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# Proposals for an Agile Business Process Management Methodology

Rachid Meziani<sup>1</sup>

Rodrigo Magalhães<sup>2</sup>

<sup>1</sup>Laboratoire Paragraphe Université de Paris 8, Paris, France

<sup>2</sup>IST/UTL, Center for Organizational Design and Engineering, INOV, Rua Alves Redol 9, Lisboa,  
Portugal

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# Proposals for an Agile Business Process Management Methodology

**Abstract.** The agility of organizations increasingly depends on their ability to set up new business processes or to modify existing ones in a dynamic manner, and rapidly adapt their information systems to these process changes. This paper propose a new agile business process management methodology, which is part of the a multidisciplinary research project – AGILe busIness PrOcess (AGILIPO). It is argued that existing business process (BPM) methodologies do not offer the necessary flexibility or agility and that new approaches are required. The new methodology is inspired on goal-orientation complemented by a classificatory framework, aimed at introducing standardization and reducing the time and effort required in the process identification phase. Wiki-based technology is proposed as the basis upon which to build a collaborative approach to business process mapping, design and re-design, supplemented by folksonomy to provide ontological support. Finally, the methodology adopts an approach to validation, which is embedded in the previous phases of process identification, mapping and design.

**Keywords:** Business Process Modeling, BPM, Agile Business Process, Wiki, Folksonomy

## 1. Introduction

In today's dynamic market environments, the only certainty is permanent change. The way that organizations have found to cope with such changes is to keep their business models flexible. Business models are made up of business processes and these are crucial in supporting a culture of innovation. However, if business processes are left unattended and not consciously adapted to the changing environment, they become impediments to innovation (Prahalad and Krishnan, 2008). Since the organizations' products released to the market are generated by business processes, having them flexible is important for coping with market changes in an effective manner (Weske, 2007).

With the increased challenges of globalization, re-engineering is now re-emerging in the form of BPM (Smith and Fingar, 2002). The drive of BPM is coming from a demand for a common way to implement inter-enterprise business processes that is independent to the technology used to support them. Recent research in BPM pays more attention to flexibility as a way of coping with the unpredictability of business processes (Dadam et al. 2008, Reichert et al. 2008). Changes are not only emerging in an organizations environment - market or society - but also within its organizational structure (fluctuation, restructure of business units, process change).

Current approaches to BPM still work on the AS-IS/TO-BE paradigm, inherited from the Business Process Reengineering (BPR) era from the nineties. BPR is a top-down, holistic, and cross-cutting approach that takes months of analysis and impact assessment to achieve. (Morgan, 2002; Cumberlidge, 2007). The problems with the AS-IS/TO-BE approaches are related to the temporal gap between the modeling and implementation phases as well as the lack of involvement of the users. These problems have created a gap between business and Information Technologies (IT), where the business has always believed that IT does not understand the semantics of business processes, while IT believes that the business has no conception on what it takes for automated business processes to execute successfully.

In this paper we start presenting a proposal for a new BPM methodology, more human-centered, following the principles of agile software development (AgileManifesto, 2001), and supported by a collaborative environment. The new Agile Business Process Methodology is aimed at supporting a set of associated tools which foster the collaborative and incremental design and implementation of work processes. This is achieved by modeling and implementing business processes in a continuous cycle that receives feedback from the real use of the last implemented processes. We also focus on the human-intensive aspects of business processes, where human participation is required for the operation of activities, even if these activities are automated.

AGILIPO - AGILe busIness PrOcess - is a multidisciplinary research project that has been put forward within the scope of a wide-ranging research programme aimed at integrating the development of computer-based artifacts for organizations with the accumulated knowledge on organizational design (Magalhães and Silva, 2009). This novel approach fosters the bottom-up design and automation of incomplete business processes, follows the principles of agile software development (AgileManifesto, 2001) and is supported by collaborative modeling and execution tools that embed social software-like functionalities (Rito Silva et al. 2009).

The distinctive feature of AGILIPO tools is the integration of modeling with execution activities blurring the differences between users and designers. Users are motivated to make suggestions while executing a particular instance of the process. This reduces the gap between modeling activities and the implementation of technology. Thus, a fundamental aspect of the AGILIPO concept concerns model evolution. Suggestions are synthesized by the users/modelers/developers following a wiki-like approach (Cunningham, 2002), where new suggestions leverage on previous ones by creating new revisions of the model. In this way, we intend to foster a knowledge creation process, organically and incrementally (Wikipedia-like (Ingawale, 2008; Riehle, 2008)), where contributors are motivated to participate in the modeling of an incomplete process by reading contributions of others and continuously adding their own knowledge (Garud et al. 2008).

In synthesis, AGILIPO tools will support the modeling and execution of business processes, using a wiki-like interface to read and update the processes, seamlessly integrates automated and non-automated parts of the process, supports the execution and modeling of exceptional behavior, and enforces a continuous knowledge creation process around incompletely defined and understood processes.

## **2. Approaches to BPM modeling**

Business Process Management (BPM) is a discipline which has been around since the early 90s, launched by the article by Hammer (1990) and reinforced by the book by Hammer and Champy (1993) on business process reengineering (BPR). Hammer (1990) stressed that IT made it possible for companies to undertake major revisions in the way they did work. At the time, it was yet another attempt at bringing more efficiency to private and public organizations, drawing attention to the situation of fragmentation of horizontal processes which has consequences on delays for the customer, increases in costs of the final product and weakened competitively. The way to overcome this was through the reengineering of the work processes, elimination of layers and radical reorganization. Although it had some success in a few companies, the BPR movement fell into discredit mainly due to the “scorched earth” policy which was adopted in many of the interventions.

BPM methodologies have two major objectives: (1) to capture existing business processes by structurally representing their activities and related elements; and (2) to represent new business processes in order to evaluate their performance (Davenport, 1993; Kettinger et al., 1995). But

what is a business process? According to Davenport (1993) and Hammer and Champy (1993) a business process contains the following elements:

- (1) has its customers;
- (2) is composed of activities;
- (3) these activities are aimed at creating value for customers;
- (4) activities are operated by actors which may be humans or machines;
- (5) often involves several organizational units which are responsible for a whole process

More recently, BPM has resurfaced through the Total Quality movement and the work of the European Foundation for Quality Management (EFQM, 1999). Such rebirth has been championed mainly by practitioners (Burlton, 2001; Smith and Fingar, 2003) and is reinforced by a host of process-based techniques, such as Six Sigma, CRM or Business Intelligence. The so-called third generation BPM brings a different perspective to process management. It is announced no longer as the panacea to all the ills of the business but as the only way to implement strategy effectively. Each process is depicted as a response to a stimulus from the organization's environment, starting from the stimuli from the stakeholders. If high-level processes are broken down into sub-processes in close alignment with the organization's strategic priorities, it will be possible to draw process map (architecture) which reflects the strategic needs of the organization

BPM seeks to streamline and govern the multitude of handoffs between functions, departments and divisions. BPM technology accomplishes this by first modeling processes and then executing the model. BPM is not a question of all or nothing. It is a continuum, which ranges from better process-related know-how of the employees to an organizational and technological solution that covers every aspect. In other words, the use of a BPM system is not a silver bullet for all business processes. For each business process, the different performance-related dimensions must be considered (Kung and Hagen, 2007).

Business process modeling has had different emphases over the last couple of decades by both researchers and practitioners. It is the first and most important step in Business Process Management lifecycle (Van der Aalst, 2003), which intends to separate process logic from application logic (Sharp and MacDermott, 2001).

When discussing business processes, it is important to differentiate the process type from the process instance. The notion of process type is used to talk about the process in general, (e.g. sales process). The notion of process instance is used to pinpoint a particular process (e.g. processing a sales lead concerning a particular customer).

Much work has been done by researchers in order to shed some light on BP modeling methods, which has given rise to different classifications. Kueng et al. (1996) have proposed four categories to group process modeling approaches:

- (1) *Activity-oriented approaches* tend to define a business process as a specific ordering of activities (sometimes referred to as tasks) BP are seen as event-driven Process Chains (Scheer, 1994). These approaches generally offer good support in refining process models; however, they have limitation in representing the true complexity of work and, in turn, have difficulty in integrating new business processes.
- (2) *Object-oriented approaches* are associated with object orientation, such as encapsulation, inheritance, and specialization (e.g. (Booch 94). The principles of object orientation are applicable to business process modeling. However, practitioners, such as process owners and team members, tend to describe their work by activities rather than by objects.

(3) *Role-oriented approaches* suggest that a role be involved in a set of activities, and carry out particular responsibilities (Ould, 1995). A group of primitive activities can be assigned to a particular role (i.e. actor or agent). However, these approaches are not suitable to express the logic of intricate sequencing.

(4) *Speech-act oriented approaches*, based on speech act theory under language/action perspective, view the communication process as four phased loop: proposal, agreement, performance, and satisfaction (Medina-Mora et al., 1992). Although business cases can be viewed as a communication between customers and performers, this approach does not provide much help in analyzing existing processes or creating new processes.

## 2.1 Limitations of BPM modeling

BPM modeling methods present advantages or disadvantages according to a host of different issues. The organization's business process modeling requirements differ and so do the environments where the models are to be used (Bider, 2005). For example, modeling methods may depend on whether or not the organization is functionally structured; on whether it has formal means of internal communications; on how strictly it defines responsibilities for each position; or on whether or not processes have been previously identified.

The mechanisms for verifying the process in terms of correctness, completeness, relevance and feasibility or economic efficiency are also extremely complex (Curtis et al., 1992; Becker et al. 2000).

*Correctness* of the process constrains the modeling primitives and combines them according to pre-defined rules. A model must also be semantically correct; therefore, it has to be formally correct and consistent with the perception of the real world. The consistency between different models is viewed as a part of the correctness of the model.

*Completeness* demands that a sufficient set of concepts is included in order to provide the expressive power that is needed for representing all relevant aspects of the domain.

*Relevance* postulates the need:

- to select a relevant object system (universe of discourse),
- to take a relevant modeling technique or to configure an existing meta model adequately, and
- to develop a relevant (minimal) model system.

A model includes elements without relevance, if they can be eliminated without loss of meaning for the model user.

The *economic efficiency* dimension is comparable to criteria for business feasibility and is supported by notions such as reference models, appropriate modeling tools or the re-use of models. Lindland et al. (1994) claim that economic efficiency factors restrict the correctness or the clarity of a model.

From the point of view of BPM practitioners, the limitations that BPM modeling might be summarized as follows (Coelho, 2005):

- Process improvement is focused on methods and tools, often forgetting the people dimension
- BPM often begins with a lengthy and monolithic "AS IS" analysis
- BPM is focused on a team of external consultants mapping the organization's explicit knowledge, often with little regard for the tacit knowledge

- The approach relies mainly on individual interviews with no further involvement of users in the identification/design of the business processes
- The task of documenting methods and procedures is very heavy, making the exercise rather unattractive to the organizational members involved

### **3. Requirements for an agile BP methodology**

As part of the AGILPO project, we aim to define a methodology for the incremental design and implementation of business processes. The methodology considers the human and social aspects associated with the understanding of what the organization's business processes are. Moreover, the methodology should make the description of all activities of a business process possible and should support and be supported by a set of AGILPO-specific tools.

The key idea is to enable the identification and design of business process on top of tangible representations of the business processes which users immediately agree on. The tangible representations will start to be built on already automated sets of activities belonging to specific business processes. Thus, users will visualize existing automated processes and their activities, and they will contextually describe the activities that are related to the ones they are visualizing. The discovery process should follow a technique of tacit knowledge management, where the users suggest process changes using a language that is based on concepts related to workflow exception. Moreover, users should provide their feedback about the business process when they are executing their daily work. This means that the tools have to integrate the interface for workflow execution with the visualization and reporting interface.

The agile business process proposal is characterized in the following manner (Rito-Silva et al., 2009):

#### **3.1 Incompleteness**

- The process does not need to be completely understood. Trying to completely understand a process is time expensive, reducing the number of feedback cycles and increasing the chances that automated processes does not conform to organizational needs.
- The process does not need to be completely specified in the sense that it is allowed that activities not pre-specified occur in some of its instances. This allows the instantaneous adaptation of processes, instances, to the emergence of new organizational needs.
- Incompletely defined processes should be executable and its execution should integrate planned and unplanned activities such that incompletely specified processes will not limit the normal operation of the organization.

#### **3.2 Empowering people**

- Processes should promote collaboration, creativity and intelligence instead of restricting them.
- The system should allow people to perform unplanned activities and integrate them with planned activities.

#### **3.3 Business process design should be integrated with usage of technology**

- To avoid a situation of paralysis by analysis due to different perspectives on processes, a modeling approach based on the operation of the business should be enforced. This way, the different perspectives on process modeling will be focused on bottom-up leveraging of the actual operation of the business.

- Integrate the execution and modeling of the process, such that the process executor is also one of its modelers.

### 3.4 Design should be carried out at the instance level

- It should be possible to describe processes on a case-by-case approach instead of trying to model all the possible situations in the process specification. This will allow a reduction of the complexity of business process models and it will provide two views of the process: the type view, containing the expected behavior common to all instances, and the instance view, containing exceptions to the expected behavior present on the type view of the process.
- It should be possible to promote unplanned exceptions, described at the instance level, to become part of the planned behavior of the business process, described at the type level. Which exceptions to promote to the type level should depend on the automation cost and benefit? Moreover, this approach promotes the bottom-up definition of processes.

## 4. Proposals for an agile BP methodology

Before going into the methodology proper, it is important to highlight the nature of our approach. Above all, the methodology we put forward in this paper aims to be not only agile but also pragmatic. It does not start off by saying that we always have to start process mapping from the company's mission and strategic objectives. Rather, it starts from a need identified out by the organization's management to solve a problem. The problem will have many components and the current structuring of the horizontal processes may be one of them. If the problem is of a strategic nature, then the intervention may need to start from the mission and strategic objectives. However, if the problem is of a more operational nature, 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 horizontal processes is usually highly disruptive.

In the strategic or top-down approach, the new processes can be designed based on the business strategy and business plan without being limited by the actual process. This approach is suitable for full optimization. In the bottom-up approach, the business process is modified from the perspective of users or operators. The focus tends to be on small improvements to the executing process, and the business process can be improved on an iterative basis. This approach is more suitable for local optimization. Both of the top-down approach and the bottom-up approach are necessary. If only the top-down approach takes place, it is likely to cause the functional failure of a centralized organization. On the other hand, if only the bottom-up approach is emphasized, the silo system will be maintained and full optimization will be difficult to achieve.

Business process agility does not mean only to have process flexibility, but also the ability of the process to be adapted. An agile process should be able to adapt itself quickly to a changing business environment. This should be achieved at modeling stage, at the execution stage and in the change-over between those two stages, with the process model being transferred seamlessly into the supporting IT-system. We are looking to a more iterative approach whereby business process change is considered as the ongoing evolution of an existing situation (as opposed to the design from scratch of an overall system).

Considering the discussion above, we propose a methodological approach based on the following steps:

- (1) Defining the process according to its goals

- (2) Defining the process according to its agency and context, using a classificatory framework based on organizational routines
- (3) Describing the process using a wiki-like approach, where collaboration, user empowerment and tacit knowledge usage are key principles
- (4) Fine-tuning the description through an ontological approach known as folksonomy
- (5) Validation of the process.

These will be discussed in turn.

#### **4.1 Definition of the process: goal-orientated**

Goal-orientation mirrors the approach we take to goals in our own lives and lends itself to business user involvement in the creation and management of processes. This also extends to routine tracking of plan execution to detect problems as they occur, or even better before they do, in order to take timely and appropriate actions.

A process can be considered a defined set of partially ordered activities intended to reach a goal. Goals are not only used as a starting point of development but serve as criteria to evaluate actions and decisions throughout the design (Basili et al, 1994). At the base of this approach we find goals, which express intentions and capture the reasons of the system to be built. Furthermore, they represent statements which declare what have to be achieved or even avoided by a business process (Greenwood and Rimassa, 2007). This step looks to define and answer the following questions:

- Why something needs to be done? (define goals)
- What needs to be done? (define activities and output)
- When does it have to be done? (define logical dependencies between activities)
- By whom has it to be done? (define roles - carried out by human or machine actors - and assign them to activities)

Each goal or sub-goal manages a single item or a set of highly cohesive related items. This results in discrete processes that are cleaner and more likely to be reusable. Let's take a business, which is actually organized into vertical business segments, where end-to-end business exists, and horizontal functions spanning across these segments. Each horizontal section manages specific items "process components". Goal-oriented approach allows for the identification of the sub-goals associated with end-to-end business processes. Once sub-goals are identified, it is easy to identify those that are common across vertical segments or horizontal functions and therefore candidates for reuse.

#### **4.2 Definition of the process: classification**

On the topic of standardization (and eventual reuse) if we know the process type(s) and the process instance(s) that we are dealing with, this will save much time and effort at the outset. Classification of processes is a method which has been talked about in the literature. There have been many initiatives aimed at cataloguing generic business processes, each proposing classifications of their own, including the MIT process handbook (Malone, 1999) or the Process Classification Framework by the American Productivity and Quality Center's International Benchmarking Clearinghouse (APQC, 2006).

Childe et al (1994) although providing detailed models for operate processes, merely list the management and support processes as examples. On the other hand, Garvin (1998) explains the meaning of these processes and gives examples from literature and practice to support his classification, which he calls a unifying framework. In contrast Armistead and Machin (1997)



refer to the CIMOSA classification and suggest that Manage processes are split in to two distinct process categories: Managerial processes and Direction setting processes.

Organizational routines is an area of research which has not been properly exploited in the BPM literature and which can be usefully applied to business processes. Defined as “a repetitive, recognizable pattern of interdependent actions, involving multiple actors” (Feldman and Pentland, 2003: 96), routines offer a researchable link between the organization as snap-shot and organizing as a process (Pentland and Rueter, 1994; Feldman and Pentland, 2005). Routines provide an observational “window” to the drivers underlying organizational change (Becker, 2004) and thus can be of use in providing also a frame of reference for agile business processes. This is the case of the research carried out by Howard-Grenville (2006), where an argument is put forward for both flexibility and persistence of organizational routines.

Howard-Grenville’s (2006) conclusions are that although pervasive and persistent, organizational routines allow for a considerable amount of variation. Also, that such variation is due to individual and collective agency, with tacit negotiation between participants being an important factor in the collective performance of a routine Furthermore, that author states that organizational context, specifically “aspects of the technology in use, the patterns of coordination and the culture” (Ibid, p. 619) have a strong influence of the performance of the routine under investigation. The outcome of Howard-Grenville’s work is a type of classificatory framework which places a given routine in its agency and organizational contexts. We suggest that if this kind of thinking is applied to business processes, there would be a great deal to be gained in terms of categorization and standardization at the identification stage. Table 1 show the proposed classificatory framework applied to business processes.

Table 1

Embeddedness of the process	Actors’ primary orientation	Flexible process performances?	Changes in process over time?	Process label and characteristics over time
<b>Weak</b> <ul style="list-style-type: none"> <li>• Overlaps with few other structures</li> <li>• Overlap is relatively insignificant</li> </ul>	To past (Iterate)	Unlikely	Unlikely	Arbitrary Process: It changes only as a result of intentional redesign or unintended slippage
	To present (Apply)	Likely	Somewhat likely	Pragmatic Process: It changes readily as a result of emergent variation; responsive to shifts in situation
	To Future (Project)	Likely	Likely	Adaptive Process: It is relatively easily adapted to new uses; many variants may coexist simultaneously
<b>Strong</b> <ul style="list-style-type: none"> <li>• Overlaps with many other structures</li> <li>• Overlap is significant and consequential</li> </ul>	To past (Iterate)	Unlikely	Very unlikely	Sticky Process: Very persistent; little impetus or change from within
	To present (Apply)	Likely	Unlikely	Accommodative Process: Pragmatically allows flexible use to apply to situation at hand, but variations rarely perpetuated
	To Future (Project)	Likely	Somewhat unlikely	Pervasive Process: Rather than changing over time, the process may “take over” more problem situations and become more widely applied

Source: Adapted from Howard-Grenville (2006)

By introducing a classificatory framework which is relevant to organizational routines (and therefore to business processes) in a BPM methodology, we hope to fulfill two objectives. Firstly, we aim to address the problem of the lack of contextualization of most methodologies. In other words, business processes are usually mapped and designed independently of the people who carry out the work and also independently of important organizational variables, such as how much flexibility is allowed in the execution of a given process by a given manager. Obviously, it will be possible to predict every possible variable which forms the organizational context of a given business process, but it is possible to characterize the process a few key variables, such as those represented in Table 1. Our second aim is to improve the agility of the mapping-design-execution cycle. By pre-classifying each process into a category (for example “Adaptive”, “Sticky” or “Pervasive”) it should be possible to reduce greatly the amount of time needed to carry out the cycle, simply by instituting different sets of rules for each category. Such rules would affect the whole process, from the manual mapping to the automated execution of the business process.

### **4.3 Wiki-based collaboration**

The wiki tool is an open authoring environment for creating and maintaining a community knowledge base, offering a quick, simple way to produce and review information that can be gathered and linked to other wiki pages. All users can comment on, change, supplement, and even delete the wiki's pages. Producing new pages is quick and easy, as is linking them to existing ones (Cunningham, 2002). The wiki is a suitable solution for IT support of cooperative community knowledge generation (Neumann and Erol, 2008). The wiki's winning feature, however, is that it provides a simple means of interaction due to the simplicity with which users can navigate its pages. The line between the “active” content purveyors (authors) and the “passive” users is largely eliminated, resulting in the rapid appearance of a knowledge network of wiki pages and sites (Fuchs-Kittowski and Köhler, 2005).

In the context of an agile BPM methodology, we proposed that a wiki-type tool can be created for the collective description of business processes. In this context, three aspects may be considered when evaluating wiki-type scenarios:

1. The degree of organization of the BPM team
2. The degree of specificity of wiki objects (goals, sub-goals, activities, roles, etc)
3. The degree of desired process completeness

The first aspect concerns the policy making needs regarding collaboration and access rules for the team in charge of the BPM project. While in the case of wikis for web pages, creating and editing have a simple underlying workflow and do not raise too many concerns about consistency, the mapping and description of a process (e.g. sales order) involving a number of participants from different organizational units, would have to be based on strict transactional rules in order to ensure data consistency.

The second aspect encompasses the data structure of a wiki-object and the degree to which it should rest on a formal underlying definition (Bernstein, 2000). Any system that plans to support emergent activity, following a situated action approach, should provide some structure as a contextual basis for situated improvisation. Process maps (in analogy to geographical maps) can provide such a structure.

As a third aspect, one should consider the degree of desired process completeness versus the continuous evolution versus development of a final version. From a social intelligence point of view, we can observe that the more collective intelligence is required for a given task, the lower

the degree of organization the task is required to have. In other words, a broad community participating in the development of an artifact increases probability of its completeness.

Users/modelers/developers that are involved in the modeling and execution of the business process, synthesize suggestions following a wiki-like approach, where new suggestions are leveraged on earlier ones, thus creating new revisions of the model. In this way, a knowledge creation, Wikipedia-like process, is created in an organic and incremental manner (Ingawale, 2008; Riehle, 2008). Contributors are motivated to participate in the modeling of an incomplete process by reading contributions of others and continuously adding their own knowledge (Garud et al., 2008).

#### **4.4 Folksonomy**

Folksonomies are an emergent phenomenon of the social Web. They arise from data about how people associate terms with content that they generate, share, or consume (Gruber, 2006). It is claimed that Folksonomies have many advantages over controlled vocabularies or formal taxonomies. Tagging has dramatically lower costs because there are no complicated, hierarchically organized nomenclatures to learn. Users simply create and apply tags on the fly. Folksonomies are inherently open-ended and therefore respond quickly to changes and innovations in the way users categorize content (Wu et al., 2006).

An important aspect of a folksonomy is that it comprises terms in a flat namespace, that is, there is no hierarchy, and no directly specified parent-child or sibling relationships between these terms. There are, however, automatically generated “related” tags, which cluster tags based on common URLs (Mathes, 2004). In our context, URLs might refer to activities, sub-goals, goals or even to business processes. This is unlike formal taxonomies and classification schemes where there are multiple kinds of explicit relationships between terms. Such relationships include things like broader, narrower, as well as related terms. Folksonomies are simply the set of terms that a group of users’ tagged content with, as opposed to a predetermined set of classification terms or labels.

The folksonomy approach is used here in conjunction with the wiki-like approach enabled by the wiki-based principles for the description of pre-defined processes. It is also used for the bottom-up identification of common behaviour in different process instances. Such bottom-up process type definition occurs in the execution context of incomplete processes. Generic activities support process exceptions, where any unplanned exception can occur as a generic activity. Such generic activities may be integrated later in the classificatory framework, becoming known exceptions. Known exceptions, in turn, can be further integrated into the process type, becoming expected exceptions.

#### **4.5 Validation**

An important point that is not covered by the current modeling approaches is the incomplete nature of business process (Lee and Dale, 1998). The modeling of business processes is never finished because the process itself is never complete. In order to overcome such a realization, a validation step must be adopted (Kuhne, 2008). Validation should give immediate and continuous feedback to business process designers about weaknesses and inconsistencies in possibly incomplete models. The established modeling process with sequential modeling, validation and evolution stages should be replaced by a modeling process with integrated validation support.

Validation addresses the problem of ensuring the consistency of the model vis-à-vis the real-world process and requires consultation of the specification and discussion with process stakeholders, before it gets to the live environment (Mendling, 2009). For instance, simulation

facilitates process diagnosis in the sense that by simulating real-world cases, domain experts can acknowledge correct modeling or propose modifications of the original process model (Van der Aalst, 2003). Although validation requires human judgment as a key characteristic, it should be noted that formal methods are useful to support it. If business process models are expressed in process languages with a clear semantics, their structural properties can be analyzed (Jansen-Vullers and Nethes, 2006). For example, if certain parts of processes can never be reached in real-life, an obvious modeling mistake occurred that should be fixed.

In our proposed methodology the step of validation of the business model represents a departure from traditional software testing by focusing more on the reality of organizational life. In order to stay in line with the agility that is put forward by the AGILIPO approach, validation should not be a lengthy process, as suggested by many other approaches (Mendling, 2009). The tight collaboration between users/modelers/developers jointly involved in process mapping and design, facilitated by wiki-like technology and by access to a federated graphical view of the business process model, should greatly ease the validation process. The use of these tools should provide immediate and continuous feedback to business process modelers about weaknesses and inconsistencies in possibly incomplete models.

Hence, our suggestion is that validation should be embedded in the previous stages of process identification, mapping and design. The reliable use of a classificatory framework as suggested in 4.2 above, the adoption of a simple ontological system based on folksonomy and the feedback gained from frequent inspections of the graphical representation of the business process model designed through a wiki-like tool should provide sufficient validation opportunities.

## **5. Conclusion and future work**

Business processes methodologies are in need of major revision. While the field of BPM has introduced noteworthy progress in the computer and human support for handling business processes, more advanced approaches are necessary in order to meet the challenges of business agility. Current modeling methodologies address few aspects of the real needs of today's organizations. They overlook the fundamentals aspects that will allow organizations to be agile, and they still enforce the separation between designers and users.

In support of the AGILIPO concept, we propose a methodological approach based on five complementary steps: (1) identification of the process goal(s), through an inherently flexible approach, which allows processes to be identified following the logical ways in which humans naturally comprehend processes; (2) classification of the process using a framework derived from the field of organizational routines, thus allowing a degree of standardization in the subsequent design phase; (3) a wiki-like approach for the mapping and design of the process, where collaboration, user empowerment and the harnessing of tacit knowledge are key principles and (4) folksonomy-based ontology concepts, where users tag activities, share their tags, and search for activities based on such tags; (5) validation procedures embedded throughout the identification, mapping and design steps of the method.

In our future work we will focus on developing each of the five steps in detail and simultaneously carry out a practical test in a live business process. In the detailed development of the methodology, there are a number of issues which are still to be resolved, namely (1) how to downscale the Wikipedia-like approach to the organization level, where relationships between participants tends to be functional or hierarchical; (2) how to carry out the federated graphical view of the business process model as mapping and design progresses enabled by the wiki-like tool; (3) what is the acceptable degree of completeness of the business processes and how can they be validated reliably; (4) what other types of social software are suitable for an agile BPM

methodology (e.g. blog, IM, tagging, social bookmarks, ratings), and (5) how to combine harmoniously and effectively the bottom-up elicitation of horizontal processes with the top-down or strategic shaping of the same?

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