DEMICON

Success Story
AUTOMOTIVE

STREAMLINED DEVELOPMENT WORKFLOW THROUGH **GITLAB: A SUCCESS STORY**

How the adoption of GitLab by a German automotive company enabled a successful technical and cultural transformation.

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This success story showcases how we helped our client enhance their Developer Experience (DevEx), integrate DevSecOps practices, and streamline pipeline development by implementing GitLab as part of a comprehensive Developer Experience platform. This integration was crucial for ensuring a rapid time-to-market in this highly competitive industry.

INDUSTRY AUTOMOTIVE

CLIENT SOFTWARE HUB OF A GERMAN AUTOMOTIVE ORIGINAL EQUIPMENT MANUFACTURER (OEM)

TOOLS AWS, GITLAB, TERRAFORM ENTERPRISE

COMPETENCES OF DEMICON

- Extensive GitLab, AWS & Terraform expertise
- Certified experts
- Vast experience in the automotive industry
- Strong analytical & methodological competence
- Customised solution approaches
- In-depth expertise in process standardisation & automation

"Through the phases of Assess, Adopt, Standardise, and Scale, we restructured the client's GitLab setup, migrating from on-premises to AWS for improved scalability and reliability."

RICO NUGUID
HEAD OF ENGINEERING AT DEMICON

BENEFITS FOR OUR CLIENT

- Increased quality & efficiency of software development
- Enhanced resiliency through automation
- Improved teamwork & developer experience
- Maximised productivity & faster onboarding through standardisation
- Increased competitive advantage through innovation
- Boosted profitability & sustainability with substantial cost savings

STREAMLINED DEVELOPMENT WORKFLOW THROUGH GITLAB

BERLIN & STUTTGART, DEMICON

Modern cars are no longer just means of transportation; they provide rich, personalised digital experiences. These interactions between a car's Electronic Control Units (ECUs), the cloud, and intelligent systems must be delivered swiftly to maximise agility, reliability and security. Furthermore, automotive companies must reduce time-to-market and provide superior customer experiences. This demands rapid deployment of on-demand cloud services and automated platforms to close skill gaps and optimise IT resources. And lastly, to enhance digital experiences and succeed in this era, IT leaders must transition from traditional ITIL-based processes to self-service and automated workflows.

THE PROJECT & ITS CHALLENGES

The project encountered substantial challenges that hindered its efficiency: The existing pipelines were intricate and difficult to manage, resulting in frequent failures and delays in the continuous integration/continuous delivery (CI/CD) process. This slowed down the delivery of software and demanded substantial manual intervention. Jenkins, the open-source CI/CD tool utilised, had limitations regarding scalability, extensibility, and user-friendliness. It required extensive manual configuration and maintenance, which was time-consuming, error-prone, and drained resources.

Additionally, operations costs escalated over time, and changes were inevitable. From a security perspective also several challenges existed. The most pressing concern was the secure management of sensitive information such as passwords and API keys throughout the developer lifecycle. The existing manual process was error-prone, amplifying the risk of unauthorised access and security breaches. This situation underscored the urgent need for a robust and automated solution to mitigate these challenges effectively.

THE DEMICON APPROACH TO MAKE PMT A SUCCESS

With a stronger focus on holistic systems and a more people-oriented approach, the DEMICON Systems, Methods & Team (SMT) philosophy bridges the gap between processes, methods and tools and is, therefore, a valuable addition to the existing PMT framework.

With this method, software systems are designed to be consistent with the established processes and methods. It also enables our team to incorporate the right tools to create a holistic and cohesive system which aligns with the team's and company's needs. By focusing on designing, architecting, and implementing scalable and maintainable developer workflows with a user-centric approach, we effectively address customer-specific challenges and ensure efficient and reliable project outcomes.

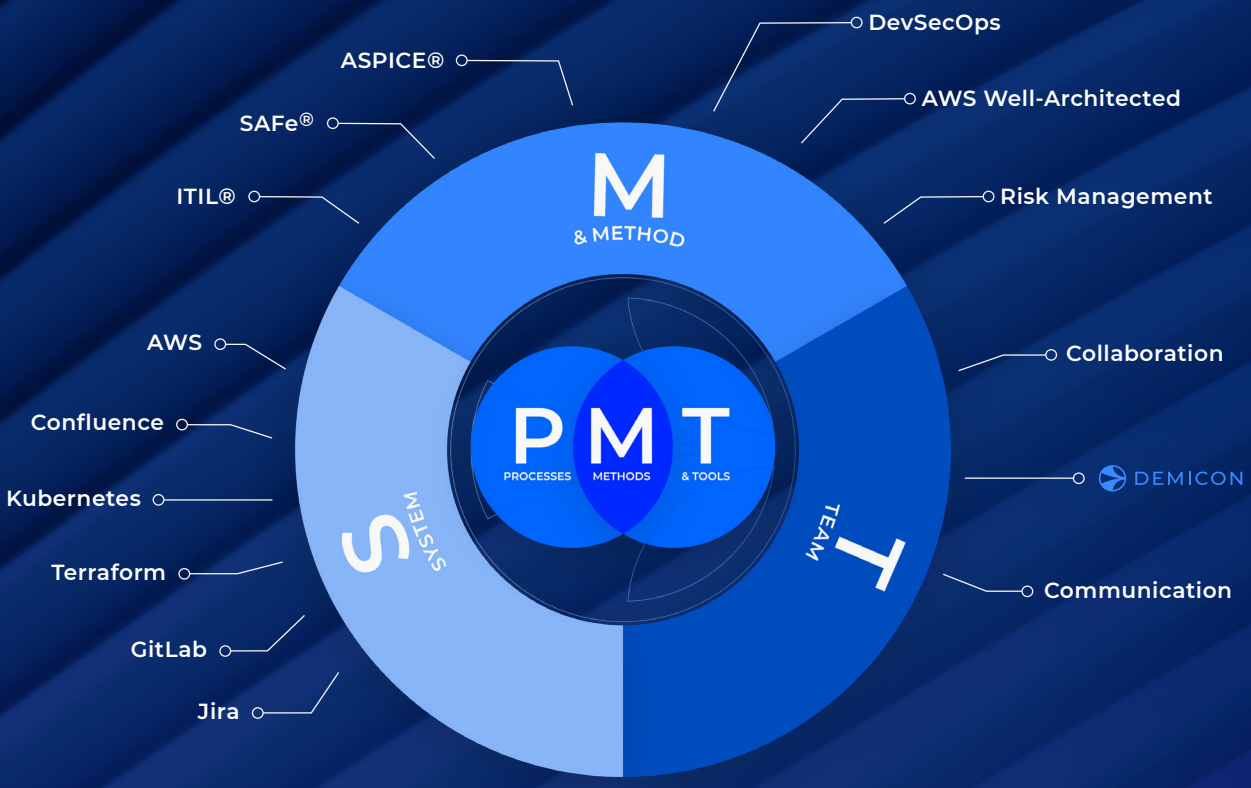
GitLab

GitLab as the Tool of Choice

In our customer project, GitLab was selected as the tool of choice to centralise developer workflows. GitLab's robust feature set and all-in-one platform capabilities made it the ideal solution for integrating development, security, and operations into a cohesive workflow.

By consolidating these processes within GitLab, all teams can collaborate seamlessly, automate their CI/CD pipelines, and maintain high code quality and security standards. This centralisation streamlines the development process, reduces complexity and improves efficiency across the board.

DEMICON'S SMT PHILOSOPHY



Different Phases of the Project

1. ASSESS

- Requirements analysis
- Performance tests
- Architecture evaluation
- Defining suitable solutions
- Cost analysis

During the assessment phase, we conducted a thorough analysis of the existing development workflows, tools, and infrastructure. We identified pain points, inefficiencies, and areas for improvement. This phase involved close collaboration with the client's teams to understand their specific needs and requirements, laying the groundwork for a tailored solution.

2. ADOPT

- PoC development
- Migration planning
- Integration of existing systems

In the adoption phase, we focused on GitLab as the core tool for managing the development workflows. We also migrated GitLab from on-premise to the cloud, configured initial pipelines, and moved projects from legacy systems like Jenkins. For a smooth transition, we provided hands-on training to enable all team members to use the new platform effectively.

3. STANDARDISE

- Automisation
- Governance & Security
- Golden Paths
- Re-architect

In this stage of the collaboration, we focused on creating uniform workflows and best practices across all teams. We developed standardised CI/CD pipelines, security protocols, and deployment processes. By establishing these golden paths, we ensured consistency, reduced errors, and improved the overall quality of the software being developed.

4. SCALE

- Optimisation of resources
- Scalable operations
- Innovation
- Cost optimisation

Finally, in the scaling phase, we expanded the GitLab setup to accommodate growing team sizes and increased project demands. This involved optimising GitLab runners, integrating additional tools, and taking steps to set up an infrastructure capable of handling larger workloads. The goal was to create a scalable, maintainable system that could grow with the client's needs.

Integrating into the SAFe® Setup

Integrating as a service provider into the Scaled Agile Framework (SAFe®) setup was a critical component of the project. We **aligned with the principles of SAFe®** and the way of working to act as full members of the development teams.

This integration facilitated a successful collaboration between the client and the DEMICON team: Not only did we drive the technical solutions, but also enabled the teams to work with the new technologies.

Expert Knowledge to Extend the Capabilities of the Teams

DEMICON brought expert knowledge to the table, extending the capabilities of the client's teams. Our **deep expertise in GitLab, DevSecOps practices, and cloud infrastructure** allowed us to provide valuable guidance and support throughout the project. We offered specialised training sessions, best practice workshops, and ongoing mentorship to help the teams fully leverage the capabilities of GitLab. This knowledge transfer ensured that the client's teams could maintain and evolve their development workflows independently, fostering a culture of continuous improvement and innovation.

In summary, DEMICON's approach in this project demonstrates how a strategic selection of tools, phased implementation, integration with agile methodologies, and expert knowledge transfer can transform development workflows, enhance efficiency, and drive organisational success.

WHY GITLAB: The Gartner Leader in DevSecOps Platforms

GitLab is recognised as the Gartner leader in DevSecOps platforms due to its comprehensive, all-in-one solution that seamlessly integrates development, security, and operations. This unified platform provides several key benefits that set it apart in the industry.

Diving deeper into the features of GitLab showcases the following benefits:

☑ **Robust CI/CD Capabilities:** GitLab's CI/CD features are among the most advanced in the industry. It supports automated testing, continuous integration, and continuous deployment, enabling teams to deliver high-quality software more rapidly. Pipelines can be configured to automatically build, test, and deploy code, which reduces manual intervention and minimises errors.

☑ **Comprehensive, All-in-One Solution:** GitLab combines all the necessary tools for the entire DevOps lifecycle in a single interface. This includes source code management, CI/CD, security testing, and monitoring. By consolidating these tools, GitLab eliminates the need for multiple disparate systems, reducing complexity and improving efficiency.

☑ **Enhanced Collaboration & Efficiency:** With GitLab, development, security, and operations teams can work collaboratively within the same platform. This integration fosters better communication and coordination, leading to faster resolution of issues and a more streamlined development process. Teams can easily share insights, track progress, and manage workflows, ensuring everyone is on the same page.

☑ **Built-In Security:** Security is a core component of GitLab's platform. It provides built-in security testing tools, including static application security testing (SAST), dynamic application security testing (DAST), container scanning, and dependency scanning. These tools help identify and address vulnerabilities early in the development process. This guarantees security at every stage of the lifecycle.

☑ **Scalability & Extensibility:** GitLab is designed to scale with organisations of all sizes, from small startups to large enterprises. Its architecture supports extensive customisation and integration with other tools, allowing organisations to tailor the platform to their specific needs. This flexibility ensures that GitLab can grow alongside an organisation's evolving requirements.

☑ **Improved Security Posture:** Integrating security throughout the development process enhances an organisation's overall security posture. GitLab's built-in security tools and automated testing help identify and mitigate vulnerabilities before they become critical issues. This proactive approach to security reduces the risk of breaches and protects sensitive data.

☑ **Faster Delivery Cycles:** By integrating development, security, and operations into a single platform, GitLab enables faster delivery cycles. Teams can automate and streamline workflows, reducing the time from code commit to production deployment. This acceleration helps organisations respond more quickly to market demands and competitive pressures.

☑ **Higher Quality Software:** The comprehensive testing and monitoring capabilities within GitLab ensure that code quality is consistently high. Automated tests run at each stage of the CI/CD pipeline, catching issues early and reducing the risk of defects in production. This focus on quality results in more reliable and robust software.

☑ **User-Friendly Interface:** Despite its comprehensive feature set, GitLab maintains a user-friendly interface that simplifies the management of complex DevOps processes. The intuitive design makes it easy for users to navigate the platform, configure pipelines, and manage projects without extensive training. This ease of use reduces the overhead typically associated with managing separate tools for development and operations.

GitLab's combination of comprehensive features, seamless integration, and user-friendly design solidifies its position as the leading DevSecOps platform according to Gartner. By providing a single platform for development, security, and operations, GitLab helps organisations **deliver high-quality, secure software faster and more efficiently than ever before.**

MASTERING DEVEX WITH A VAST GITLAB KNOW-HOW & DEMICON'S PEOPLE-ORIENTED APPROACH

At DEMICON, we specialise in transforming development workflows to enhance productivity, security, and scalability. For our client, we provided a comprehensive suite of services to optimise their CI/CD pipelines and Developer Experience. Our approach focused on restructuring their GitLab setup and integrating advanced tools to meet their specific needs. Our services are clustered into two main categories:

GitLab Operations and Value-Added Development.

GitLab Operations

Scaling GitLab: DEMICON facilitated the transition from a monolithic GitLab setup to a distributed system setup. This restructuring enabled the system to handle larger workloads more efficiently, improving performance and scalability. By distributing the system components, we helped to ensure that the GitLab environment could grow with the client's needs, providing a robust and responsive platform for their development activities.

Maintenance: With ongoing maintenance services DEMICON makes sure that the GitLab environment remains secure, up-to-date, and fully operational. Regular updates, monitoring, and performance tuning were part of our maintenance package, ensuring that the system continued to meet the evolving needs of the client. We could help in continuously improving the uptime of the platform to meet the SLAs committed to the users of the platform.

GitLab Secret Management: We implemented a robust secret management solution within GitLab to securely handle sensitive information such as passwords, API keys, and other credentials. This solution automated the storage and retrieval of secrets, which reduces the risk of unauthorised access and enhances the security of the development lifecycle.

Pipeline Migration: A key service provided by DEMICON was the migration of existing CI/CD pipelines to GitLab. This process involved analysing the current pipeline configurations, identifying any custom scripts or tools in use, and re-creating them within GitLab's environment. Our team ensured that the new pipelines maintained all necessary functionalities while optimising them for performance and reliability. This migration minimised downtime and allowed a smooth transition so that development activities could continue without significant disruptions.

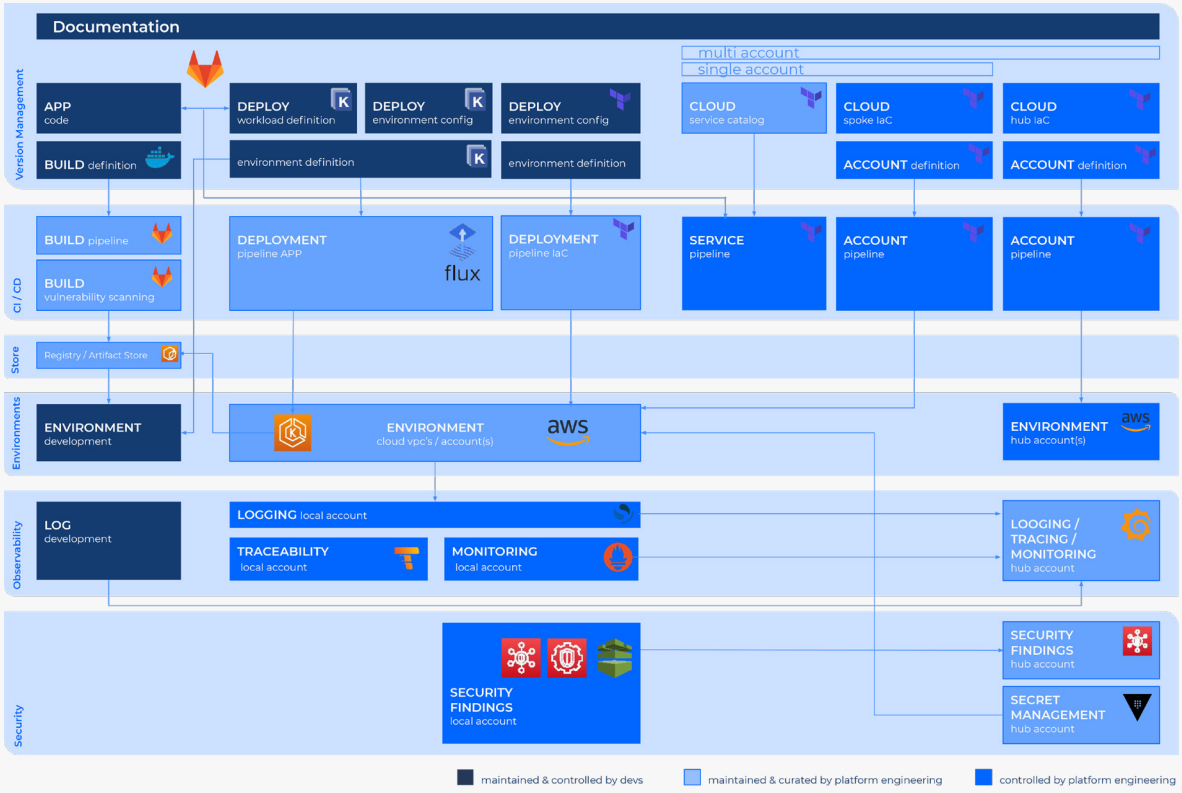
System Migration: DEMICON managed the comprehensive system migration from on-premises infrastructure to AWS. This involved transferring repositories, user accounts, and project data to a cloud-based environment. We meticulously planned and executed the migration to prevent data loss and guarantee a seamless transition. By moving to AWS, the client benefited from increased scalability, reliability, and flexibility. Our team configured GitLab to leverage AWS services optimally, ensuring enhanced performance and integration with other essential cloud services. This migration enabled the client to scale their operations dynamically and reduced the overhead associated with maintaining on-premises hardware.

AWS OAuth 2.0 Pipeline Authentication: DEMICON integrated AWS OAuth 2.0 authentication into the GitLab pipelines. This provides a secure and streamlined authentication process for accessing AWS resources without the need for long-lived credentials. With this integration, the pipelines can now securely and efficiently interact with AWS services, which also improves the overall security and functionality of the CI/CD process.

Value-Added Development

DevEx Platform: DEMICON provided services to evolve GitLab into a comprehensive Developer Experience (DevEx) platform, further enhancing the client's development ecosystem. This service aimed to extend GitLab's capabilities beyond its standard functions. By combining the application lifecycle, infrastructure lifecycle and security lifecycle into one platform, it was transformed into an all-encompassing platform that optimises the entire development lifecycle and lastly improves developer satisfaction and productivity.

This evolved into the DEMICON reference architecture for a DevEx Platform:



Golden Path Development: We developed „Golden Paths" – standardised, best-practice workflows tailored to the client's environment. These Golden Paths provide a clear and efficient route for developers to follow while reducing variability and errors in the development process. This approach improves overall productivity and software quality by consistently applying best practices. DevSecOps is part of our golden path development and significantly enhances the client's security posture by integrating comprehensive security measures directly into the CI/CD pipelines. By adopting a „shift-left" approach, we ensure that security is embedded early in the development process, enabling the identification and remediation of vulnerabilities as soon as code is written.

Runner Setup to Scale with Unique Requirements of Different Teams: DEMICON set up GitLab runners that could scale to meet the unique requirements of different teams. With this customisation, each team has now the necessary resources to run their CI/CD pipelines efficiently, without being affected by the demands of other teams. The scalable runner setup allows for better resource utilisation and faster pipeline execution.

Integrating GitLab with Terraform Enterprise: We integrated GitLab with Terraform Enterprise to streamline the infrastructure as code (IaC) management. This integration enables automated and consistent provisioning and management of cloud resources, which enhances the efficiency and reliability of the deployment process. By leveraging Terraform Enterprise's capabilities, we provided the client with a scalable and maintainable infrastructure solution. Through GitLab Operations and Value-Added Gitlab Development, DEMICON delivered comprehensive solutions that addressed both the technical and procedural challenges faced by our client. This holistic approach not only enhances the efficiency and security of their CI/CD pipelines but also significantly improves the developer experience, positioning them for continued success in the competitive automotive industry.

CONCLUSION

This collaboration successfully transformed the development workflows of a German automotive and positions our client for continued success and growth. By enhancing the Developer Experience (DevEx), integrating DevSecOps practices, and streamlining pipeline development, we boosted productivity, increased overall quality and achieved significant cost savings. All these components ensure rapid time-to-market in a competitive industry.

Through the phases of Assess, Adopt, Standardise, and Scale, we restructured the client's GitLab setup, migrating from on-premises to AWS for improved scalability and reliability. Our integration of GitLab with Terraform Enterprise automated infrastructure management, enhancing efficiency and consistency. Secure GitLab secret management and AWS OAuth 2.0 authentication strengthened the security of the development lifecycle.

Integrating into the SAFe® setup facilitated successful collaboration and alignment with agile methodologies, enhancing transparency and efficiency. DEMICON's expert knowledge empowered the client's teams to leverage GitLab fully and maintain their workflows independently.

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DEMICON is a multi-award winning IT service provider founded in 2008, and one of the leading AWS and Atlassian Platinum & Enterprise Solution Partners in the DACH market.

DEMICON has built a legacy based on deep technical expertise and strategic thinking, combined with a people-first approach. Our services range from customised software development and implementing scaled, agile methods, such as SAFe®, to consulting on agile processes and hosting seminars and workshops.

Our team of experienced Enterprise Architects, Technical Consultants, Software Engineers, Business Consultants and Project Managers provide a wide range of solutions to help companies reach their digital goals.

TOGETHER WE WILL DESIGN THE RIGHT SOLUTIONS FOR YOUR VISION!

GET IN TOUCH

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