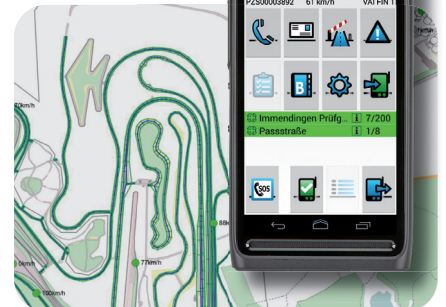
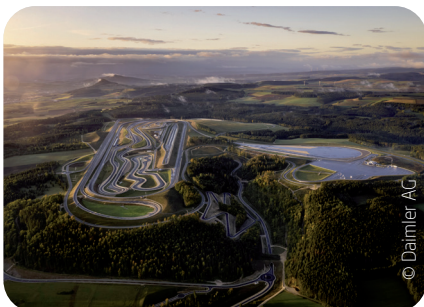


PGMS - The Integrated Solution

mm-lab Telematics System
Increases the Safety Level at
Daimler Proving Ground in
Southern Germany

Success Story



mm-lab Telematics System Increases Safety at German Automotive Proving Ground in Immendingen



This is the place to test the new technologies of the next decades: Proving Ground in Immendingen, Germany.

Customer Motivation

In order to push forward the future of mobility, Daimler AG is intensively testing future technologies such as networking, automated driving, flexible use and electric drives. With the intention of becoming more flexible for the increasingly complex test scenarios, the car manufacturer planned to create special test environments to examine the new vehicle technologies. The project was also aimed to relieve test engineers of test drives around the world.

The vision for the future was to move up to 80 percent of the test drives from public roads to a test track near the Sindelfingen development site. The car manufacturer set up a modern Testing and Technology Center on the previous military training ground of the German army in Baden-Württemberg. On numerous test modules including city quarters, endurance testing and an oval circuit, real driving conditions can be simulated today. By creating the Bertha area, a dedicated black sea, the car manufacturer was able to build a segregated area for testing the new technologies, on which driverless maneuvers are also

realized. There was a need to find a solution for the transparent management of the versatile processes, which efficiently optimize the operation of the proving ground and significantly support the safety of the drivers.

mm-lab GmbH sets standards for management and drivers' safety on proving grounds worldwide. mm-lab convinces its customers with the satellite-based Proving Ground Management System (PGMS) and with extensive knowhow, as well as on the basis of previously implemented projects at other well-known proving grounds. The world's unique, high-precision Collision Awareness System CAVE! was specially developed for automotive test tracks and was awarded by the state of Baden-Württemberg as part of the Innovation Award 2018. It makes a significant contribution in Immendingen to further increase the safety of test engineers.

Customer Benefit

Supports the safety of life and limb

Access controls, reminders of safety requirements and warnings through the integrated Collision Awareness System contributes enormously to the safety of test engineers. The integrated PGMS in Immendingen has long since developed into a flagship project for automotive proving grounds.

Important tool for operator personnel

PGMS consistently maps operational processes, providing information to drivers and operator personnel at the right time and in correct order. In short: It supports efficient planning, safe implementation, transparent monitoring and precise documentation of the processes on the test modules – around the clock (24/7).

Optimum usage of the proving ground and resources

The efficient resource planning of the PGMS allows the optimal usage of the Immendingen Proving Ground. Intelligent login processes and the immediate re-assignment option after booking cancellation avoid unnecessary waiting times. Thanks to the digital usage recording, utilization analyses are quickly created and serve as basis for optimizing proving ground operations.

One OBU for all functions

By using only one OBU with GNSS module (Global Navigation Satellite System), drivers have access to integrated safety functions (CAVE!) with precise positioning, test sequence control, as well as with voice and data communication. It has a high-quality hands-free function, which can be reliably used even in noisy environments. A suction cup fastening allows mounting the OBU in a quick and stable manner.

„They have exceeded our expectations of the PGMS by far!“

The head of operations of Immendingen Proving Ground is pleased „to have a partner who knows the processes on proving grounds and who understands how the system optimally supports daily operation. We were particularly impressed by the adaptability of the system to the special conditions of our proving ground with the integration of our endurance testing program and the integrated Collision Awareness System, which will certainly lead mm-lab to further successes. They have exceeded our expectations of the PGMS by far!“

Collision Awareness System CAVE! for proving grounds

- detects and warns against dangers on lanes and vehicle dynamics areas without distracting driver's attention and is ready for use for the entire proving ground
- calculates the distance between vehicles and the resulting risk of collision precise and in real time, even in banked curves!
- prediction of driving maneuvers: Alerts all drivers in case of imminent danger audio-visually, even under limited visibility conditions and in the event of obstacles outside the field of sight

A comparable Collision Awareness System does currently not exist on the market.



INNOVATION BW
2018
 Innovation Award Baden-Württemberg
 Dr.-Rudolf-Eberle-Preis
 Recognition 2018



OBU display while driving
 on the Vehicle Dynamics Area

- + own vehicle
- other vehicle in close vicinity

„The collaboration was very good coined by high flexibility and commitment.“

Also the way how mm-lab handled the management of the project was convincing: „The Proving Ground Management System in Immendingen was implemented successfully by mm-lab so that the proving ground was taken in operation on time. The collaboration was characterised by high flexibility and commitment. In case of necessary adaptations according to new findings during the construction process, everything was taken into consideration and integrated during the development process. Even tricky challenges were addressed professionally and solution-oriented, and finally solved successfully. With joined forces we were able to provide the optimum solution for the proving ground.“

Customer

Daimler AG, based in Stuttgart, Germany, is known as one of the most successful automotive companies in the world with around 300,000 employees. With the construction of the new Testing and Technology Center, the car manufacturer built an important high-tech location and created many new jobs. Dynamic vehicle testing takes place on different test tracks, roads and gravel roads. The company is thus relocating a large part of its worldwide vehicle testing to Immendingen in South Germany. During the construction work, the company took care to act in accordance with nature.



Safety always in focus - modern control center workstations with integrated monitoring display at the Immendingen Proving Ground.

Customer Goals

Proving ground equipped with the mm-lab PGMS-Software, customised to the special features of the Test Center in Immendingen for simultaneous operation of up to 1,000 vehicles as well as the equipment with a special On-Board Unit (OBU) for each vehicle.

Connecting the PGMS with customer's IT infrastructure with direct access via OBU and by using private 4G communication: Maintaining Daimler's internal and already established processes, such as the implementation of the endurance testing programs and the control of the infrastructure components.

Implementation of the mm-lab Collision Awareness System CAVE! into the PGMS as integral part of the system solution. Enhancement of the precise, previously lane-related CAVE! to a solution that additionally warns the driver on large areas without lanes.

Support in testing of new technologies with the mm-lab PGMS and Collision Awareness System CAVE!, also including dynamically controlled dummy vehicles (Guided Soft Targets), used for testing of Advanced Driver Assistance Systems (ADAS) and automated driving.

On-time completion, test operation and transfer to productive operation before the official inauguration of the proving ground in Immendingen, celebrated in September 2018 by the former Chairman of the Board Dieter Zetsche and the German Chancellor Angela Merkel.



Our claim: quality and information security
Our basis: certification according to
ISO 9001 and ISO / IEC 27001



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