BPMN Modeler for Confluence

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Abstract

The BPMN Modeler for Confluence is a lightweight extension for the Enterprise Wiki System Atlassian Confluence®. With the BPMN Modeler it is possible to carry out methodically profound process management directly within Confluence. Thereby processes reside directly integrated and easily available within the pool of documents required for BPM initiatives. This contributes to decrease information asymmetries between the roles involved and to the principles of the Social BPM paradigm with a mixed architecture of shared spaces and workflow automation architecture.

Keywords

BPMN, DMN, Knowledge Management, Process Automation.

1. Introduction

BPM initiatives and software architectures built around BPMN engines are essentially investments in flexibility. Their potential is best realized, when the approach is applied throughout an entire organization and when models and daily business remain aligned consistently.

The BPMN Modeler for Confluence allows to edit, display and curate BPMN models along with DMN decision tables using a second, similar plugin. It democratizes access to process modelling methods, relevant contextual knowledge, and process meta data especially in larger institutions.

It addresses the challenges of the Social BPM paradigm [1, 2] and the observation that current tools do not sufficiently support involvement and collaborative efforts [3]. This problem is addressed with a wiki architecture of participation and trust in the wisdom of the entire community to drive the BPM cycle while maintaining consistency and adherence to modelling best practices as proposed by Dengler et al. [4].

The goal of this paper is to invite researchers to consider the tool for research purposes, investigate participatory process modelling and its effects and broaden their perspective on BPMN models to include their *ecosystem* of documentation and links as a meaningful level of analysis for future empirical studies.

2. Main Characteristics and Innovations

The BPMN Modeler for Confluence is a web-based, fully BPMN-v2.0 compliant, lightweight modelling tool. Following the evaluation criteria by Yan et al. [5], it provides a shared repository of models as part of a set of Confluence pages and uses XML as the file format for storage and export. The modeler is offered under a commercial license, but both a free tier and an academic license are available. The focus of the tool is on the creation, maintenance, and contextualization of process models within an Enterprise Wiki, and thus no advanced auto-layouting, simulation or monitoring features are included.

Provided within a Wiki, the BPMN Modeler for Confluence embodies the design principles of Social BPM and can play an important part in self-organized, bottom-up process modeling endeavors. As such, it may help with combating the problems of *model-reality divergence* and *lost innovation* [1, 2] that

Proceedings of BPM2022 – Demos and Resources, 09-2022, Münster, Germany
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more traditional, top-down modeling approaches carried out by a small number of experts with exclusive access to models and modeling tools often exhibit. Recent research underlines the limiting role of information power relations between centrally defined processes and the daily business on the shop floor and the value of communication flowing against this hierarchical slope in industry processes [6, 9]. Hence, while the tool can be used by all members of an organization, certain roles and groups might profit from it more specifically:

1. *Process owners*, analysts and consultants actively involved in process design, improvement, and documentation

2. *Software developers* and software operations teams that enrich BPMN models with technical details to create executable artifacts for BPM engines, or to let the overall process description including the relevant documents mature over time [4]

3. *Interdisciplinary teams* using them as reference material or to perform audits across processes and their documentation, e.g., in the context of data protection regulation or IT-security activities

In terms of the BPM life cycle, the modeler can support a wide range of different activities starting with the analysis and design of business processes, over the creation of executable model artifacts, to the ex-post evaluation and improvement of implemented process models based on their performance figures [7]. Even after their decommissioning, models may still hold value as reference material that is accessed from other Wiki pages.

Furthermore, while many BPM and process automation endeavors employ top-down hierarchical decomposition to depict the same, interlinked process models with varying levels of detail and for various purposes (e.g., analysis vs. execution), it often becomes difficult to maintain the integrity between the business and technical perspectives of process models on an operational level [8]. While in principle conceptual models can be refined as a single entity, that becomes executable in a BPM engine, in practice it is not trivial to live up to this ideal. Moreover, decentralized process innovations and process workarounds are often an underutilized resource that could provide resilience and adaptability for organizations that recognize this value [2], [9]. Based on these observations, the BPMN Modeler for Confluence proposes the following innovations to address these challenges:

Confluence integration: Generally speaking, making conceptual models useful or even executable, e.g., within the Camunda platform, may require references to numerous additional documents such as user interface documentation for user task forms or descriptions of data models and validation rules. Furthermore, it is highly beneficial to maintain and evolve meta data such as governance information about process ownership or data protection risk assessments in parallel with the process models themselves. These challenges can all be addressed by directly embedding a process modelling tool into a knowledge management system such as Confluence and by providing the necessary means to interlink processes, decisions, and any other arbitrary content. This Wiki-integration of the BPMN Modeler for Confluence is a unique selling proposition as proposed in the literature [1, 2, 4, 9], but not available with other commercial tools. While *Cawemo*, the Camunda Web Modeler, has similar goals,[2] it is meant to achieve them within the Camunda ecosystem and thereby does not allow for an integration with the richness of process meta data that can be found in an Enterprise Wiki.

Versioning and version comparison: The BPMN Modeler for Confluence integrates with and extends the versioning mechanism of Confluence. Each new diagram version is saved as a page attachment to the Confluence page. It is possible to return to older versions, mark versions as milestones by giving them a label, and add changelog comments to model versions when saving. To improve traceability, the modeler has a built-in model comparison view. This view displays changes between two diagram versions in visual form and uses color to distinguish between different types of changes,

[2] https://docs.camunda.org/cawemo/1.9/ (last accessed on 2022-07-19): "Cawemo is the specification platform of the Camunda Platform 7 stack. Its main purpose is to enable all stakeholders to model and collaborate on BPMN and DMN diagrams and related files."

such as layout, elements added/removed, or attributes changed. The comparison is constructed from the technical IDs and position information contained in the underlying XML file.

Git integration: Early BPM activities emphasize ease of use and accessibility of models for a large set of potential contributors of process knowledge. At some point, a software development team pushes a technically advanced version of the process model to a version control system (VCS) along with implementation code coupled to the BPMN model. Here, the BPM learning cycle needs to be protected from developing loose ends: The BPM Modeler for Confluence maintains an integrated view and enables all stakeholders to make changes to the latest model and keeps track of changes in Git as well as on the wiki page. This level of integration and the continuous accessibility of technical models for non-technical users is a unique feature and specifically addresses a lack of tooling illustrated in the literature [8].

Process Networks: This view in the application sheds light on the use and re-use of (sub-) processes and DMN models. It shows all links created between these entities in a central place and thereby allows process engineers to either analyze the current degree of re-use or perform an impact analysis. This is especially useful when assumptions or data models of re-used components need to change. To make informed changes to information systems a complete repository of processes and their interdependencies is mandatory. This is strongly encouraged by the easy to access wiki culture in most Confluence instances, compared with single purpose process modeling tools. This level of transparency on multiple models and the accompanying meta information is currently unique and not provided by other tools.

Diagram Validation: To support establishing best practices, the BPMN Modeler for Confluence provides just-in-time validation of the created models. When diagram validation is activated, the process model is continuously checked for certain quality criteria while editing. Opportunities for improvement are then directly displayed on the respective process element. The validation rules can be configured for each *space* within the Confluence instance by choosing between the warning levels *error*, *warning*, and *off* per rule. This feature is commonly found in process modeling tools and represents a rather new addition to the BPMN Modeler for Confluence. It is considered to become more important with an increasing number of people and roles involved in Social BPM initiatives. Consequently, the capabilities of the validation feature will be expanded in the future to empower BPM initiatives based on collective ownership.

3. Lessons Learned

The BPMN Modeler for Confluence can be considered mature. It was developed with the extensive experience gained by viadee consultants through numerous BPM projects. The decision to create the modeler as a plugin to an Enterprise Wiki was made so that it can be offered to its users in a software system that they use daily, and this decision still holds today. The tool is currently in use at approximately 2,000 companies, of which 1,500 installations correspond to the free version of the modeler that can be used without any cost, and 500 installations to the paid Enterprise version.

The customer base of the modeler includes academic institutions, public administrations, and private enterprises such as banks and insurances. From the feedback of both groups some key lessons are derived:

First, to onboard potential users onto the BPMN Modeler for Confluence and to avoid vendor lock-in, it is important that any existing modeling artifacts can be used without too much effort. Therefore, *interoperability* with other tools has been a cornerstone during its development. To assess this, the modeler has been entered into the OMG interoperability test for model interchange since 2020, and its results have been convincing so far [11].

Second, a key lesson learned through projects using the BPMN Modeler for Confluence is that creating a meaningful *hierarchical decomposition* of (sub-)processes while maintaining their interrelationships remains a challenging task, especially for larger model repositories that are used in multiple phases of the BPM life cycle. We follow the recommendation of [10] to provide versatile tool

support for proper model decomposition and aim to support this task through features such as the process network visualization described in Chapter 2.

Lastly, the idea of *democratizing access* to process models and decision diagrams by providing them within the context of an Enterprise Wiki regularly creates positive feedback, thereby supporting the underlying ideas of Social BPM. In particular, the possibility for egalitarian involvement in process modeling leads to a stronger perception of collective process ownership and increased motivation, even if this option is not always exercised. Users especially value being able to get up-to-date information on process design activities and to provide their feedback. As a result, we see more collective behaviors emerge and the concerns and innovations of more individuals find their way into business processes.

Future development will add features for model element re-use and process repository features.

4. Examples and Resources

A demo version is available at https://atlassian-plugins-demo.bpm.viadee.cloud/. The showcase environment there includes the process documentation of a fictional insurance provider. The process documentation is created in a hierarchy of processes and interlinked with process monitoring resources, process meta data and business process models as seen below in Figure 1.

The colored icons above four activity symbols are signals, that show the existence of all kinds of references. For example, this could be the documentation required for a particular user task on a separate Confluence page.

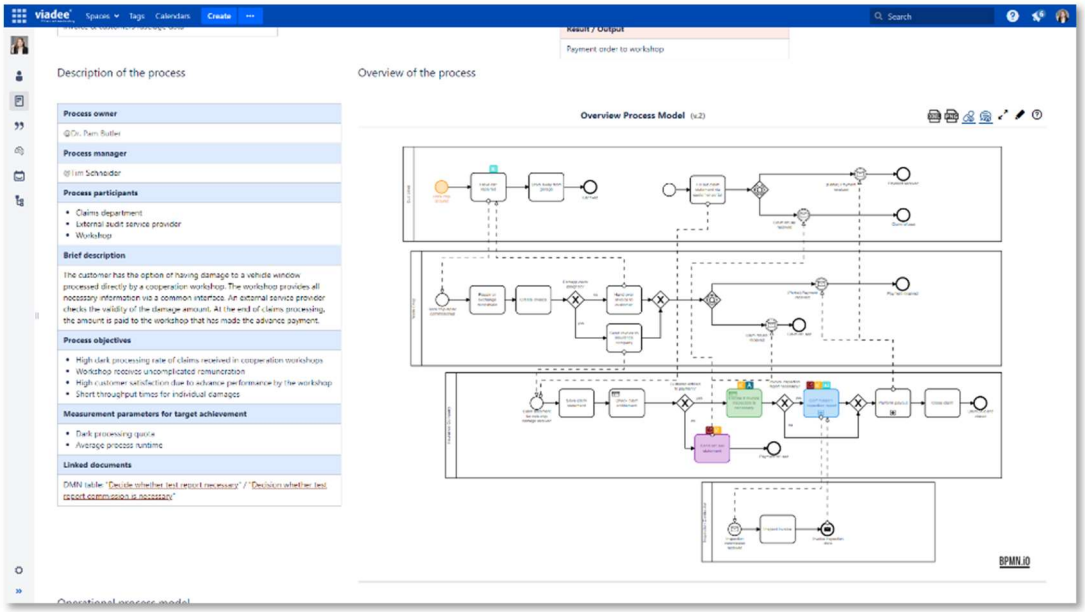

Figure 1: An editable, cross referenced process model embedded in a Confluence knowledge base

- The video available at https://www.youtube.com/watch?v=wkw9PCiHt4g provides a step-by-step introduction.
- The video available at https://www.youtube.com/watch?v=DjIc13t25Uw shows one of the core features of the tool: the integration of different types of documentation into a BPMN model.

Setting up the application (in an existing Confluence instance – this is not required for the demo) begins with downloading and installing the BPMN Modeler from the Atlassian Marketplace as a platform administrator.

1. Once installed, the tool is available for all Confluence users. A new BPMN diagram can be inserted anywhere while editing a Confluence page. This is done by adding a so-called *macro* to the page – the common pattern to add additional content to pages in Confluence.

This allows both top-down layouts with high-level processes that serve to navigate a hierarchical knowledge base containing process relevant knowledge as well as a bottom-up layout where a process model is spontaneously considered useful e. g. while drafting requirements for a software system on a Confluence page.

2. After saving the page including the macro, an initial diagram with only one start event is displayed in the BPMN Modeler.
3. Users can open the editing functionality of the app directly from the page view, and process model elements can be added via drag and drop from a palette.
4. All additional features (version control, model comparison, element alignment, links to other content etc.) are accessible in an intuitive navbar and shortcut toolbar.

Please note, that most models are write protected for anonymous users in the demo environment. Anonymous users can, however, create new models and wiki pages and collaborate on their own models.

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