DevOps for MBSE at Bosch

LieberLieber

# LieberLieber Software: DevOps for MBSE at Bosch

At the Prostep ivip Symposium 2022, Florian Beer (Bosch, Engineering Driving Systems) and Daniel Siegl presented their joint project to realise DevOps for MBSE at Bosch Driving Systems. In the presentation, they showed how such a DevOps solution for models can be implemented. A continuous integration process was presented that uses modelling tools such as Enterprise Architect and LemonTree together with Git for versioning and deploying models.

Bosch Driving Systems and LieberLieber are currently working together on the implementation of agile working and DevOps concepts in MBSE. The background to this is the challenges in the market for driver assistance systems and automated driving functions. Here, Bosch has set itself the goal in the Driver Experience division of actively shaping the future of these systems on the way to automated and accident-free driving and parking. To this end, various products are being developed in the area of driving and parking, starting with sensors such as ultrasonic sensors and near-range cameras and extending to domain controllers with a large number of cameras, radar sensors and cloud connection for the realisation of complex driving scenarios. In LieberLieber, Bosch has found a competent development partner with outstanding expertise in merging models. This cooperation allows Bosch to concentrate fully on its core competencies. Daniel Siegl, responsible for Business Development at LieberLieber: „Together we are identifying the additional requirements for DevOps, looking for solutions and developing them to deployment maturity. In this way, we want to achieve improvements in software quality, development speed and delivery, while also improving the interaction between the teams involved.“

Florian Beer (Bosch) and Daniel Siegl during their presentation at the Prostep ivip Symposium 2022

New drivers and their effects bring...
...new challenges for architecture

Modularization	Distributed teams	Continuous Delivery	Intellectual Property	Continuous Integration
Decompose the big model into modular packages	Collaboration on distributed infrastructure	of validated releases	Stakeholder specific scope of deliverables	of updates from other teams
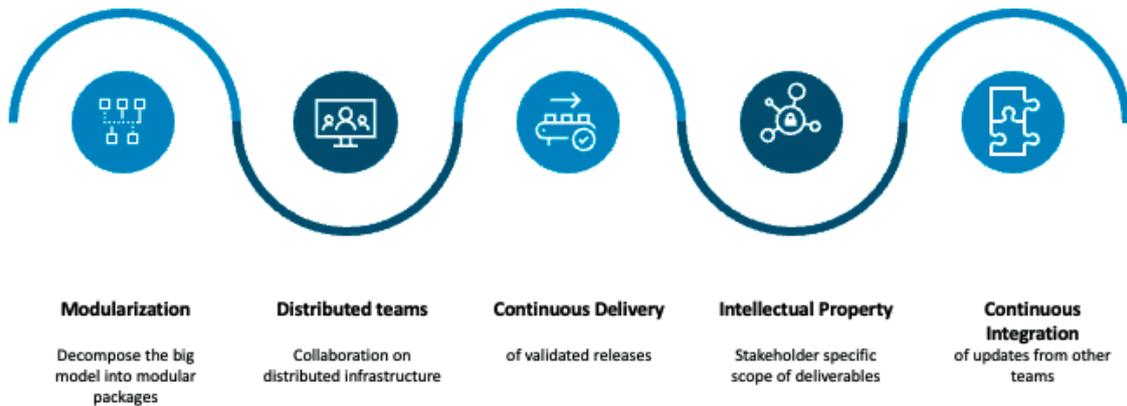
New drivers and their effects pose challenges for the architecture.

New vehicle architecture requires rethinking

In order to meet the new requirements, Bosch Driving Systems not only wants to drive forward the technology development in its products, but also design the internal development processes and tools accordingly. The traditional vehicle architecture, in which every sensor and actuator is a fully-fledged control unit with individual logic and corresponding development depth, is today increasingly giving way to new centralised architectures in which the program logic is concentrated in a few central ECUs with corresponding computing power. Several major trends are currently seen in the automotive market that will turn the old, hardware-driven development work upside down. DevOps is a trend that has long been established in classic software areas such as online systems, smartphone apps and desktop applications, but is also already being applied in the automotive sector at Tesla. Due to new cybersecurity requirements and data-driven development approaches, this approach will be necessary on a broad basis in the future. In order to be able to quickly implement the new requirements, many new development cooperations can currently be seen on the market, especially in the area of automated driving. The reason for this is that the effort for development, data collection and validation of the functions is so great that it cannot be managed quickly enough by a single market participant alone.

LieberLieber contributes specific MBSE know-how

In Beer's department, LieberLieber was involved in piloting the migration of the architecture models to GIT more than two years ago. The experience gained in the process was immediately fed back into the further development of the tool chain. It was learned that many of the architects are not as familiar with the GIT way of working as classical software developers. In order to enable broad acceptance, it is therefore necessary to link the tools in such a way that an architect notices little or nothing of GIT during normal work.

For this purpose, LieberLieber offers the LemonTree plugin in Enterprise Architect, with which the GIT handling can be done directly in the architecture tool. Automation with workflows relieves the user of the need to understand the technical details in review and merge. Scripts and integrations are provided to users to resolve conflicts when merging different model versions. This allows them to concentrate fully on the technical content of the model.

Dr. Konrad Wieland, CEO of LieberLieber: „In order to optimise this automation of the tool chain (pipeline, Continouus Integration, DevOps), we offer with LemonTree.Automation the possibility to integrate the model world around Enterprise Architect even more completely into the tool chain. For example,

documentation, architecture and specifications are included and the models can be built into different scenarios (build pipelines)."

For this, a freely available integration option was presented with the presentation of LemonTree 3.3 as a special service for customers together with Florian Beer on Github.

Basically, however, each integration must be determined by the respective company so that everything also fits into the existing tool chain.

More information about LemonTree:
https://www.lieberlieber.com/lemontree/en/

Find the appropriate training for the optimal use of LemonTree.

Dr. Konrad Wieland
Managing Director of LieberLieber

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To solve these challenges...
...we need

	Modularization	Distributed Teams	Continuous Delivery	Intellectual Property	Continuous Integration
Package Management	✓			✓	✓
Version Control	✓	✓	✓		✓
Distributed Collaboration infrastructure		✓			
Resolution of merge conflicts		✓			
Easy access for non-architect stakeholders		✓		✓	
Simple review		✓	✓		
Automated Deployment			✓		
Automated Integration					✓

To meet the new challenges, Bosch needs an adapted tool chain.

Whitepaper: Continuous Integration with Enterprise Architect

In this Whitepaper, LieberLieber answers the question of how to bring „Continuous Integration" into model-based software development. In the tool chain around Enterprise Architect (LemonTree, Git, Pro Cloud Server, Prolaborate) you can currently find all the prerequisites to realise this scenario. From our experience, these possibilities are currently unique on the market and they open up completely new possibilities for our customers. Therefore, we want to present to you which procedures of classical software development can be adopted for „continuous modelling" with this tool chain. It will also become clear that working with a central database (Prolaborate) and using LemonTree/Git are not contradictory, but can be used very well in parallel.

[Download]

CONTINUOUS
INTEGRATION WITH
**ENTERPRISE
ARCHITECT**

INTERACTION OF LEMONTREE, GIT,
PROCLOUDSERVER AND PROLABORATE

LieberLieber Software GmbH
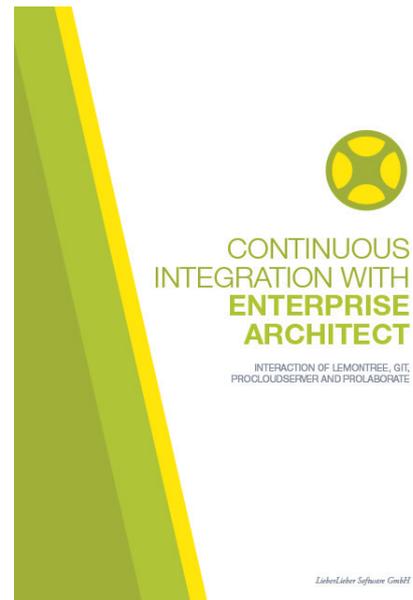
Cover of the Whitepaper „Continuous Integration with Enterprise Architect"

ABOUT LIEBERLIEBER SOFTWARE

We are a software engineering company. The know-how of our employees lies in model-based software and system design based on tools such as Enterprise Architect from Sparx Systems.

Our customers are companies that place particular importance on the quality of their software and systems development. They wish to maintain a constant overview of their complex development scenarios while ensuring that security-relevant requirements are clearly represented in models.

For this task we provide our own special tools, such as LemonTree and Embedded Engineer. In addition, we offer a range of useful tool integration services to help make our customers' development processes more productive.

LieberLieber is a business unit of Lieber.Group.
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