional exchanges

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[1] http://www.linkedin.com

between individuals, while Orkut targets casual and leisure exchanges between family and friends. In that sense, SN help to define an individual in terms of a context that includes the type of people they target. Although research in SN have demonstrated the great potential that SN present for generating knowledge, less attention has been paid on how to harness users' knowledge in generating collaborative content. Some of the current SN offer capabilities for creating communities within the SN, however they dont provide tools for collaboration. Moreover, until the appearance of Open Social[2], the communication between independent SN was not possible.

The collaboration has been set aside from SN. Although collaborative systems, such as a wiki, provide tools for user participation into common tasks, e.g., discussion pages, there is still a lack of ties that prevent users from propagating information and from promoting their participation in a given task, by bringing this to the attention of the user's acquaintances. There is also still a gap between SN and collaborative systems. One possible solution to this situation would be to enable the capability of managing relationships within semantic wiki engines; however that would not be enough, as it would leave aside the potential benefit that the diversity of SN can bring into a common collaborative space.

1.2 Semantic Wiki and the linked Web

The semantic web is not about putting data together but about making links between the data [4]. So far, semantic wiki engines have acted as isolated content stores. Although efforts such as [5] have established the existence of links between same instances of data from different semantic wikis, there is still a broken link between the author of the data and the identity of the author. The integration of digital identities into semantic wiki engines can be perceived as an attempt to break away from one of the wiki principles regarding minimal access control, which refers to the capability of contributing in an anonymous way or by using a registered username, which can hold minimal authoring information.

Online identity can be defined as the representation of one's persona in a digital context[6]. It is worth noting that in the case of online identity the user has the ability to define a personal facade that represents him in a particular context. People in social environments tend to present just a facet of their identity for others to perceive. The integration of digital identities with wiki engines would allow the users to select their preferred persona to represent his authorship on a given wiki, while the wiki engine could still allow the anonymous authoring.

The integration of digital identities into wiki engines open a promising field in which the contextualization of a persona can be developed according to the activities carried out by this persona on the Web. Services integrating digital identities would not only pull information from the user's identity service provider, but also push information about the task carried out by the user that would help to better define the user's persona's interests and knowledge. The aggregation of information containing linked data coming from different data

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² OpenSocial, http://www.opensocial.org

silos could help in building up a decentralized digital identity [7]. The openID version 2.0 OpenID[3] protocol for digital identity providers already defines a attribute exchange protocol however it doesn't provide a standard way of defining and developing users' personas' contexts.

Until now, just a few semantic wiki engines have integrated the openID standard into their engines however they use it just as an authentication service. On the other hand, none of them have introduced the use of the social intelligence included in the users' FOAF[4] files.

Incorporating that information would enable the merging of users' SN information (including profile, social graph and interests for instance). This information can help to correlate users coming from different SN. Consider a user who is part of an alternative rock community within meta-social and is interested in releasing his first album. He creates a new project with that subject. People with similar interests can be advised to join the project. The user should be able to try to establish a relationship with other users, not necessarily a friendship but a colleague relationship, advertising his project. In this way he could establish relationships with people from Myspace interested in music, which could advise him on the design of the album's cover, or with people from LinkedIn who could help him to better position his album on the market.

Integrating the user's identity and social information into semantic wiki engines would enable linkage between user's identity with the type of contents he adds (presumably the type of topics he is interested in) and the relationships he establishes. Keeping track of this information will enable better tracking of users' interests and would facilitate the improvement of suggestion engines. Moreover making this information available to the user's identity service provider, would help to decentralize the information given by the user, enabling it to be reused in any other system linked to the user's identity.

2 Proposed Approach

The proposed functionalities for Metasocial are contained within two separate parts. Each part depends on semantic technologies to enhance existing services. A semantic wiki plays a crucial role in bringing the below functionalities together as we now explain.

2.1 Social Functionalities

Metasocial will allow users to collaborate from multiple social networks, therefore managing user accounts will be addressed to map individual accounts in different social spaces. As mentioned, OpenID will be used as a single user identity URI for each user of Metasocial. Social graphs using both the FOAF and SIOC[5] specifications will be imported into Metasocial from multiple distributed social

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[3] OpenID, http://openid.net

[4] FOAF, http://www.foaf.org

[5] SIOC, http://www.sioc.org

web platforms and linked together. The intuition behind this functionality is to enhance the information attributed to each user thereby offering intelligent suggestions based on their prior knowledge. Such social graph interlinking also contributes to current initiatives to address identity fragmentation and data portability [6].

Status information of each social network member will be described using the Online Presence Ontology [7], and with current initiatives such as Smesher [8] it is possible to convert such updates to semantic representations usable by the system. For example, if a person's status describes how they are busy working on a given project task, then Metasocial would not suggest additional work. Possible collaborations with work colleagues are suggested based on the imported social graphs, each social network member also has a list of interests extracted from the hosting service. Suggestions are then made based on such interests for specific projects. The converse is also true in that users are suggested projects and work based on their interests described in multiple social graphs. Combining such identity fragments we build a more complete profile of the user allowing projects spanning both the Semantic Web and Social Web to be suggested. We use this example as a very simple indicator of a trivial suggestion task [9].

A semantic wiki provides a useful means to control semantic graphs attributed to individual users, and make inferences based on the type of annotation the users have used when adding content. Metasocial will maintain a knowledge base capable of offering a useful collation of knowledge statements expressed within the wiki. One of the attractions of using a semantic wiki is the ability to effectively infer suitable projects suggestions and colleagues based on available semantic information.

2.2 Knowledge Functionalities

Within Metasocial collaborative environment projects will be described using the DOAP ontology[10] including extensions to this specification to capture knowledge describing more generic projects (at present DOAP is tailored more towards software based development projects). Looking for a project will be controlled using a semantic search mechanism by aligning the semantic concepts the user has expressed an interest in with similar projects. This allows more general and specialised projects to be returned if the user's original criteria are not explicitly matched.

Project management will require tools such as time planners, task managers and role assigners all usable on the semantic wiki. Social information assigned to users within the collaborative environment allows suitable roles to be suggested based on the semantics of the user details, i.e., `sioc:Role`. Managing

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[6] Date Portability Group. http://www.dataportability.org

[7] OPO, www.milanstankovic.org/opo/ontology.html

[8] Smesher, http://smesher.com

[9] Twine platform already leverages users interests, and track of user's searches for suggesting content. See http://www.twine.com

[10] Doap, http://usefulinc.com/ns/doap

project milestones would be enhanced through interactions with semantically linked calendars; allowing project members to receive updates and reminders about upcoming milestones. Reminders would be controlled automatically by the semantic preferences stipulated by the project member.

Project work will be labeled using free text tagging, which is in turn aligned with concepts from a knowledge base, thus controlling term ambiguity and correct co-referencing. External knowledge sources can also be used [11] for greater availability of concept definitions. The internal knowledge base would allow discourse to be developed specific to that project so that knowledge generated as a result of this process could then be shared with additional projects. Natural language style queries could be asked, either returning any derived answers or relevant knowledge from the knowledge base, or allowing project members to answer the questions themselves. Completed projects tasks would become less visible to the user on the semantic wiki based on the task being semantically defined as complete. This would offer the functionality to display all completed projects of a specific type, enhancing the knowledge management functionality on the wiki and encouraging reusability of the existing projects.

3   Conclusions

Metasocial introduces various challenges, most of them concerning the representation of the user context in an standard format, the extraction of information (interests in particular) from user added data and the inference of information from the user's social graph. Offering a platform where people from different social networks can not only communicate, but also collaborate easily in the development of semantic-aware projects according to their interests will help in allocating the right user with the right skills in the right projects.

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[11] Such as DBPedia, http://dpedia.org and Freebase, http://www.freebase.com