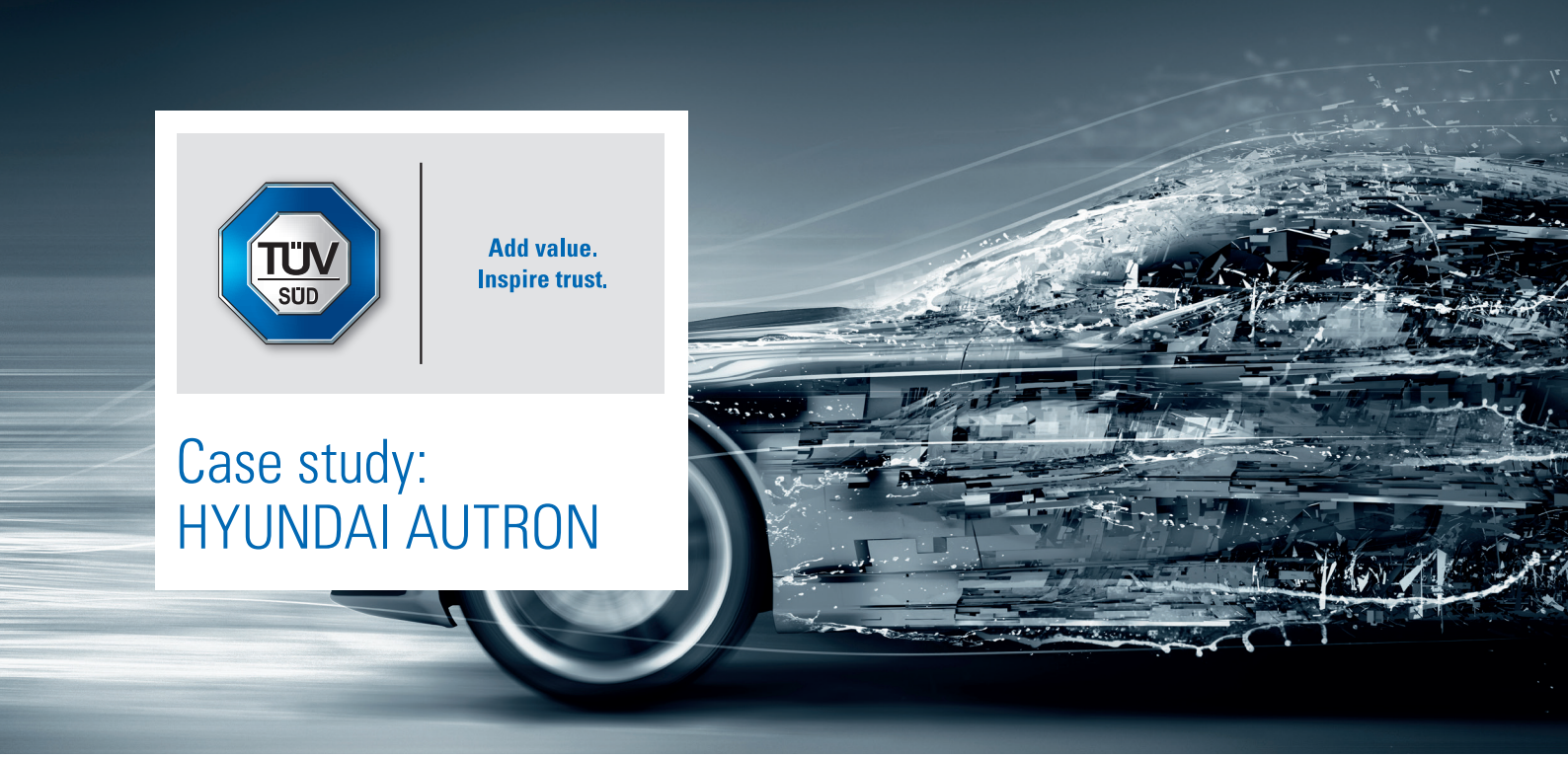

Add value.
Inspire trust.

Case study: HYUNDAI AUTRON

HYUNDAI AUTRON develops and supplies common software modules for various highly autonomous driving (HAD) and advanced driver-assistance (ADAS) control units. TÜV SÜD's experts helped HYUNDAI AUTRON to develop a preemptive safety design that future proofs its standard software platform and ensures the safety of vehicle control units, ADAS and automated vehicles (AV) that integrate it.

Business challenge

HYUNDAI AUTRON develops a standard software platform for automotive control units. This plays an important role as a common software module for automotive control units such as automatic parking assist and automated driving, as well as various future ADAS and AV functions. It wanted to enhance the software platform development by applying vehicle and control unit safety considerations. Also, as the standard software platform can be applied to any new control units that are developed in the future, various high-level safety requirements need to be preemptively considered and responded to at the design stage.

This gave HYUNDAI AUTRON the challenge of preemptively responding to customer safety design needs by considering safety requirements that are common to the control units to which the standard software platform is applied. To meet this challenge, HYUNDAI AUTRON prepared reference AV driving scenarios and considered relevant safety requirements for various control units which are available on the market today, and for those being developed in the future.

OVERVIEW	
Client name	HYUNDAI AUTRON
Industry	Advanced electronic automotive controls
Profile	Headquarters in Seoul, annual sales of KRW 8,598 billion and 734 employees. Major R&D fields include semiconductors, control units and software.
Business challenge	Preemptively responding to customer safety design requirements for its automotive control unit software platform.
Our solution	Preparation of reference driving scenarios for highway and urban areas, based on SOTIF safety requirements and experience from the PEGASUS project. Derivation of a methodology for enhancing the technical safety requirement of the software platform for ADAS and AV automotive control units, based on driving scenarios.
Business benefits	Development of safer software for future automobile control, responding quickly and flexibly to evolving customer requirements.

TÜV SÜD's solution

TÜV SÜD is an independent third-party service provider with over a century of automotive expertise and has strong capabilities relevant to HYUNDAI AUTRON's challenge, with a wealth of experience in the fields of ADAS, connected vehicles and AV.

TÜV SÜD's experts are actively involved in the development of the latest standards and regulations, providing clients with the most up-to-date knowledge of current and future requirements. TÜV SÜD has also been involved in the development of the first technical guideline in Singapore (TR68-3) for the secure and safe deployment of fully autonomous vehicles. TÜV SÜD's global team is closely involved with a range of highly autonomous driving projects across the world, including IAMTS, PEGASUS, VVM and CETRAN.

TÜV SÜD supported HYUNDAI AUTRON to prepare reference AV driving scenarios for highway and urban areas. TÜV SÜD experts supported in setting-up the driving scenario development methodology based on their experiences from the PEGASUS project and established the safety requirement derivation methodology based on SOTIF (Safety Of The Intended Functionality).

Business benefits

This project helped HYUNDAI AUTRON to gain a deeper understanding of the automated vehicle driving environment, as well as safety requirements at vehicle level and for the control units to which its standard software platform is applied.

In addition, by considering the safety requirements of the control unit and deriving the safety requirements of the standard software platform in advance, HYUNDAI AUTRON is fully prepared for the needs of current and future customers. This allows HYUNDAI AUTRON to respond to customers in a timely and high-level manner.

HYUNDAI AUTRON's preemptive safety design ensures the safety of vehicle control units, ADAS and AV that integrate its standard software platform. This also supports compliance with the safety requirements of Tier 1 and OEM customers. HYUNDAI AUTRON is now able to develop software for future automobile control by responding quickly and flexibly to evolving new technologies and market trends - providing the highest quality software products at all times.

JUNG-MIN KIM, SENIOR RESEARCH ENGINEER, FUNCTIONAL SAFETY TEAM, HYUNDAI AUTRON:

> "A preemptive response to customer needs with reference to AV driving scenarios, scenario development methodology and deriving a methodology for the safety requirements, which we developed together with TÜV SÜD, helps to reduce our development time and enhance the product quality."

Add value. Inspire trust.

TÜV SÜD is a trusted partner of choice for safety, security and sustainability solutions. It specializes in testing, certification, auditing and advisory services. Since 1866, the company has remained committed to its purpose of enabling progress by protecting people, the environment and assets from technology-related risks. Today, TÜV SÜD is present in over 1,000 locations worldwide with its headquarters in Munich, Germany. Through expert teams represented by more than 25,000 employees, it adds value to customers and partners by enabling market access and managing risks. By anticipating technological developments and facilitating change, TÜV SÜD inspires trust in a physical and digital world to create a safer and more sustainable future.

TÜV SÜD AG Westendstr. 199, 80686 Munich, Germany
+49 89 5791 0 automotive@tuvsud.com www.tuvsud.com/automotive