eSystems Customer Case Study

ptc

DIGITAL TRANSFORMS PHYSICAL

eSYSTEMS
A KATEK Brand

About eSystems

“Connected to the future”

eSystems MTG GmbH (part of the KATEK SE group of companies) is an automotive Tier 1 supplier for connected electric vehicle (EV) charging solutions. Working at the crossover of the energy and automotive sectors, the company develops and produces charging solutions and Vehicle-to-Grid (V2G) technology, as well as ECUs for artificial noise generation in electric vehicles.

eSystems was started as an automotive development department of bebro electronics GmbH, and became a separate entity in 2019. As the team was built in early 2016, several former employees of S1nn GmbH & Co. KG (now part of HARMAN, a Samsung company) joined the team. S1nn was an early user of Codebeamer, so these team members brought to eSystems a knowledge of integrated ALM and a thorough understanding of its benefits.

Today, eSystems’ software team consists of about 20 people including Integrators, Software Tool Developers, and Software Project Managers. Together, KATEK SE group members and eSystems employ 2300 staff (data from November 2019).

Alexander Bourgett

Leiter Software Entwicklung / Head of Software Development, eSystems MTG GmbH

Alexander Bourgett is a systems architect expert with years of experience in the development of automotive end products. Prior to joining bebro, Mr. Bourgett was a Senior System Architect at S1nn, an innovative developer of infotainment systems, connectivity and car audio solutions (later acquired by Harman/ Becker Automotive Solutions).

Alexander was an early adopter of Codebeamer who started to use the platform during his time at S1nn from 2011 on. Like most users, he valued the breadth and depth of features offered by the solution – but he was especially fond of Intland’s support in the early days. By coincidence, S1nn and Intland Software shared an office building for a few years, so support tickets were often submitted by way of taking the elevator up to Inland’s office on the 11th floor, and chatting about the problem over coffee.

“I did the benchmarking and product comparison of the two evaluated solutions. [...] I also introduced the tool later on into our Software Development Department and into Requirements Management.”

The Problem: Traceability & Automotive Compliance

When starting out, the eSystems team already had years of experience in the automotive industry: several team members joined after having spent years working at mobility development and supplier companies.

Most of them had used Excel sheets and open-source issue tracker tools for requirements management and to track development activities. To achieve some level of traceability, they either relied on scripts or linked databases manually.

As head of Software Development, Mr. Bourgett knew that this was a substandard approach. Familiar with this strategy, he understood that a generic program like Excel may have worked in a smaller operation, but when it came to working with over 50,000 requirements in a regulated setting, using Office tools would increase the risk of problems and could lead to painful audits.

Other bebro departments were relying on tools like Subversion, Redmine, and MS Office for the development of industrial software and hardware products. However, it was very clear to all stakeholders that in order to meet the increasingly demanding requirements of automotive customers (such as ASPICE conformity), eSystems would have to have a strong toolchain at hand. The most pressing problems for eSystems to overcome were the following:

1. Partial **traceability** of requirements and other artifacts, hindering both quality development and successful audits.

2. The costly and effort-intensive **maintenance** of homegrown tools to compensate for missing features in issue trackers, office tools, and other elements of a “makeshift” toolchain.

3. A pressing lack of **test management** tools besides MS Excel.

4. The need for simple **project status overviews** such as “open tasks”, “open bugs”, or “unmet requirements”. These are very difficult to achieve without an integrated tool environment.

5. **Workflows** described in documents and driven manually are always error-prone. eSystems was aiming to reduce that high error rate in their delivery processes by automating process control.

6. To **build reports** for customer reviews and external audits, team members would have to invest huge amounts of manual effort. This was going to get unsustainable as eSystems scaled their operations.

Modernizing the Toolchain

In early 2016, eSystems began operations without a standard software development management platform in place – but with an appreciation of the acute need to update their tool infrastructure.

One positive aspect of building a toolchain from scratch was that eSystems didn't have to work around entrenched legacy software tools. The team began identifying and evaluating tools that would suit their Application Lifecycle Management needs:

> **Siemens Polarion was evaluated primarily due to management's inclination to adopt a toolset similar to that used by some of eSystems' competitors.**
>
> **Codebeamer was evaluated because of some team members' positive experiences with the platform at their previous companies.**
>
> **The Atlassian suite (Jira, Confluence, etc) was considered but wasn't technically evaluated because of its difficult adaptation to automotive processes, and the company's licensing concept that the eSystems team found confusing.**

Rather than just abstract requirements and issue management functionality, eSystems was looking for in-depth software development process support. In addition, the team needed to prepare for customers' requirements around ASPICE compliance, with a strong likelihood that ISO 26262 requirements would also become important in the future.

A meticulous ALM tool comparison was carried out by eSystems, focusing on the meticulous evaluation of ASPICE capabilities (with ISO 26262 support) and of features to drive software development processes.

"A highly important aspect in this evaluation was the capability of the ALM tool to reduce the effort in Requirements Management. But it was even more important to reduce the "management" effort for software developers to get their code changes linked to the requirements, tests, and tasks of an ALM tool."

ALM for Automotive Software Development

By late March 2016, eSystems made the decision to adopt Codebeamer.

In addition to the platform's high overall performance (demonstrated faster response times than that of competing products), the software team valued Codebeamer's robust support of software development processes.

eSystem's evaluation found that Codebeamer offered command line support, automated traceability, and Git integration complemented by rich functionality around managing blessed repositories. The system provided check-in management with pre-commit hooks out of the box, something that other solutions could not offer at the time of evaluation. The eSystems team appreciated that Codebeamer's document management features were easy to use, and worked with a straightforward versioning concept.

eSystems was also looking at Codebeamer's open architecture and extendability via the REST interface, an important feature for a developer operating in a complex automotive ecosystem with many stakeholders. The platform's integration with Enterprise Architect was also considered more robust than that offered by competitors.

Because Codebeamer runs on a single database, eSystems team members can reference "anything to everything". The platform adequately supports the full V-model process, and enables the team to blend Agile elements into their processes as they see fit.

To top all that off, eSystem's previous experience with Intland Software's support team reassured the team (and management) that their needs would be adequately tended to – even if complimentary coffee with support tickets could not be promised once Intland Software was no longer just an elevator ride away!

- **Software development support**
- **Extendability,APIs**
- **Traceability**
- **Outstanding support**
- **High performance**
- **V-model & Agile support**

Rollout and Use

Because certain team members already had experience with Codebeamer, eSystems decided to go without training when rolling out the platform.

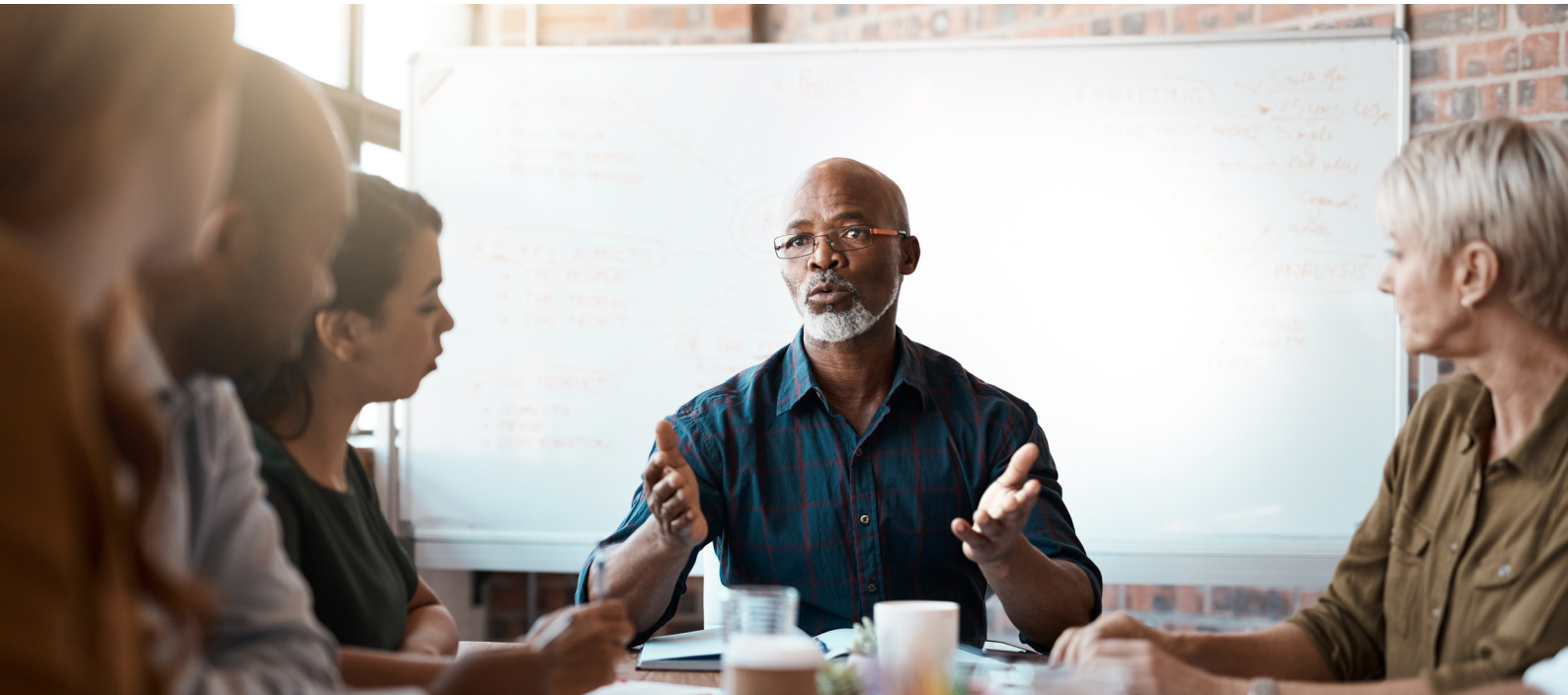
They deployed the system on a new virtual server and implemented standard server (resource) monitoring and backup processes.

While Mr. Bourgett describes Codebeamer's learning curve as "very steep", he said that users feel comfortable working in the tool once they have the basic principles down. The system's internal logic makes it easy for users to get up to speed very fast after an initial learning phase.

Today, advanced users including the software developers that most heavily use it are pleased with Codebeamer. Project Managers and those used to other systems (like hardware developers, for instance) find it difficult at first, but a short 1-day training helps them understand the underlying principles and processes.

That's why Mr. Bourgett advises to train key users for admin duties, to configure the underlying logic in workflows, and to train other members of their teams. Due to the depth and breadth of Codebeamer's functionality, most users don't need all the features. Removing access to these simplifies UX for these user groups, and enables administrators to use more automation.

eSystems continued to work closely with Intland Software's support team over the past few years, and this cooperation is highly valued by Mr. Bourgett and his team.



Value Realized with Codebeamer

Since its implementation, the eSystems team has used Codebeamer for a variety of purposes.

As their use cases expanded and deepened, they were able to access more and more advanced features in the system. For instance, the eSystems team today builds their own reporting widgets and have a fully customized, very sophisticated monitoring and reporting system in place.

The Software team runs fully controlled and compliant processes at all times. eSystems implemented a method of continuously feeding back live data back into the system and onto KPI dashboards. Therefore, when an audit is coming up, the team only double checks that all the latest latest, recently generated information is actually there in Codebeamer. As the data is real and is continously updated by actual project tasks, this generally takes about 1 day – this enormously reduces the overall amount of audit preparation needed to be done by the eSystems team.

Mr. Bourgett sees the bottom-line value of using Codebeamer as being able to run automotive development processes with a small team, with minimal investment of effort. At audits, the platform saves eSystems valuable time and costs by offering a one-stop-shop for easily accessible audit data.

When asked about the most important benefits of Codebeamer, Mr. Bourgett quoted the following:

1. **Gapless traceability** of software artifacts to test cases and test results

2. Full and better replacement of IBM® Rational® DOORS® for **Requirements Management**

3. Highly configurable reporting and dashboard widgets to get an **easy project overview**

4. Drill down into every software commit, **complete check-in history** linked to related software tasks

5. Introduction of **blessed and developer repositories** based on Git

6. Drill down into **every software commit**, complete check-in history linked to related software tasks

7. **Extendability** through the REST interface, especially when connecting other ticket systems for exchanging issue report & logging data

8. **Highly automated reporting** via the REST interface and Codebeamer's reporting engine used to generate Customer Release Notes or test reports of system testing campaigns

9. Process handbook as a requirements template **reused** in every project, version controlled using baselines

Overall, eSystem's use case of Codebeamer is a good example of the platform's flexibility. According to Mr. Bourgett, eSystems was able to realize value with the platform within 1-6 months of deployment (depending on use case). As their system administrator team gained more experience with Codebeamer, they became adept at custom-configuring the tool, extending it with sophisticated workflows and 3rd party solutions that perfectly suit the development team's needs.

In addition to requirements management and software development, eSystems today uses Codebeamer to define and manage project management handbooks (which are reused for new projects), for multi-dimensional release planning, and for generating documentation and release notes for new product versions. The costs of these effort-intensive activities is greatly reduced by Codebeamer, saving eSystems valuable development time and costs. Mr. Bourgett's summary of eSystems' experience using Codebeamer speaks for itself:

"It's a lot better than any other system I know".

About Codebeamer

Codebeamer is an Application Lifecycle Management (ALM) platform with unique configurability and product line configuration capabilities.

Codebeamer X is an integrated Engineering Lifecycle Management (ELM) platform for life sciences companies with regulatory process & compliance support.

About PTC (NASDAQ: PTC)

PTC enables global manufacturers to realize double-digit impact with software solutions that enable them to accelerate product and service innovation, improve operational efficiency, and increase workforce productivity. In combination with an extensive partner network, PTC provides customers flexibility in how its technology can be deployed to drive digital transformation—on premises, in the cloud, or via its pure SaaS platform. At PTC, we don't just imagine a better world, we enable it.

DIGITAL TRANSFORMS PHYSICAL

121 Seaport Blvd, Boston, MA 02210 : ptc.com

cs-esystems-success-story