

Capturing and Annotating Processes using a Collaborative Platform

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ABSTRACT

Existing standards in capturing processes concentrate on client tools. Furthermore, semantic information are often available that cannot be captured in a structured way with the proposed standard formats. In addition, processes are usually used and maintained by multiple persons. Therefore, a collaborative platform to discuss and share information about processes is valuable.

In order to address the challenge of maintaining and sharing knowledge about processes, we provide a tool to capture and annotate processes using Semantic MediaWiki as a collaborative platform. We demonstrate the practical applicability of our tool by presenting a demo available in the World Wide Web.

Keywords

Business Process Model and Notation; Semantic MediaWiki; Semantic Data Management

1. INTRODUCTION

The World Wide Web has significantly evolved during the past 25 years, developing from a collection of a few inter-linked static pages to a global ubiquitous platform for sharing, searching and browsing dynamic and customizable content, in a variety of different media formats. Future developments bring the promise of a higher level of automation, distributed search and the use of intelligent personal agents¹, which autonomously perform tasks on behalf of the user. The foundation for these trends is laid by the ever growing number of users and web sites, the increasing data volumes and the development of the employed technologies, including, for instance, semantics, Linked Data principles and Web APIs.

¹Spivack, Nova. Web 3.0: The Third Generation Web is Coming, 2007, <https://lifeboat.com/ex/web.3.0>, visited 8 January 2016

The great amount of users and the constantly availability and access of the World Wide Web provides the possibility to work together in a collaborative platform to accumulate and share knowledge. Hence, users can discuss knowledge, e.g. about processes, and edit them in order to design them more efficient.

Processes are a set of tasks that are performed in a logical order. In order to use process information in multiple domains (e.g. clinical pathways in health-care or business processes) but also to make a step towards the support of autonomously performing of tasks in the web, we have to ensure to capture these processes in a comprehensible way and annotate them with meta-information.

At the same time processes are usually used and maintained by multiple persons. Therefore, we concentrate on providing a solution to capture and annotate processes by using a collaborative platform.

To this end, we offer a tool to capture Business Process Model and Notation (BPMN) processes and enrich them with meta-information on a collaborative platform so that multiple users can maintain and discuss processes. In particular, we focus on three main aspects 1) Create, Import and Export BPMN processes – ensuring proposed standard formats for a facilitated communication with other tools, 2) Editing BPMN processes – allowing to add, edit and delete BPMN process, 3) Annotating BPMN processes – enriching BPMN elements with meta-information.

2. MOTIVATION

There are already tools available that supports capturing BPMN processes like e.g. Signavio², Aris³ and BPMN Corner⁴. However, these are client tools that do not support the collaborative capturing of processes.

A collaborative design of processes allows a various number of users to share, discuss and refine processes in an enhanced way. In order to support this basic principle we need a common network structure so that users from different workstations can access and maintain the knowledge. Furthermore, we need a collaborative platform, which can be accessed by using the common network structure, allowing the user to enter and maintain the knowledge. The platform has to support a large number of users in order to ensure scalability. Further functionality of the collaborative plat-

²<http://www.signavio.com>, visited 8 January 2016

³<http://www.ariscommunity.com/aris-express/bpmn-2-free-process-modeling-tool>, visited 8 January 2016

⁴<http://bpt.hpi.uni-potsdam.de/Public/BPMNCorner>, visited 8 January 2016

form like e.g. user rights management, embedding of files and proposing statistics is desirable.

3. SEMANTIC BPMN

We developed an extension for Semantic MediaWiki⁵ that supports the creation, importing, exporting and annotating of BPMN processes by using an intuitive graphical user interface. Semantic MediaWiki is a collaborative platform to capture and share knowledge in a structured way. Therefore, it is also suitable to capture process data. Furthermore, Semantic MediaWiki provides additional functionality like user rights management and uploading and linking files. Figure 1 shows a high-level architecture of the system.

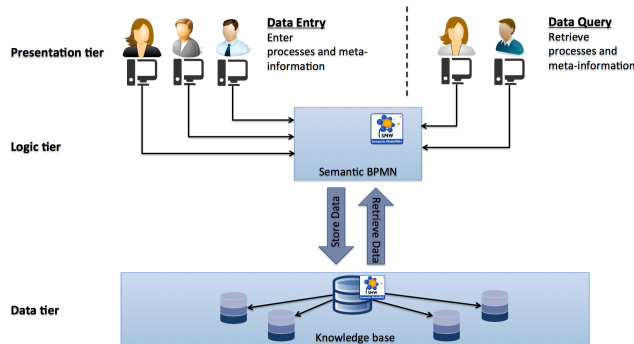


Figure 1: The infrastructure of the system is based on a three client architecture. Presentation tier – Graphical representation of the BPMN processes that supports users in creating, importing, exporting and updating BPMN processes and meta-information, Logic Tier – Business logic that converts the inputs in Semantic MediaWiki syntax and communicates with the MediaWiki API in order to store and receive information from the knowledge base, Data tier – Stored data in the Semantic MediaWiki

The extension, called Semantic BPMN, is based on bpmn.io⁶, which is a JavaScript renderer that allows to model BPMN processes and checks the syntax. It is part of Camunda BPM⁷, which is an open source platform for workflows. This JavaScript serves as user interface to model BPMN processes. We extended bpmn.io with further functionality in order to manipulate the wiki pages of the elements by using the MediaWiki API. Each BPMN element (nodes and edges) is represented by its own wiki page that stores all information about the element in a structured way. Each manipulation of the BPMN process in the graphical user interface leads to a communication with the MediaWiki API in order to create, update or delete the wiki page of the elements.

However, changing the content of the wiki page (e.g. the position or size of an element) effects the graphical representation of the BPMN process as well. Thus the communication works in both directions.

The formats for importing and exporting follows proposed standards. Thus, the BPMN process can be exported in

⁵<http://semantic-mediawiki.org>, visited 8 January 2016

⁶<http://bpmn.io>, visited 8 January 2016

⁷<https://camunda.org>, visited 8 January 2016

BPMN 2.0 XML format, as well as in SVG format, which is an image format. The tool requests BPMN 2.0 XML files in order to import BPMN processes.

Additionally, we use Semantic Forms⁸ to facilitate the input of meta-information. Users can create individual forms in order to enter meta-information about BPMN elements in a simplified way. Each element of the BPMN process can thus be annotated by a simple selection and click on a form. However, entering the information directly on the wiki page is possible as well.

Semantic MediaWiki allows to export all information in Resource Description Framework (RDF)⁹. Therefore, advantage of using Semantic MediaWiki as platform is to provide the possibility to export the captured and annotated processes in a structured way to a large number of people. The information, stored in this format, can easily be processed and queried.

We embedded the extension in a Semantic MediaWiki for demo purposes.

<http://aifb-ls3-vm2.aifb.kit.edu/DevelopersDay>

Additional to the demo, documentation on how the extension is used can be found on this site. Please use the following login:

Username: Demo

Password: developersday2016

4. CONCLUSION

We showed an extension to Semantic MediaWiki that allows to capture and annotate BPMN processes. The graphical user interface allows users to easily create, import, export and manipulate BPMN processes and enrich the elements with meta-information. The used formats for importing and exporting BPMN processes follow proposed standards. The input of meta-information is facilitated by using Semantic Forms.

Using a collaborative platform in order to maintain BPMN process and share knowledge about them is an innovative approach. The World Wide Web serves as a scalable network to allow the communication between people. Semantic MediaWiki serves as the collaborative platform to structure the knowledge about BPMN processes. We use existing standards and software to enable this innovative approach.

Captured processes and meta-information about these processes are made available to a large number of people by using Semantic MediaWiki as collaborative platform in combination with the World Wide Web. The information is available in a structured format and can easily be adapted. Therefore, a large number of people can use and benefit from these information. Following standards allow to reuse already modeled BPMN processes.

Data security policies can be ensured by using functionalities offered by Semantic MediaWiki. User rights management allows to restrict information to a limited number of users. This makes the preservation from unauthorized access possible.

⁸https://www.mediawiki.org/wiki/Extension:Semantic_Forms, visited 8 January 2016

⁹<http://www.w3.org/RDF>, visited 8 January 2016