



The virtual coach - for ambitious racers and those who aspire to become one

AMG is the sports car and performance brand of Mercedes-Benz. It produces high-performance vehicles and meets exclusive customer requirements that are not offered ex-works.

Starting in 2017, their vehicles were equipped with the virtual race engineer „Track Pace“ - made by Noser Engineering. The innovative feature makes every racing enthusiast's heart beat faster.

The driver feels like a Formula 1 driver on the race-track. He receives valuable tips and tricks from his virtual race engineer after each trip and can evaluate his driving style on the basis of performance diagrams. Among other things, he learns how he can drive around curves even better and how he can minimize his lap time. Track Pace has direct access to the nervous system of the vehicle and thus to a variety of sensor data, which are evaluated and visualized to the driver.

Furthermore, thanks to a smartphone connection, the data can be shared with friends at any time.

«It was fun to implement this technically challenging project from the idea to the production stage together with Mercedes-AMG. It was like a car race: great collaboration with an internationally distributed, motivated team, agile from round to round, pit stops where complex technical challenges had to be resolved quickly, achieving top results despite limited hardware performance, and appreciative applause at the finish line.»

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The Project

Track Pace is an additional feature of the COMAND online infotainment system. It measures, among other things, the acceleration, lap and sector times as well as the sprint from the stand or over the quarter mile. In addition, numerous vehicle data such as speeds, longitudinal and lateral accelerations, steering angles or decelerations can be stored and subsequently evaluated. It is operated via the controls on the steering wheel, in the center console and the COMAND display and head-up display.



Display of «Track Pace» in the vehicle cockpit.

The Benefit

The intuitive visualization on the vehicle display allows the values of the recorded parameters to be evaluated quickly and accurately. From the knowledge gained and implementation, the next lap time is improved. Legendary racetracks such as the Nürburgring Nordschleife and other selected tracks come pre-stored from the factory for the ultimate racing experience. The recording of new individual routes is possible. Thanks to smartphone connectivity, results comparison among friends and like-minded people is possible.

The Implementation

The automotive specialists from Noser Engineering and the engineers from Mercedes-AMG worked very closely together during the entire realization. In this project, agile development methodology meant implementing racetrack applications and insights into usability and functionality in the shortest possible time so that they could be put to the acid test in the next run.

The Technology

The modern state-of-the-art architecture is in C++. It ensures the maintainability and expandability of future additional functions. To meet the high performance and graphical user interface requirements, Noser Engineering did not shy away from writing its own library for an OpenGL-ES-based 3D game engine.

This included the realization of a shader optimized for the needs. The entire system is designed so that time-critical information is processed immediately and graphically displayed immediately. For the storage of the data an optimized data model in a SQLite database is used.

The Result

Noser Engineering can look back on a very exciting project. In a short time, a racing application was conceived, developed and implemented to maturity. The agile implementation was a perfect match for racing and was the basis for the project's success. The proximity to racing made this project a very special experience.