Chapter 3

Knowledge Management: Emerging Trends and Technologies
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KNOWLEDGE MANAGEMENT: EMERGING TRENDS & TECHNOLOGIES

The traditional knowledge management has been a top down approach. The way, knowledge management of an organization, is handled now-a-days, has undergone significant changes. New techniques, new demands, new kind of data, and the plethora of data is forcing organizations to reformulate their strategies to achieve an interactive, distributed and collaborative environment. Many new trends and technologies have emerged, some of which are discussed as below:

3.1 Enterprise 2.0

Enterprise 2.0, is about empowering employees; providing them an open platform to express opinions and share expertise. According to Wieringa, T. (2010), corporate counterpart to Web 2.0, Enterprise 2.0 builds on management to pass some control on to the network; they empower the knowledge workers to work and act autonomous. Based on loosening the control, Enterprise 2.0 allows information to flow more directly from originator to recipient, and therefore enables faster knowledge sharing and innovation.

In May 2006, Andrew McAfee quoted Enterprise 2.0 as “Enterprise 2.0 is the use of emergent social software platforms within companies, or between companies and their partners or customers”. This is not altogether a new concept. It is the result of realization, evolution and maturation of the ways of collaboration and participation for effective knowledge management. The objective of Enterprise 2.0 is to produce a more intelligent, efficient and
productive workforce within an organization, such that one can communicate easily and freely within company’s inter (team members) and intra (other employees of the organization) group environment, as well as with the external environment (with vendors, clients, customers).

The main Enterprise 2.0 features, as surmised by Balasubramanian, S. (2012), and Velev, D., et al. (2012), can be summarized as follows:

- The technology facilitates the application of Web 2.0 into the enterprise.
- The technology enables people to collaborate and/or for online communities and provides for a higher level of collaboration.
- It is a new set of technologies, models and methods used to develop and deliver business software.
- The technology offers a new way for knowledge management within the organization. Large corporations use idea management systems to solicit ideas from their customers and employees. Idea generation in some cases fuels the product pipeline.
- The technology enables business agility by putting together the ability to deliver various software services in the organization.
- It facilitates transparency by making information available to all who need it and for development of content-centric systems. Information is readily available and with suitable search engines, the users can locate the information they need.
- The technology adopts an approach that is user-centric and facilitates developing and accessing content.
• It enables the use of social networking platforms either within the organization or between companies. Different blogs can be organized depending on the particular engaged community.

• The technology leverages collaboration to include not only employees but also business partners.

Knowledge Management with Enterprise 2.0 has been carried out as follows as per Dave, M., et al. (2012):

• **Capturing, Collection and Prioritization:** with the help of wikis (can be free/paid/self-hosted).

• **Posting of Messages/Reporting:** with the aid of blogs (There are various types of blogs: *Project Blogs* are authored by multiple authors of the same organization, working on a common project. It is exclusively official and work related. *Personal Blogs* are the most prevalent ones. These are authored singly and mainly meant (though not restricted) for a small group. *A-list Blogs* are authored by media related people and are used as watchlist reports. *Corporate Blogs* are used for marketing or public relations).

• **Intra Organization Communication:** with microblogging (used for Social Networking, Project Management, Knowledge Sharing, Emergency Broadcasting, Analysing and Identifying informal help/support groups). Microblogs are helpful in making enterprise social media quite time efficient and focused.

• **Retaining Updated Form:** with the assistance of RSS (It could be Web-based, Desktop-based, or Mobile-device-based).
Enterprise 2.0 activities in relation to the various tools used for knowledge management can be depicted below in Figure 3.1:

Figure 3.1: Enterprise 2.0 - Scaling of Tools (Frequency of Usage)
3.1.1 RSS Feeds

RSS (most commonly expanded as Really Simple Syndication) is a group of web feed formats meant to publish frequently updated works, such as blog entries, news headlines, audio, and video, in a standardized format.

According to Rowse, D. (2010), it is a technology that provides a method of getting relevant and up to date information sent to you, for you, to read in your own time. It saves time and helps one to get the information wanted quickly after it was published.

An RSS document, commonly known as a "feed", "web feed", or "channel", comprise of complete or summarized text, and can additionally have metadata such as publishing dates and authorship. RSS feeds are provided in three ways: headlines only, headlines with excerpts and full text feeds.

3.1.2 Webcast

Essentially, webcasting is “broadcasting” over the Internet. A webcast may either be distributed live or on demand. Molay, K. (2007), explains that a "webcast" refers to information dispersed to a large audience via the Internet. It might be just a simple audio stream, or it might include visual aids, such as PowerPoint slides, recorded video clips, or live software demonstrations.

Many large public companies webcast the audio each quarter to review financial results and provide a commentary from management. Some sports teams now webcast their games. Special events such as fashion shows may be webcast with live video and audio. Webcasting is typically a one-way flow of information, where the audience cannot contribute to the content.
When looking at webcasting technology, companies are usually interested in the capacity for handling large numbers of viewers. Ease of connection and flexibility in supporting many different computer systems is also important.

### 3.1.3 Podcast

A podcast is a type of digital media consisting of an episodic series of audio radio, video, PDF, or ePub files subscribed to and downloaded through web syndication or streamed online to a computer or mobile device.

A list of all the audio or video files currently associated with a given series is maintained centrally on the distributor's server as a web feed, and the listener or viewer employs special client application software, known as a podcatcher, that can access this web feed, check it for updates, and download any new files in the series. This process can be automated so that new files are downloaded automatically. Files are stored locally on the user's computer or other device ready for offline use, giving simple and convenient access to episodic content. In this way it is contrasted to webcasting (Internet streaming).

### 3.1.4 Community of Practice

According to Wenger, E., et al. (2002), Communities of practice (CoP) are "groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise by interacting on an ongoing basis".

In reference to the virtual world, CoPs can exist online, such as within discussion boards and newsgroups. Thomas, J.C., et al. (2001), argue that because knowledge management is seen "primarily as a problem of capturing, organizing, and retrieving information, evoking notions of databases, documents, query languages, and data mining", the community of practice,
collectively and individually, is considered a rich potential source of helpful information in the form of actual experiences; in other words, best practices.

Schneider, D.K. (2007), explains that Virtual communities of practice are loose or tight communities of practice that may be geographically dispersed, communicating through the use of Internet software (usually a kind of portal) that provide collaboration and information tools (email, online discussions (forums, videoconferencing, CSCW tools, etc). A well designed portal that provides both functionality and a sense of "social presence and being there" may help.

3.1.5 Microblogging

Microblogging is a broadcast medium in the form of blogging. A microblog differs from a traditional blog in that its content is characteristically smaller in size.

Kaplan, A.M., et al. (2011), explains that Microblogs "allow users to exchange small elements of content such as short sentences, individual images, or video links". These small messages are sometimes called microposts.

Microblogs are traditional (meant for simple and personal uses) as well as commercial. Commercial microblogs are used to promote websites, services and/or products, and to promote collaboration within an organization.

Additional services are also provided like features such as privacy settings, which allow users to decide who can read their microblogs, or alternative ways of publishing entries besides the web-based interface. Some services may include text messaging, instant messaging, E-mail, digital audio or digital video, etc.
3.1.6 Phases of Enterprise 2.0

Hinchcliffe, D. (2009), explains that when it comes to the rich tapestry of information that is being created, managed, and consumed, the concept of Enterprise 2.0 can be considered as three phases or waves of Enterprise 2.0 adoption, as explained below:

**Phase/Wave I - Information Explosion:** Once workers have the ability to put information on the intranet, change it, and engage in conversation, the amount of exposed information on the local network grows rapidly. Open data initiatives, especially ones that are web-oriented, further increase the amount of data accessible. At first this does not pose a major problem, but as the entire organization begins to change its habits and engage, the amount of information climbs until it's difficult to deal with using existing capabilities, both at a worker level and at an infrastructure level, such as search engine relevancy. At this point in the Enterprise 2.0 maturity curve, as shown in Figure 3.2, the growing information abundance represents a significant business advantage that can only be partially realized.

**Phase/Wave II - Information Filters:** Organizations may move to adopt filters to reduce the amount of exposed information on the network. It cannot be assured though, that it will be removed or hidden, but it won't be as visible in things like search engines, recommendation systems, or activity streams unless it's considered relevant. Keyword analysis, tags and hashtags, and social recommendations are some simple ways that filters like this can be applied today without additional complexity or software. Additional capabilities like semantic search (an example of 2nd generation filters) can provide even more leverage.

**Phase/Wave III - Information Shadows:** While filtering will help deal with the rapid growth in exposed information volume on enterprise intranets, getting a deeper understanding of what an enterprise really knows will require
another level of improvement in human ability to perceive deeply and strategically into the webs of information that build up in social computing environments. For example, social analytics is part of this 3rd wave of maturity that will give enterprises an actionable view of the collective intelligence that builds up in organizations that actively engage in Enterprise 2.0 activities. Deriving real business intelligence from the information that communities of workers, partners, and even customers are creating is central to getting the full ROI of social computing.

Figure 3.2: Phases/Waves of Enterprise 2.0

Source: adapted from Hinchcliffe, D. (2009)
3.2 Semantic Web (Web 3.0)

Wieringa, T. (2010), describes that the semantic web, also known as Web 3.0, is built on the idea that not only humans but also machines can understand information. Enterprises can benefit from semantic web services by defining company-wide meta-data on all forms of knowledge and improve coherence and consistency in classifying content which will lead to more accurate search results.

In the view of Pulkkinen, J. (2008), Semantic Web promises to make Web-accessible data more amenable to machine processing. The Semantic Web is about labelling (annotating) information so that computer systems (and humans) can process it more meaningfully.

The semantics underlying such annotations usually come from ontologies, which encapsulate agreement among information creators and users with help from common nomenclature and the use of rich knowledge representation. The latest Semantic Web developments and insights in knowledge management challenge the new era of semantic-based knowledge-management systems.

Semantic Web tools and applications contribute significantly to knowledge management’s performance, providing a definition for flexible reference mechanisms to knowledge objects and knowledge contributors; integration of knowledge creation and use; integral human involvement in information- and knowledge-management activities; and a definition for and the exploitation of social networks, including social activities and context.

Latest examples of semantic explorations are Facebook Page Suggestion and Google Reader Play. Wieringa, T. (2010), states that social media allows us to discover new content, which is shared by our peers, friends, etc., and, social
computing empowers people to access information, that is related to their interests and scope of work.

These services support employees gain faster, deeper and broader expertise complementing classic (expensive) training. This opens doors to informal and contextual learning, which can be termed as a more cost effective training.

3.3 Ubiquitous Technologies

Dave, M., et al. (2012), describe Ubiquitous Computing as a new player in the game. It encompasses mobile, wireless, pervasive, etc. technologies. It works closely with mobile computing, sensor networking, distributed computing, machine learning, etc. and is still a growing field. With the advent of such a trend, the face of knowledge management is sure to change drastically.

Ubiquitous technology (UT) enables accurate and timely automatic capture of actionable logistics data with little reliance on human intervention. Some of the major areas identified for immediate benefit of ubiquitous technologies (RFID, GPRS etc) are as explained by Kumar, R., et al. (2005):

- Asset Tracking
- Goods Traceability
- Enhance and streamline business processes
- Seamless Supply Chain Management
- Efficient Remote Monitoring System
- Retail.

Wieringa, T. (2010), elucidates that this is a general trend in business and society. Mobility creates new opportunities for knowledge sharing initiatives to exploit areas which has been out of reach before. Providing mobile solutions will allow decision making faster and more accurate.

The mobile web influences the trends as follows:
• fast information transfer with visualisation and semantics are required for mobile devices.
• content generation and information discovery happens on-the-go.
• engaging in social networking is done while commuting and travelling.