A Social Framework to Underpin Collective Awareness in BPM

Nuno Pina Gonçalves, Sérgio Salazar, Francisco Cascão and José António S. Pereira
Superior School of Technology, Polithecnical Institute of Setúbal, Rua Vale de Chaves, Setúbal, Portugal

Keywords: Business Process Management, Social BPM, Process Awareness, Social Framework, Social Media Software, BPM Lifecycle.

Abstract: People are changing the way how they interact with the internet. They are using it to connect virtually with other people for sharing ideas, opinions about a specific item/product or process. BPM involves a detailed analysis of the organization, and often a change in organizational structure. Organisations will be able to reach additional benefits in the usage of BPM Software and Social Software for the coordination of activities that involve processes and it supports new communication patterns between costumers and enterprise. The solution found was the combination of social technology and Business Process Management. This paper proposes a framework focused on design and analysis stage in BPM life cycle that enables all the stakeholders to interact and share knowledge in order to fill some of the existing gaps in BPM life cycle, creating a harnessing collective awareness.

1 INTRODUCTION

For quite some time the web was seen as a tool. Nowadays we don´t use it just as a tool, but we´ve became a part of it. The use of internet has been growing rapidly not only inside the organisations but also around our lives. The extraordinary breakthrough of communication technology with online access anywhere allows people, machines and organisations to be always connected.

We are changing the way how we interact with the internet. The use of this tool only for information dumping has reached its end. We are using it to connect virtually with other people sharing our opinion about a specific item/product, process, ideas, etc.

Without knowing we started to communicate, exchange opinions, information and off course bonding with other people through the web. This new way of communication is accomplished through blogs where we insert our comments, social networking (MySpace, Facebook) create friendships and Wikis (Wikipedia, Wikia) used for sharing information.

Social Media started to gain a life of its own. Its effect on us has been changing the way how we organize formal and informal relationships, how we started to change the way we work with process inside and outside organisations. For personal and professional reasons we are constantly using social networks.

For personal reasons, for example, before acquiring a specific product we attempt to find out other people's opinions. Social networks may also be used to meet new people online or to discover long gone friends.

Professionally social networks are used as a tool to find a job, to be able to work anywhere, communicate with colleagues, manage processes, or occasionally to promote organizations. Nowadays we live in a virtual world where we are all connected by a simple click.

The great goal of Social BPM is in fact to realize, within an organisation, how they are applied to your operations and how they relate to each other (Richardson, 2011).

For this it is necessary that teams from various departments are synchronized to realize their needs. BPM brings greater clarity to processes, making them visible, allowing you to change the methods of operation and offer greater precision and increases in efficiency (Jeston and Nelis, 2008).

Nowadays, more than ever, the result of increasing globalization and the corresponding increase in competition, organisations need to be well organized and communication between different departments should be a multilateral so that all occurrences in procedural terms, critical or not

Gonçalves N., Salazar S., Cascão F. and António S. Pereira J..
A Social Framework to Underpin Collective Awareness in BPM.
DOI: 10.5220/0004179903350340
In *Proceedings of the International Conference on Knowledge Management and Information Sharing* (RDBPM-2012), pages 335-340
ISBN: 978-989-8565-31-0

critical, are described and documented.

For this it is necessary to combine Social Software with BPM systems in order to incorporate the richness of social relationships into the technology supporting the organisation of work (Sarini, 2010).

It´s now necessary not only to focus on new technologies, but also on innovation and relationships about sharing of the information and knowledge both produced and used by participants working for the same organisation or for different organisations with common business goals.

Formal hierarchical communication model, which is strongly implemented in organisations, using a “top-down” approach, has gradually been losing strength due to the advancement of new technologies and Web 2.0 platforms (Blogs, Wikis and Facebook) allowing there for a multilateral communication between the various areas of the organisation in real time.

According to (Hendler, 2007) Web 2.0 is mostly a social revolution in the use of Web technologies, a paradigm shift from the Web as a publishing medium.

These new ways of communicating allow breaking the traditional models of management, introducing more transparency in the development of business processes, and a greater involvement of all stakeholders in these processes.

A good implementation of organisational processes helps organisations to improve its distribution system overheads by activity of the organisation and achieve its objectives more effectively.

A business process depends not only on a department. Directly or indirectly all departments end up being involved in the development / drafting of this processes. The exchange of ideas coming from various areas (departments) allows discovering new and more creative solutions, a greater understanding between the participants (stakeholders) in the process development, helping to unlock complex processes.

People learned that it is more efficient sharing information through social networks, whether the network is an internally or externally social network, rather than sending documents / information by email to a large group of people. The active collaboration and coordination between departments bring more accuracy and helps to reduce errors in the development process.

Business processes of an organisation represent the resource management activity and processes management within the business.

2 BUSINESS PROCESS

The world has witnessed major changes in organisational and economic areas. The rigid structures, characterized by an intense bureaucracy have been superseded by other more horizontal and more flexible structures.

The traditional vertical organisational model, as shown in Figure 1, based on a "top-down" structure, ensuring the excessive command, control and responsibility, putting people in the background, gave greater emphasis to the processes and technologies.

The concept of a department or functional area is too embedded in the organization. The processes and technologies used in different departments or functional areas come to be quite heterogeneous. People only know what tasks to be performed in his/ her department / functional area.

Such postures generated results inconsistent with the expectations of organisations, low productivity, quality and sometimes inadequacies and adapting their tasks that people played.

Figure 1: Vertical chart Model.

Radical changes in the organisational world have revolutionized the role of human beings in modern society.

Today's organisations begin to adopt an organisational "bottom-up" structure (i.e. not focused on command and control), the worker is seen as an asset and not as a cost, and technologies are beginning to be seen as tools to support their activities.

Organisations are changing the relationship between their employees and the employers, in response to the need to maintain competitive organisations. This requires that all stakeholders contribute with their knowledge and their creative ability and responsibility.

In addition, greater work autonomy allows integrating teams and who are able to determine their own services and coordinate, rather than simply obeying orders.

The reality of the organisations as shown in Figure 2 has become so complex and

multidimensional, that there is no way to split the company into hierarchical structures.

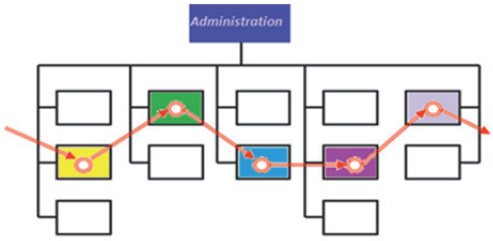

Figure 2: Horizontal Chart Model.

These changes in the organizations result in a need to place the processes and technologies used in different departments to communicate with each other.

In order to allow this communication, organisations implement systems that manage processes and their connections to heterogeneous technologies. This system is well known as BPMS (*Business Process Management Systems*).

According (Weske, 2007) BPMS is a generic software system that is driven by explicit process representations to coordinate the enactment of business processes.

For this it is necessary to understand the phases of the BPM, how they are interrelated and their mode of operation. Figure 3 depicts these same phases (Weske, 2007).

Phase 1 – Design & Analysis Phase. The BPM cycle begins at the design stage. During this phase processes are identified and modelled.

All processes that can be made explicit through a graphical notation will help to facilitate communication between different stakeholders. This processes allow improvements and refinements as they are already explicit (Weske, 2007).

The achieved models need to be analysed using techniques such as validation, simulation and verification.

We will be focusing our research in this phase in order to help validating business processes by creating a collective awareness.

According (Weske, 2007) a workshop is a useful instrument to validate a business process, during which persons involved discuss the process.

However with the proliferation of collaborative platforms and emerging technologies (i.e. web 2.0, web 3.0) becomes easier the involvement and coordination of people making them more visible.

Phase 2 - Setup ("Configuration") where we choose the system where it will be implemented and where the application will perform the respective approval tests.

The system needs to be configured according to the organizational environment of the organization including all employee interactions with the system, as well as the integration of BPMS with existing software systems (Weske, 2007).

Phase 3 – Enactment Phase ("Enactment"). In the enactment of processes, are considered only the right processes, ensuring that activities are conducted in accordance with the restrictions of execution specified in the process model.

In this phase business process instances are initiated to fulfil the business goals of an organisation and valuable execution data is gathered, typically in some form of log file (e.g. execution log).

Monitoring as a part of the enactment phase is a component of a BPMS that visualizes the status of business process instances. This is a very important part because it allows detailed information about the status of running instances of the processes and the information can also be viewed and monitored using techniques based on colors (Weske, 2007).

Phase 4 - Evaluation Phase ("Evaluation"). This phase will evaluate and improve processes and their implementation. This assessment will allow understanding if a process took too long to complete or not.

In this phase execution logs are evaluated using business activity monitoring and process mining techniques (Weske, 2007).

According (Dumas et. al., 2005) process mining is to extract knowledge from logs recorded by an information system and offers new ways to find organisational and social structures, discovering processes, ability to monitor and improve the existing processes.

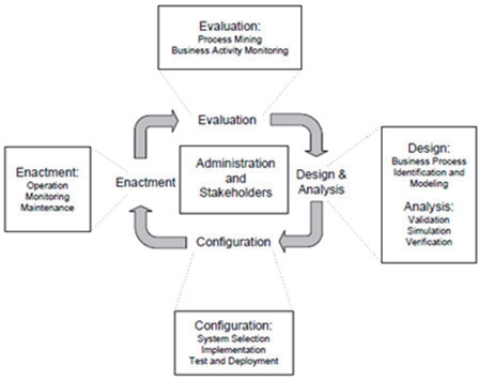

Figure 3: BPM Life Cycle – Source: (Weske, 2007) - Business Process Management, concepts, languages architectures – Springer – p12.

3 SOCIAL BPM

A business process is a set of activities that are executed in coordination, technical and organisational environment included concepts, methods and techniques to support the administration, configuration and analysis of business processes. (Van der Aalst et al., 2003)

The management of these processes, known by BPM (*Business Process Management*), are by nature, social activities. In the last decade it has become clear that the processes are equally important and need to be supported in a systematic way.

Communication and collaboration patterns that are now increasingly referred to as "Social Computing" were also fundamental for the BPM templates in the 90's. Today we have witnessed the transformation of BPM technologies as well as the increasing adoption of social tools to improve the techniques of design and process development (Layna, 2011).

Web-based social networks such as Facebook, MySpace and LinkedIn are great tools to stay in touch with the world and create personal and professional connections.

SMS (*Social Media Software*) through the use of wikis, blogs, forums or other SMS will allow stakeholders to provide input to the organisation, capture and share ideas in order to define the business process in terms of different perceptions constructed by various individuals and groups as a result of different frames of interpretation. (Erol, S., et al., 2010, Gonçalves et al., 2011)

Organisations will be able to reach additional benefits in the usage of BPM Software and Social Software for the coordination of activities that involve processes and it supports new communication patterns between costumers and enterprise. Multidirectional communication replaces the former unidirectional from one enterprise to the costumer.

The solution found was the combination of social technology and Business Process Management (i.e. Social Web + BPM). It should be an automation tool allowing drawing, managing and modifying workflows to best meet the needs of the business and satisfy stakeholders.

This is all about harnessing collective intelligence. According (O'Reilly and Battelle, 2009) collective intelligence applications depend on managing understanding and responding to massive amounts of user-generated data in real time.

4 PROPOSED FRAMEWORK

The BPMS (BPM Software) supports most of the elements of the BPM life cycle since the discovery of new process, drawing, analyse, implement and modelling.

The use of BPMS allows:

- The collaboration between stakeholders at any time during the business process;
- Streamline routines so that processes can be changed quickly and at any time to meet the same goals;
- The collection of information on the case in question, through internal or external sources, with a view to completing that process.

In order to involve all stakeholders in this process we intend to create collective awareness about each process, create collective intelligence and also make more visible the best reviews, achievements and shares.

The proposed framework based on Weske BPM life cycle (Weske, M., 2007), depicted in Figure 4 will be focused mainly on the phase of **design** & **analysis** in order to help identify and modelling the business processes.

During this phase and in order to validate the business process, persons must be involved during the implementation and modelling process - social clients enrolment.

After the enrolment of social clients to the process, the social core is intended to monitor all social interactions between stakeholders in the business process identification and modelling (e.g. a scoring system for the best reviews and achievements, messaging, rating, tagging, authoring, shares, etc.).

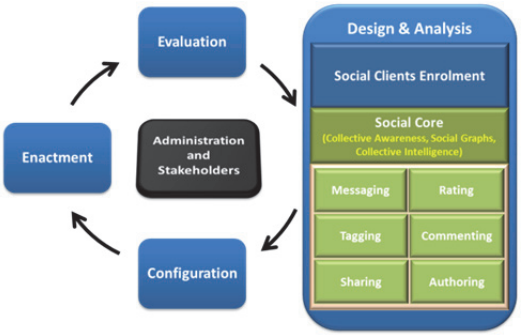

Figure 4: Social BPM Framework – Design & Analysis.

This social core is intended also to contribute for the Collective Awareness and Collective Intelligence

using Social Graphs (*who interacts with who, how, where and when*).

Social core manages the social interactions among stakeholders. These interactions are usually computed with social media software. Our framework intents to bring together social media software functionalities (e.g. wikis, forums, blogs, etc.) with BPMS. BPMS provides design and analysis functionalities, but lack to provide a modelling process awareness. Starting process awareness at this phase, all the process will have less constraints and difficulties during the rest of the BPM lifecycle.

5 CONCLUSIONS AND FUTURE WORK

Today organisations operate in an environment characterized by intense changes and great competitiveness. To adapt to reality, they need to create a flexible and agile structure and being constantly innovating. The changes in society, the development of new technologies, have provided the new changes in the behavior of people, either by creating new needs or even by their values.

When people start to feel members of a business process they tend to take responsibility for the same. Such participation gives you a broader view of the means of production in question and it makes it possible to develop its freedom of choice on the context.

In a modern organisation, people think together to jointly exploit the new opportunities, create products and services, and of course they can find more efficiently certain problems that may exist in a process.

Therefore, there is a challenge for the new administrators to create environments and opportunities for the integration of people in their workplace, forcing them to shirk their traditional values and valuing the potential and the capacity of people within the organization.

To get people to think together and overcoming the challenge to create environments that integrate people in creating a collective awareness, was taken into account new forms of communication between people, changes in the relationship between employees and employer and adoption of business processes that cut across the entire organization.

This adoption of business processes will be given an emphasis on analysis and design phase to ensure that all stakeholders are aware of all restrictions on the activities and processes.

In conclusion the proposed framework aims to:

- Improve of the design and analysis of business processes;
- Include all the stakeholders in process definition and design;
- Integration with social networks, blogs and chats;
- Share and store all the information about business processes of an organisation.
- Improve the collective awareness and intelligence.
- Improve the following phases of the BPM lifecycle (i.e. configuration, enactment, evaluation)

In order to grab collective intelligence future work is needed to explore the process mining techniques for extract information about the processes in organizational perspective in order to be able to know which performers are involved and how they are related.

The goal is to apply these techniques in the organizational structure, classifying people in terms of roles and organizational units or to show the relationships between individual participants, to ultimately build a social network of participants in a process (van der Aalst, W.M.P., et al., 2007).

REFERENCES

Dumas, M., van der Aalst, W. M. P., ter Hofstede, A.H.M., 2005 - Process-Aware Information Systems – Process Mining - John Wiley & Sons, Inc.

Erol, S., Granitzer, M., Happ,S., Jantunen,S., Jennings,B., Johannesson, P.,Koschmider,A.,Nurcan, S.,Rossi, D., and Schmidt,R., 2010 - Combining BPM and social software: contradiction or chance? In *journal of software maintenance and evolution: research and practice. Wiley Online Library (wileyonlinelibrary.com). DOI: 10.1002/smr.460.*

Gonçalves, N. Pina, Pereira, José António S., 2011- Business Processes and Organisations - *Challenges and Opportunities Towards a People-centric Approach*. KMIS 2011: 418-423

Hendler, J., 2007. Embracing “Web 3.0” . Published by IEEE Computer Society.

Jeston, J., Nelis, J. 2008.*Business Process Management – Practical Guidelines to Successful Implementations*. Elsevier Ltd. Hungary,2nd Edition.

Layna, F., 2011. Introduction and Overview: Social BPM. In *Social BPM – Work, planning, and collaboration under the impact of social technology – BPM and workflow Handbook Series*. Published by Future

strategies Inc., Book division. Lighthouse Point, Florida.

O'Reilly, T., Battelle, J., 2009. Web Squared: Web 2.0 Five Years On – Web 2.0 SUMMIT - O'Reilly Media, Inc.

Richardson, C., 2011. Forward - Social BPM – *Work, planning, and collaboration under the impact of social technology – BPM and workflow Handbook Series*. Published by Future strategies Inc., Book division. Lighthouse Point, Florida.

Sarini, M., 2010. The Activity Circle – *Building a Bridge Between Workflow Technology and Social Software*. *Third International Conference on Advances in Human-Oriented and Personalized Mechanism, Technologies and Services*. Published by IEEE Computer Society.

van der Aalst W.M.P., Reijers H., Weijters A., van Dongen B., de Medeiros A.A., Song M., Verbeek H., 2007 - Business Process Mining: An Industrial Application. Information Systems

van der Aalst, W. M. P., ter Hofstede A. H. M. and M. Weske, 2003.Business Process Management: A Survey - "Conference on Business Process Management: On the Application of Formal Methods to Process-Aware Information Systems" - *Springer Lecture Notes in Computer Science*- In Eindhoven: the Netherlands.

Weske, M., 2007. Business Process Management – *Concepts, Languages, Architectures*. Published by Springer.