

When Digital Commands Meet Real-World Vehicle Physics

Arnold NextG expands its system architecture for controlled motion on automated and unmanned defense platforms



Drive-by-wire as the foundation for automated, teleoperated, and unmanned vehicle platforms: Arnold NextG continues to develop vehicle architecture for safety-critical applications. Photo: Arnold NextG

Pfronstetten-Aichelau, October 6, 2026 – Autonomous and unmanned defense platforms must be able to execute movement requirements in a controlled manner even when conditions change during a mission. Terrain, traction, gradient, load, or vehicle condition all influence whether a digitally planned movement is actually feasible.

This challenge becomes particularly evident with autonomous convoys or unmanned logistics platforms: An identical trajectory can present different levels of difficulty for two vehicles depending on their load, the terrain, or available braking and propulsion reserves. This creates a critical system limitation—the “control gap”—between what a higher-level autonomy or mission system demands and what the actual vehicle platform can execute in a controlled manner under its current conditions.

Arnold NextG addresses the Control Gap with a new product to be unveiled in early November. At the heart of this development is Vehicle Motion Assurance—an additional vehicle-side function that bridges the gap between digital motion commands and drive-by-wire execution.

This development builds on Arnold NextG’s more than 25 years of product development expertise in digital vehicle control and system integration. This know-how forms the technological foundation for the next stage of vehicle architecture development.

PRESS RELEASE

Pfronstetten-Aichelau, October 6, 2026



A New Layer Between Motion Request and Execution

With NX NextMotion, Arnold NextG has already created the drive-by-wire control layer for in-vehicle execution. Steering, braking, propulsion, and relevant secondary functions are digitally controlled via this layer. The system architecture is now being expanded to include an upstream layer. Its task is Vehicle Motion Assurance: it verifies whether and how a requested motion can be executed in a controlled manner under the platform's current conditions.

To this end, motion requests are placed in the context of the real-world platform, evaluated, constrained, and monitored during execution. This creates a clear motion chain: an autonomy, mission, or remote system defines the desired motion. The new product layer handles Vehicle Motion Assurance. NX NextMotion implements the approved motion as the drive-by-wire control layer on the vehicle.

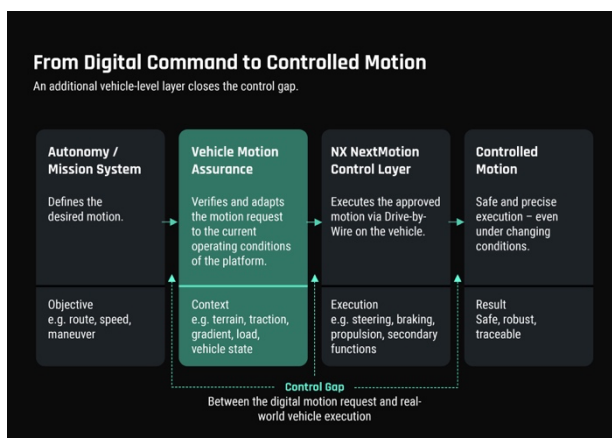
"Autonomous systems today can see, analyze, and make decisions. The crucial question is whether their motion requirements can also be implemented in a controlled manner under real-world operational conditions," says Kevin Arnold, CEO of Arnold NextG. "It is precisely at this interface that we are further developing our vehicle architecture."

The new solution is aimed in particular at manufacturers, system integrators, and operators of automated, teleoperated, and unmanned defense platforms. It extends the existing Arnold NextG architecture precisely at the point where the "control gap" arises: between the digital motion requirement and the actual vehicle execution.

In the coming weeks, Arnold NextG will provide further technical details on this additional layer. A full product launch will follow in early November—featuring the specific system architecture, the product name, and the technical solution to the "control gap": Command to Controlled Motion.

WE CONTROL WHAT MOVES.

More Information: www.arnoldnextg.com



From digital motion commands to controlled vehicle motion: Vehicle Motion Assurance addresses the control gap between requested motion and actual vehicle execution. NX NextMotion, acting as a drive-by-wire control layer, handles implementation in the vehicle. Graphic: Arnold NextG



Arnold NextG's test platform for developing and testing electronic vehicle control under real-world driving conditions. Photo: Arnold NextG

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NX NextMotion forms the drive-by-wire control layer for the electronic control of steering, braking, propulsion, and other vehicle functions. Photo: Arnold NextG

About Arnold NextG:

Arnold NextG is bringing tomorrow's Safety-by-Wire® technology to life: the multi-redundant NX NextMotion central control unit enables a fail-safe and customized implementation that is independent of vehicle platforms and unique worldwide. The system enables the safe implementation of autonomous vehicle concepts in accordance with the latest hardware, software, and safety standards, as well as remote, teleoperation, and platooning solutions. As an independent early-stage developer, incubator, and system supplier, Arnold NextG handles planning and implementation—from the initial vision to road approval. With the road approval of NX NextMotion, we are setting the global drive-by-wire standard. www.arnoldnextg.de

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