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Innovative Process Controlling

Berliner Wasserbetriebe

Case Study

Utilities

Introduction.

Berliner Wasserbetriebe (BWB) has been responsible for water supply and wastewater disposal in Berlin and parts of Brandenburg for more than 160 years. In addition, they supply the capital with electricity through their subsidiary, Berliner Stadtwerke. They are responsible for more than 18,000 kilometers of network facilities, 7,900 kilometers of the drinking water network, 10,900 kilometers of sewer and ADL network.

Berlin is growing steadily - between 2007 and 2016 the population grew by almost 200,000 people - and Berliner Wasserbetriebe has to adapt quickly to these changes. Therefore, the so-called “cross-media network construction” (MüN) is a major topic. In Berlin, the current supply networks of the three main media are sewer, drinking water pipes (TWL) and wastewater pressure pipes (ADL). Those have to be regularly expanded or renewed. The entire process of cross-media network construction is distributed internally across various departments and responsibilities, including external stakeholders such as the construction companies. Berliner Wasserbetriebe was thus faced with the challenge of controlling and monitoring a complex and non-transparent process.

With the implementation of Appian Process Mining, BWB obtained comprehensive process transparency, identified important process characteristics, and key figures and thereby achieved innovative, need-oriented controlling. Together with the data scientists from Appian, BWB was able to establish data consistency across various systems and thus implement transparency across systems and departments. The new findings from the Process Mining analyses have given the BWB a profound understanding of their processes. In addition, the original Excel-based controlling could be replaced by automated, centralized controlling.

The goals of BWB: transparency, automation and optimization.

Process Mining was used to link the decentralized coordination of the MüN process against distributed responsibilities and system breaks. BWB is thus developing an integrated controlling system that enables cross-system and cross-departmental process monitoring. Berliner Wasserbetriebe uses a so-called “Process Engine” to automate digital processes. However, as a control and execution tool for certain sub-processes, it offers only limited insights into the entire process implementation.

Thus, the focus of the initial Process Mining project was on the first realization of holistic process transparency. For this purpose, process data from various IT systems was validated, visualized and analyzed in Appian Process Mining. As an innovative controlling tool, Appian also creates a basis for continuous monitoring and optimization of the entire MüN process.

Berliner Wasserbetriebe

Industry:
Utilities

Core business:
Water supply,
wastewater disposal

Headquarters:
Berlin, Germany

Website:
bwb.de

Number of employees:
4,382

Income:
€1,167 million

Investments in fixed assets:
€274 million

Process:
Cross-media network construction (MüN)

Process flows:
1,176 construction measures

IT systems:
Camunda, SAP, ASS, Gimba

Period:
2014 - 2018

Initial situation at Berliner Wasserbetriebe.

- **Lack of transparency.** Due to the various systems and departments involved, the entire, real process flow was not transparent and not documented in its entirety. This made it difficult to track the status of the planned network expansion.
- **Decentralized control.** In view of the various stakeholders and distributed responsibilities, decentralized controlling at departmental level was necessary.
- **IT architecture.** Process data from SAP, ASS and Camunda, the Process Engine, are stored in the data warehouse, the central database. SAP supplies the order data, ASS the construction and planning data and Camunda the execution data.
- **Manual creation of a KPI dashboard.** Before Appian Process Mining was applied, the relevant key figures were stored manually in Excel. This was very time-consuming, especially due to conflicting data sources, and took about 3 - 5 days per month. At the same time, the evaluations were error-prone, inflexible and limited, especially with regard to the presentation of Process Performance Indicators (PPIs). For example, measurement sections and process durations could not be mapped comprehensively.
- **No big data experience.** Prior to the project, the BWB did not have any experience with the preparation and analysis of large amounts of data.

Success cases of BWB and Appian Process Mining.

Maintaining an overview of the entire process and continuously improving it.

Continuously ensure better data quality with process mining.

Within the validation process, the data quality could be increased considerably and the basis for a continuous improvement cycle was created.

For data validation, the process data was extracted, integrated and transformed from the IT systems involved in the process - SAP, ASS and Camunda - from 2014 to 2018. This means that the process data from the various systems had to be converted into a uniform and error-free format. The unevenly distributed system data created unwanted gaps in the data set, which normally make process analysis difficult.

These gaps and other quality deficiencies were eliminated by Appians' data scientists together with the BWB process experts, thus creating a uniform, quality-checked data basis for the process.

The main focus of the project was therefore put on:

The development of an interdepartmental, centralized controlling system.

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The validation of data from different systems or departments.

Insight into the entire, real process.

With the visualization of the process data in Appian, the BWB gained insight into the entire process of cross-media network construction for the first time.

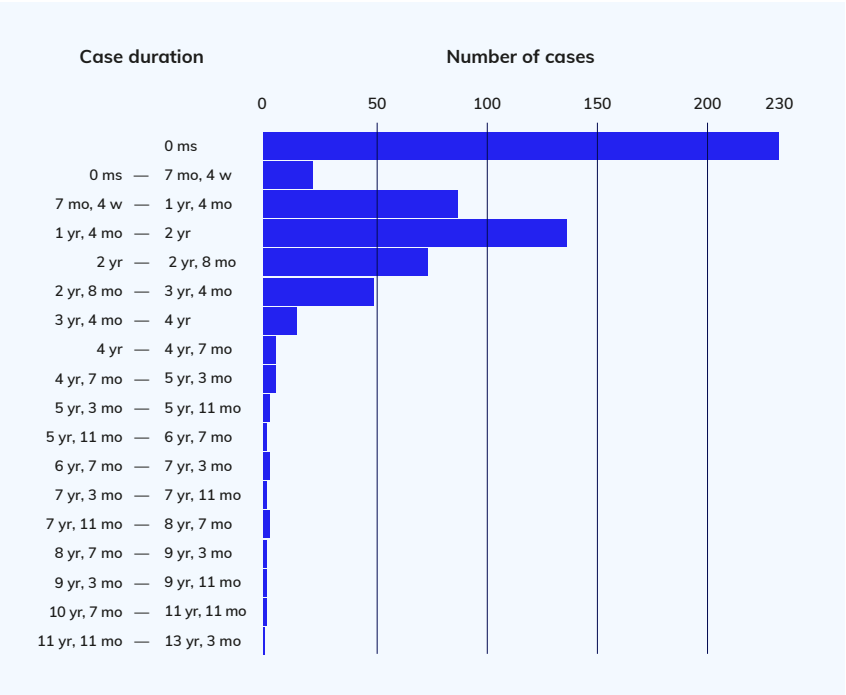
The visualization of the process data from a period of four years reveals very complex and varied process implementation. A total of 1,176 construction measures were carried out during this period, which is expressed in more than 500 different process variants.

On the basis of the actual process or discovered model, the BWB were able to perform further analyses, for example by specifically examining process sections or activities with common attributes. This enabled them to efficiently uncover undesired process developments, process loops, and bottlenecks.

Gain a holistic understanding of the process.

With the automated process analysis, BWB were able to analyze the process as a whole for the first time. This has given them a new, holistic understanding of the process. Using statistical information on process performance, the BWB were able to identify a wide variety of Process Performance Indicators (PPIs).

These findings form the basis for the derivation of targeted improvement measures. For example, inefficient process variants can be eliminated or resources can be distributed more efficiently.

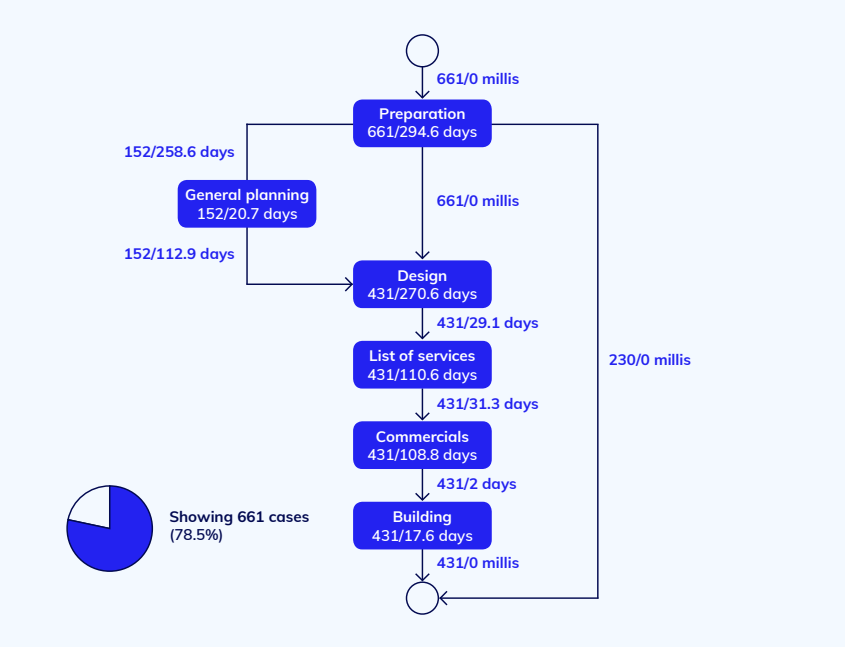


Among other things, the following questions were answered:

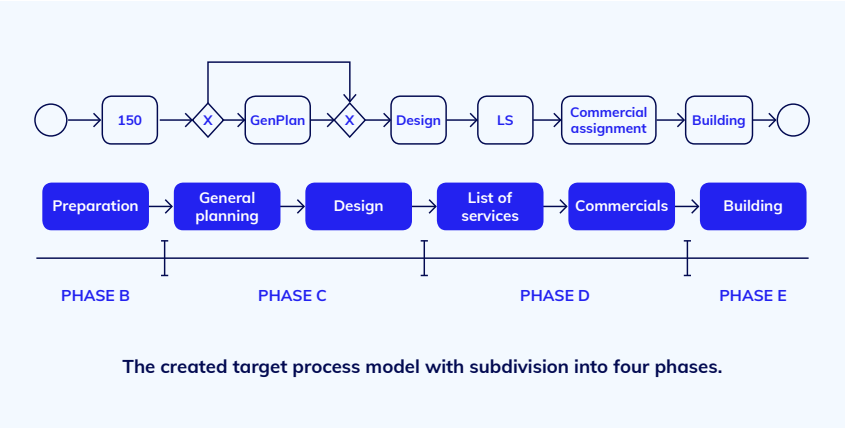
- How is the process performance in the individual departments?
- How are the throughput times distributed?
- Where do we lose the most time?
- How much delay occurs in the process and why are there delays in individual phases?

Set a new standard and perform conformance checks - within seconds.

Based on real process data, the BWB could set up a rule-conform target process in the shortest time. With this process model, all non-compliant process variants could be automatically identified.



The starting point were three identified main variants, which were implemented by 78.5 percent of the construction measures. Since the second main variant represents cancelled construction measures, the target model was created on the basis of the first and third main variants.



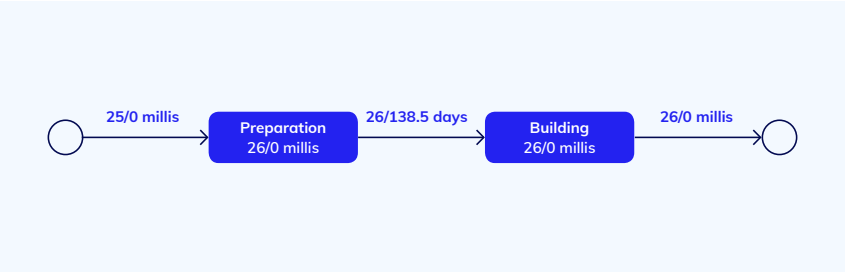
The created target process model with subdivision into four phases.

During conformance checking, the target process model was then compared with the actual process, i.e. the real process data. In the process, all process variants that did not correspond to the target and should be examined more closely, were automatically revealed. These include process variants that

Benefits:

- Increased data consistency across the various systems (Camunda, SAP, ASS, Gimba).
- Fast capacity building in Process Mining through know-how transfer.
- Enablement of an end-to-end perspective and insights into the real actual processes.
- Cross-departmental transparency with fast drill down to process key figures.
- Unification and standardization of controlling, the realization of crosssystem and cross-departmental monitoring.

contain duplicate work, skipped process activities or process loops. For example, the BWB identified 26 construction measures in which phases C and D were skipped completely.



For these construction measures, the planned network construction was implemented directly after the preparatory planning.

Automated, integrated and centralized: innovative controlling with Appian.

With the KPI and PPI dashboards in Appian, BWB can implement cross-system and cross-departmental controlling. The existing MüN cockpit was transferred to Appian and extended by relevant KPIs and PPIs (Process Performance Indicators). This enables the BWB to monitor the following aspects, among others:

- The statistical implementation of construction measures at cross-media level.
- The target compliant process implementation in the departments, phases and the entire process.
- The occurrence of critical deviations and risk factors Compliance with the SLAs.
- How many construction measures are in the defined phases B, C, D, and E.

The identified key figures also serve as future reference values, for example, to track process developments or to check the effectiveness of improvement measures. This enables BWBs to monitor the entire process in a data-based and automated manner and to implement continuous process improvement.

Conclusion.

Berliner Wasserbetriebe has achieved three decisive milestones with the initial process mining project: holistic process transparency, identification of important process characteristics and key figures, and implementation of innovative, needs-oriented controlling.

Key results:

- Development of an innovative, demand-oriented controlling system.
- Realization of cross-system process transparency.
- Identification of important process characteristics and key figures.

With the validation process of the data, gaps and inconsistencies could be eliminated, so that data consistency was established across various systems. This insight and knowledge helped the BWB to maintain data quality at a high level. High data quality ensures a high- quality Process Mining analysis.

The use of Appian Process Mining provided BWB with process transparency across systems and departments for the first time. This revealed a very complex and variant-rich actual process that could be examined down to the activity level of individual construction measures. The BWB have thus gained a profound understanding of the process and uncovered risk factors and optimization potentials.

The MüN cockpit was successfully transferred to Appian Process Mining and supplemented by process key figures measured for the first time. BWB has thereby implemented a cross-departmental, automated controlling system that can be flexibly combined with process analyses. As a holistic solution, Appian, therefore, offers the optimal basis for continuous process improvement.

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