

Agile product portfolio and process management for dynamic optimization

Process Evolution Cockpit

In the corporate context, agility describes the ability to take targeted action at an early stage by analyzing changes using predictive tools and creating feasible alternative courses of action.

This capability is more vital for machine and equipment manufacturers today than ever before. On the one hand, the growing demand for new product variants as well as for customized adaptations of series products results in increasing complexity and makes fast reactions more difficult. On the other hand, cross-company value chains must be mastered in order to ensure high quality and delivery reliability despite diverse dynamic influencing factors.

The goal of the project »MAP – Machine Learning for agile process management in machine and equipment manufacturing« is to develop an integrated agile product portfolio and process management system that enables the derivation and realization of simulation and process scenarios which can be implemented at short notice. Therefore, two use cases from industrial partners with different focuses are considered. For KSB SE & Co. KGaA, an integrated agile product portfolio and process management system is created that enables the derivation and realization of quickly executable simulation scenarios with the push of a button. This makes it possible to realize dynamic optimization of product and process variance

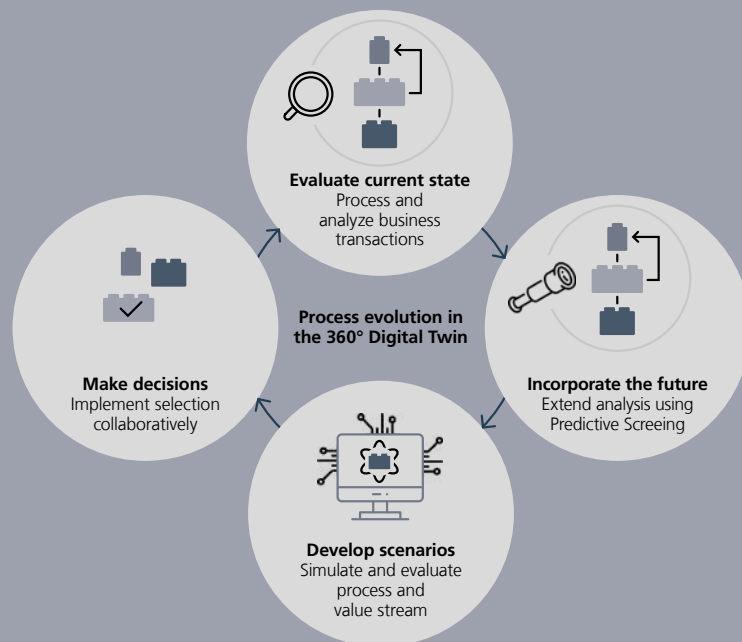
starting from the market launch of KSB products. The classic tools of variant management are enriched for the first time by process information and predictive methods.

Processing and continuous analysis of business transactions

For this purpose, all relevant criteria are mapped in a comprehensive data model, key figures are calculated and clearly presented in dashboards. In addition to technological, logistical and commercial criteria, process data is also included in order to provide additional interfaces for the agile optimization of the product portfolio.

Enhancement of analytics with predictive analytics and strategic foresight criteria

Predictive analytics approaches are used to create demand forecasts from historical data and enable automatic evaluation of the product portfolio. However, internal changes such as the strategic development of the company as well as external influences such as market trends and disruptive events (e.g. pandemic) cannot be extracted from the historical data. In order to take such influences into account and thus ensure the most accurate possible look into the future, the evaluations are supplemented with strategic foresight methods.



Agile product portfolio and process management for dynamic optimization in the KSB use case

Simulation and evaluation of process and value stream metrics for actions

With the help of machine learning, scenarios with optimized key metrics are suggested. These can be further refined by manually adjusting the parameters. The resulting alternative solutions can be compared on the basis of their influence on value stream and process key indicators.

Implementation of collaborative decisions in the product and process model

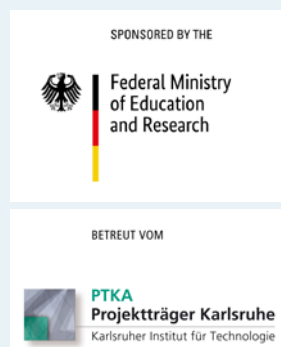
In an IT-supported, cross-functional work process, expert opinions can be supplemented and decision-making processes can be facilitated. The transfer of the decision into new product data models also takes place within the collaboration platform and using the data from the defined scenario.

Consortium

- Fraunhofer IPK: Head of consortium
- budatec GmbH: Application partner
- KSB SE & Co. KGaA: Application partner
- Soley GmbH: Technology partner

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