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At the Crossroads of Knowledge Management and Social Software

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Abstract: The growing phenomenon of Social Software seems to provide an opportunity to complement the top-down approach based on central knowledge repositories with tools that are simpler, smarter and more flexible. This article includes a brief description of the main categories of Social Software – weblogs, wikis and social networking sites - followed by an analysis of their utilisation in relation to the five core Knowledge Management activities of the Knowledge Management taxonomy proposed by Despres & Chauvel in 1999. Examples that illustrate the support Social Software could provide for knowledge management are presented. Finally, some of the problems that hinder the usage of Social Software tools, together with some of the latest developments and trends in the field are mentioned.

Keywords: Social Software, weblog, wiki, social networks, knowledge acquisition, knowledge sharing.

1. Introduction

Knowledge Management (KM) and collaboration are considered to be pre-requisites for more innovation and enhanced creativity. Until recently, most of the KM efforts were focused on the creation of central knowledge repositories, encouraging knowledge reuse and collaboration based on these repositories, in a typical top-down approach where knowledge was seen as a separate entity. The growing phenomenon of Social Software offers a chance to complement this approach with tools that are simpler and more flexible. This type of software is actually not new at all – software applications having similar traits have been in use for quite some time – but it is only recently that these have been labelled as “Social Software”. Social Software is the term used to designate, “the use of computing tools to support, extend, or derive added value from social activity - Including (but not limited to) weblogs, instant messaging, music and photo sharing, mailing lists and message boards, and online social networking tools” (Lawley 2004).

What could Social Software do for Knowledge Management? Knowledge emerges in conversations, actionable knowledge is mainly the result of collaboration, and more and more importance is given to social capital. Social Software provides the necessary support for conversations and collaboration, for knowledge creation, sharing and publication, for identifying experts and getting access to expert opinions worldwide. It leaves the control of knowledge with the individuals owning it. Each individual is able to maintain his own space for which he has complete control over the information he chooses to share. This creates a bottom-up style of information sharing and collaboration, rather than an imposed or corporate top-down strategy. (Fisher 2005)

The second section of this paper includes a brief description of the various types of Social Software

– such as weblogs, wikis, social networking sites, social tagging, events management, geo tagging. Probably the specific tools, permanently evolving, are not as important as the social phenomenon generated around them – through spontaneous interaction, pro-active attitudes, enhanced knowledge creation, knowledge sharing and transfer.

Section 3 contains an analysis of three important categories of Social Software (weblogs, wikis and social networking) in connection with the core KM activities included in the taxonomy of applied Knowledge Management proposed by Despres and Chauvel (1999).

Several examples extracted from different sources presented in section 4 are meant to illustrate the various ways in which Social Software is able to support knowledge management.

Section 5 considers some of the problems that hinder the usage of Social Software tools and points to some of the latest developments and trends in the field.

2. Social software

What types of software are actually included in the category of Social Software? There is a tendency to include email, discussion lists or message boards under the umbrella of Social Software. And to a certain degree, they are social interaction tools too. But there's an important distinction between traditional communication software - forming people into groups with a top-down approach and assigning membership, as discussion lists and forums usually do, and Social Software - with its bottom-up approach, enabling people to organize themselves into a network based on their preferences (Boyd 2005).

According to Stowe Boyd, social software encompasses one or more (though not necessarily all) of the following elements

Support for conversational interaction between people or groups. That includes real time conversations like instant messaging, and what Boyd calls “slow time” conversations that occur in collaborative virtual spaces.

Support for social feedback. Reputation and trust are crucial in online interactions, as demonstrated by the importance placed by sites such as eBay on a seller’s rating and reputation.

Support for social networks. Many Social Software applications create a digital layout of a person’s social network and facilitate adding new connections. (Kaplan 2005):

The sudden popularity of social technologies is attributed to the increase in low-cost tools and the critical mass of millions of people who are now connected to the Internet (Boyd 2005), to the growing tendency of people to rely more on their own personal social networks than on traditional company structures (Nardi 2004), and to the people’s need to feel part of a community (Bryant 2003).

Jack Vinson depicts other characteristics of Social Software tools: they are extremely easy to use; they provide for networking and allow for self-forming networks; usually, readers are also contributors and vice versa, this virtual environment enforcing much less sense of hierarchy than in the real world; relationships become nothing but flows – one person can be at the same time part of several networks (Vinson 2005).

The key areas of Social Software are considered to be the weblogs, the wikis, and the social network services of different kinds (Boyd 2003). Social network services range from some focused purely on networking, to others designed to share different types of resources, or meant for open co-ordination purposes (Figure 1). A strict classification is hard to derive, because the categories of Social Software tend to intertwine and to rely on each other.



Figure 1: Key areas of Social software

2.1 Weblogs

A weblog or simply a blog is a web application enabling periodic posts on a common webpage with public access. These posts are usually in reverse chronological order.

Editing a weblog does not require any special training, enabling anyone to publish content on the web. As with any other website, the public can use any HTML browser to visit its pages. Weblogs range from personal diaries meant for family and friends and lists of visited links seasoned with short comments to personal knowledge repositories maintained by professionals, learning journals or networking instruments.

The entries - called *posts* - are usually short. The most recent ones are displayed on the weblog homepage, while old posts can be retrieved from archives ordered chronologically (and possibly on topics). A post can be as short as a link to an online article, or as long as to contain an essay. Many posts link to interesting on-line articles, earlier discussions or related readings. They enable readers and other weblog authors to add comments or link back to a particular post using its

permalink (permanent URL), which is usually automatically generated by all popular weblog systems.

Most of weblogging tools not only generate HTML pages but also encode the post content in a format derived from XML known as *RSS (Really Simple Syndication, or Rich Site Summary)*. The RSS format can be read by news aggregators, a type of software who checks automatically the weblog feeds for updates and display their content. These enable readers to keep up with many weblogs (and an increasing number of other websites), without navigating the actual web pages. (Efimova 2004)

Besides *weblog editing and publishing tools* and *news aggregators*, *weblog search tools* give the users the chance to find weblog posts or connections between them.

Unlike an official web site, a weblog is highly subjective, reflecting the thoughts, opinions and preferences of its author(s). Most weblogs are written by individuals (also known as webloggers, or bloggers). These coexist on the World Wide Web with group weblogs, project weblogs and organisational weblogs.

Many weblogs also exhibit *blogrolls*, lists of weblogs that their authors read regularly. Through these lists, occasional readers can find trusted "sources" that influence the thinking and writing of a particular weblog author. These links are not only referrals to specific sources, but also signs of value and personal recommendation. In this sense, hyperlinks between weblogs fulfil a similar function like references in scholarly publications (Mortensen 2002).

2.2 Wikis

A wiki is a website (or other hypertext document collection) that allows users to add content, as on an Internet forum, but also allows anyone to edit the content. "Wiki" also refers to the collaborative software used to create such a website.

A wiki enables documents to be written collectively in a simple markup language using a web browser. A single page in a wiki is referred to as a "wiki page", while the entire body of pages, which are usually highly interconnected via hyperlinks, is called "the wiki."

A defining characteristic of wiki technology is the ease with which pages can be created and updated. Generally, there is no review before modifications are accepted, and most wikis are open to the general public — or at least to anyone who has access to the wiki server. In fact, even registration of a user account is not always required. Most wikis offer a title search, and some also provide full text search.

WikiWikiWeb, the first wiki site that created the concept, defines a wiki as a "composition system, a discussion medium, a repository, a mail system, a chat room, and a tool for collaboration." In the vision of Ross Mayfield of Social Text, wikis are tools for "transparent collaboration" (Kaplan 2004).

There is a sort of safety clause in the wiki design: one page always lists recent changes to the page and enables users to revert to previous versions. That, explains WikiWikiWeb, allows people to correct mistakes, erase spam, and generally keep the content "meaningful".

Two core assumptions are incorporated in the wiki mechanism. The first is that knowledge is transitory, not static. There's always some new piece of information to add, and some old piece to delete or revise. The second assumption is that the whole is greater than the sum of the parts. Through each individual's contribution, the resulting product is made better and better.

The most well known example of wiki usage is Wikipedia (<http://wikipedia.org>), a free, multilingual

online encyclopaedia created and maintained collaboratively (Kaplan 2004).

2.3 Social network services

The so-called "social networks" are circles in which people interact and connect with other people. They transcend strict delineation between personal and business (there's often overlap between the two), and tend to transcend organisational boundaries and hierarchies.

Social networks can provide the essential context needed to make knowledge sharing possible, valuable, efficient and effective. (Pollard 2003)

2.3.1 Social networking sites

The first online social networks started appearing in 2002, when the term was used to describe the means of networking in virtual communities, and became popular in 2003, with the advent of websites such as Friendster (www.friendster.com), TheHoosierWeb (www.thehoosierweb.com), Tribe.net (www.tribe.net) and LinkedIn (www.linkedin.com). The number of social networking sites currently available exceeds 300, and it is growing steadily. (Wikipedia 2005). Some of them are wide-ranging online social networking sites, such as Friendster and Orkut (www.orkut.com); others are dedicated to business networking, such as Ryze (www.ryze.com), OpenBC (www.openbc.com) and LinkedIn, or dedicated to location-based interaction, such as MeetUp (www.meetup.com), Plazes (www.plazes.com) and Tribe, and still others organised around business concepts, as in the case of ReferNet (www.refer.net) or Shortcut (www.shortcut.nu). Another category focuses almost exclusively on dating.

In these communities, an initial set of founders sends out messages inviting members of their own personal networks to join the site. New members repeat the process, growing the total number of members and links in the network. Sites then offer features such as automatic address book updates, viewable profiles, the ability to form new links through "introduction services," and other forms of online social connections.

Some social networking sites are also facilitating music sharing (Kazaa) and photo sharing (Yahoo 360, Flickr, Phlog).

In order to allow computers to link people to one another, a computer-readable social networking data format was created. FOAF (Friend-Of-A-Friend) is a simple and easily extendable text-based data format defined using OWL (the Web Ontology Language).

2.3.2 Social tagging and folksonomies

Social bookmarking is another type of online services, allowing users to save and categorise a personal collection of bookmarks. The individual bookmarks are public, so that anyone can see the bookmarks that have been saved by others and add them to their own collection, as well as to subscribe to other people's feeds (Wikipedia 2005).

There are several such sites, but the most well known seem to be CiteULike (www.citeulike.org), del.icio.us (<http://del.icio.us>), furl (www.furl.net), and spurl (www.spurl.net). Sharing and searching for bookmarks, photos and weblog content was made easier by the initiative to provide the users with the opportunity of adding tags to these types of content. Users are now able to categorise for themselves these various types of content as they wish. This is how social tagging was born, a sort of general taxonomy emerging from the individual tags. Social tagging was revealed to be a way to get some relatively reliable content classification out of a large number of people.

Folksonomy is a neologism for the practice of collaborative categorisation using freely chosen keywords. This feature began appearing in a variety of Social Software in 2004. There are currently several examples of online *folksonomies*: del.icio.us and Jots (<http://jots.com>) are bookmark sharing sites, Flickr (<http://www.flickr.com>) is meant for photo sharing, 43 Things (<http://www.43things.com>) for goal sharing, and Tagsurf (<http://tagsurf.com>) for tag-based discussions. (Wikipedia 2005)

Folksonomies work best when a large number of users all describe the same piece of information. Discussions are taking place if folksonomies should be taken into account as a possible basis for building the Semantic Web.

2.3.3 Time and proximity management social tools

Several Social Networking services already contain tools (Calendar, Agenda) for managing community events. One of the most well-known services of this type is MeetUp, meant for intermediating and managing face-to-face meetings on different topics in locations placed all over the world. Some of these tools are focused on time management and events information sharing. For example, *RSSCalendar* (www.rsscalendar.com) is a sort of new way for individuals and organisations to share their calendars with family, friends, and co-workers – making use of the latest developments in RSS technology and including RSS channel creation and aggregation. More complex than *RSSCalendar*, *events* (<http://www.events.org/>) is a service for

tagging events and sharing this kind of information. EVDB is another “events and venues database”, and has an associated web-based calendar service and search engine named Eventful (<http://eventful.com>). There are a whole range of other web-based applications for handling events, location and calendaring currently under development. These could give individuals the chance of looking for other people who are going to attend the same event, or be in the same place at a specific moment in time.

Another group of tools of this category are dedicated to geographic location management – the so-called geo tagging applications – making it possible to add geographic metatags (geotags) to web pages and to process RSS feeds.

The *GeoURL* (<http://www.geourl.info>) is another popular service amongst bloggers. It offers a way to register a weblog in a directory for certain geographical coordinates. Furthermore, it also offers the possibility to obtain a list of other blogs near to a specific blog.

Multimap (<http://www.multimap.com/>) and *World kit* (<http://brainoff.com/worldkit/index.php>) are both services allowing the visualization of websites geographically situated in a specific area. A series of search engines (such as Google Local, A2B Location Based Search Engine, GeoTags Location-Based Search Engine, RSS Weather) are able to search websites using geotags.

Plazes (<http://www.plazes.com>) is a social networking site providing the possibility to register Internet access sites based on their IP number. Each member of the network is considered a discoverer of new Internet access points and can invite others to join. It mainly offers the possibility to find other people connected to the Internet in a specific area or to identify public access Internet access spots when travelling.

A constantly evolving list of social networking sites can be found at http://en.wikipedia.org/wiki/List_of_social_networking_sites.

3. Social software in the service of knowledge management

The success of Social software is regarded as being based on the availability of these low-cost, high bandwidth tools, coupled with a critical mass of millions of self-motivated, gregarious and eager users (Boyd 2002). This kind of tool gives individuals the chance to network in online versions of real world social systems. Social Software is transforming group interaction and has a notable impact

nowadays on how businesses reach their markets, changing the way collaboration and communications are managed within and across businesses.

3.1 The KM taxonomy by Despres and Chauvel

In their paper titled “Knowledge management(s)”, Despres and Chauvel proposed a framework for categorising Knowledge Management (KM) regions of practice, taking into account five types of processes (activities) and three different contexts (individual, group and organisation) (Despres 1999). The KM activities mentioned in their paper are:

1. Scan/map - pointing to the world of business intelligence, perception;
2. Acquire/capture/create – associated with the world of research, development and creation;
3. Package/codification/representation/storing – related to the world of databases, information and knowledge bases, organisational memory;
4. Apply/share/transfer – related to the world of competencies, teamwork, intranets and cross border sharing;
5. Reuse/innovate/evolve/transform – associated to the world of leverage, intellectual assets and innovation.

3.2 Social Software as support for knowledge activities

We will now attempt to analyse the three categories of Social Software mentioned above (weblogs, wikis and social networking) using the framework of these core KM activities. Deliberately, we chose not to include the three different contexts (individual, group and organisation) of the Despres and Chauvel taxonomy, for an almost obvious reason: Social Software is meant for individuals to enhance their social interaction in groups, organisations and across them, so that separating these three different contexts would not make much sense in this case.

Let us now review some of the uses of Social Software from the perspective of the activities included in the Despres and Chauvel taxonomy:

3.2.1 Scan/map:

For business intelligence, blogs reading proves to be an excellent way of collecting information on markets, competitors and latest innovation, and also of locating experts both inside and outside an organisation; for marketing, blogs monitoring is a new opportunity for examining customer opinions; weblogs run by individuals known as working for famous companies also attract feedback from cus-

tomers and have an influence on the public image of the company (as in the famous case of Robert Scoble from Microsoft).

News aggregators make subscribing to specific searches and monitoring the content of an extended number of blogs regularly much easier. In order to be able to adapt rapidly, businesses have to know who is speaking about them and their products, and in what terms.

Wikis can also be seen as an emerging source of information. More and more people are using Wikipedia today, and there are other wikis on specific topics coming to public attention. These sources of information have the advantage that they are updated almost in real time, and bring together the contributions of thousands of people.

Browsing other people’s tags, bookmarks, photos - especially if these persons are known to share the same interests - can save hours of work and is an effective alternative to Google and catalogue searches. These other people invested time in collecting those items, and agreed to make them public – so they are free resources that should be taken into consideration.

Social networking sites may provide information on potential contacts, partners and customers; by using the available information, specific expertise can be located and potential job candidates screened. LinkedIn, for example, is famous for bringing together employers, job seekers and multi-level marketing salespeople.

The time and proximity management social tools can be used for scanning events (fairs, conferences, workshops) in a particular field of interest, or for scanning places in search of people with specific expertise. Plazes, for example, can give the chance of finding local peers when travelling, or online acquaintances happening to be in the same town or even in the same hotel, creating the opportunity to meet in person.

3.2.2 Acquire/capture/create:

Blog authors use this type of tool for capturing their own ideas and those of other people during research work, project development or simply during regular work. It is a method for exposing work-in-progress and for getting feedback, for storing drafts that could later develop into some form of deliverables (articles, reports, books) and for commenting on other people’s ideas.

The open editing facility provided by wikis enables individuals to capture knowledge and afterwards jointly participate in its refinement. Knowledge can be restructured and reorganised at any time due to

the remarkable flexibility offered by this category of tools. Inside organisations, wikis can be used for coordination purposes and for acquiring a common understanding of the concepts and procedures.

Browsing social network sites may result in the acquisition of new customers, employees or consultants. It is mainly focused on discovering the needs, expertise and offers of other people and indirectly of other organisations.

Bookmarking interesting pages found during the web browsing activity is an excellent method for organizing and storing links; bookmarks, photos, audio and video files can be stored on specialised sites providing the respective services, their owner retaining the right to decide if he wants to make them public or not. The opportunity to tag these artefacts enables their classification and organisation.

3.2.3 *Package/codification/representation/storing:*

In order that it is available for a large category of the public, Social Software is typically very easy to use and intuitive - at least at a basic level. The packaging, codification and storing activities are usually transparent for the users, and are frequently associated with acquire/capture/create activities: in the case of social networking sites, information is discovered, acquired and stored immediately, without intermediaries, just by pushing a button; blogs make web publication extremely easy and wikis facilitate collaborative editing without requiring any previous knowledge.

The representation aspects differ from one tool to another. Some (like those dedicated to photo sharing or bookmarking) do not allow for much personalisation and innovation. Others - especially blogging software- allow more advanced users to intervene on the representation of the stored information. Together with the text entry, the aspect and form of a blog, the images, audio sequences and links can contribute to a great extent to the delivery of the intended message to its public.

3.2.4 *Apply/share/transfer:*

The sharing facility is the essential feature of any Social Software application. Weblogs, wikis and social network services have as their core purpose knowledge sharing, and RSS feeds have made sharing even easier. By subscribing to RSS feeds, users can stay up-to-date with the latest developments on a specific topic. Information travels around the world, across professions and organisational boundaries, and is accessible to anyone, apprentice or scholar.

Weblog posts usually reflect personal knowledge and competencies in their original context, and their content can be used as log, illustration or source of inspiration for the author's own work, but - at the same time - by peers and novices in the field. Distributed teams can use group blogs for coordination and information exchange.

Wikis can be used as repositories for more structured knowledge by teams, communities of practice, or networks of various types.

When people are sharing their links and photos by storing them on specialised sites, they first think of the advantage of re-using them from wherever they are, whenever they need them. Using other people's links and photos is a secondary, but not less important, purpose.

The tag search facility enables people to search blogs, link and photo repositories for information on a particular topic, making the search a lot easier and providing access to human-filtered information.

3.2.5 *Reuse/innovate/evolve/transform:*

Regular reading of weblogs incites reflection and instigates weblog writing. It can be the source of controversies and encourages synergy and creativity. Bloggers read each other's posts and start conversations across weblogs and these conversations can become starting points for forming social networks, based on joint interests. This phenomenon occurs across teams, professions, organisations, countries and continents. The pace of knowledge transformation is amazingly fast: a few hours after an idea was born, there are people all over the world who have already retained it and adapted it to their own purposes, shaping their own domains.

Wiki pages are edited and improved, sometimes reorganized; new knowledge emerges; open editing stirs up discussions, concepts and meanings are often vividly negotiated, definitions are continuously polished and facts updated. Synergy arises from collaboration, ideas exchange, and the amalgamation of knowledge from different domains.

What does Social Software offer more than the traditional communication tools? E-mail and instant messaging, discussion lists and forums involve messages sent to a person or a group. It is usually short-lived communication (synchronous or asynchronous) and destined to a specific, already known, public. The content of weblogs and wikis, the profiles, the tags and the comments left on social networking sites remain available for a longer period of time (if not forever) and they could be meant for everybody (in the case of public access)

or for all the members of a group (in case of limited access). The most interesting thing about Social Software is the fact that it is social

6. In the way it is conceived – a networked approach to fitting connected tools around users
7. In its purpose - augments and extends online and offline social interaction to promote mutual understanding, and
8. In the way it behaves - it adapts to the user, instead of forcing the user to adapt to it; becomes part of the user's means of representation, and augments human interaction, instead of narrowing it down (Bryant 2004).

4. Selected examples of Social software usage

We present here a few examples to illustrate how Social Software tools are used to support knowledge management activities.

4.1 Reasons for using weblogs

The first example is a reflection on weblogs usage, extracted from a post made by Lilia Efimova in her weblog "Mathemagenic" (Efimova 2005):

There are two sides of it, reading and writing. Reading weblogs as a way for prevention, preparation, relation and expertise building. It's like everyday exercise to stay fit - knowing what is going on, what are the trends, who are the people. It may feel as not very important in everyday scale, but every time when I face a new big challenge I appreciate it - like appreciating everyday exercises and being fit if time comes to run for your life. Reading is also about taking time to develop ideas (I often think of "being pregnant with ideas"), having time to explore, bit by bit, creating a space for emergent connections and associations. This is where writing comes into play as well. For me writing is about catching ideas on the fly, growing and connecting. (Here I can go into a body of research on how artefacts support thinking and knowledge creation, but I wouldn't) Somehow the process of articulation is largely the process of idea development as well. Like a sculpture that exists only in a head of sculptor and needs to be moulded into physical shape to get a life, writing gives shape and life to fuzzy ideas in my head.*

4.2 Wiki usage

A wiki can be useful for different collaborative activities, such as jointly writing a paper, coordinating a project or preparing an event. A brilliant example is the KmWiki (<http://kmwiki.wikispaces.com>), an

initiative of Denham Grey, which became in time an excellent collective repository of KM references (KmWiki 2005).

Another example is the Knowledge Management Summer Camp wiki (<http://wikifarm.roell.net/kmsc/KnowledgeManagementSummerCamp>).

The 2004 edition was organised in Portugal with the support of the Knowledge Board. The wiki cited was used for participants' registration, for preparing the actual event, exchanging ideas between the online and on-the-site participants, for storing references and publishing ideas that emerged during the camp.

The following is an example of how a wiki can be used for collaborative work inside a company, encountered in Alexander O'Neill's weblog, *The Hallway* (O'Neill 2005):

At my company the development team is currently making heavy use of Wiki technology to allow us to easily share and edit documents with each other. A wiki essentially lets you edit content directly on the web server without having to upload HTML files or keep track of a local file tree. So, for example, you can go to a site like Wikipedia, click the 'edit' link, and suddenly you can make whatever changes you like to the page. The wiki software also helpfully keeps track of revisions people make, so if some unthinking soul deletes everything you just have to click the 'rollback to previous revision' button and the damage is undone. We're finding this model very useful for editing and fixing up each other's work. We also don't seem to have any trouble with people feeling like they 'own' a piece of material. Everyone works on everyone else's stuff, to improve it and look for mistakes, and everyone also then has a better understanding of the overall project."

4.3 del.icio.us – A social network service for bookmarks management

del.icio.us is a Social Software web service for sharing web bookmarks. It was developed by Joshua Schachter and "...is meant for people who are keeping track of their URLs for themselves, but who are willing to share globally a view of what they're doing, creating an aggregate view of all users' bookmarks, as well as a personal view for each user". (Shirky 2005)

The next example is taken from a weblog post of Stephen Spaeth, who works for the Centre for

Teaching, Learning and Technology (CTLT) at Washington State University (Spaeth 2005):

At CTLT, we have been trying to find ways to build collaborative communities around web resources. We have been exploring the intersection between two tools: delicious and wikalong. Nils discovered a small community (four people as of 2005-01-14) that have posted Wikalong's homepage to delicious. Nils recognized that by virtue of registering a common interest in wikalong at delicious the four are an incipient interest group. He created a wikalong for that page in order to provide the group with a common resource on which to build their interest. While four people is a start, that number seems too small. There must be others who have this common interest. I added the term wikalong to the tags for my post to delicious and discovered a larger community of eight citations using the term wikalong. Some of those pointed to the page which a much larger number of users (129 as of 2005-01-14) had noted. In creating the link to the delicious home page, I discovered another convergence of interest in delicious and wikalong. That community is starting to identify themselves in the wikalong for that page." (Note: Wikalong is a Firefox Extension that embeds a wiki in the Sidebar of the Firefox browser, indexed off the URL of the current page.)

4.4 Social Software tools integration

The various Social Software tools can be easily combined and aggregated to suit the needs of a particular community and to support its culture. An interesting example in this direction is the system designed by Headshift for the National Institute for Mental Health in England (Bryant 2004). The system (<http://kc.nimhe.org.uk>) was designed for creating joint knowledge and for promoting collaboration and understanding to bridge organisational divides (e.g. local health services, charities, professional bodies), occupational divides (e.g. clinician, policy maker, academic) and different perspectives (e.g. service user, carer, researcher, etc.) within the Mental Health field.

Headshift envisaged the deployment of simple, usable Social Software to create new and interconnected opportunities for informal knowledge sharing between key stakeholders in the Mental Health field. Rather than seek to mediate these different perspectives and produce a single 'official' version of events, they decided to promote self-representation by encouraging individual 'voices' from their network to stimulate informal knowledge sharing within an innovative framework of top-

down and bottom-up metadata and controlled vocabularies.

The use of connected individual and group weblogs was central to this process, not only in terms of the final product itself, but also in the way it was developed. Building such a system was considered a more than technical exercise, requiring an organisational commitment to building a knowledge-sharing culture, and involving various communities in both on- and off-line activities. Headshift created a network ecology of individual and group weblogs (including other Social Software tools) for an initial population of more than 10,000 users and linked these together using common top-down metadata and bottom-up terms and categories to create a genuinely joined up knowledge sharing environment where every node, group and category is syndicated both within the network and outside to other agencies via web services and XML. (Bryant 2004)

5. Unsolved problems and future trends

Social Software is rapidly evolving; new features are being thought of and made available almost every day. Probably the most interesting trend is the participation of users in the development of new features and the speed of developers trying to bring in new applications. Users with programming skills provide add-ons and make them available to the public. Some of them are rapidly adopted on a large scale, while others remain little used. The social phenomenon generated around the development and the use of Social Software tools is continually evolving.

Probably the most important characteristic of this category of tools is their extreme simplicity (anyone can use them) and the fact that they involve social interaction and a fun factor. Adding new features can cause difficulties for users. Keeping the balance between user-friendliness and new appealing features is not an easy task for the developers. Making the use of these kinds of tools compulsory in companies will probably take the fun factor away – and this is a problem that needs attention.

There are several visible trends at this point in time. Upon users' request, weblogs and wiki merged into *Bliki* (blog+wiki) type tools, the spontaneity of the weblogs marrying the structure of wikis.

Some sites dedicated to weblog hosting, such as Live Journal and Greatest Journal, encourage the interconnection of weblogs forming social networks. Further evolution of this idea is the Semantic Social Network, which interconnects both peo-

ple and weblogs, such as Stumble Upon and Fun-chain.

Real Time social networking is the name given to a hybrid of web-based social networks and instant messaging technologies emerged recently and gaining popularity. Another current trend is *collaborative real time editing*, referring to the process of editing a text or media file by different participants to an event from different internet accounts (Wikipedia 2005).

The typical social networking sites, storing individual profiles and facilitating contacts, are blamed for excessive data centralisation and their lack of standardisation. Each time an individual registers to a new social networking service, almost the same information has to be filled in again and again. Then, the respective information is stored on that site, instead of being held on a personal site and having the social networking sites link to it. After a boom when hundreds of thousands of people subscribed to such social networking sites, the current trend shows many of them are currently opting out. In spite of some widely publicised success stories, membership in most of these networks has failed to prove its loudly claimed advantages. Engestrom argues that what causes the failure of many of the social networking sites is the lack of a shared object. Social networks are not just made up of people – they consist of people who are connected by a shared object. (Engestrom 2005)

An interesting initiative regarding the social networking phenomenon is *The Augmented Social Network* (<http://asn.planetwork.net>), a public initiative meant to build identity and trust into the architecture of Internet, in the public interest, in order to facilitate introductions between people who share affinities or complimentary capabilities across social networks. Another interesting development is the possible usage of *folksonomies* (collaborative categorisation using freely chosen keywords) as a basis for building the Semantic Web.

6. Conclusions

The bottom-up approach of Social Software encourages responsibility and content ownership, and at the same time opens wide opportunities for collaboration and interaction. The benefits of using

Social Software tools for individual knowledge creation and sharing are already highly visible. Professionals sharing the same interests (sometimes having very different backgrounds) find them extremely useful for locating expertise worldwide, keeping up-to-date with the latest developments in multiple fields, and for connecting to each other.

The approach supported by this category of tools is informal, innovative and flexible giving enhanced support to the user-centric perspective – because it empowers users, bringing the tools to them, and not the opposite.

A sort of reluctance still hinders the usage of these tools on a large scale in organisations. Possible causes can be the control they are giving to the individual on his own generated content – as opposed to the hierarchic control on central knowledge repositories, and their bottom-up approach – as opposed to the classic top-down one.

Our paper attempted to provide a succinct presentation of Social Software, followed by an endeavour to describe its utility from the perspective of the five core KM activities included in the Despres & Chauvel taxonomy. The four examples of utilisation were meant to give an idea on the possible contributions of Social Software to Knowledge Management.

In our perspective, far from being a substitute, Social Software tools could provide a useful complement to existing central knowledge repositories (Ras 2005). It is noteworthy that the results of Social Software deployment consist not only in the generated content, but also in the social interaction triggered and in a shared understanding of concepts and facts, as basis for joint actions.

The huge number of available tools and features and the rapid pace of innovation in the field bring the advantage of a wide choice, adapted to the users' needs and continually evolving to serve them better. This kind of flexible and rapidly evolving tools in the hands of innovative users will be probably one of the major sources of competitive advantage in the Knowledge Economy of the future.

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