Navigation Maps for Business Process Landscapes[*]

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Abstract

For modern companies, digital transformation and continuous process improvement are crucial endeavors. One of the main challenges that organizations face in such initiatives is the facilitation of a common understanding of business processes and process landscapes. Hence, important requirements for process model landscapes are straightforward understandability and user-friendly navigability. Current solutions such as value chain diagrams and folder-based process hierarchies are supporting these requirements to different extents, but they have some limitation regarding design, flexibility, and complexity. This demonstration paper introduces Process Navigation Maps, which address these limitations by providing intuitive design capabilities to facilitate the understandability of process landscapes and fasten the navigation of process content, while also supporting the integration of process models and process performance data.

Keywords

Business Process Models, Process Landscapes, Process Architectures, Navigation Maps

1. Introduction

Recent decades have seen an increased uptake of digital technologies and, accordingly, substantial investments in digital transformation. This trend has been further accelerated by the covid-19 pandemic, which required a particularly high degree of agility and digital-first operations from many organizations. The resulting efforts around digital transformation and continuous improvement highlight the importance of process management, and of process landscape modeling as a means to facilitate a joint understanding of business processes and their interdependencies across various stakeholder groups. Such an understanding is considered to be vital for successful digital transformation and overall continuous process improvement [1].

One way to facilitate a common understanding of business processes is the creation of appealing and easy-to-understand process visualizations. To visualize and structure business processes, organizations often construct a process (model) landscape that specifies the relation between different business processes and other major interdependencies (such as organizational units and IT systems), and portraits a structured overview of an organization's process architecture [2].

A process landscape overview creates the basis for process understanding that is required for process discovery[1], thus facilitating communication among process professionals and other process stakeholders within an organization [3].

Creating, sharing, and understanding complex process landscapes is time-consuming, considering that large organizations may have thousands of process models and tens of thousands of business object models that are referenced by the processes. Different ways of visualizing process landscapes exist:

1. A common approach to visualizing a process landscapes or parts thereof as "high-level" business processes is the creation of process diagrams in a language such as Business Process Model & Notation (BPMN) [4].
2. Process folder structures within process repositories allow process professionals to create business process hierarchies[2].
3. Value chain diagrams indicate an organization's strategies through a set of interconnected models and activities [5], and often link to business processes that form the operational backbone of organizational strategy.

Although the aforementioned approaches support process understanding to different extents, they are subject to a range of limitations regarding design, flexibility, and complexity. For instance, BPMN models excel at representing technical aspects of process models but they are not meant to visualize the overall landscape and process architecture; in particular, they lack visual appeal, as well as expressiveness when it comes to intuitive, informal visual modeling. Process folder-based hierarchies better support bringing structure to the repository of models. However, the mapping between different processes and the folders that contain them may not fully capture the logical grouping of processes and other models that is required by a specific view on a process landscape, which increases the complexity of process landscape understanding. This means the use of folder structure is not a scalable method to share the whole process repository within organizations. Lastly, value chain diagrams help create a high-level perspective on the process landscape. However, in complex landscapes that contain multiple value chains, visualization remains a challenge, considering the limited expressiveness of traditional value chain diagrams [3]. By focusing on specific process details, the broader strategic view of the processes can get lost and in large value chain diagrams, it is hard to discover granular details of processes, like sub-process, performance indicators, risks, application systems, and data objects. Also, the three approaches fail to treat data about business processes and process landscapes as a first-class citizen.

To overcome the mentioned challenges and enhance the understanding of processes and process landscapes, we introduce *Process Navigation Maps* (PNMs), a new capability within a commercial process modeling and process intelligence software offering that enables process modelers to present an overarching view of all processes in an attractive way, with semantic

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[1]Here, we refer to process discovery as a conceptual business activity and not to the technical "discovery" of process models from event logs that is one of the key activities in process mining.

[2]See:
https://documentation.signavio.com/suite/en-us/Content/process-manager/userguide/use-folders-and-diagrams.htm, *accessed at 15-06-22.*

links, data augmentation, and without any formal restrictions on the graphical look and feel (i.e., supporting configuration in alignment with an organization's corporate identity).

In the remainder of this demonstration paper, we first explain the main characteristics of PNMs along with its innovation potential and benefits for process professionals. We then briefly demonstrate the capability using two examples, before we conclude with a future outlook.

2. Process Navigation Maps: Ideation and Conceptual Introduction

PNMs can be seen as a new generation of value chains with a highly customizable notation for creating high-level, conceptual diagrams that provide entry points into business process landscapes and increase process transparency. More specifically, PNMs provide an informal notation that allows for the grouping of business processes models, as well as of other models, *i.e.*, of business objects and business decisions. PNMs are more expressive and visually more appealing than value chain diagrams. From a semantics perspective, they form logical groups and facilitate reporting, *e.g.*, for auto-generating end-to-end process-specific process documentation handbooks. In addition, PNMs facilitate the integration of data and models, by supporting the embedding of data analysis widgets that are provided by process mining (or, more broadly: *process intelligence*) software.

PNMs are the the result of joint user-vendor ideation based on customer interviews and were ranked highly as a desirable feature in stakeholder voting sessions by in-house process consultants, external process professionals, and process management experts. The capability was then developed as part of a design partner program by a process management software vendor and a number of customers and consulting partners in order to continuously test and validate the prototypes. After the development of the minimum viable product, the capability was tested in a product beta stage. PMNs have been activated as a beta feature for more than 500 corporate customers based on their explicit individual requests; more than 20,000 PMNs have been created on software-as-as-service production systems during the beta phase and pre-beta phases.

3. Demonstration

Users of the process management software offering can create new Process Navigation Maps through the system's modeling and collaboration user interface views. PNMs include a relatively basic set of diagram elements that are heavily customizable and configurable to reflect an organization's corporate identity. In particular, custom vector graphics, as commonly used in corporate identify graphics kits, can be uploaded to create individualized shape visuals. In addition, shape attributes can be configured that may, for example, feature textual descriptions, numeric values or Web links, as well as references to diagrams, business objects or data analytics widgets.

PNMs can be applied to a variety of use cases such as the visualization of process landscapes, the visualization of organizational units with links to processes, and the facilitation of process content navigability. In the following, we shortly explain the latter use case.
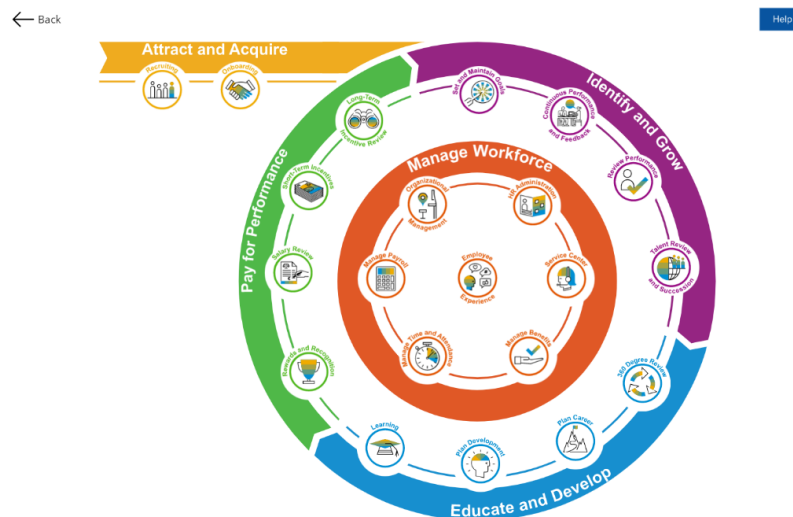
Figure 1: Process Navigation Map for the *Attract-to-Retire* end-to-end process.

To facilitate digital transformation and process improvement initiatives, an enterprise software vendor strives to provide a harmonized *process accelerator layer* across all solutions they provide. The ultimate goal is to accelerate time-to-value when customers run initiatives and to mitigate risks caused by a lack of process understanding. To achieve this, different process content like business process models, metrics, benchmarks, and conceptual best practices are jointly provided in a shared repository that many customers as well as the vendor have access to[3].

A major challenge in the context of the *process accelerator layer* repository is to present content for various personas, use cases and with different purposes in an easy to access and consumable way. In Figure 1 the *Attract-to-Retire* end-to-end process navigation is displayed. This PNM visualizes how one particular software product can be leveraged to execute the process and serves as an entry point to access more detailed content. Leveraging the PNM in Figure 1, the user gets an easy to consume and visually appealing overview of the overall process by setting the different process steps and entry points into perspective. To deep-dive into more detailed process models, the user can click on an element in the PNM, which opens the process model in a read-only view, from which navigation to other diagrams or business objects (or back to the PNM) is possible. If editing permissions exist, users can switch between read-only and editing views at any navigation step.

An example of a data-augmented PNM is displayed in Figure 2. Here, users cannot only navigate to detailed process diagrams and business object definitions, but also to analyses of business process behavior and performance: *i.e.*, the PNM serves as an integrator of data-driven and model-based perspectives.

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[3]An overview of the corresponding productization initiative is available at https://www.signavio.com/de/one-process-acceleration-layer/, *accessed at 20-07-22*. A product introduction video to Process Navigation Maps is available at https://video.signavio.com/watch/xQm2KcgnaSTanugf6Yb57T, *accessed at 20-07-22*.
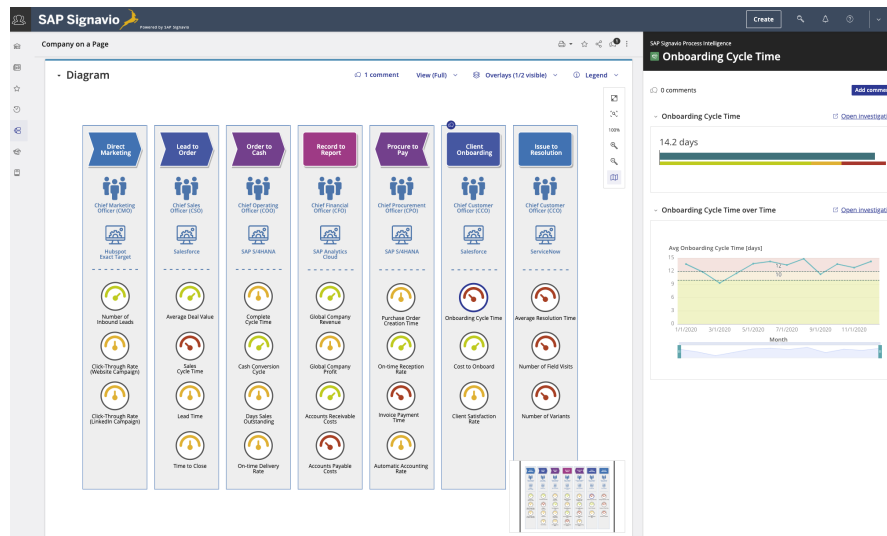
Figure 2: A data-augmented Process Navigation Map.

4. Conclusion

We have introduced Process Navigation Maps, which provide an intuitive notation for high-level perspectives on process landscapes, integrating models and data. We speculate that the focus of PNMs on a visually appealing summary of the most important processes, objects, and performance indicators of process landscape (or a part thereof) are in many scenarios and to many stakeholders more informative than technically intricate, control flow-oriented business process diagrams. This hypothesis may be a promising subject of future studies.

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