Application and Simplification of BPM Techniques for Personal Process Management

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Abstract. With the advent of Web 2.0 and online social interactions, people started sharing thoughts, contents and tasks online. This evolved to cover also socialization of task management, which is currently supported by a plethora of online services directed to the final user. However, all these tools share a common weakness: they don't provide any way for structuring the interactions, dependencies or constraints between tasks. This paper discusses a vision towards the application of BPM techniques and tools to personal task management. The challenge of this roadmap is finding the appropriate level of complexity of processes: the language for modeling such processes should be complete enough for describing basic processes but also simple enough to let people understand, accept and use them in their everyday life. Therefore, our proposal describes how to strip off some of the expressive power of enterprise business processes, so as to accommodate end user needs and acceptance.

Keywords: Business process management, personal process management, social BPM, BPM, social network, personal productivity.

1 Introduction

With the advent of Web 2.0 and online social interactions, people started sharing thoughts, contents and tasks online. This started as means for producing content, then evolved to a means for building and maintaining social connections, and finally ended with a way for sharing experiences on the go, with systems such as Foursquare, Twitter, and others.

As one of the last trends, the move towards online social sharing evolved to cover also socialization of task management, which is currently supported by a plethora of online services directed to the final user, such as RememberTheMilk and many others.

These tools are extremely user friendly, allow to manage personal tasks, social interactions, and even assignment of tasks to fiends. However, all these tools share a common weakness: they don't provide any way for structuring the interactions, dependencies or constraints between tasks. In technical terms, these tools do not embrace the practices of BPM at all and do not consider the advancements of BPM towards the integration of social aspects. In a sense, despite

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being the integration of the enterprise practice of BPM and the end user trend towards social networking, Social BPM remains an approach which is studied only in the academic and industrial setting, leaving out all the possible interesting exploitation scenarios for the end users.

This paper discusses a vision towards the application of BPM and Social BPM techniques and tools to personal task management, with the purpose of introducing the concept of process and execution flow in personal, everyday life tasks. We call this Personal Process Management (PPM).

The challenge of this objective is finding the appropriate level of complexity of processes, methods and tools that can be accepted by end users: the language for modeling such processes should be complete enough for describing basic processes but also simple enough to let people understand, accept and use them in their everyday life.

The paper is organized as follows: Section 2 discusses the state of the art of PPM and Personal Task Management Tools; Section 3 presents and motivates the simplified modeling language we propose; Section 4 shows our implementation of a prototype online tool that supports our approach; and Section 5 concludes.

2 Related Work

Despite being a more and more important issue, personal task planning has received limited attention from academic research so far. Just a few visionary statements can be found on this, e.g., the reader can have a look at the blog posts by prof. Michael Rosemann [2] and by Armin Sander [3] which lay the basic principles of Personal Process Management. The only structured research that can be found is reported in a Technical Report of UNSW [4]. The report discusses a possible implementation of personal process management, in a similar manner to what we will propose. However, our approach differentiates on some fundamental aspects. First, the choice of control flow patterns to be covered is different: while [4] mainly focuses on sequential and conditional (alternative) constraints, our proposal is centered on parallel executions. Furthermore, their proposal is intended primarily for personal use, without prominent attention to the ability to share and assign tasks to other users, while our challenge is to build a social process planning system in the first place. Notice that the two decisions are connected: parallel executions would not be so crucial in case of a single executor, while they are paramount for shared processes. The report [4] also proposed a formal grammar for the design of personal processes and based the approach on that notation. While formally precise, this solution is not going to be so attractive to the end user, who expect user-friendly and convenient ways for defining his processes.

On the other side, a large number of commercial online tools exist for personal tasks management. A short list of them is reported in Table 1. These tools are explicitly oriented to end users and provide a plethora of convenient features, as summarized in Table 2, including task creation, editing, tracking and sharing;

social network integration; importing and exporting; notification and synchronization. They also support some kind of project management, in the sense of managing pools of tasks altogether. However, none of them allow structuring sets of tasks into process models.

Table 1. List and URLs of Online Personal Task Management Tools

Tool	Url
Remember The Milk	http://www.rememberthemilk.com
Online Task List	http://www.onlinetasklist.com/
Hi Task	http://hitask.com/
Todoist	http://todoist.com/
Toodledo	http://www.toodledo.com/
Tadalist	http://tadalist.com/
Voo2do	http://voo2do.com/
Astrid	http://astrid.com/
Cozi	http://www.cozi.com/
Blablalist	http://blablalist.com/
CCtodo	http://cctodo.com/
Tasktoy	http://www.tasktoy.com/
GTDagenda	http://www.gtdagenda.com/
Manymoon	https://manymoon.com/
Producteev	http://www.producteev.com/
Workhack	http://workhack.com/
Webtodo	http://webtodo.wndmll.com/
Theonlineceo	http://roughunderbelly.com/user/login
Nozbe	http://www.nozbe.com/
Tedium	http://www.mcqn.com/tedium/account/login
Checkvist	http://checkvist.com/
Hiveminder	http://hiveminder.com/splash/
Stayuseful	http://stayuseful.com/
Nutshell	http://www.gonutshell.com/

3 BPM Approach to Personal Processes

To support users in adopting BPM in their everyday life, we propose three features of PPM that aim at increasing the adoption and acceptance of the approach:

1. First, we propose to reduce the expressive power, and thereby the complexity, of business process modeling semantics.
2. Second, we define social interactions, social sharing and gamification (i.e., the possibility of increasing engagement of users through mechanisms that are typical of games, such as points, badges and so on) as first class citizens in the approach.
3. Third, we propose to embrace the ease of use, flexibility and productivity of the personal task management tools presented in Section 2.

In this section we address the former two points, while in Section 4 we cover our implementation experience that tries to convey the latter.

Table 2. Summary of the features of Online Personal Task Management Tools

Online Task Mgmt Platform / Feature	Remember the milk	Onlinetasklist	Hitask	Todoist	Toodledo	Tadalist	Voo2do	Astrid	Cozi	Blablalist	Cctodo	Theonlineceo	Taskboy	Workhach	Webtodo	GTDagenda	Manuymoon	Producteev
Social network integration	Y				Y			Y								Y	Y	Y
Creation of tasks via email	Y		Y				Y									Y		Y
Quick submission	Y		Y		Y			Y	Y	Y		Y	Y	Y	Y		Y	Y
Tagging / Categories	Y	Y	Y	Y	Y		Y	Y			Y		Y			Y	Y	Y
Localization	Y				Y													
Contacts management	Y	Y	Y			Y	Y	Y	Y							Y	Y	
Development API	Y																	
Export	Y	Y	Y	Y	Y		Y							Y		Y		
Import		Y			Y		Y									Y		Y
Feed	Y		Y			Y				Y			Y	Y				
Search	Y		Y	Y							Y					Y		Y
Notifications	Y	Y						Y										Y
Synchronization	Y																	Y
Keyboard shortcuts	Y	Y		Y				Y										
Project management		Y	Y	Y			Y						Y			Y	Y	
Permissions		Y															Y	
Task assignment		Y	Y				Y	Y	Y	Y	Y							Y
Public sharing		Y	Y			Y	Y	Y		Y			Y	Y				
Reports / Stats		Y	Y				Y	Y										Y
Drag&Drop			Y	Y		Y	Y				Y		Y	Y			Y	
File upload		Y	Y		Y												Y	
Time tracking			Y		Y		Y											
Multiple insertion			Y		Y													
Backup/Restore			Y		Y		Y											
Booklet printing			Y		Y													
Periodic checklist																Y		

3.1 Expressive Power Reduction and Notation Simplification

Simplification of expressive power has been carried out based on the observation that end users have rather simple needs and usually aim at describing collaborative activities performed together with their acquaintances.

In our informal investigation with users, by asking them to design some typical personal workflows, we noticed that:

– Users don't need personal process management in the sense of structuring their own workplans, because for that purpose they are happy enough with plain tasklists (possibly based on temporal deadlines) with no particular structure.

- Users want to easily specify task assignment to friends.
- Users want to describe simple sequential constraints between tasks or the possibility of performing actions altogether.
- Users don't want to deal with complex decision points, involving definition of conditional expressions, complex event management, or exceedingly complex process structures.

Based on this, we propose a PPM model that is based on BPM practices but actually covers a fairly reduced expressive power. In particular, our execution model covers only the design of process types that comprise: **atomic tasks, sequential task dependency, and parallel execution**. Assignment of one task is allowed to one and only one person. The design consists of task types, assigned to actual people (not roles). Therefore, the reuse of process models (in the sense of having several executions of them) is possible but not really frequent.

This being said, also the visual notation that one can apply for representing this kind of processes can be a stripped down version of well-known standardized tasks. In particular, we propose to start from a notation that only includes two elements:

1. Atomic tasks, represented by white boxes, which can be assigned to one person.
2. Sequential dependencies, represented by directed arcs between boxes.
3. Parallel execution, represented by two or more arrows exiting one box (split point) and merging into another (merge point).

Notice that no gateways, events or any other complex element is shown. No cycles are allowed in the task dependencies. Therefore, the proposed notation is straightforward. A typical example of personal process model is shown in Figure 1.

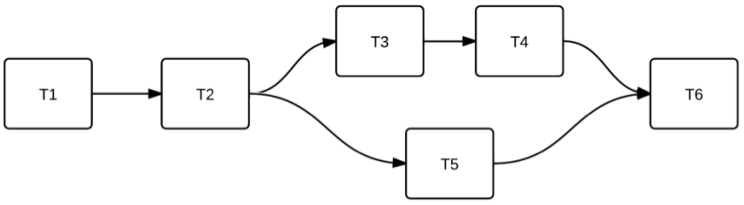

Fig. 1. Example showing the PPM notation, with sequential and parallel executions

3.2 Socialization

From the socialization perspective, the user needs are quite basic: they need the possibility of inviting users from social networks or mailing lists, they want them to see their tasks appear in the todo list in the right moment, and they want to award them somehow for the work done, e.g., through gamification mechanism.

4 PPM Tool and Experience

To validate our approach, we implemented a prototype online tool for personal and social task management. A demonstration video of the tool is available at [1]. The tool covers the expressive power of a PPM language as described in Section 3.1 and allows to make processes and tasks social according to the vision outlined in Section 3.2. On the other hand, the tool adopts the ease of use, mobility and flexibility aspects of task management tools described in Section 2. The tool is implemented as a completely online service where users can focus on their process planning and sharing with friends. The application is integrated with Facebook for sharing the task invitations and also for posting task outcomes. Figure 2(a) shows a snapshot of the modeling tool, where users can drag and drop tasks and friends (taken from Facebook) on the editing panel. The advancement of the process is also shown through different colors of the boxes. Figure 2(b) shows an example of invitation message posted on the Facebook wall of users invited to perform a task. The invitation is sent out only when the preceding task(s) are completed. A similar message notifies users about the end of a task. One interesting feature is that processes can be changed even while in execution already, for the part that has not been completed yet. The execution control is in charge of a tiny ad hoc process engine that covers only the simple control flow cases supported by the method.

(a) (b)

Fig. 2. (a)The personal process editing panel, showing the advancement of the process (red tasks are late, green ones are done and on time, black ones are still to be executed). (b) Invitation messages posted on Facebook walls of users invited to perform a task.

5 Conclusions

This paper presented a vision and a concrete tool implementation that demonstrate the validity of personal process management as a solution to everyday

task organization. Future work will address refinement of the tool implementation (especially with respect to gamification and utility features such as allowing attachment of forms, documents, maps, etc to tasks), formalization of the approach and thorough comparison of different reduced sets of business process modeling constructs in terms of acceptability and convenience for end users.

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