Continental and Synopsys Provide Vehicle Digital Twin Capabilities to Accelerate Software Development

Highlights:

- Integration of Synopsys virtual electronic control unit (vECU) solutions with Continental's cloud-based development environment (CAEdge) enables faster advancement for the Software-Defined Vehicle (SDV)
- Synopsys virtual prototyping tools enable the development of vECUs supporting a broad range of abstraction levels for vehicle digital twins
- Continental's collaboration with Synopsys marks a significant step in accelerating automotive software development and system testing

FRANKFURT, Germany, December 11, 2023. /PRNewswire/ -- Continental today announced a collaboration with Synopsys to accelerate the development and validation of software features and applications for the Software-Defined Vehicle (SDV). This new collaboration integrates Synopsys' industry-leading virtual prototyping solutions for virtual Electronic Control Units (vECU) within Continental's Automotive Edge (CAEdge) cloud-based development framework. The result is digital twin capabilities for software development that help automakers accelerate software development and speed up their time to market.

"The Software-Defined Vehicle requires working on hardware, software, applications, and validation in parallel, all while maintaining the highest level of quality and safety," said Gilles Mabire, CTO at Continental Automotive. "Synopsys' virtual ECUs and vehicle digital twin capabilities enable us to develop and test advanced software solutions earlier, so they can be deployed to vehicles faster."

Using virtual environments to develop real-world solutions
The modern SDV promises drivers a cutting-edge user experience with continuously improved and enhanced software features. In order to fulfill this demand, car manufacturers rely on comprehensive tools to simulate the performance of digital features and confirm their compatibility with existing and new car models. CAEdge provides vehicle manufacturers and their partners with a cloud-based development environment for software-intensive vehicle architectures to develop solutions in a fraction of the time traditionally needed. Its modular hardware and software platform connects the vehicle to the cloud and features a virtual workbench to develop, supply and maintain software-intensive system functions. Within this framework, digital representations of the real-world physical devices, such as vECUs and the vehicle digital twin, facilitate the development and validation of software solutions prior to general hardware availability.

"The Software-Defined Vehicle focuses automotive development and innovation on the software that offers customers real added-value," explains Gilles Mabire. "By combining our CAEdge framework with Synopsys' virtual ECU technologies, we are directly addressing the vehicle manufacturers' needs to accelerate software development and automate software validation in a modern cloud-based environment."

Broad range of abstraction available for vECUs and digital twins
The Synopsys virtual prototyping tools simplify the deployment of individual vECU and vehicle digital twins by combining multiple vECUs with vehicle dynamics, sensor and environment simulations. They support the full range of vECUs abstraction (L1 through L4), mixed abstraction vehicle simulation, and come with the largest library of models developed within an automotive semiconductor and software ecosystem. Together with CAEdge, developers can benefit from the full power of a digital twin in the development pipeline for the SDV, automating both the software validation and delivery process during development and throughout the vehicle's entire lifecycle.

"The combination of CAEdge and Synopsys virtual prototyping tools marks a significant step in accelerating the deployment of the Software-Defined Vehicle," said Tom De Schutter, vice president of Engineering, Systems Design Group at Synopsys. "Bringing together Continental's proven track record in design, software and manufacturing of complex automotive systems at scale with Synopsys' proven vECU technologies, we are expanding and speeding the automotive design process from physical to virtual."

Continental at CES 2024
Both CAEdge and the Synopsys vECU technology integration will be part of Continental's presentation at CES 2024. Continental will showcase its latest technologies at a private structure exhibit in Central Plaza across from the Las Vegas Convention Center from Tuesday, January 9 through Friday, January 12. The technology company has numerous solutions that highlight mobility innovations, from the road to the cloud.

Continental develops pioneering technologies and services for sustainable and connected mobility of people and their goods. Founded in 1871, the technology company offers safe, efficient, intelligent and affordable solutions for vehicles, machines,

traffic and transportation. In 2022, Continental generated sales of €39.4 billion and currently employs around 200,000 people in 57 countries and markets.

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