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Volkswagen's CARIAD and STMicroelectronics to co-develop chip for software-defined vehicles

- *New cooperation model: CARIAD and Volkswagen Group will enter into direct relationships with semiconductor suppliers at Tier 2 and Tier 3-level for the first time.*
- *Securing Tier 3 supply: CARIAD, TSMC, and ST plan that TSMC will manufacture the system-on-chip wafers for STMicroelectronics (ST)*
- *Innovative basis: The new co-developed system-on-chip (SoC) aims to complement ST's high-performance Stellar microcontroller family.*
- *Efficiency boost: The perfectly tailored SoC will be used as standard chip for all electronic control units in CARIAD's zone architecture.*

Wolfsburg, Germany and Geneva, Switzerland – July 20, 2022 – New cooperation model for software-defined cars: CARIAD, the software unit of Volkswagen Group, and STMicroelectronics (NYSE: STM), a global semiconductor leader serving customers across the spectrum of electronics applications, will shortly launch the joint development of an automotive system-on-chip (SoC).

Together, CARIAD and ST are developing perfectly tailored hardware for connectivity, energy management, and over-the-air updates making vehicles fully software-defined, secure, and future-proof. The planned cooperation targets the new generation of Volkswagen Group vehicles that will be based on the unified and scalable software platform. At the same time, the parties are moving to agree that TSMC, one of the world's leading dedicated semiconductor foundry companies, will manufacture the SoC wafers for ST. With this move, CARIAD aims to secure the chip supply for the Volkswagen Group's cars years in advance.

As part of its semiconductor strategy, CARIAD will enter into direct relationships with semiconductor suppliers at the Tier 2 and Tier 3-level for the Volkswagen Group for the first time. In the future, CARIAD plans to direct Tier 1 suppliers of the Group to use only the SoC co-developed with ST and ST's standard Stellar microcontroller for CARIAD's zone architecture.

"We are about to launch a groundbreaking new cooperation model for the Volkswagen Group. With the planned direct cooperation with ST and TSMC, we are actively shaping our entire semiconductor supply chain. We're ensuring the production of the exact chips we need for our cars and securing the supply of critical microchips for years to come," says Murat Aksel, Volkswagen Group's Board Member for Purchasing. "In this way, we are setting new standards in strategic supply chain management."

This co-development is a first for CARIAD and ST. *"With the co-development of the system-on-chip with ST ahead of us, we are consistently pursuing our semiconductor strategy. The SoC we are designing will be optimally matched to our software – without compromise. In this way, we can offer our Group's customers the best performance for their cars,"* says CARIAD CEO Dirk Hilgenberg. *"The use of a single, optimized architecture in all Volkswagen electronic control*

units will give us an enormous boost for the efficient development of our software platform.” This efficiency will allow all electronic control unit (ECU) devices – from microcontrollers to SoCs – to run on a common basic software in the future.

The new SoC aims to complement ST’s high-performance Stellar microcontroller family by extending its power-efficient real-time capabilities to service-oriented environments. CARIAD is contributing its specific target requirements and functionalities for the Volkswagen Group vehicles and will help extend the architecture of ST’s 32-bit Stellar Automotive microcontroller.

“ST designed its Stellar architecture specifically to facilitate the transition to software-defined vehicles and CARIAD’s decision to work with ST to fit the requirements and functionalities of the Volkswagen Group’s next-generation vehicles highlights the success of our approach,” said Marco Monti, President of ST’s Automotive and Discrete Products Group. *“The combination of CARIAD’s software competences with ST’s design expertise and innovative Stellar automotive architecture will position the Volkswagen Group to deliver best-in-class, connected, software-defined vehicles.”* CARIAD and STMicroelectronics have agreed on the key points of the cooperation. The details of the cooperation will now be finalized between the companies and cast into detailed agreements.

CARIAD will include both the jointly developed SoCs based on Stellar and the standard Stellar microcontroller in its new AU1 processor family. Its range offers CARIAD flexible scaling for various applications in the car to meet the needs of all Volkswagen Group brands. The chips are being designed for all applications in the areas of networking, drivetrain, energy management, and comfort electronics – in zone controllers or in servers in VW’s operating system, VW.OS. Building on Stellar’s unique attributes, the entire AU1 processor family will be powerful enough to easily map future function extensions via over-the-air updates. Using a common device architecture will enable CARIAD experts to develop only one basic software for all electronic control units (ECU), substantially reducing complexity and accelerating development. Moreover, the Stellar architecture encourages the integration of numerous functions into individual ECUs. This significantly reduces the number of ECUs in the car, increasing the cost effectiveness and reliability for the software company.

The collaboration with ST enables CARIAD to further expand its expertise in semiconductors and gain additional experience in their co-development. *“This is just the first step,”* says CARIAD CTO Lynn Longo. *“In the future, we also aim to enter into co-development of high-performance semiconductors for complex functions.”*

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About CARIAD SE

CARIAD is an independent automotive software company in the Volkswagen Group that is consolidating and further expanding the Group’s software competencies. The company is developing the leading technology stack for the automotive industry with the mission to make the automotive experience safer, more sustainable and more comfortable for people. Established in 2020 under the name Car.Software Organization, CARIAD has around 5,000 engineers and developers today working on a unified software platform for all Volkswagen Group brands, comprising an operating system, a unified architecture and an automotive cloud. The new software platform is to be used for the first time in the middle of the decade. The company is also developing digital functions for the vehicle, including driver assistance systems, a standardized infotainment platform, software functions for linking powertrains, chassis and charging technology, as well as the new digital ecosystem and digital services in and around the

vehicle. CARIAD has software competence centers in Wolfsburg, Ingolstadt, the Stuttgart region, Berlin and Munich, among other places, and works closely with the Volkswagen Group's international development teams in the US and China. For more information, visit <https://cariad.technology>.

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About STMicroelectronics

At ST, we are 48,000 creators and makers of semiconductor technologies mastering the semiconductor supply chain with state-of-the-art manufacturing facilities. An integrated device manufacturer, we work with more than 200,000 customers and thousands of partners to design and build products, solutions, and ecosystems that address their challenges and opportunities, and the need to support a more sustainable world. Our technologies enable smarter mobility, more efficient power and energy management, and the wide-scale deployment of the Internet of Things and connectivity. ST is committed to becoming carbon neutral by 2027. Further information can be found at www.st.com.

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