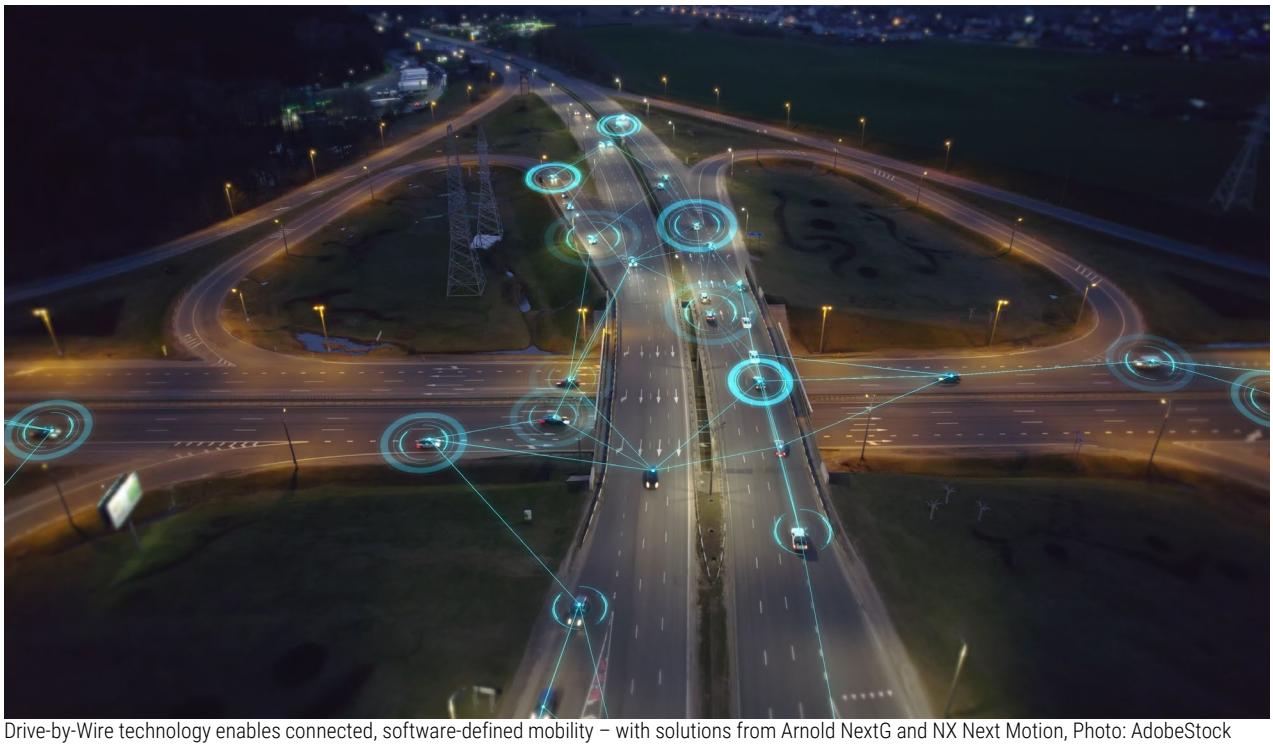
PRESS RELEASE

Pfronstetten-Aichelau, March 12. 2025

Drive-by-Wire: Safety and Innovation from a Single Source – Made in Germany

The future of mobility is software-driven – and Drive-by-Wire plays a key role in this transformation. Traditional mechanical steering systems, such as the steering column, are reaching their limits, as they can only be partially electronically controlled and integrated into digital control systems. Fully electronic steering solutions set new benchmarks in safety, flexibility, and efficiency. Arnold NextG takes this technology a step further with its central control unit, NX Next Motion – a highly integrated system that seamlessly combines hardware, software, and safety architecture. Designed and manufactured in Germany, NX Next Motion paves the way for autonomous, software-defined vehicles.



Drive-by-Wire technology enables connected, software-defined mobility – with solutions from Arnold NextG and NX Next Motion, Photo: AdobeStock

Maximum Safety Through Intelligent Redundancy

NX Next Motion is redefining Drive-by-Wire technology. Unlike conventional systems with multiple control units, a single, highly advanced ECU (Electronic Control Unit) manages all steering functions. This highly redundant, road-approved system ensures precise and reliable vehicle control – even in the event of individual component failures. However, redundancy alone is not enough. The key lies in an intelligent safety architecture that detects faults in real time and applies adaptive response strategies to maintain safe vehicle operation at all times. NX Next Motion integrates fail-operational architectures, sensor redundancy, and intelligent control mechanisms into a robust solution that delivers maximum stability, even in extreme conditions.

At the same time, NX Next Motion replaces the mechanical link between the steering wheel and the wheels with a fully electronic control system. Thanks to its fail-operational architecture, the vehicle remains steerable even in the event of a failure, while sensor redundancy ensures precise execution of steering commands. This not only reduces complexity but also enhances efficiency and operational safety.

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New possibilities for vehicle design and autonomous driving concepts

Beyond technological advancements, Drive-by-Wire opens up new design and functional possibilities for future vehicle generations. Eliminating the mechanical steering column creates more interior space, reduces vehicle weight, and enables innovative vehicle concepts – from robotaxis to autonomous commercial vehicles. At the same time, software-defined steering enhances driving dynamics and allows for an unprecedented level of vehicle behavior customization.

The key to market approval: regulatory hurdles and cybersecurity

Before a Drive-by-Wire system can be deployed on public roads, it must meet strict regulatory requirements. Standards such as ISO 26262 (ASIL-D), UNECE R79, and NHTSA regulations define the safety benchmarks for fully electronic steering systems. Manufacturers face the challenge of ensuring not only functional safety but also complying with complex cybersecurity requirements. Arnold NextG has not only taken on this challenge but fully meets these stringent standards.

Why is Drive-by-Wire the key technology for autonomous driving? How does Arnold NextG overcome regulatory challenges? What steps are necessary to establish Drive-by-Wire as a standard technology for autonomous vehicles?

Find answers to these questions in our comprehensive Whitepaper – now available.

Download now and explore the future of vehicle control!

About Arnold NextG:

Arnold NextG realizes the safety-by-wire® technology of tomorrow: The multi-redundant central control unit NX NextMotion enables a fail-safe and individual implementation, independent of the vehicle platform and unique worldwide. The system can be used to safely implement autonomous vehicle concepts in accordance with the latest hardware, software and safety standards, as well as remote control, teleoperation or platooning solutions. As an independent pre-developer, incubator and system supplier, Arnold NextG takes care of planning and implementation - from vision to road approval. With the road approval of NX NextMotion, we are setting the global drive-by-wire standard. www.arnoldnextg.com

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