Information management from social and documentary sources in organizations

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ABSTRACT

The wide adoption of social and connected tools in organizations leads them to think again about their behavior regarding how they manage their resources. They now consider the resources users can produce on various social media and how correctly index them in the organization knowledge base. We present in this paper the model of a digital ecosystem, which permits the indexing of either documentary resources or those produced on a social platform with the help of an ontology.

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1. Introduction

Social networks drain more and more users online. Whether for entertainment, information finding or personal watch, new habits of resources production or sharing have emerged.

The organizations are aware of the opportunities that may present these new habits in their collaborative or activities or watch. Thus, they are increasingly interested in social networks and the deployment of such digital tools in organizations accelerates.

However, most current products used by organization are not optimal. They are rarely or poorly integrated with existing infrastructure. This results in a scattering of information across different tools, which do not communicate with each other.

Organizations are therefore looking for a way to effectively use these information sources and make them interact with their traditional knowledge bases. Enabling organizations to better manage all of their resources by indexing them with a single frame of references, regardless of their mode of creation, is a key to improve decision-making at all levels. We present in this paper a semantic model of a digital knowledge ecosystem and its prototype. This system allows the indexing of the organization's resources coming either from its documentary bases or users interactions on a digital social network.

We will return in Section 2 on the relevance of integrating social tools to the other Information Services (ISs) of an organization and how these tools could be viewed as a knowledge ecosystem, favorable to decision making. We then present, in Section 3, the design of a digital ecosystem. Before concluding, Section 4 presents a use of the prototype and the first results we obtained.

2. User interactions in knowledge ecosystems

2.1. People as information vector

The control of information is essential for organizations, which have always tried to capture and index it so one can easily use it later. This is a strategic issue in a changing world (Ermine, 2000; Waltz, 2003). Controlling its own information is a springboard for innovation and permit to persist in a very competitive market.

All this information enables the organization to maintain access to its own knowledge, the knowledge brought by its employees. This business knowledge can be found into elementary forms depending on whether it is explicit or implicit (Nonaka & Takeuchi, 1995). Therefore, the challenge of mastering the knowledge for organizations requires the transcription of tacit knowledge into explicit in the most consistent manner to avoid the loss of a piece of this corporate knowledge if an employee leaves the organization.

This transcription still happens today by creating documents such as reports of meetings, notes, position papers, proposals, patents, or others kinds of publication. Although the use of digital tools in organizations has helped the transcription phase by providing new tools to facilitate notes taking or documents sharing, is not yet able to index all.

However, taking into account the resources, which are shared by collaborators on digital social networks, could improve the understanding of their field of expertise. This problem of experts identification or research in the social network of an organization

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is a vast research field, for which (Ehrlich, Lin, & Griffiths-Fisher, 2007) provides a state of the art, completed by (DiMicco, Geyer, Millen, Dugan, & Brownholtz, 2009) in a state of the art around the concept of people sensemaking.

In order to easily capture and transcribe the implicit knowledge carried by its members, the organizations provides them digital tools to improve information sharing and collaboration. People become then an essential vector of information within the organization.

2.2. Knowledge ecosystems

The concept of knowledge ecosystem (Bray, 2007, Chapter 31) comes directly from the digital ecosystem. This theory is based on the idea that innovation and learning new skills will be drastically improved in an environment, which favors primarily human interaction and especially the self-learning in a self-organized structure. This approach is opposed to the more traditional view of a top-down education.

This approach has found a particularly big echo on the Web, as it enables the self-organization of people and the free exchange of knowledge to the mass through Web applications. The advent of tools such as Wiki (1995) or blogging platforms (Blogger, 1999) has transformed the Web from a fifth media to a platform on which the visitor can add his own creations, the content of his choice.

This digital revolution, which took the name of Web 2.0 (O'Reilly, 2009) served as a catalyst for many new uses of information. Information should no more be just accessible – through encyclopaedia, libraries, etc. – but it should be dynamic, editable, incremental. The consumer became an actor. These changes spread in many areas, particularly in the corporate structure. The flattening of the old hierarchical structures in favor of a greater transversality led to an acceleration of trade and new forms of innovation.

Exchanges occur in organizations with integrated and often free offerings – like Google Docs, Doodle, Trello, etc. – which compete directly with the own tools of the organization. Collaborators often see the corporate services as aged and abandon them in favor of Web platforms, seen as more modern. Faced with the raised of the use of these new platforms within their teams, organizations are thinking about how these new tools could coexist with their historical information systems.

The main flow of information leaving the organizations is not related to its business documents – patents, reports, etc. These lasts are always indexed within the organization internal knowledge base. The main flow of information is instead related to the new habits of the organizations members toward Web applications. The more they use such applications and produce multimedia contents on the Web, the less these contents are indexed in the organization knowledge base. Some works have been previously done to provide a solution to this problem (Gayo, de Pablos, & Lovelle, 2010 for example). It seems necessary that organizations deploy in their IS the same kind of knowledge ecosystem than their members enjoy on the Web. Therefore, this will allow the indexing of data exchanged or produced within these Web applications.

We will see in the next section how social networks should occupy a prominent place in the design of a digital ecosystem for the organization before presenting the E-MEMORAe 2.0 platform, which could be compare to such an ecosystem.

2.3. Social networks as prominent part of digital ecosystem

A social network is the common name for representing a social structure, which may be composed of individuals or organizations and is based on relationships like friendship, professional or commercial links (Barnes, 1954). Since the early 1990s and the rise of the Web, social networks have emerged and benefited of modern technologies to ease knowledge sharing, meeting new people, etc. The concept of social network in the digital world is complex. If it refers exclusively to the possibility offered by some sites to create friendship links between members (Boyd & Ellison, 2008), the first of them appeared in the second half of the 1990s with classmates.com (1995), sixdegrees.com (1996), Asian Avenue or Black Planet (1999), followed more recently by LinkedIn and MySpace (2003) or Orkut and Facebook (2004).

We can also consider all the digital media that exploded by the 80s (mail, Usenet groups) as social networking tools, by the ability they have to build micro-societies around topics. The communication between different members of different groups creates a strong social structure underlying the electronic tool (Fisher, Smith, & Welser, 2006).

Seufert, von Krogh, and Back (1999) emphasize the importance of balancing social network and knowledge management. They remind us how companies tend today to gather themselves in industrial consortium and no longer work alone. Knowledge management in such partnership have to deal with the recognition of internal and informal social networks (Morgan, 1986; Sandner, 1990 in Seufert et al. (1999)), often constituted by people sharing strong affinities (McPherson, Smith-Lovin, & Cook, 2001).

Often stigmatized as potentially bad for a team productivity, by allowing the use of organization resources for personal or simply idleness use (Ferreira & du Plessis, 2009; Shirky, 2008), online social networks can however be good for the company by facilitating remote interactions between collaborators and improving information or knowledge transfer within the organization.

It is crucial for organizations to highlight their social network through applications facilitating collaboration and rapid exchange of information in order to keep all their data and make emerging new trends and *in fine* innovation (Tsai & Ghoshal, 1998).

We will present in the next section the MEMORAe approach, which has led us from an original proposal for the Knowledge management to the modeling of a knowledge ecosystem, which takes of course into account the social dimension of organizations.

3. The MEMORAe approach

The MEMORAe approach proposes a theoretical model (Section 3.1) and a platform for collaboration and knowledge management for organizations (Section 3.2). The main contribution of this approach is to allow the indexing of all types of resources around a semantic frame of references presented to the user as a concepts map.

Our works are integrated into the MEMORAe approach. They extend its model and features, such as wikis, forums, or shared calendars (Leblanc & Abel, 2008; Leblanc et al., 2010), developed in a previous prototype. This paradigm shift has primarily focused on better consider the social dimension of an organization using existing Semantic Web standards. Thus our prototype of a digital knowledge ecosystem has been extended.

3.1. Semantic design

The design of our digital knowledge ecosystem has started out of this simple fact: exchanges, which take place within social platforms, can represent some knowledge for the organization, what is not taken into account today.

To enable the homogeneous consideration of all types of resources, whether from a social process within a Web application or simply from a knowledge base of the organization, our ecosystem is organized around a pivot represented by a single shared frame of references along which all resources will be indexed. It is also due to the same index that the members of the organization