

Achieving Business Process Agility through a Pragmatic Approach

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Abstract—In today's dynamic market environments, the only certainty is permanent change. As used by organizations to cope with such changes is to keep their organizational models flexible. Organizations' models consist of business processes and they are crucial to sustaining a culture of innovation. However, if business processes are left unattended and consciously unadapted to the changing environment, they become barriers to innovation. In this paper we present AGILIPO (AGILE Business Process): a new approach to business process management that is pragmatic, human-centered following the principles of agile software development, and supported by a collaborative and social environment.

Index Terms—Business process management, agile and social BPM, collaborative modeling, flexible organizational models.

I. INTRODUCTION

In recent years, economic and competitive climate prevailing requires that public and private organizations to be effective, reliable and resource efficient. In this context, agile methodologies come to the rescue, and have recently gained growing success in many economic, technical and business domains. This is due to the fact that flexibility, in particular fast and efficient reactions to changes are more important in the information society.

This development began in software engineering, having realized that the traditional heavy methodologies, not working properly, where the needs were uncertain and frequently changing, as is the case in our context business management process. Many agile methodologies in software engineering then evolved.

Since the problem of uncertainty and changing requirements is not limited only to the areas of software engineering, the idea of adaptation methods that can react to changing conditions, has also been adopted to other areas of software engineering. These include the "Wiki Way" [1] for content management, rapid prototyping [2] for industrial engineering. In addition, the method of "Lean Management" that has been used to some extent in the field of business process management.

Process improvement based on systems should take into account three key factors namely feedback, collaboration and change. Obviously, these factors suggest following an iterative process. It is important in this context that the implementation approach meets the criteria that supports these principles. The key criteria to support these principles, namely in the business process management life cycle, the

modeling language and platform used, it is an indivisible whole, on which our approach is based on and tries to provide pragmatic solutions.

We propose here AGILIPO (AGILE business Process): a novel approach which aims to be not only agile but also pragmatic. It does not start by saying that we must always begin with the description of the organization's mission and strategic objectives processes. Instead, it starts from a need identified by the organization's management to solve a problem. The problem has many components and the current horizontal processes may be one of them. If the problem is of a strategic nature, the intervention can be started from the mission and strategic objectives. However, if the problem is a more operational intervention in one or more horizontal processes may be all that is required. This follows the normal evolution of organizations, where a complete overhaul of the horizontal process is usually very disruptive.

II. BACKGROUND

Current business process management approaches still work on the AS-IS/TO-BE paradigm, inherited from business process re-engineering (BPR) back from the nineties. BPR is a "top-down" holistic and transversal approach that takes months of analysis and impact assessment [3].

Problems with AS-IS/TO-BE approaches are related to the time difference between the modeling and implementation phases as well as the lack of user involvement. These problems have created a gap between the field of business and Information and Communication Technology (ICT), the profession has always believed that ICTs do not understand the semantics of business processes, while ICT believe that the business has no idea what it takes for automated processes are executed successfully.

New collaborative business process management approaches [4] - [6] recognize the benefits of following the principles of social software such as egalitarianism, which focus on the involvement of all types of business process stakeholders to collaborate to their improvement.

III. AGILIPO APPROACH

AGILIPO is a new approach which is based on the concept of iterative improvement, based on the fast users' input and feedback. The central paradigm is the focus on smaller contributions, information and possible participant's tacit knowledge. The social collaborative aspect comes naturally, allowing contributions to be added, deleted or annotated selectively with comments and / or assessments. The design

rationale for our approach is that it should be light, easy to implement and supports the spatial distribution and highly collaborative scenarios.

We propose a methodological approach based on the following steps that integrate with the traditional cycle of business process management [7]:

- A. Integration of social concepts
- B. Collaborative discovery of business processes.
 - 1) Define the process in terms of its objectives and sub-objectives, or commonly called, process oriented goals.
 - 2) Define the process in terms of its agency and context, using a classification framework based on organizational routines.
- C. Collaborative design and modeling
 - 1) Designing and modeling the process using a wiki-like approach, where collaboration, user empowerment and use of tacit knowledge are key principles.
 - 2) Specify the description through an ontological approach called folksonomy
- D. Collaborative execution and control
- E. Evaluation and validation of participants' contributions throughout the business process life cycle.
- F. Adopting an agile approach to the life cycle

These above steps are depicted in Fig. 1. Concepts and tools that support them are shown in the center of the figure, namely social software, which make the environment of modeling and execution, based on a wiki design principles [8]. The second level is the traditional cycle of business process management [7]. The last level is based on the AGILIPO concepts based on social collaboration enabled by social software.

These steps will be discussed in turn.

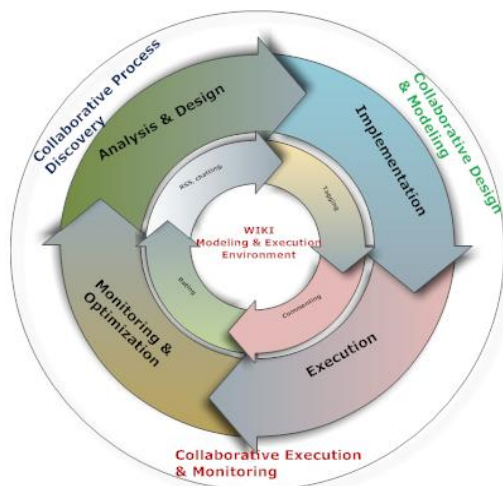


Fig. 1. AGILIPO lifecycle

A. Integration of Social Concepts

Design and modeling process to be "socially active" means fundamentally and comprehensively rethink how work is done, who does it, and how insights from the social interactions are analyzed and affect the process. This is also known as "social Business Process Management (BPM)" [9] [4] - [6]. In addition, special attention should be given to behavioral and organizational changes that will be needed to

fully embrace the social BPM. There will be many changes compared to current work practices - collaboration is the fundamental principle. Effective techniques of organizational change must go hand in hand with social BPM.

1) BPM as a discipline versus BPM as a system

When we talk about BPM as a discipline, it is essentially the work of any manager to operate effectively the organization and its business processes. BPM systems cannot replace the management skills needed to manage business processes. What are the important business processes in the organization? What are the steps we need to automate and what must be done by people? What people should be involved and when? Which is essential for the organization and what is the detail? All this requires a human manager with a vision and analytical skills to master well and advance the discipline of business process management.

2) Social BPM: Social software supports BPM principles

- Improves the visibility of the process by adding the Context
- Allows the collective decision-making and promotes responsibility
- Supports adaptability by offering insights in the context of work
- Supports the adaptation to a strategy based on models

B. Integration of Social Concepts

Collaborative discovery process can have a profound impact on organizational performance, because it allows a wide variety of participants to be involved to document, implement and improve business processes across the organization. Knowing that the discovery process is focused on creating collaborative content, the benefits are more closely aligned with more generic social software tools, such as those we use in our approach: wiki, folksonomy, rating, comments, etc...

In a recent report on social software for the performance of the organization, [10] explain how social software can significantly improve the performance of organizations in the short term, and can be transformational in the long term.

The tools available in the AGILIPO platform facilitate collaboration between business units within the organization and beyond, with others. While community forms around collaborative discovery of business processes tools, new uses will be possible to create and process management, and workers from different sectors will be more easily brought to bring their expertise to projects that carry some similarity to theirs.

1) Define the process in terms of its objectives

The goal-oriented approach reflects the goals we have for our own lives and is open to the participation of business users in the creation and process management. This also applies to the routine monitoring of the execution plan to detect problems as they occur or even better, before, to take timely and appropriate action.

The concept of goal is one of the most important concepts of business process modeling and it is included implicitly or explicitly, in the various definitions of business processes, for example: "A business process is a set of partially ordered activities to achieve a goal. However, most of the research and practice in the field of business process modeling are

devoted to describe and formalize the sequence of activities rather than explanation and representation goals [11] - [14]. For example, a consequence of focusing only on the order of activity leads to a well-known problem that is the inflexibility of flow [15].

The execution of a perfect flow does not though guarantee results or a higher value perceived by the customer. The flow of a rigid process are avoided by using social empowerment, another way to coordinate the work, should be used. The only reason to run processes to achieve certain outcomes for clients; orientation objectives is essential. But social communication does not provide goal-oriented, nor achievements verification. Empowering the business user has to be linked to definitions of process-oriented objectives. The results are related to the objectives, goals and these goals in business and process owners. Additional guidance for users can be incorporated in the form of business rules.

2) Define the process in terms of its agency and context

On the subject of standardization (and possible reuse), if we know the type and the process instance that we handle, it will save a lot of time and effort at the early stage. The classification process is a method that has been discussed in the literature. There have been many efforts to catalog the generic business processes, each has a separate classification, including the MIT Process Handbook [16] or as part of the classification process by U.S. productivity and international center for quality [17].

By introducing a classification framework that relates to organizational routines (and business processes) in a BPM approach, we hope to meet two objectives. Firstly, we try to solve the problem of lack of contextualization in most methodologies [18], [19]. In other words, business processes are typically designed and mapped independently from the people who do the work and also independently from important variables of the organization, such as the degree of flexibility allowed in implementing a process given by management.

Obviously, it is not possible to anticipate all the possible variables that form the organizational context of a given business process, but it is possible to characterize the process of key variables, such as those shown in Table I.

Our second objective is to improve the agility cycle mapping-modeling-implementation. Pre-filing process in each category (e.g. "adaptive", "Sticky" or "Pervasive"), it should be possible to significantly reduce the time required to complete the cycle, simply by establishing different rules for each category. These rules affect the whole process, mapping manual automated execution of business processes.

C. Collaborative Design and Modeling

The idea of fostering collaboration between business process stakeholders is not new. Collaborative modeling environments, such as [5], [6], are intended to facilitate the participation of end users in business process modeling. However, end users are required to work at the abstraction level of the expert using languages such as EPC or BPMN notations. On the other hand, end users often have a local perspective of a given business process: they know which business activities they have to run and their organizational responsibilities, but they are not aware of the objectives and

the overall structure.

Today's BPM practice, business process modelers work on models independently, sometimes simultaneously, in which case they need to analyze and merge their changes. With our approach that fosters social collaboration, this paradigm can go to the collaborative modeling. The modeling tool integrated with the wiki provides a space for exchange and collaboration snapshot, where several participants can work together on a process model. These modeling tools can also provide mechanisms that help participants know when others are online and what they're working on. This will help the process modeler to solicit who is available to collaborate.

1) Wiki as a collaborative modeling tool

Within an agile BPM approach, we propose that a wiki tool can be at the heart of creation, modeling and execution of collaborative business processes. In this context, three aspects can be considered:

- The degree of the BPM team's organization
- The degree of specificity of wiki objects (objectives, sub-objectives, activities, roles, etc.).
- The completeness of the desired process

2) Folksonomy

Folksonomy approach is used here in conjunction with the wiki approach facilitated by the wiki principles for the description of predefined processes. It is also used for the identification of a common behavior in different process instances from the "bottom-up". This bottom-up process definition takes place in the context of incomplete process execution. Generic activities support the process exceptions, where no unexpected exception can occur as a generic activity. These generic activities can be integrated later in the context of classification, and make them as known exceptions. The notable exceptions, in turn, can be further integrated in the type of process, becoming exceptions.

D. Collaborative Design and Modeling

The collaborative execution and dynamic modeling are often considered as the same functionality in a BPM system, even if they are closely related, they are not identical. The collaborative execution is the activity of adding participants to a process instance running that was not originally part of the process design, while dynamic modeling is the activity of changing the model for a process instance, usually to add one or more jobs in the process. Although dynamic modeling almost always includes the addition of new participants, the reverse is not necessarily true. New participants can be added to existing process tasks without changing the topology of the original model.

The collaborative execution in its simplest form, allows a user to add employees to its assigned task with others, without changing the development process - it increases the visibility of this task to others, and collects their responses and decisions in the history of the task. This is essential for processes that are regulated or auditing for compliance, where it is important to know who was involved in the decision making process on each instance.

As for the validation phase, this life cycle of the process step cannot receive direct benefits from social technology. However, the communication process review and control measures, can be enhanced through the use of automated updates or activity streams such as those used in social networks Twitter or Facebook.

TABLE I: PROCESS CLASSIFICATION

Embeddedness of the process	Actors' primary orientation	Flexible process performances?	Changes in process over time?	Process label and characteristics over time
Weak • Overlaps with few other structures • Overlap is relatively insignificant	To past (Iterate)	Unlikely	Unlikely	<i>Arbitrary Process</i> : It changes only as a result of intentional redesign or unintended slippage
	To present (Apply)	Likely	Somewhat Likely	<i>Pragmatic Process</i> : It changes readily as a result of emergent variation; responsive to shifts in situation
	To Future (Project)	Likely	Likely	<i>Adaptive Process</i> : It is relatively easily adapted to new uses; many variants may coexist simultaneously
Strong • Overlaps with many other structures • Overlap is significant and consequential	To past (Iterate)	Unlikely	Very Unlikely	<i>Sticky Process</i> : Very persistent; little impetus or change from within
	To present (Apply)	Likely	Unlikely	<i>Accommodative Process</i> : Pragmatically allows flexible use to apply to situation at hand, but variations rarely perpetuated
	To Future (Project)	Likely	Somewhat Unlikely	<i>Pervasive Process</i> : Rather than changing over time, the process may "take over" more problem situations and become more widely applied

Source: Adapted from [20]

E. Evaluation and Validation

This stage of the process allows employees to assess and validate all contributions almost in real time. The collaborative environment facilitated by social software, empowers the group to take action in the wake of improving the contributions' quality. Thus, it is continuously being evaluated by the group. Detected defects can be corrected immediately or delegated to the author, administrator. Assessments can also be recursive.

In our context, the validation step of the business model represents a change in traditional software testing, with a focus on the reality of organizational life. To stay in line with the agility that is highlighted by our approach, validation should not be a long process, as suggested by several approaches [21], [22]. The tight collaboration between users / modelers / developers jointly involved with the description of the process design and facilitated by wiki technology, and having access to a graphical view of the federated business process model, should greatly facilitate the process validation. The use of these tools should provide immediate and continuous feedback to business process modelers on the weaknesses and inconsistencies in the models that may be incomplete.

Therefore, our suggestion is that validation should be integrated in the preceding stages of the process, i.e. identification, mapping, modeling, and execution. The use of a reliable framework for classification as previously suggested, the adoption of a simple ontological system based on folksonomy and the feedback of frequent inspections of the business process model graphical representation designed using a wiki tool, should provide sufficient opportunities for validation.

F. Adopting and Agile Approach to the Lifecycle

There are at least two reasons to conclude that agile methodology would be well suited for the iterations of a BPM life cycle. First, as we have seen, the BPM is active, facilitated by the AGILIPO platform and its social software.

Each business process modeled and inserted to the implementation can be regarded as the configuration software platform BPMS. By modeling a process, modelers create a software execution model, similar to what the developers do when designing and writing code. Second,

given the assertion that BPM is an implementation of continuous improvement by nature, it would be natural to use an approach that goes well with this philosophy, and, as we have seen, agile methodologies meet this requirement.

G. Approach Roles

Our approach advocates a number of different roles to accomplish the different collaborative tasks that cover the business process life cycle. It encourages through its platform these roles to actively use the available social tools. Fig. 2 shows the different roles that interact with the platform and their rationale. For instance, the coordinator has the delicate task to coordinate and facilitate the smooth running of activities throughout the life cycle of the process. In this regard, it will have a more complex role in relation to others. The modeler evolves the process definitions gathered during the collaborative discovery of the process; the developer automates the models created previously by the modeler, and the executor (user) executes the process or part of it and reports his feedback to the other members for improvements.

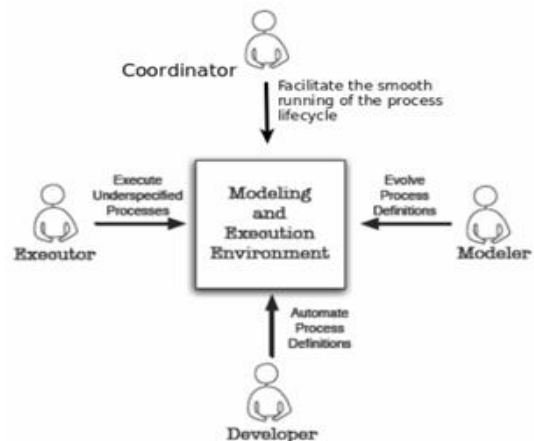


Fig. 2. AGILIPO roles

IV. CONCLUSION

In support of AGILIPO, we propose in this paper a methodological approach based on these steps: (1) Integration of social concepts that brings a new dimension of business process management principles, which are accountability, visibility and adaptability; (2) The discovery

of collaborative business processes, because it allows a wide range of participants to be involved to document, implement and improve business processes across the organization; (3) The collaborative design and modeling that aims a more inclusive integration of the needs of process stakeholders, the aggregation of detailed process obstacles to improve coding knowledge and enhance the improvement cycle, supported by a wiki approach to the definition and modeling processes where collaboration, user empowerment and exploitation of tacit knowledge are the key principles and the use of ontological concepts based on folksonomies, where users label activities, share these labels, and ultimately search for activities based on them; (4) Collaborative execution and control to solicit collective intelligence by adding participants to a running process instance that were not part at the origin of the design process, and offering ability to dynamically modify the process instance model, to add one or more jobs to the process; (5) Evaluation and validation of participants' contributions throughout the business process life cycle that empowers the group to take action in the wake of improving the quality of contributions; (6) Adoption of an agile approach to the life cycle to support dynamic changes and eliminate model-reality syndrome; (7) and the whole is coordinated by complementary roles who support and foster a smooth collaboration.

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