

Analysis and improvement of business process models using spreadsheets



Jorge Saldivar^{a,*}, Carla Vairetti^b, Carlos Rodríguez^a, Florian Daniel^a, Fabio Casati^a, Rosa Alarcón^c

^a University of Trento. Via Sommarive, 9 I-38123 Povo (TN), Italy

^b Facultad de Ingeniería y Ciencias Aplicadas. Universidad de los Andes. Mons Alvaro del Portillo 12445, Santiago, Chile

^c Pontificia Universidad Católica. Av. Vicuña Mackenna 4860, Santiago, Chile

ARTICLE INFO

Article history:

Received 23 July 2014

Received in revised form

20 October 2015

Accepted 30 October 2015

Recommended by: M. Weske

Available online 10 November 2015

Keywords:

Business process analysis

Spreadsheets

Business process simulation

ABSTRACT

Software in general is thoroughly analyzed before it is released to its users. Business processes often are not – at least not as thoroughly as it could be – before they are released to their users, e.g., employees or software agents. This paper ascribes this practice to the lack of suitable instruments for *business process analysts*, who *design* the processes, and aims to provide them with the necessary instruments to allow them to also *analyze* their processes. We use the spreadsheet paradigm to represent business process analysis tasks, such as writing metrics and assertions, running performance analysis and verification tasks, and reporting on the outcomes, and implement a spreadsheet-based tool for business process analysis. The results of two independent user studies demonstrate the viability of the approach.

© 2015 Elsevier Ltd. All rights reserved.

1. Introduction

The analysis of a piece of software, e.g., an algorithm or a mobile app, is a highly technical and daunting task typically performed by *developers* or *testers* who have the necessary technical background to know what to analyze and how. What is important is that the piece of software is analyzed by someone with the right skills, tools and methodologies.

Interestingly, when it comes to *business processes* (BPs) this is not common practice. In fact, the *BP analysts*, who design the processes to be executed, often do not have the necessary instruments to analyze their artifacts, i.e., the *business process models*.

In the context of Business Process Management Systems (BPMs), the tasks in the process models are typically implemented using web services [1]. The web services can be either fully automated or it can provide a web application that allows human operators to perform the tasks through suitable user interfaces. For this type of business processes, which implementation requires involving developers, the analysis is, therefore, done again by the developers, if at all. This in turn means that the concerns of the actual owners of the artifacts, the BP analysts, may not be properly taken into account before implementing and running the production processes. Identifying issues at this late stage of the process lifecycle can be time-consuming and costly.

Let us consider, for example, the *travel expense reimbursement process* in Fig. 1(a). Furthermore, let us assume that the process is currently in use in a service-based BPM system and that some problems have been identified by the BP analyst of the company. More concretely, he has

* Corresponding author.

E-mail address: jorge.saldivargalli@disi.unitn.it (J. Saldivar).

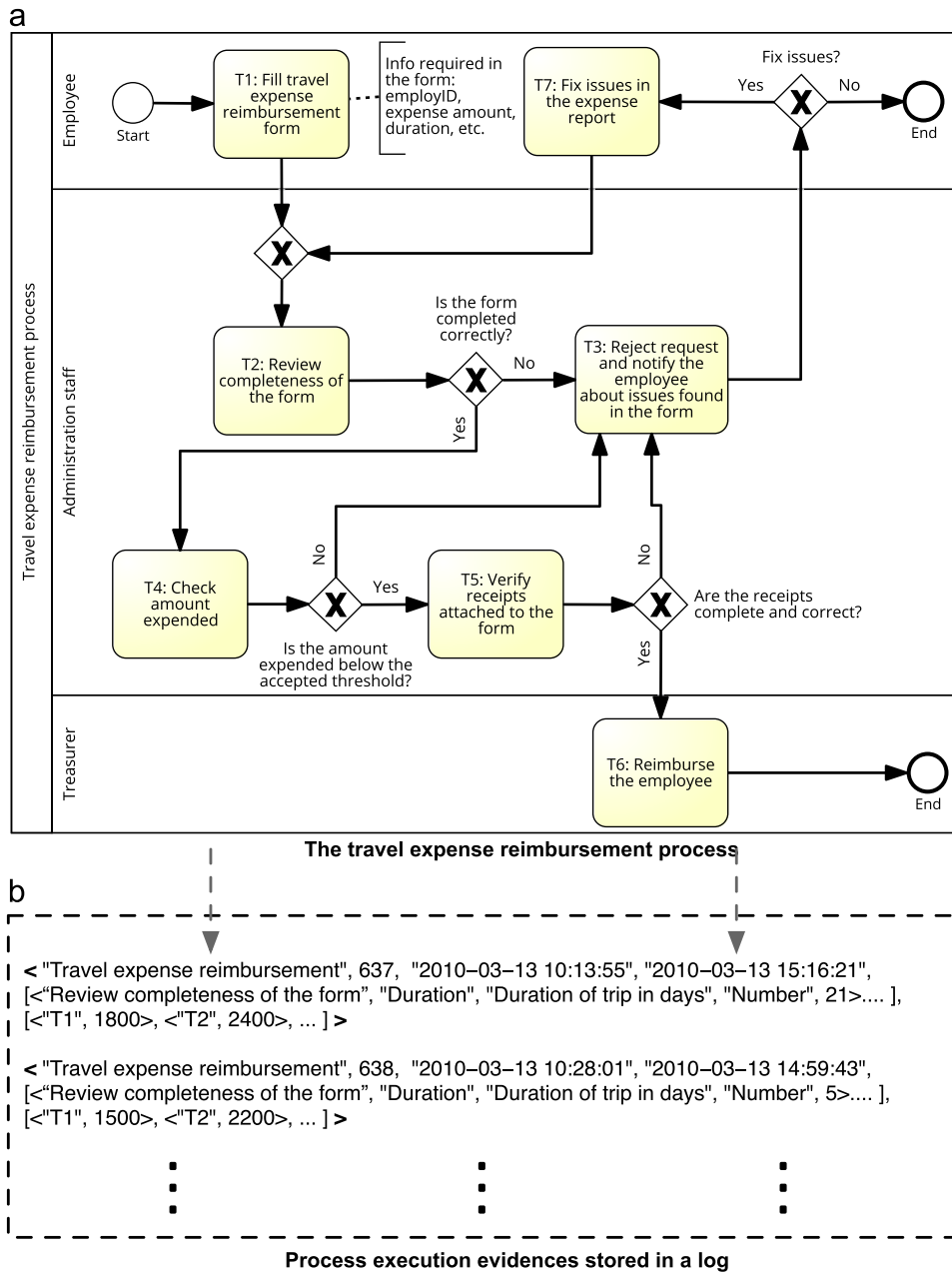


Fig. 1. BPMN model of a travel expense reimbursement process and a possible execution log.

noticed that with the current resources assigned to operate this process, only 70% of all the reimbursement requests are processed on time. The BP analyst would like to change the process in order to improve its performance without the need of having to increase the amount of resources assigned to the process. In addition to this, he has also noticed that the amount of many reimbursement requests are far below the operational costs of having to run the BP to process the request and that, in such cases, it may just be better to immediately reimburse the employee without having to run the whole process and incur in costs that are not justified by the requested amount.

Before investing the necessary effort for implementing and deploying changes in the process, the BP analyst needs to find answers to key questions, such as *how many reimbursement requests, per quarter of the year, fall within the 30% of requests that are not processed on time, what should the value be for the amount requested under which the request is immediately reimbursed, and whether all these requests can be reimbursed without exceeding the maximum amount of 15K euros imposed by the accounting department.* These are business questions that require the possibility to try different process execution scenarios that reproduce different execution outcomes. The BP analyst needs to be able to specify the typical behavior per quarter of the year,

Download English Version:

<https://daneshyari.com/en/article/397283>

Download Persian Version:

<https://daneshyari.com/article/397283>

[Daneshyari.com](https://daneshyari.com)