Replacing a Monolithic Application with Microservices
Implementing a Logistics Application for a Global Premium Automobile and Motorcycle Manufacturer

*smartShift and the BMW Group successfully designed & implemented **FAVOR Cockpit**, a microservice based logistics application, replacing an outdated landscape of legacy systems integrated with SAP. The solution based on Red Hat OpenShift is used to check material plausibility and correctness of freight forwarder's invoicing data.*

Background

To supply the large-scale production of vehicles with the required parts and components, carriers deliver thousands of truck loads per day to the warehouses and production lines. In addition, there are outgoing truck loads, as well as journeys between the plants. Based on that, thousands of carrier invoices come together every day.

Data for incoming or outgoing goods are loaded from various different BMW Group plant systems. In most cases, the carriers also provide freight data. A package calculator checks the load weight and volume for standard shipments. Supporting IT-Systems have been growing in complexity over the past 25 years and a need to replace the legacy platform has been identified.

smartShift offered a flexible, scalable replacement for the previous systems. BMW Group and smartShift successfully designed and implemented FAVOR Cockpit, a microservice based logistics application. The solution was designed to check material plausibility and correctness of freight forwarder's invoicing data, and, if appropriate, integrate data with BMW Group's SAP freight cost management system for invoicing.

Approach

BMW Group decided to approach the implementation from the process perspective and not implementing the exact same logic in the new landscape. The Project FAVOR (FrAcht VORsysteme) was commissioned to develop a future-proof solution and in particular to optimize the existing processes of service confirmation and volume calculation.

BMW Group and smartShift implemented FAVOR Cockpit in a microservice architecture based on Red Hat OpenShift Container Platform. It consists of >30 small, self-contained services that communicate with each other using standard mechanisms like REST or messaging. Together they provide the overall functionality of the application. The user interfaces were completely redesigned according to modern usability principles. For the freight forwarder portal, EUROLOG was integrated as a standard software.

The architecture based on Red Hat OpenShift ensures that FAVOR Cockpit is scalable and independently extensible. It perfectly supports the agile process model: Design, development, test, and continuous deployment could be divided into several small, flexible sub teams. The architecture is future-proof and follows the Keep-the-core-clean principles for modern, agile Side-by-Side Extensibility SAP-Integration of End-2-End Business processes. It was designed to be expandable to integrate additional services, if needed, and can be easily maintained. It's scalable in anticipation of future growth and robust enough to provide required reliability. To make this complex, distributed, and highly interconnected system robust, responsive, and highly available, smartShift implemented resilience at the application level, including redundancy of hardware and infrastructure, monitoring, and defect correction.

Results
The joint implementation of FAVOR Cockpit was a great success. The key was smartShift's deep knowledge in microservice based architectures and an open and extremely solution-oriented collaboration. The solution is successfully rolled-out to all plants world-wide. The new microservice system architecture enables BMW Group to implement new requirements to their system quickly and easily.

Other positive results include:
- The project was implemented 100 percent on time and within budget.
- The automated processing of freight orders was increased from 30 percent to more than 80 percent.
- Manual errors were reduced thanks to the high automation rate.
- Additional processes can be added and integrated quickly as new OpenShift workload on any hybrid-cloud infrastructure incl. on premise.
- DevOps ready through decoupling end-2-end processes from SAP digital core.

Arndt Hoffmann, EVP & Client Executive for BMW at smartShift, says: *"The project was a great success and is an excellent example of how we can help our customers to get to a clean SAP core. Decoupling processes into modern microservice architectures enables true technical and business agility for our customers!"*

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About smartShift

smartShift is cloud migration, technology optimization, and managed services partner to the world's leading businesses. smartShift's patented Intelligent Automation Platform, reduces the risk, cost, and duration of complex IT transformations, enabling organizations to upgrade to next-generation cloud computing environments seamlessly. smartShift's automation platform has been used in over 1,000 application modernization projects, analyzed, and converted over 2B lines of code. smartShift has offices in the USA, Germany and India.

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