



NVIDIA Halos



NVIDIA Halos is a full-stack comprehensive safety system for autonomous vehicles that unifies vehicle architecture to AI models.

NVIDIA Halos elements span from hardware, software, and tools to services for safely developing autonomous vehicles (AVs) from cloud to car, with a focus on AI-based, end-to-end models.

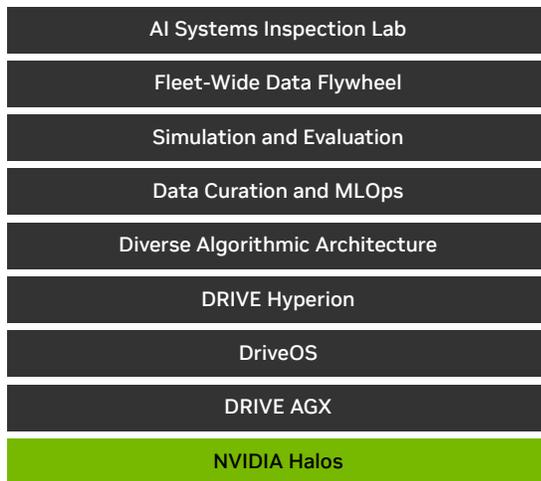
On top of the elements sits the NVIDIA AI Systems Inspection Lab, which allows customers to verify the safe integration of their products with the system's.

NVIDIA Halos complements existing safety practices while introducing unique elements, ensuring regulatory compliance and advancing safe and reliable AV stacks.

NVIDIA Halos Approach

NVIDIA Halos uses three powerful computers:

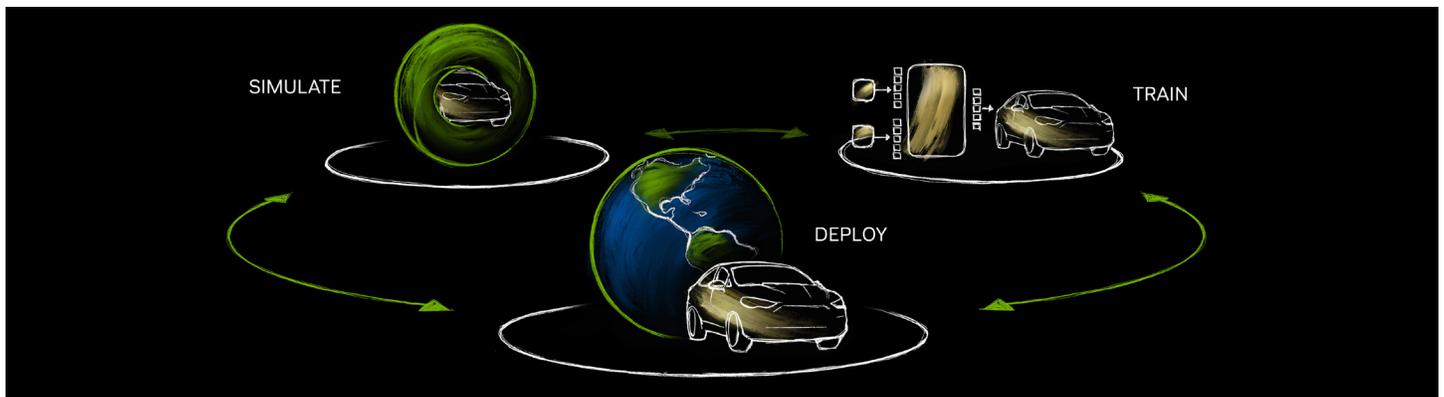
- > NVIDIA DGX™ provides a powerful compute foundation for training with AI safety at the forefront. To ensure our models learn safe behaviors, we run AI-powered curation workflows to filter out undesirable behaviors and biases before training.
- > NVIDIA Omniverse™ and Cosmos™ provide a safe training ground for autonomous vehicles, building physically accurate driving simulations. Omniverse-powered simulation also aids in validation, augmenting held-out safety test data to fill gaps in coverage.
- > NVIDIA DRIVE AGX™ enables runtime safety across layers of the hardware and software stack.



ANAB



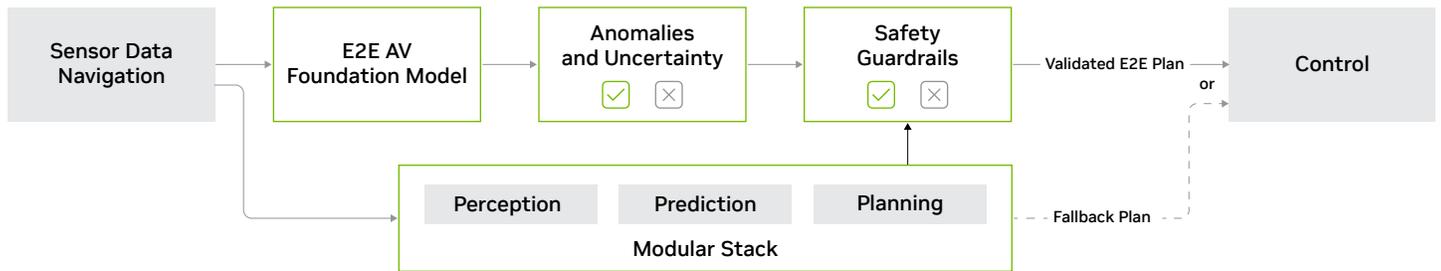
TÜV



NVIDIA Halos System Elements

Design-time, deployment-time, and validation-time guardrails collectively build safety into several layers of technologies. Read the blog [here](#).

HW/SW & Platform Safety	Algorithmic Safety	Ecosystem Safety	AI Systems Inspection Lab
<ul style="list-style-type: none"> > Safety assessed SoC > Safety certified NVIDIA DriveOS™ > Safety assessed base platform > NVIDIA DRIVE AGX Hyperion™ > DRIVE OS Linux for Safety (future offering) 	<ul style="list-style-type: none"> > API for safety data creation, curation, reconstruction > Libraries for safety data loading and accelerators > NVIDIA Omniverse and Cosmos for AV Simulation Blueprint to train, test, and validate AVs > Diverse AV stack that combines a modular stack and E2E AI models 	<ul style="list-style-type: none"> > Safety data with diverse, unbiased data > Continual improvements through a safety data flywheel 	<ul style="list-style-type: none"> > Leadership in AV safety standardization and regulation > First of its kind to be accredited by ANAB, NVIDIA AI Systems Inspection Lab inspects and verifies the integration of partners' products with NVIDIA Halos' safety elements



Assessed by Experts

Independent third-party assessments of NVIDIA Halos elements demonstrate NVIDIA's ongoing commitment to AV safety.



TÜV SÜD

TÜV SÜD certified NVIDIA's Automotive Product Lifecycle (PLC) and DriveOS 6.0 to ISO 26262 standard for Automotive Safety Integrity Level (ASIL D). NVIDIA also received ISO/SAE 21434 Cybersecurity Process certification for its automotive engineering processes.



TÜV Rheinland

TÜV Rheinland performed an independent United Nations Economic Commission for Europe safety assessment of NVIDIA DRIVE AV related to safety requirements for complex electronic systems.

NVIDIA Halos is the result of continuous investment in safety, from research to engineering:

- > 15,000+ engineering years invested in vehicle safety to date
- > 10,000+ hours of contributions to international committees
- > 21 billion+ transistors safety assessed
- > 7 million lines of safety-assessed code
- > 22,000+ platform safety monitors
- > 2 million daily end-to-end integration tests for validation
- > 20,000+ hours of safety test data
- > 1,000+ patents filed
- > 240+ research papers published
- > 30+ safety and cybersecurity certificates

NVIDIA AI Systems Inspection Lab



NVIDIA is the first company in the world to establish an ANSI National Accreditation Board (ANAB) accredited inspection body integrating functional safety, cybersecurity, AI, and regulations into a unified safety framework. The lab helps to ensure that NVIDIA Halos' partner system integrations meet rigorous safety and cybersecurity standards through impartial assessments. Partners/customers get an inspection report and an inspection certificate to be consumed with technical services or vehicle certification agencies for final certification or Type Approval.

Ready to Get Started?

[Learn more about NVIDIA Halos.](#)

