

Social-PPM: Social-Aware Personal Process Management

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Abstract. The rise in popularity of various social network applications has brought the opportunities for Internet users to share and reuse a plethora of things like images, videos, datasets, maps, reviews etc. However, currently there is no effective way to share personal experiences such as the process of filing a personal income tax return, the process of applying for a visa. We propose a flexible personal process model and its implementation as a mobile application that empowers users to create and to share personal processes at anytime and at anywhere. We leveraged the most recent functionalities of social networks, including: a following System, a notification mechanism and a recommendation system that predicts processes a specific user might be interested in.

Key words: personal processes, process management, social BPM, social networks

1 Introduction

The rise in popularity of various social network applications has brought the opportunities for Internet users to share and reuse a plethora of things like images, videos, datasets, maps, reviews etc. However, sharing of personal experiences such as the process of filing a personal income tax return or the process of applying for a visa are still mainly via blogs, eHow, specialized books, or gleaned from comments on Facebook or Twitter. For the majority of users, the discovery of any useful personal processes either requires extensive internet search or is via the words of mouth. Even when the correct personal process is stumbled upon, the context of why the process is created and how it is used is usually not there or not obvious which impedes its effective reuse.

We believe that the lack of a systematic approach for users to create, share, and reuse personal experiences is hindering our day to day productivity and

unnecessarily preventing the accumulation of “crowd wisdom”. A recent experiment [1] also strengthens our hypothesis that the ability to share personal processes in a structured manner saves time from subsequent users, as it means that users are not required to conduct their own research on each process to derive the associated tasks and their contexts.

In this paper, we propose a personal process model that can document personal experiences in a structured way. A personal process is defined as a set of tasks carried out in a certain order to achieve a goal by an individual. It can be as simple as booking a restaurant for a Friday night in San Marcos, or as complicated as applying for a driving license in the state of Texas. Personal process differs from business process [2] in that it is ad-hoc, on demand and with minimal control flow. Some of the tasks in personal processes can only be completed manually. Personal processes are thus much more flexible than business processes in the order of how tasks are executed. In the increasingly connected digital world, users carry out personal processes on a daily basis using a varieties of applications or resources on the web, however the knowledge gained by users carrying out the repetitive routines is locked away (in a person’s email folder, personal notebooks, etc.) and is inaccessible to others. Our goal is to develop an innovative platform for Personal Process Management (PPM) that is accessible via any mobile devices. Through automatic documentation and sharing of personal experiences, we can leverage “collective intelligence” and avoid costly or inefficient steps in executing our personal processes.

The remainder of this paper is organized as follows. Section 2 describes the related work. Section 3 gives an overview of the system and provides detailed description of the main functionalities of Social-PPM. Section 4 provides some concluding remarks and also discusses various open issues.

2 Related Work

Relevant work in PPM can be divided into two categories; the existing mobile apps from Google Play and AppStore, and the academic literatures.

We downloaded and tested highly rated free mobile apps on the market that allowed users to organize tasks. Mobile apps that we tested include: MyLifeOrganized¹, Wunderlist², GTasks³, Mindjet Tasks⁴ and Todoist⁵.

All of those apps are mostly fancy text editors where the user can write down tasks she needs to do. In the best case, few of those apps offered a reminder functionality and allowed the user to keep track of her progress in her todo list. Mindjet Tasks extended the functionalities to also manage todo list for a team of collaborators. None of those apps offered the possibility of reusing and sharing the experience of completing the todo list. Each user is at her own and there

¹ www.mylifeorganized.net

² www.wunderlist.com

³ GTasks: To-Do List & Task List, Google Play

⁴ www.mindjet.com/products/mobile

⁵ www.todoist.com

is no way of transferring knowledge about common processes from one user to another without tedious documentation.

Since personal process management is a relatively new area of research, there are only a few papers that are directly related to our work. Two implementations of personal process management are discussed in [3] and [4]. [3] mainly focuses on sequential and conditional constraints in a process by introducing a formal personal process modelling language. The main innovation of this paper is the implementation of FormSys process designer that allows users to fill out forms with their information automatically. Given that completing various forms is a common task in the majority of personal processes, FormSys is very valuable in that respect. However, FormSys does not support mobile platforms and requires the processes to be pre-created by experts. It is thus not a tool that can empower end-users to create and share personal processes in a large scale. The work in [4] simplifies Business Process Management (BPM) model and pays special attention to the role of social aspects of the process management such as sharing and assigning tasks. However, this work remains at preliminary level and is yet to realize any significant improvement over PPM.

In an earliest work of PPM in [5], the authors recognized the need to have a personal process model which is not constrained by rigid control flow and structural rules as defined in BPM. They proposed a set of algebraic operators that can be used to query a repository of processes for recommendation of suitable processes targeted to a task at hand or a specific artifact. However, the users are restricted to process templates pre-created by the system. Moreover, there is no notion of sharing, reuse or following.

There have also been some attempts in recent years to accommodate social features in the BPM environment. Most notably a recommendation-based process modelling support system with social features in [6]; a modelling and execution tool for business processes with collaboration and wiki-like features embedded in [7]; and an ad hoc workflow system focusing on non-intrusive capturing of human interactions in [8].

The paper “Processbook: Towards Social Network-Based Personal Process Management” [9], was one of the main papers that inspired our work. In Processbook, personal process is viewed as a goal that can be shared within a social network. Users are encouraged to actively manage and share their processes within the social network. However, Processbook only supports manual task execution and provides limited social features. Moreover, Processbook is not available on any mobile platforms. This work extends Processbook with a mobile client, the ability for tasks to be executed automatically as well as the prediction of processes that a user might like to follow.

3 Overview of Social-PPM

Our system aims to provide the user with a mobile client that supports the highly exploratory process creation and execution while also integrating some of the functionalities of social networks for the ease of sharing and reuse of personal processes. The social-PPM (i) provides an intuitive way to query and search

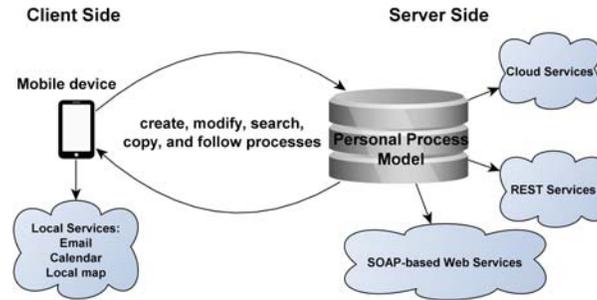


Fig. 1: Overview of the System

personal processes, (ii) leverages contextual knowledge and social relationships between users by means of recommendation and prediction systems, and (iii) encourages users to share intermediate results with others and receive feedback from them while carrying out the process. Figure 1 provides an overall view of the system depicting the flow of data between the end-user, the server process model, and various other services that can be leveraged to complete a task.

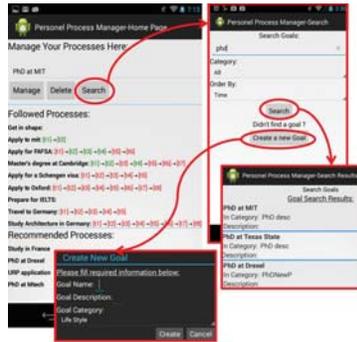
The PPM repository resides at the server side. We store two levels of knowledge about personal processes in our repository: (i) the primary level which consists of the personal process models, their constituent tasks and additional information about each task such as its execution type (manual or automatic) and priority, (ii) the secondary level which captures the reviews submitted by the users in forms of comments and votes. Users' profile, the processes each user follows and a history of major updates on processes are also kept in the PPM repository. The repository is updated whenever users save the changes on their mobile client.

Our social PPM mobile application enables users to create or manage their personal processes. If users need to create new processes, they can first search and see if there are any relevant processes that can be used as a template. If a relevant process is found, creating a new process is just a matter of copying and then modifying the template process for the current situation. The mobile client allows users to execute some of the tasks automatically using local services on the device. Currently, the only available local services are sending an email and adding an event to the user's calendar. Figure 2 illustrates two functionalities of the mobile app.

3.1 The Social Aware Mechanism

In the following, we discuss how PPM is enhanced via a social aware mechanism.

Following Processes and Notification Mechanism Users can follow processes created by other users and receive instant and specific updates and notifications whenever a major change happens to a followed process. Similar following systems in various social networks have proven success in keeping the nodes of the network informed about their neighboring nodes. As far as we know, nobody has provided following utility in a PPM framework.



(a) Creating a New Process



(b) Task Review

Fig. 2: Social-PPM Mobile Client

Process Prediction This service predicts processes that the user may need in the future. The algorithm for determining what processes might be interesting for a certain user relies on her interaction history and profile. For example if two users have been copying and following the same processes then there is a decent probability that those two have similar interests, which would be reflected as both of them will engage in similar personal processes. If this is the case, our system will pro-actively spots processes that only the first user is using and suggest them to the second user or vice versa. The algorithm uses a simple probability distribution in order to diversify the suggested processes each time the user connects to the Social-PPM mobile app.

Process Rating and Advanced search Social-PPM allows users to post reviews on any tasks of a process. A user’s review could be a **comment**, a **like** or **dislike**, or a combination of both. The total number of likes and dislikes on tasks is used for computing the final ranking of a process. This is particularly useful for evaluating different versions of a process to discover which one is more useful or recent. An alternative way to rank processes is to use the prediction system. Processes are ordered by their importance to the user based on the user’s interactions with the owners of the processes. The more processes in common the user has with a process owner, the higher in the result list the process will appear.

4 Conclusion and Open Issues

We have proposed a flexible personal process model and its implementation as a mobile application that empowers users to create and to share personal processes at anytime and at anywhere. We leveraged the most recent functionalities of social networks, including: a following system allowing users to keep track of the latest progresses, a notification mechanism allowing users to be informed about major changes of followed processes and a recommendation system that predicts processes that a specific user might be interested in.

Our future work includes designing a general framework for adding more services to Social-PPM for the purpose of helping users to execute tasks automatically and automatic recording of the provenance of those executions. A simple example would be using a system similar to FormSys [10] to fill out forms automatically. Another direction is to further improve our prediction algorithm such that the system is able to learn the “best” process for a particular goal optimized for a particular user. A comprehensive field study that includes the usability of the mobile client, the accuracy of the prediction algorithm and the expressiveness of our PPM model is also planned.

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