

Celonis Process Repository: A Bridge between Business Process Management and Process Mining

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Abstract. Process Mining disrupted Business Process Management (BPM) in various ways from process modeling to analysis, redesigning, implementing, and monitoring of processes. One of the big challenges of traditional ways to identify and discover process models are the very time consuming and costly procedures due to lengthy interviews and workshops that result in a conceptual model and not representing the real executed process (As-Is process). Process Repository is a recently developed toolset by Celonis that brings BPM and Process Mining closer together by providing process documentation capabilities and fully integrating them with Process Mining applications.

Keywords: Process Repository, Process Documentation, Process Mining, BPM

1 Introduction

Process Mining is a technology as well as a research discipline that connects the data world and process world to support fact-driven process management [1]. The main research efforts in Process Mining focus on the development of new discovery algorithms, conformance checking, analytics features [2], and deriving process actions and recommendations from data [3]. While research connects Business Process Management (BPM) and Process Mining [4,5,6,7], there is still a gap between both disciplines when it comes to process mining and BPM tools and there only a few tool-based approaches to combine both disciplines [8]. Integrated process documentation capabilities are one of the important elements to bridge the gap between BPM and Process Mining.

We conducted nine semi-structured interviews with customers and partners of Celonis to better understand the pain points regarding the integration of BPM and Process Mining. One of the main pain points that the interviewees mentioned is the energy and time needed for training and onboarding of new joiners on how processes are performed and that the information sometimes gets lost in different parts of the organization. Similarly, the interviewees mentioned a lack of a single source of truth for maintaining process-related information including organizational process architecture with its process flows and attributes, such as process owners and supporting documents. Additionally, proper integration between process modeling and Process Mining are often missing. This hinders the usage of process models on the Process Mining side, e.g., for

compliance use cases. It also inhibits the avoidance of time-consuming interviews and workshops for process modeling and taking advantage of mining capabilities.

To overcome process documentation challenges and take one step ahead to fill the gap between BPM and Process Mining, we present a new capability in the Celonis Intelligent Business Cloud: The Process Repository. Process Repository connects the As-Is world with the To-Be world by making process documentation easy and accessible for Process Mining users and Process Managers who need both functionalities. The repository aims at creating an integrated and centralized environment for documenting and maintaining business processes, analyzing their process performance and conformance, as well as providing the possibility for integration with BPM tools.

The remainder is structured as follows. Section 2 describes the overview of the new features and their benefits. Section 3 demonstrates the tool, and Section 4 concludes.^{1,2}

2 Innovations and Main Characteristics

Process Repository is a product service that is inspired by a series of interviews among nine Celonis customers. The toolset has then been developed in a co-innovation project between Celonis and one customer, which is a +50,000-employee sized organization in the Chemical industry. After development, the product was tested by multiple organizations in the manufacturing & production and healthcare industry.

The features of Process Repository allow creating a process architecture by defining process categories, identifying names and descriptions of each category, and identifying process attributes, such as the process owner, necessary links, attachments of supporting documents (e.g., guidelines, policies, etc.). It enables tracking of all applied changes on different parts of process categories. For instance, it is shown in which time different users made changes in different sections, such as attributes and process models. It also enables easy communication among employees through commenting. Users can upload their designed process models in the BPMN 2.0 format or process flow images. Processes can also be modelled out of the box or adjusted using a process modeler. It is possible to monitor all versions of each process and track the changes that happened over time. Furthermore, each process model can be specified by adding tag groups for instance for different plants or business sections.

The benefits of Process Repository can be summarized into three categories: Integration & Consistency, Collaboration, and Compliance & Standardization.

Integration & Consistency. Process Repository provides seamless integration and consistency from two perspectives. First, it provides integration with Process Mining (Celonis Process Analytics) to send and receive process models mined from the actual event data. By providing public APIs, it also enables all BPM tools to integrate their process models and use them directly in Celonis Intelligent Business Cloud. Second, it improves consistency by gathering all process-related information in one place that can be used for instance for training purposes.

¹ Step-by-step guide and documentation: <https://bit.ly/393hNQa>

² Video tutorial: <https://bit.ly/2ZtXqs8>

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Collaboration. Process Repository increases collaboration by enabling all employees with different responsibilities to view and follow processes. Users can communicate with each other and will always be updated about process changes.

Compliance & Standardization. Process Repository enables process modeling to define target process models that can be used in Process Mining, which supports Conformance Checking. Documents such as internal audit reports can be stored for each process category for more transparency.

3 Tool Demonstration

Process Repository consists of four main sections including Home, Categories, Attributes, and Process Models. The Home Screen shows updates on all categories and allows you to directly select a specific category level. Categories section enables the creation of a process architecture to represent how organizational processes are classified at different category levels (defining process structure). The Attributes (Fig. 1) and Process Models sections (Fig. 2) allow to maintain the process related information.

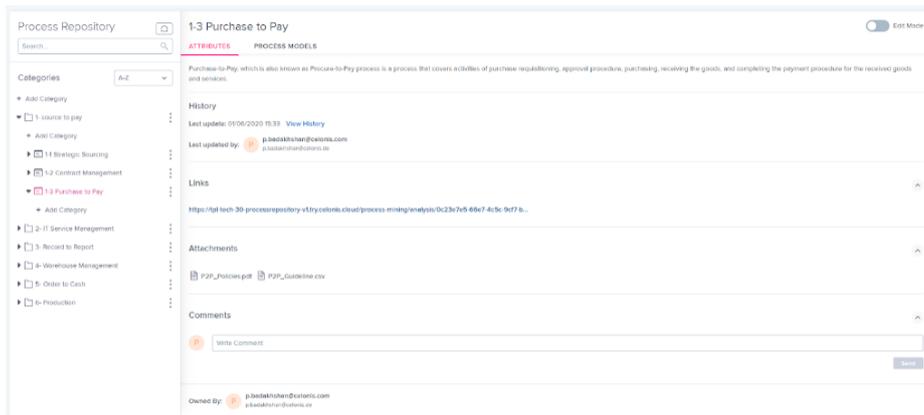


Fig. 1. Attributes section

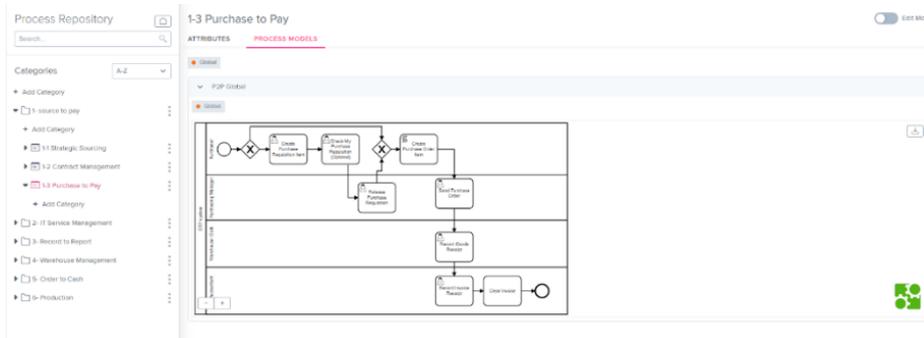


Fig. 2. Process Models section

As mentioned in the introduction, one of the main benefits of Process Mining is to avoid long interviews for designing conceptual process models. However, documentation of the discovered models remains a challenge of tools, as Process Mining and BPM require closer integration. Process Repository enables documentation of process models from Process Analytics, for instance from the Celonis Variant Explorer or within the Conformance Checker.

After mining the process in the Celonis Conformance Checker, the process model can be saved in the Process Repository by identifying the desired category level and process model. Having all process models stored in the same platform as the Process Mining application, it is now easy to retrieve process models from the Process Repository as the capability is integrated, e.g., in the Conformance Checker and compare the model against the discovered process to detect process violation (Fig. 3).

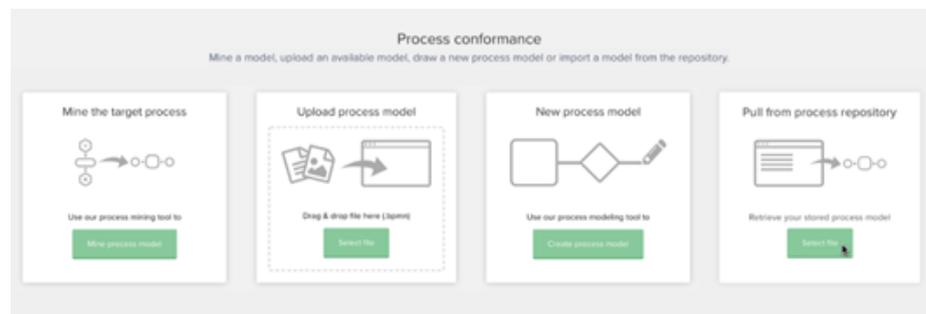


Fig. 3. Options to define target (To-Be) models for Conformance Checking

In the following, we shortly explain three use cases of Process Repository in the Celonis Intelligent Business Cloud.

Use Case 1. Users claimed that they have their process models and their assets, such as guidelines and training material, in unstructured folders and the process architecture is not clear, representative, and accessible. Therefore, various challenges occur, such as time-consuming onboarding of new joiners and updates regarding changes of each process category. Process Repository capabilities allow maintaining all materials and process-related information in one integrated environment with easy access.

Use Case 2. Users claimed that they need to integrate their Process Mining technology with their BPM tools to bring the designed process models to the process mining environment, reuse them any time needed for conformance checking, and avoid manual uploads.

Use Case 3. Users claimed that they do not want to spend time on out-of-the-box process modeling and rather take the advantage of mining capabilities and document the models as the base for defining To-Be models. For this use case, users start from the Process Analytics application in Celonis. They either check the Variant Explorer directly, select the variants, export to BPMN 2.0, and then save the model in the Repository. In the Conformance Checker in the Process Analytics, where users mine the

target process, they can select the desired variants, check the section edit process model, directly save the model in the repository by defining the category level and process model level. If the user has specific permissions, they can overwrite the existing model (keeping the versions) or create a new process model.

4 Conclusion

Process Repository is a service that is developed in a joint project of Celonis and its customers, it serves the goal of improving the integration between BPM and Process Mining. The features are fully available in the Celonis Intelligent Business Cloud and actively used by Celonis customers. For example, in one organization, Process Repository is currently rolled out among 2000 employees for Process Documentation, Conformance Checking, onboarding new joiners, and better organizational collaboration for process related topics.

A detailed step-by-step guide and description of Process Repository is available in a separate file to the 18th International Conference on Business Process Management (BPM 2020). Educators, researchers and students can use Process Repository for free via the academic license of the Celonis Intelligent Business Cloud.³

5 References

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³ <https://www.celonis.com/academic-signup>