Agenda

Session 1: 1:00 PM to 1:50 PM

Introduction to NVIDIA Halos - Strategy for AV Safety
- Chapter 1: Overview
- Chapter 2: Design-time safety guardrails

Session 2: 2:00 PM to 2:50 PM

Guardrails for NVIDIA Halos Across the Product Life Cycle
- Chapter 3: Deployment-time guardrails
- Chapter 4: Validation-time guardrails

Session 3: 3:00 PM to 3:50 PM

Safety Regulation and Standardization in the Era of AI-Based AV
- Chapter 5: Safety regulation and standardization
- Chapter 6: From AVs to general Physical AI

Session 4: 4:00 to 5:00 PM

Navigating the High-Stakes Safety Challenges of AVs

Chapters 5 & 6: Safety Regulation and Standardization in the Era of AI-Based AVs / From AVs to general Physical AI

Riccardo Mariani, VP Safety, NVIDIA

Tina Kirschner, Manager Regulatory Affairs, NVIDIA

Chapter 5: Safety Regulation and Standardization in the Era of AI-Based Avs

Synoptic View of NVIDIA Halos AV Safety Day

Design-time

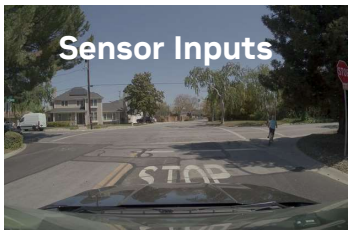
Large-Scale Data

Design-time safety (Chapter 2):
- Safety architecture
- AI train-time safety
- AV platform safety
- Data flywheel and processes

E2E

Validation-time guardrails (Chapter 4):
- Metrics
- Coverage – top-down
- Coverage – bottom-up
- Data flywheel and processes

Run-time



Deployment-time guardrails (Chapter 3):
- Run-time monitoring – HW
- Run-time monitoring – SW
- Arbitration
- Data flywheel and processes

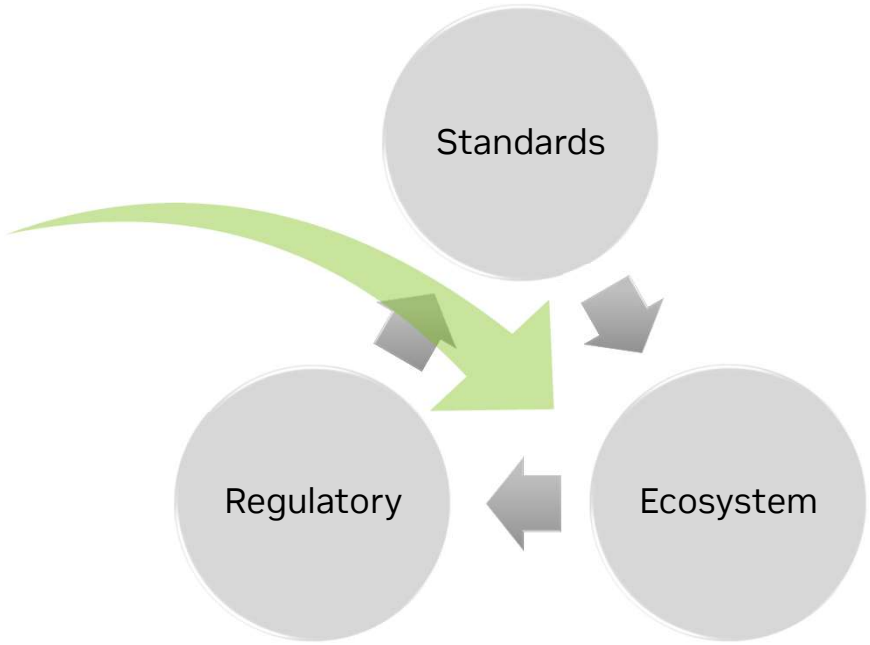
Safety Regulation and Standardization in the Era of AI-Based AV (Chapter 5):
- Standardization challenges
- Regulatory challenges
- NVIDIA AI Systems Inspection Lab

From AVs to general Physical AI (Chapter 6):
- How Halos extends to Physical AI
- NVIDIA IGX elements
- Outside-in safety

Setting the context

The key questions we want to answer in this chapter:

1. Can the **complexity** of a E2E Fused AV Stack be handled within the boundaries of existing standards ?
2. How is the evolving AI safety standardization and regulation landscape impacting the compliance of a E2E Fused AV Stack ?
3. Are the Halos **safety principles** aligned with those standards and regulations ?
4. How can we help the **ecosystem** in addressing compliance challenges ?



Chapter 5a: Standardization Challenges

Riccardo Mariani, VP Safety, NVIDIA

How to cope with complexity of E2E Fused AV Stack

1) setting up process steps to address system limitations and feedback learnings

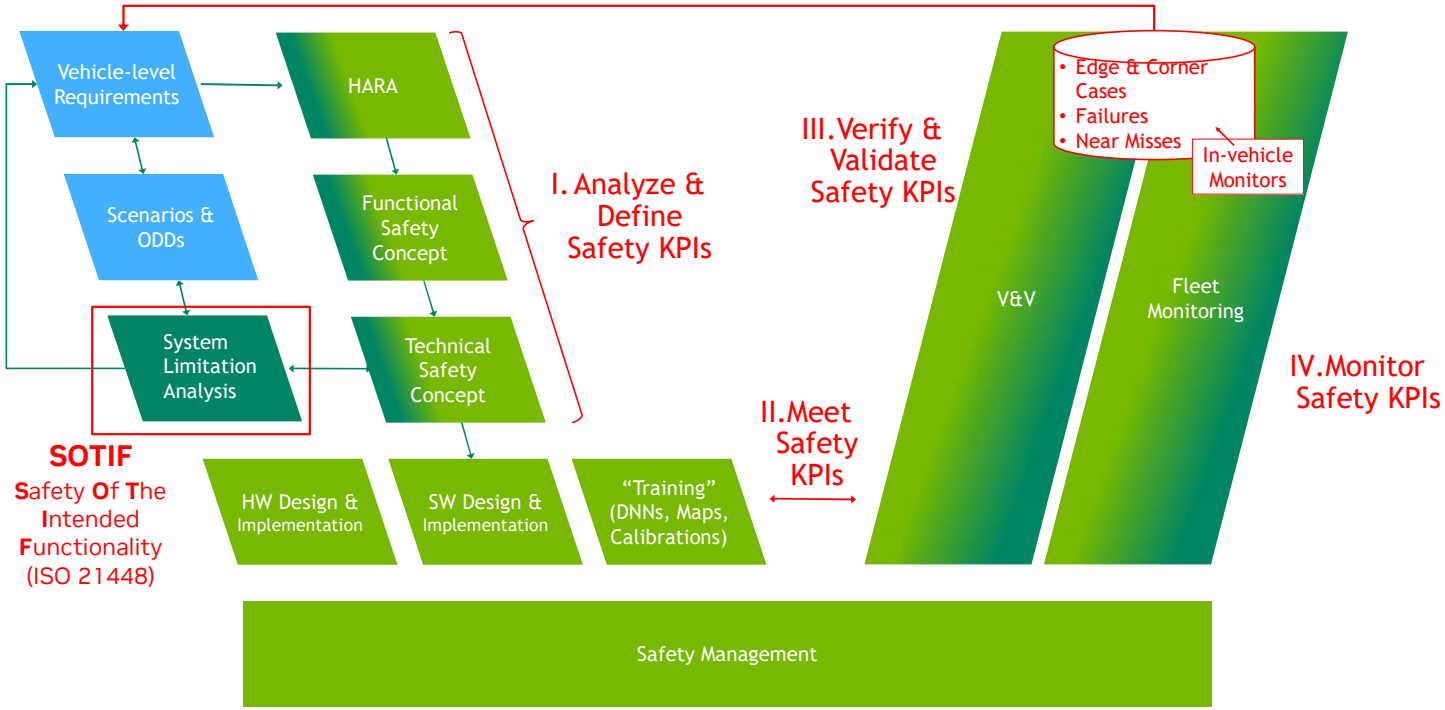
Challenges

Safety KPIs

System limitations

Field learnings

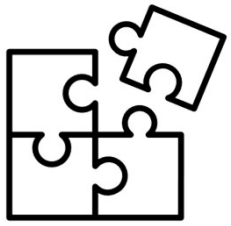
NVIDIA Halos



How to cope with complexity of fused E2E stack

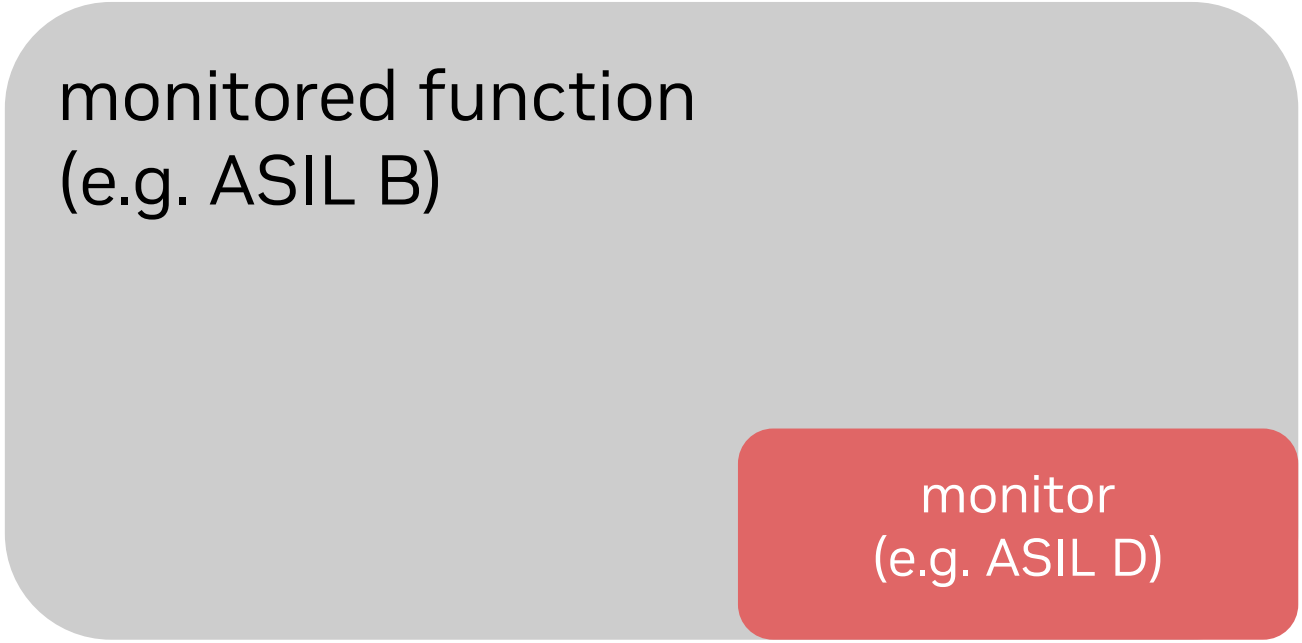
2) setting up process steps and architecture for ASIL decomposition and monitoring

Challenges



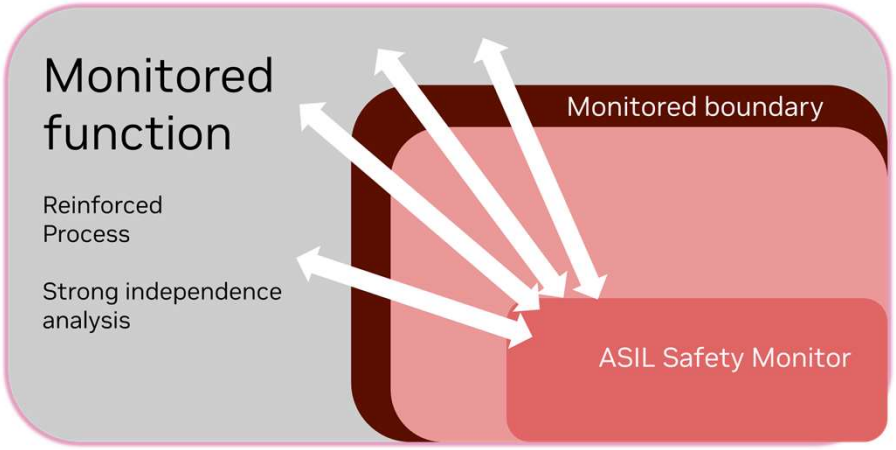
Misuse of ASIL decomposition:

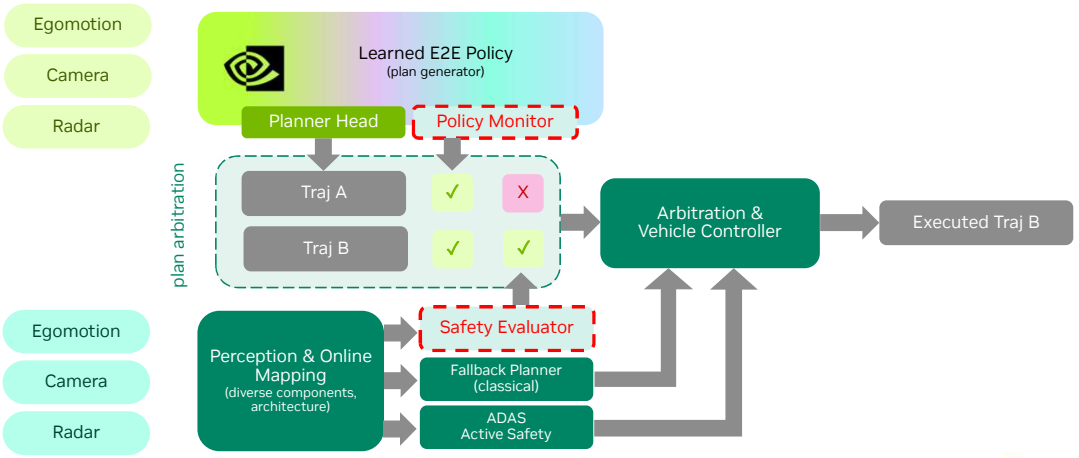
- Poor monitored function
- Poor monitor
- Poor Common Cause Failures (CCF) analysis



How to cope with complexity of fused E2E stack

2) setting up process steps and architecture for ASIL decomposition and monitoring





How to cope with complexity of fused E2E stack

3) Combine FuSa, SOTIF, cybersecurity, AI Safety in a holistic process

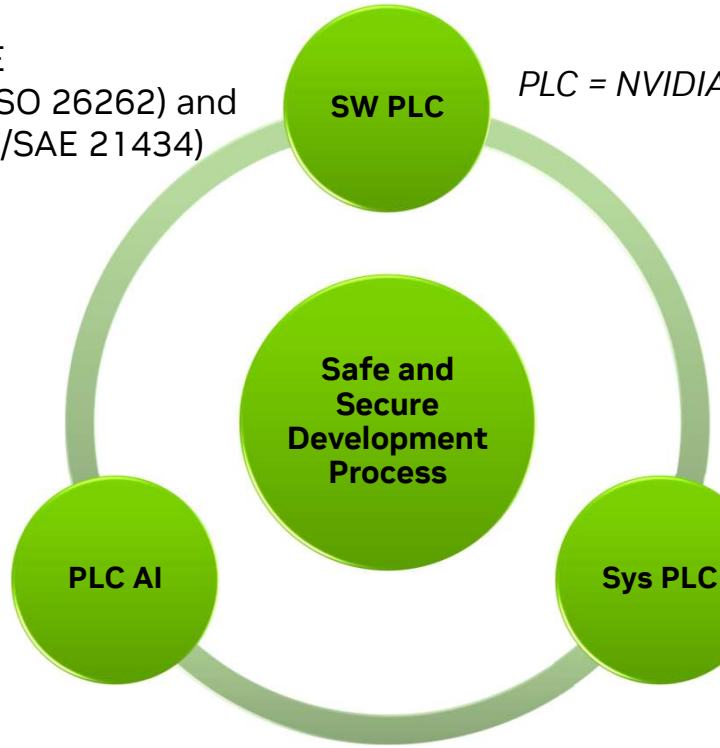
Challenges

Processes Proliferation

ISO 26262
ISO 21448
ISO/SAE 21434
ISO PAS 8800
.....

NVIDIA Halos

SW development process
PLC L1 = quality
PLC L2 = + ASPICE
PLC L3 = + FuSa (ISO 26262) and cybersecurity (ISO/SAE 21434)



PLC = NVIDIA Product Life Cycle

AI Safety
AI Trustworthiness

System development process
SOTIF (ISO 21448)

NVIDIA Halos' Safety Assessments Portfolio

Halos' Element	Description	Type of Element	ISO 26262 Capability	Assessment/Certification Strategy
NDAS	Software and system for autonomous driving	NDAS Platform	Up to ASIL D	Process certification Concept assessment Product assessment
Hyperion Sensor Library Hyperion 8.x Hyperion 9.x	Library of pre-qualified sensors for AV applications	Hyperion Platform	Varies based on supplier safety claims	N/A
Reference Board DRIVE AGX Orin P3663 DRIVE AGX Thor	Reference design for customer productization	Base Platform Basic HW	Up to ASIL D	Process certification Concepts assessment
DriveOS QNX Safety 6.0 QNX Safety 7.0	Type 1 Hypervisor, QNX operating system, deterministic scheduling, sensor management support	Base Platform Basic SW	Up to ASIL D	Process certification Product certification
Deep Learning Inferencing (DLI) GPU-DLI DLI	Performance and safety optimized neural network inferencing with GPU and TensorRT	Base Platform Basic SW	Up to ASIL D	Process certification Product certification
SoC DRIVE Orin DRIVE Thor	System on Chip for Physical AI	Base Platform Basic HW	ASIL D systematic ASIL B random	Process certification Concept assessment Product assessment

NVIDIA HW and SW Processes
NVIDIA SOC
NVIDIA DriveOS
NVIDIA CSMS

Certified by TÜV SÜD

TÜV SÜD recently granted the ISO/SAE 21434 Cybersecurity Process certification to NVIDIA for its automotive system-on-a-chip, platform and software engineering processes.

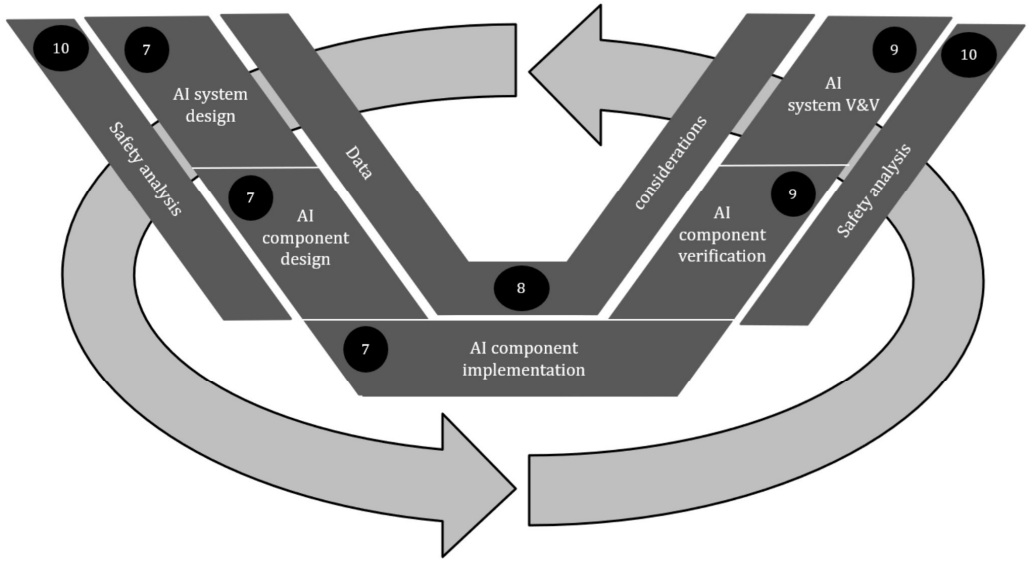
Moreover, the NVIDIA DriveOS 6.0 operating system conforms with ISO 26262 Automotive Safety Integrity Level up to ASIL D.

"Meeting cybersecurity process requirements is of fundamental importance in the autonomous vehicle era," said Martin Webhofer, CEO of TÜV SÜD Rail GmbH. "NVIDIA has successfully established processes, activities and procedures that fulfill the stringent requirements of ISO 21434. Additionally, NVIDIA DriveOS 6.0 conforms to ISO 26262 ASIL D standards."

The evolving AI safety standardization landscape

ISO PAS 8800
Road Vehicles – Safety and AI

- Published in December 2024
- On top of ISO 26262 and ISO 21448 (SOTIF)
- Key novelty: AI safety lifecycle



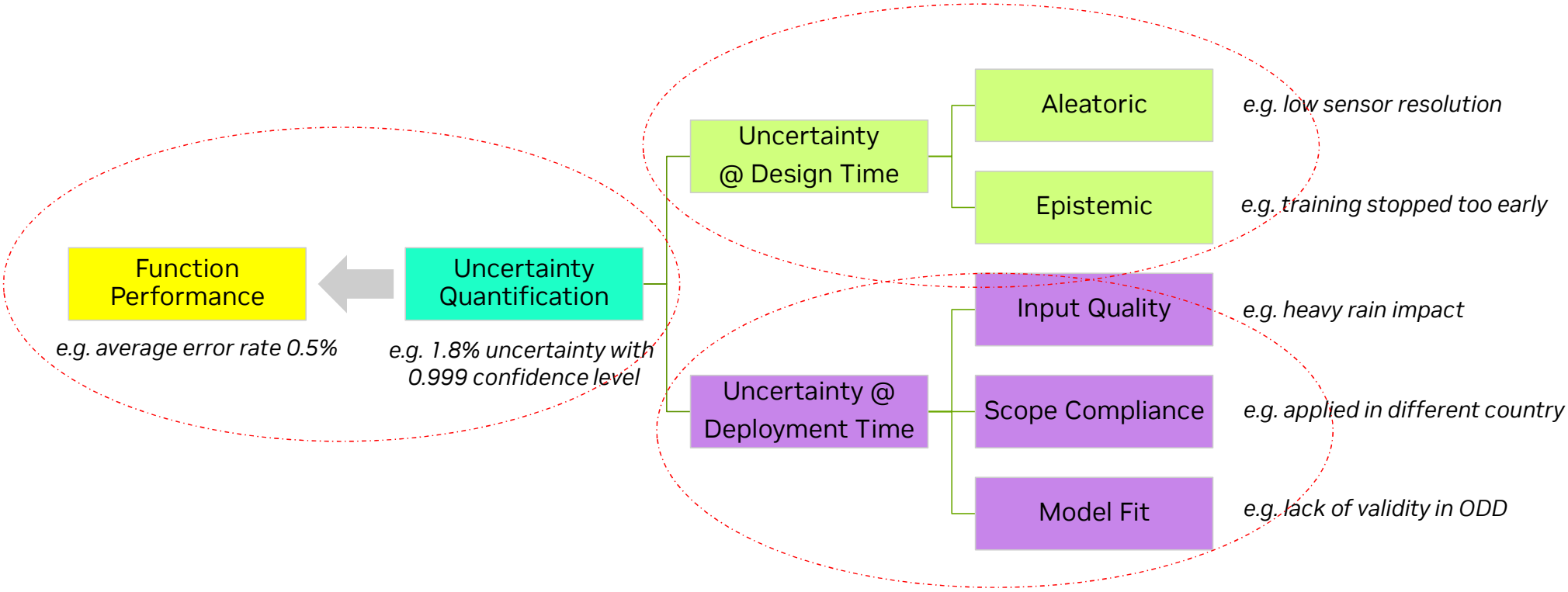
ISO/IEC TR 5469, TS 22440 series
Functional Safety and AI systems

- TR 5469 Published in January 2024
- CD of TS 22440 series expected within fall 2025
- Key novelty: classification of AI technologies according to SW Technology Class (SWTC) and Application Usage Level (AUL)

		SW Technology Class (SWTC)		
		SWTC I	SWTC II	SWTC III
Application Usage Level (AUL)	AUL-A1			
	AUL-A2			
	AUL-B1			
	AUL-B2			
	AUL-C			
	AUL-D			

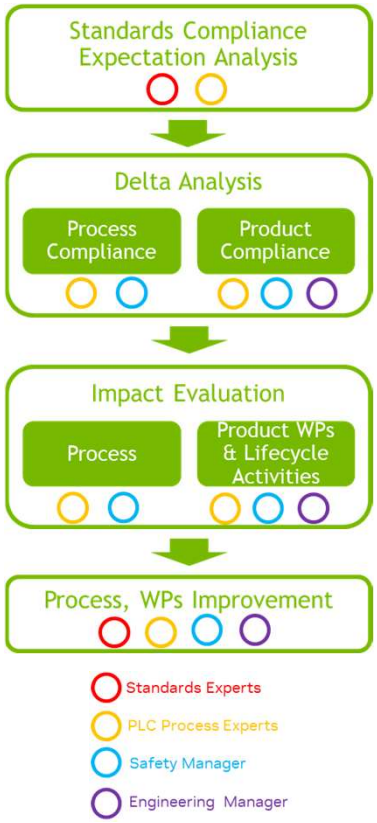
Colors: depth and rigor of requirements

AI Uncertainty Quantification (ISO/IEC TS 25223)

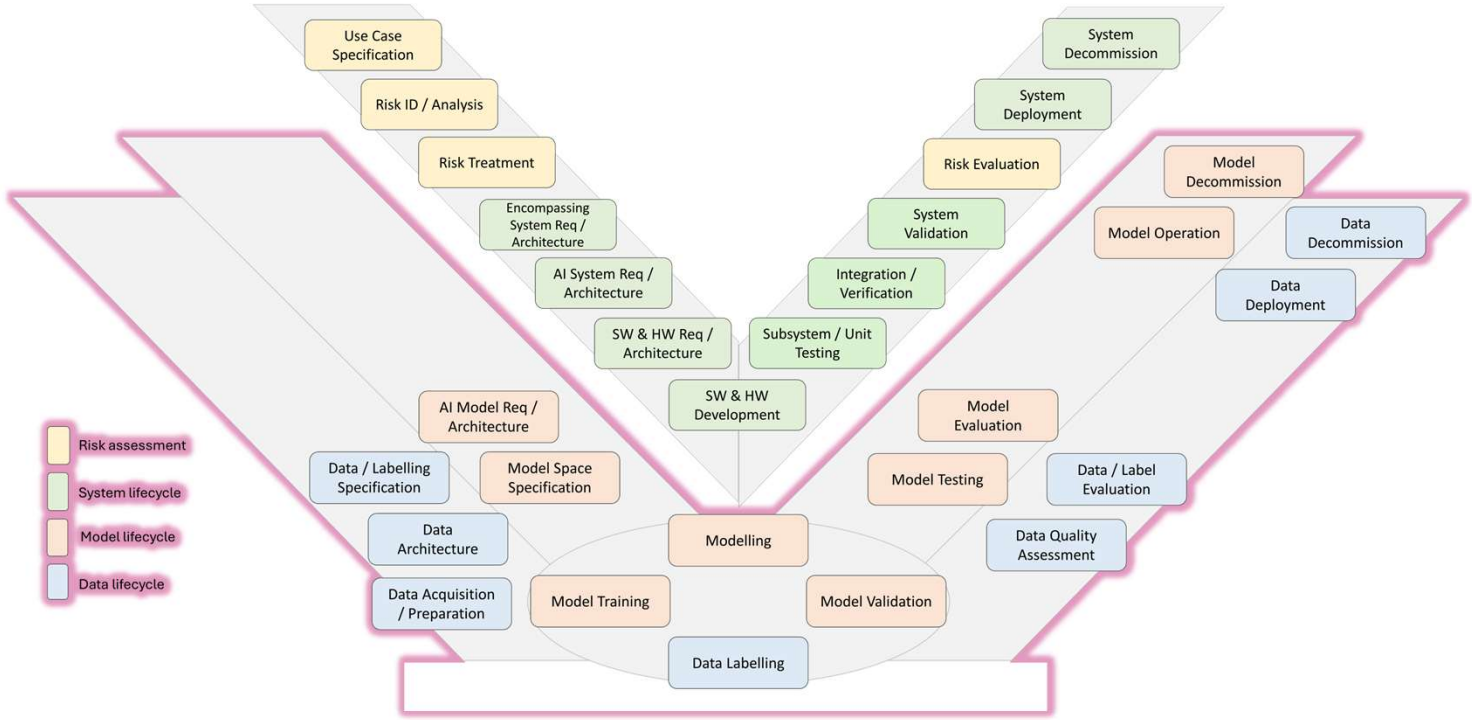


Halos approach to AI safety standards compliance

Impact Analysis and Evaluation

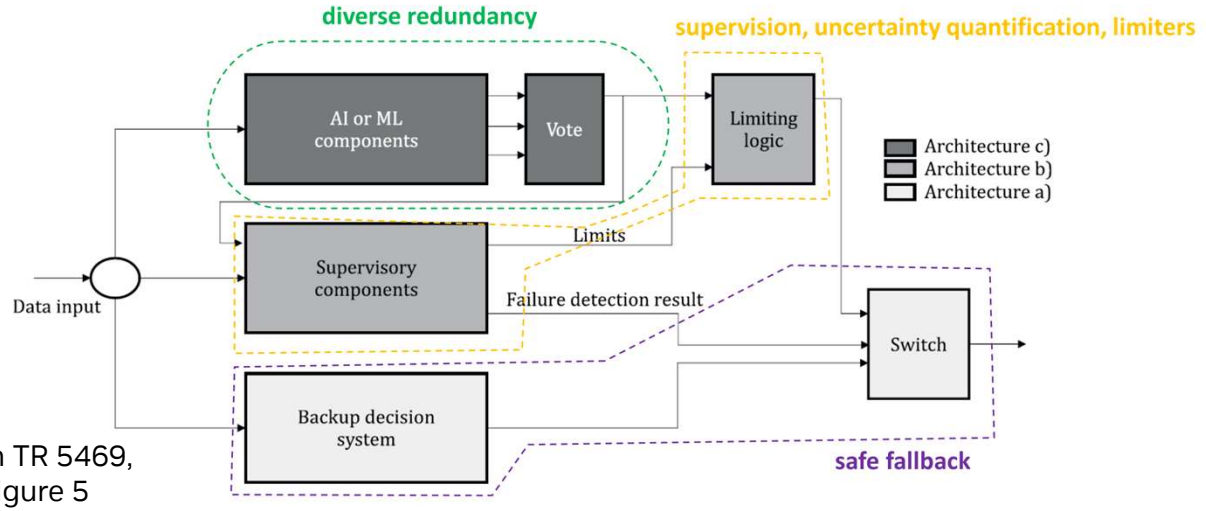


Integrated Process Lifecycle



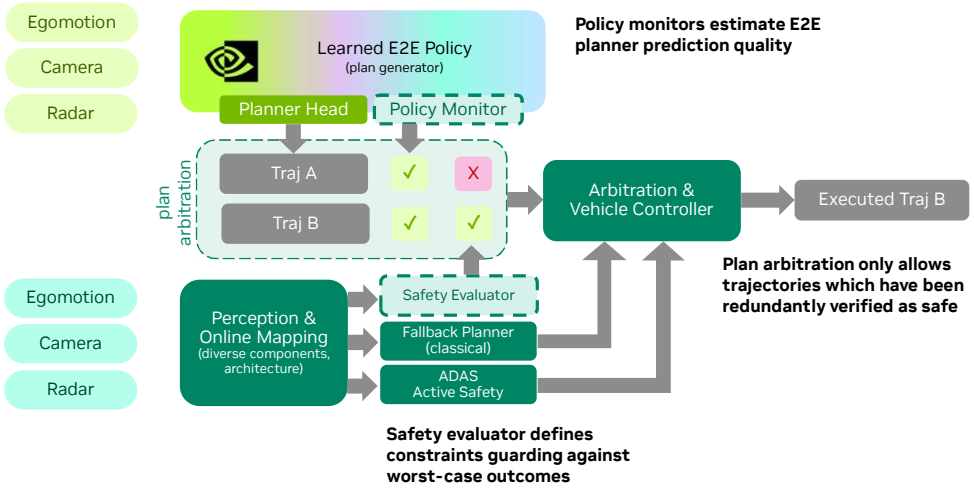
Architecture for Safe AI and NVIDIA Halos

AI Safety Architecture (ISO/IEC TR 5469, ISO PAS 8800)



From TR 5469, Figure 5

NVIDIA Halos



How to cope with complexity of E2E Fused AV Stack

Key Takeaways

- Handle **system limitations** and **Safety KPIs** along the whole lifecycle, including **learnings from the field**
- Careful use of ASIL decomposition and robust monitoring design
- Safe and Secure **Holistic Development Process**
- Embed the requirements of **new AI Safety processes** (ISO PAS 8800) into the product lifecycle
- Combine **diversity**, **redundancy** and **uncertainty quantification** for Safe AI architecture

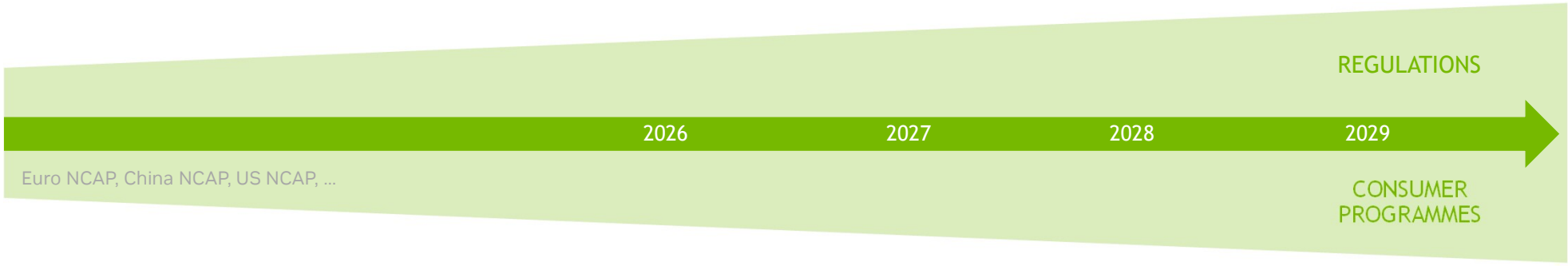
Chapter 5b: Regulatory Challenges

Tina Kirschner, Manager Regulatory Affairs, NVIDIA

Evolving AV Regulations

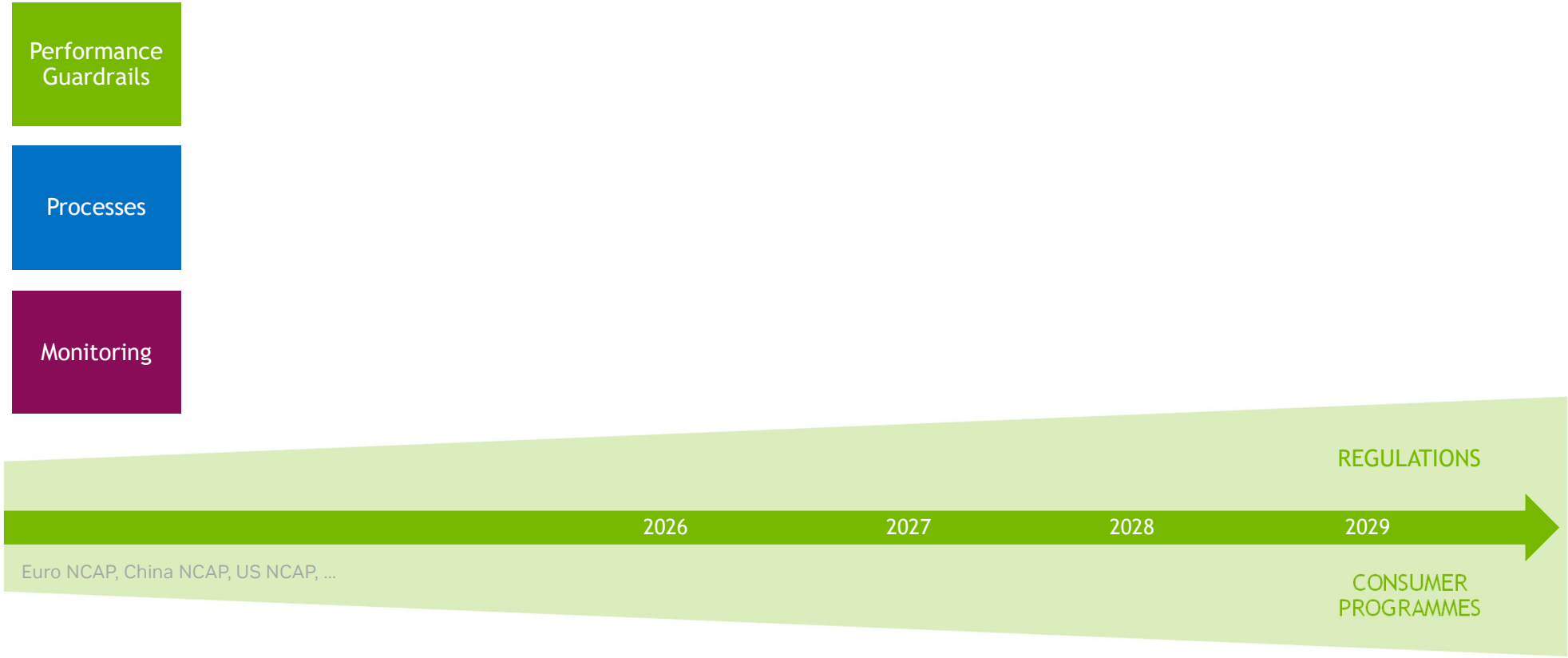
Dealing with New Requirements on Performance Guardrails, Processes and Monitoring

Performance Guardrails



Evolving AV Regulations

Dealing with New Requirements on Performance Guardrails, Processes and Monitoring



Evolving AV Regulations

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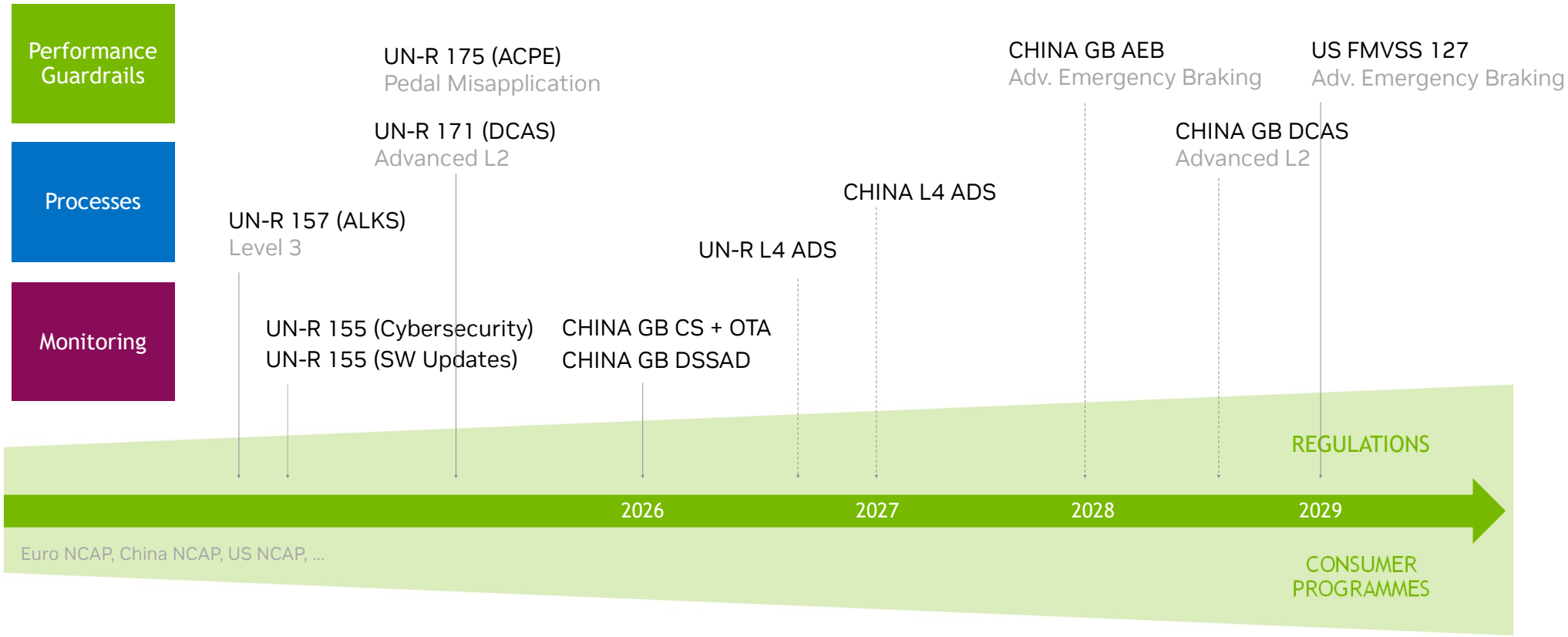


Challenges for E2E from Regulation

Performance Guardrails

How do we ensure meeting hard regulatory requirements with an E2E approach?

- Regulations impose hard regulatory requirements e.g. on the permitted maximum lateral acceleration of the vehicle.
- Traffic rules compliance will require a much stricter behavior than that shown by normal drivers on the road.
- System design needs to ensure those hard behavioral boundaries can be imposed on the system.

The E2E Fused Stack can help address this challenge!

Challenges for E2E from Regulation

Monitoring and Reporting

How do we explain why the system behaved the way it did?

- Regulators want the manufacturer to be able to explain why the system behaved the way it did in case something went wrong.

- We need to establish mechanisms to ensure sufficient explainability.
- We have to engage with regulators to define ways to address their concerns, without hindering innovation.

Challenges for E2E from Regulation

Complying with the EU AI Act

What requirements is E2E facing beyond those coming from Vehicle Regulations?

High Risk Systems

- AV systems will be **classified as high-risk** in the EU AI Act (HRAIS),
- They will **remain primarily governed by Type Approval** and the standard requirement or obligation regime for HRAIS will not apply to these systems.

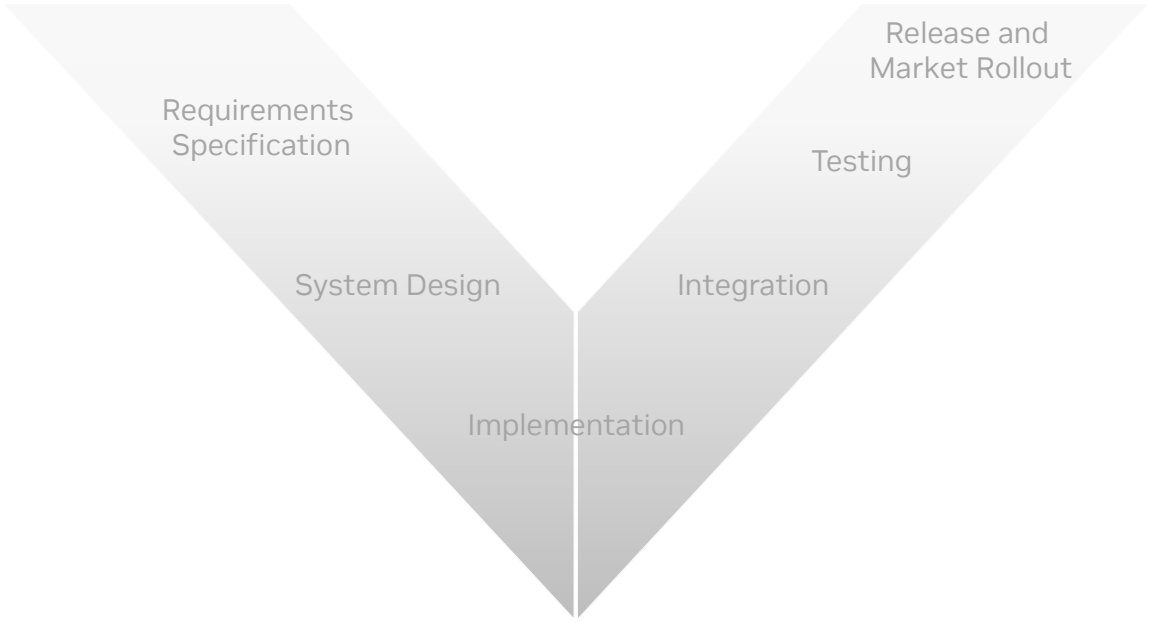
GPAI models

- **Transparency requirements** of the EU AI Act could still apply, i.e. the Criteria for **GPAI models (Models >1B parameters)** or **GPAI models with systemic risk** (models with a cumulative training compute >1x10^25 FLOPS)

Integration into existing processes

NVIDIA Halos' Tenets For Complying With AV Regulations

Making Compliance a Top Objective across the Entire Development Process



Thorough Processes

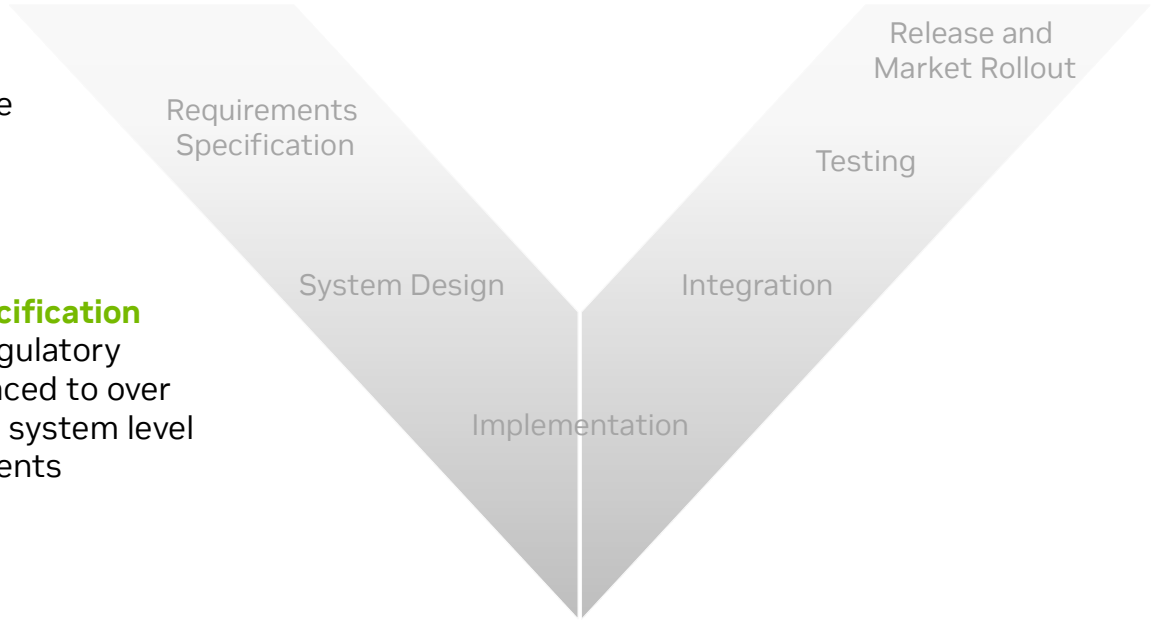
PLC reflecting all process requirements to meet audit and assessment criteria.

NVIDIA Halos' Tenets For Complying With AV Regulations

Making Compliance a Top Objective across the Entire Development Process

Understanding Regulatory Requirements
Over 3000h yearly spent on monitoring and shaping future vehicle regulations

Traceable Specification
Over 1000 regulatory requirements traced to over 13000 vehicle and system level requirements



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NVIDIA Halos' Tenets For Complying With AV Regulations

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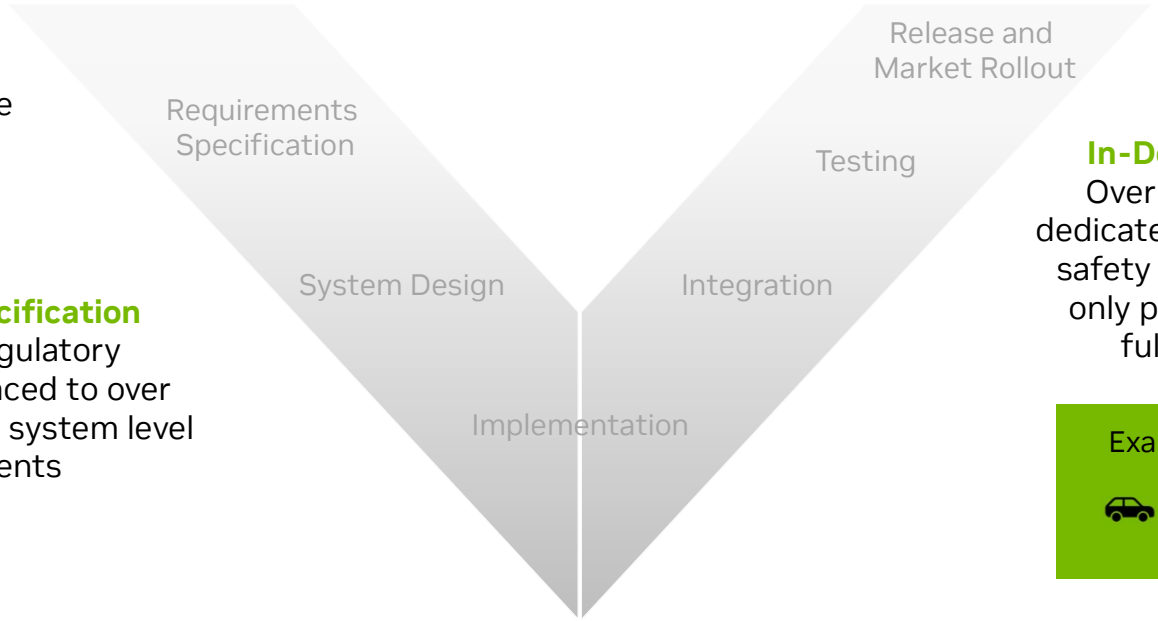


In-Depth Multi-Modal Testing
Over 1500 hours of regulations dedicated track testing just for active safety up to L2 alone to ensure not only passing prescribed tests but fulfilling the requirements.

Example: What is a "road user"?

Thorough Processes
PLC reflecting all process requirements to meet audit and assessment criteria.

NVIDIA DRIVE AV

TÜV Rheinland

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

"NVIDIA has demonstrated thorough, high-quality, safety-oriented processes and technologies in the context of the assessment of the generic, non-OEM-specific parts of the SAE level 2 NVIDIA DRIVE system," Dominik Strixner, global lead functional safety automotive mobility at TÜV Rheinland.

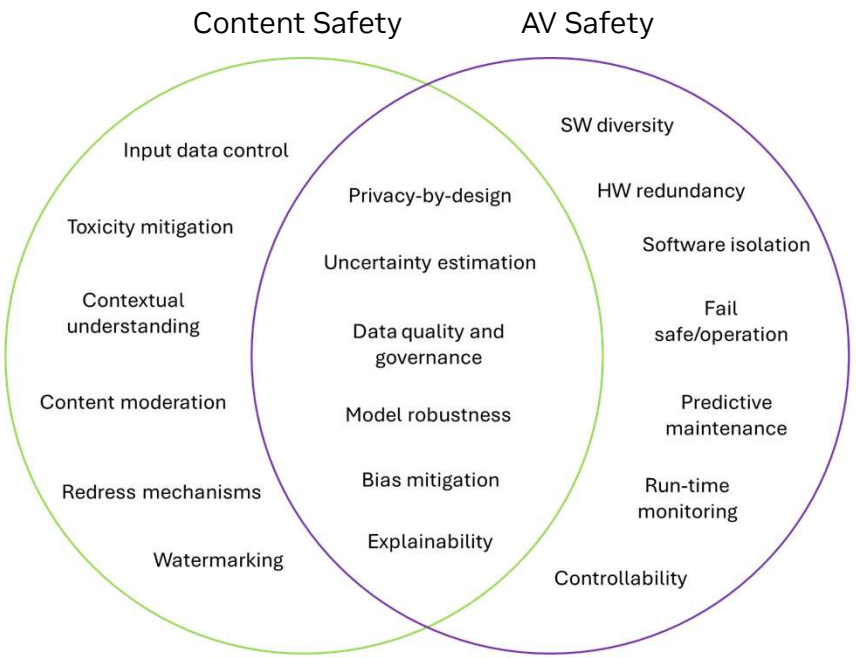
Compliance for E2E AV systems

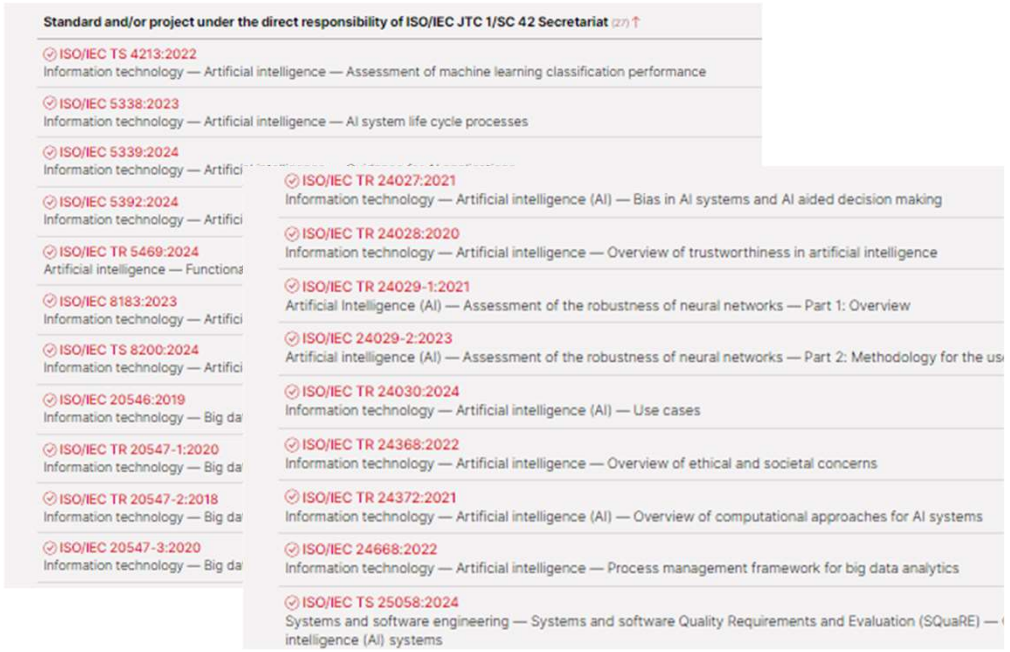
Key Takeaways

- **Considerations on compliance** need to be integrated into **every step of the development process**
- The E2E Fused Stack is considered a solution to **ensure being able to enforce hard regulatory boundaries** on the system.
- Additional requirements are imposed by the EU AI Act in case a **GPAI model exceeds 1B parameters** or is considered to present **systemic risk (models with a cumulative training compute >1x10^25 FLOPS)**

AI Standardization Landscape

Standardization Beyond Safety Alone - AI Trustworthiness





The **AI standardization landscape is fast evolving and growing**, challenging us to **deal with all aspects of AI development and use**, like

ISO/IEC 8183 (Data life cycle framework)

ISO/IEC TR 24027 (Bias in AI systems)

NVIDIA's Tenets for AI Trustworthiness

How Ecosystem Partners benefit from our Experience

Privacy

AI should comply with privacy laws and regulations, and meet societal norms for personal data and information privacy.

Safety and Security

Ensure that AI systems perform as intended and avoid unintended harm and malicious threats.

Transparency

Make AI technology understandable to people. Explain, in non-technical language, how an AI system arrived at its output.

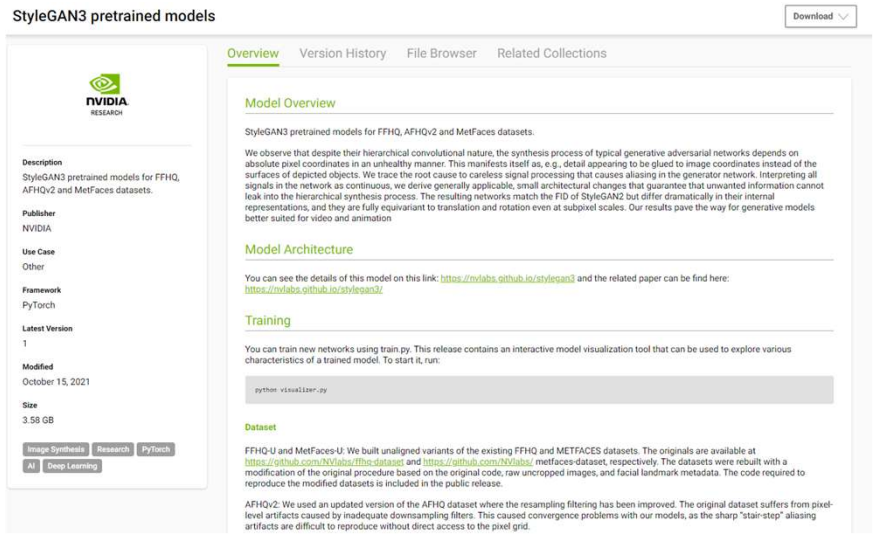
Nondiscrimination

Minimize bias in our AI systems and give all groups an equal opportunity to benefit from AI.

Supporting our Ecosystem Partners in their Journey to Trustworthy AI

NVIDIA's Model Card++

An AI model card is a document that provides detailed information about how machine learning models work, encouraging transparency and trustworthiness.



NVIDIA Involvement in AV Safety Standardization and Regulations

- ISO 26262-11 co-leads
- ISO TR 9839 lead
- PAS 8926 contributor
- US TAG lead
- US TAG ISO 26262-5 lead

FuSa and SOTIF

- ISO TS 5083 Annex lead

AV Safety

- ISO PAS 8800 ST lead
- new TR lead
- SAE AI Ground Vehicle Committee

Road Vehicles AI Safety

- UNECE Task Force DCAS lead
- UNECE IWG ADS co-lead
- UNECE IWG AI

AV regulations

- JWG 4 convenor
- TR 5469 lead
- ISO TS 22440 lead

AI Safety

- IEC 61508 co-convenor
- IEC 61508-6-1 lead

Beyond AV

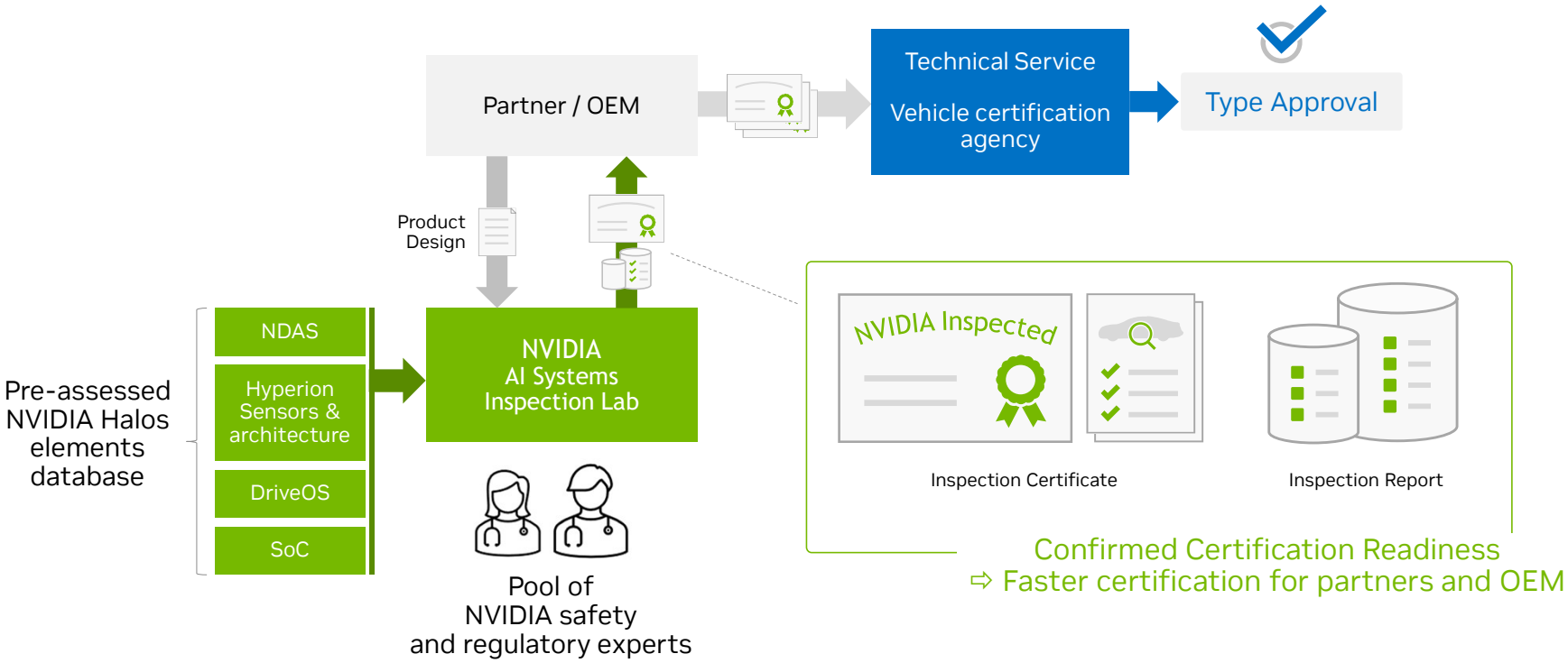
10,000+ hours of contributions to international committees

Chapter 5c:
NVIDIA AI Systems Inspection Lab

Riccardo Mariani, VP Safety, NVIDIA

NVIDIA AI Systems Inspection Lab

NVIDIA Halos Entry Point



Accreditation

NVIDIA is the first company in the world to be accredited by ANSI National Accreditation Board (ANAB) for an inspection plan integrating functional safety, cybersecurity, AI, and regulations into a unified framework.

Topic	Automotive	Industrial, Robotics, Agtech
Functional Safety	ISO 26262	*IEC 61508* *ISO 13849* *ISO 25119* *ISO 18497* *(April 2025)*
SOTIF	ISO 21448	
Cybersecurity	ISO/SAE 21434	
Artificial Intelligence	ISO PAS 8800	ISO/IEC TR 5469
Regulation	UN-R 79 (Annex 6) UN-R 13-H (Annex 8) UN-R 152 (Annex 3) UN-R 155 (cybersecurity) UN-R157 (Annex 4) UN-R171 (Annex 3)	

ANAB
ANSI National Accreditation Board
ACCREDITED
ANSI National Accreditation Board
ACCREDITED
ISO/IEC 17020
INSPECTION BODY

Inspection Process

Onboarding

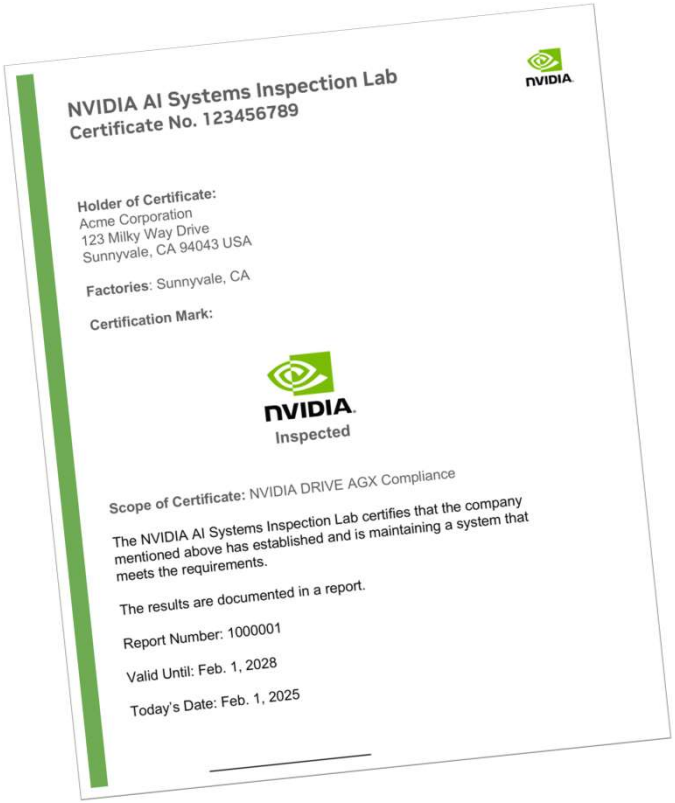
- Pre-evaluation checklist
- Terms of Inspection
- Assigning inspectors

Inspection

- Inspection meetings
- List of Open Issues
- Inspection Report draft
- Review by Inspection Review Board

End of Inspection

- Inspection Report
- Inspection Certificate



NVIDIA AI Systems Inspection Lab
Certificate No. 123456789

Holder of Certificate:
Acme Corporation
123 Milky Way Drive
Sunnyvale, CA 94043 USA

Factories: Sunnyvale, CA

Certification Mark:

NVIDIA
Inspected

Scope of Certificate: NVIDIA DRIVE AGX Compliance

The NVIDIA AI Systems Inspection Lab certifies that the company mentioned above has established and is maintaining a system that meets the requirements.

The results are documented in a report.

Report Number: 1000001

Valid Until: Feb. 1, 2028

Today's Date: Feb. 1, 2025

Inspections can be carried out at concept, development and final stage.

Accreditation Board of
NVIDIA AI Systems Inspection Lab

ANAB

The ANSI National Accreditation Board (ANAB) is the largest multi-disciplinary accreditation body in the western hemisphere, with more than 2,500 organizations accredited in approximately 80 countries.
ANAB provides accreditation and training and serves as architects for the conformity assessment structure of industry-specific programs.

ANSI National Accreditation Board (ANAB) accredited NVIDIA AI Systems Inspection Lab according to the ISO/IEC 17020 assessment for standards.

ANAB
ANSI National Accreditation Board

"ANAB is proud to be the accreditation body for the NVIDIA DRIVE AI Systems Inspection Lab," said R. Douglas Leonard Jr., executive director of ANAB. "NVIDIA's comprehensive evaluation verifies the demonstration of competence and compliance with internationally recognized standards, helping ensure that DRIVE ecosystem partners meet the highest benchmarks for functional safety, cybersecurity and AI integration."

Ecosystem Enablement and Customer Stories

Riccardo Mariani, VP Safety, NVIDIA

NVIDIA Halos Elements

Full-Stack System for Autonomous Vehicle Safety

HW/SW and Platform Safety	Algorithmic Safety	Ecosystem Safety	AI Systems Inspection Lab
• Safety assessed HW (SoC and reference board) • Safety certified DriveOS • Safety assessed base platform • NVIDIA DRIVE AGX Hyperion™ • DriveOS Linux for Safety *(future offering)*	• Libraries for safety data loading and accelerators • API for safety data creation, curation, reconstruction • 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	• Safety data with diverse, unbiased data • Continual improvements through a safety data flywheel	• Leadership in AV safety standardization and regulation • First of its kind to be accredited by ANAB, Inspects and verifies the integration of partners' products with Halos' safety elements

NVIDIA AI Systems Inspection lab member

Hyperion Stack 8.1. Validated & Approved Sensor Kit

Continental Autonomous Mobility

Front looking smart radar (ARS) / surround looking smart radar (SRR)

- Scalable product with best-in-class value
- Smallest in-class volume product with high performance
- Focused sensing for highest range and precision for a safe and comfortable journey
- 360° coverage for various safety and comfort functions

NVIDIA AI Systems Inspection lab member

In-Cabin

FICOSA

In-Cabin Cameras (Driver & occupant)

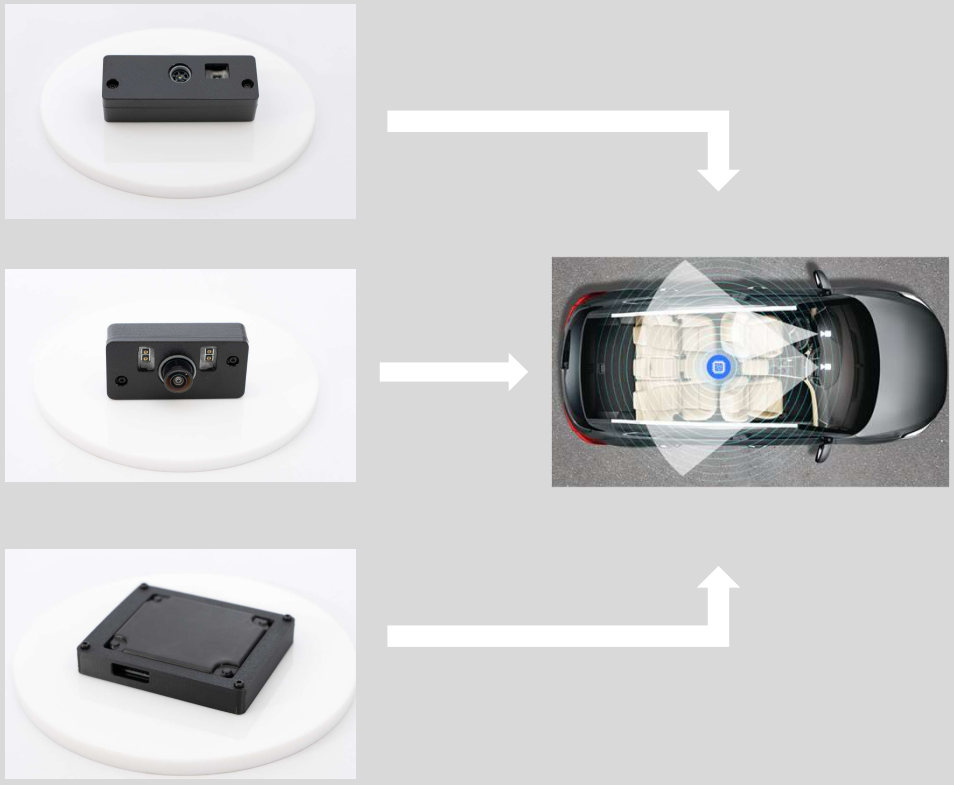
Cameras for driver and occupant monitoring

- **Ultra HD Precision** – 5MP resolution for unmatched detail.
- **Smart Awareness** – Tracks eyes, detects distractions, enhances safety & security.
- **Flawless Vision** – Homogeneous IR illumination.
- **Plug & Play** – Effortless software integration for seamless performance.
- **Certified Safe** – Eye-safety and industry-approved.
- **Secure by Design** – Built-in cybersecurity & safety compliance.

Imaging Radar

60 GHz Radar for cabin monitoring

- **Child presence detection & occupant monitoring** complying to NCAP.
- **Edge-computing radar** with cybersecurity
- **Radar integrated** above the headliner in the rear row roof



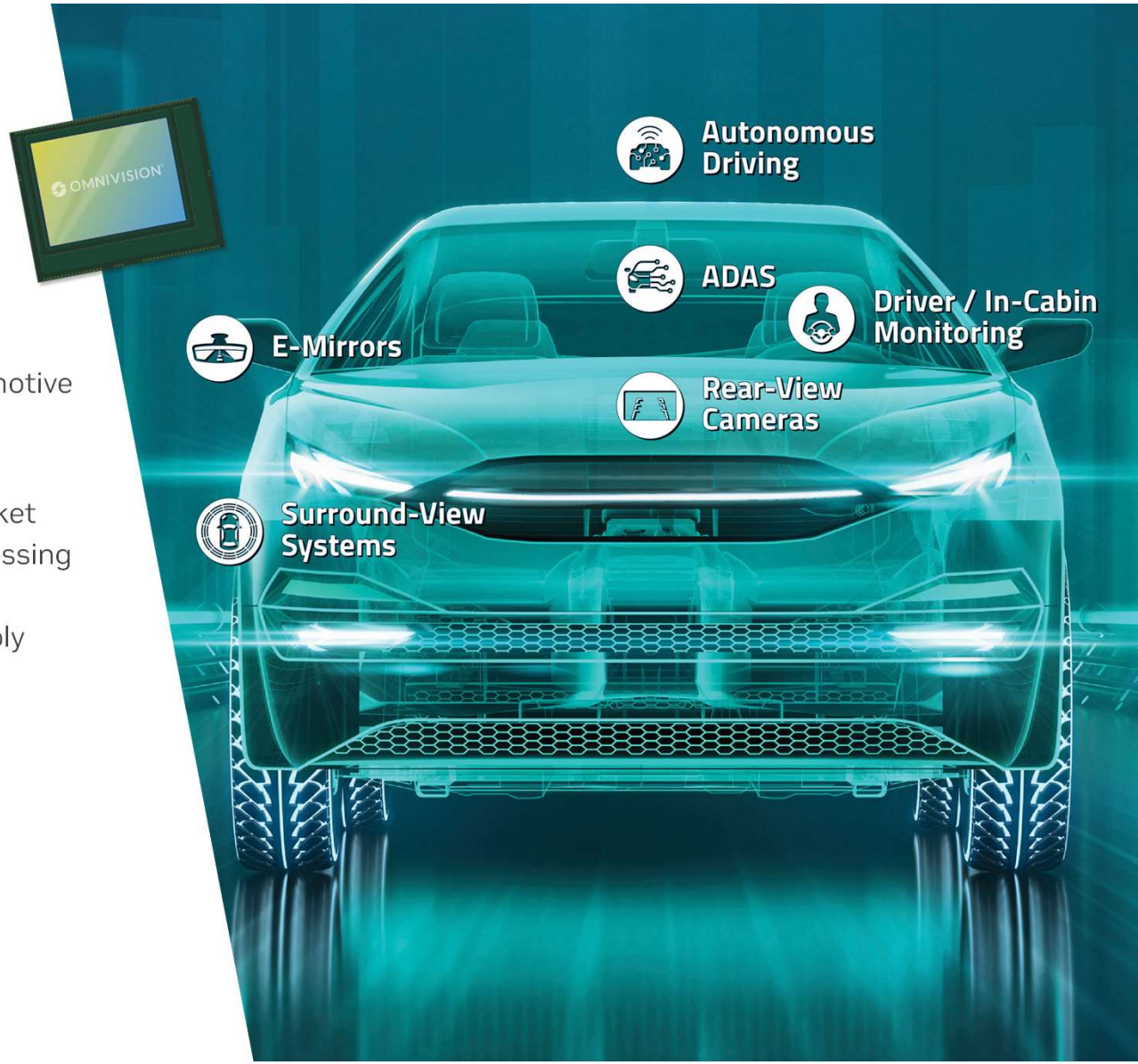
NVIDIA AI Systems Inspection lab member

Automotive CMOS Image Sensor

OMNIVISION

Cutting-Edge CMOS Image Sensors for All Automotive Applications

- 20 Years of Excellence in the Automotive Market
- Revolutionary Technology and an All-Encompassing Product Portfolio
- Dedicated Customer Support and Global Supply Chain



OMNIVISION®

NVIDIA AI Systems Inspection lab member

Hyperlux™ Image Sensors

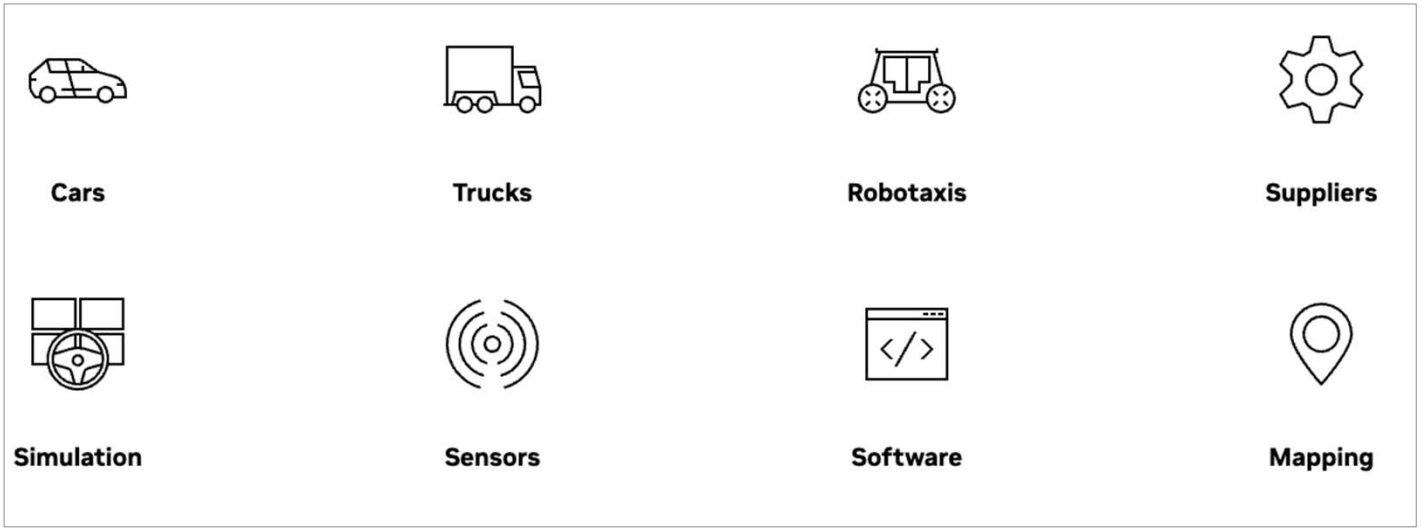
onsemi

- **Future-Proof Scalability**: Scalable and innovative 3MP & 8MP imaging solutions for ADAS and autonomous driving applications
- **Enhanced Safety:** Exceptional image quality for object detection in low light scenes and ultra high dynamic range environments
- **Efficient Decision-Making**: Low-power sensor architecture enabling power-efficient vision data stream for autonomy decisions

onsemi

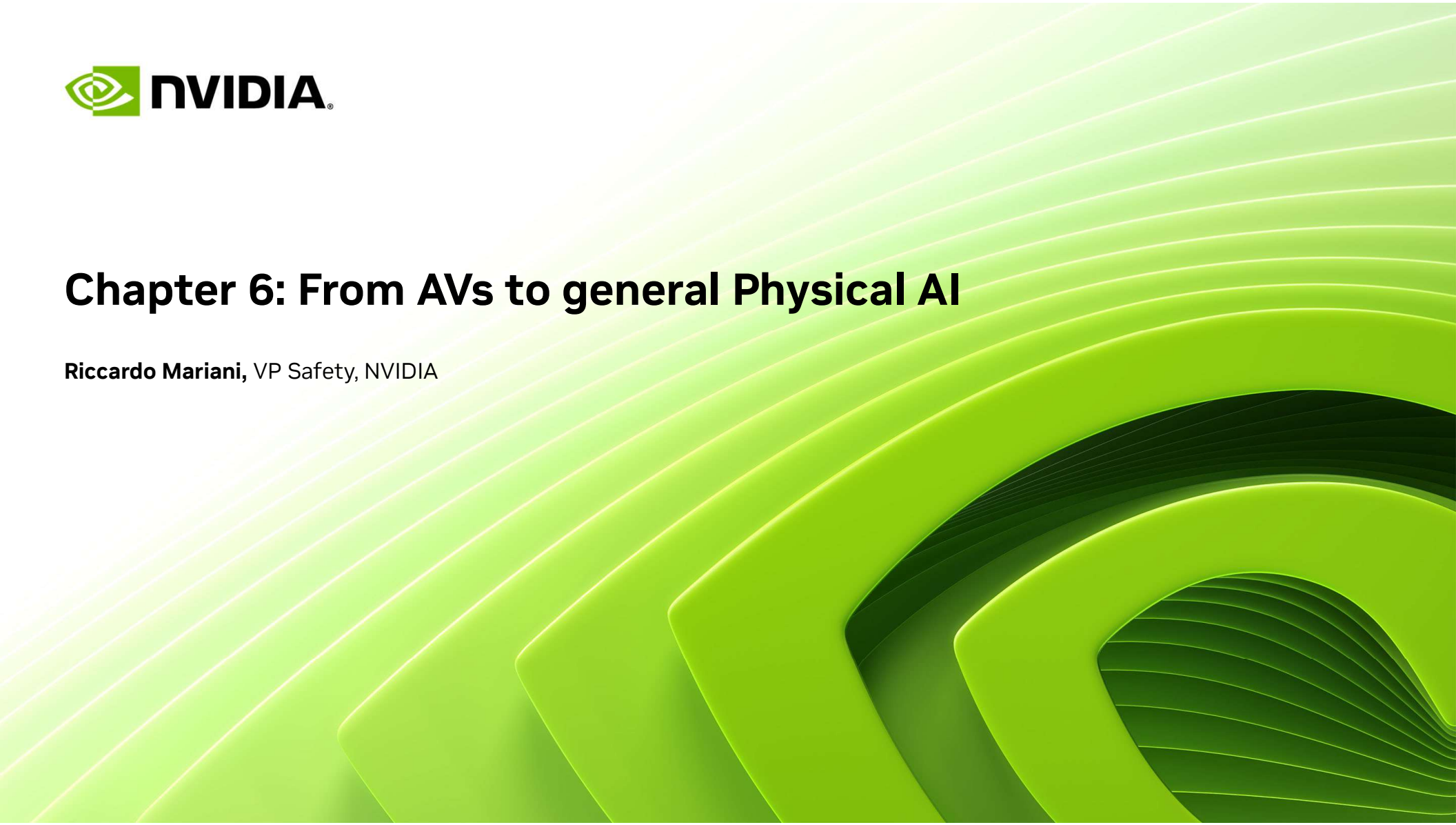
Partners Using Halos System

All NVIDIA DRIVE Partner Ecosystem Members are Part of Halos



Leading robotaxi companies, OEMs, industry safety pioneers, mapping and simulation companies, and software and sensor providers worldwide are using Halos systems to deliver autonomous vehicle safety at all levels of automation

View All NVIDIA DRIVE Partner Ecosystem Members

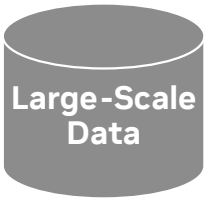


Chapter 6: From AVs to general Physical AI

Riccardo Mariani, VP Safety, NVIDIA

Synoptic View of NVIDIA Halos AV Safety Day

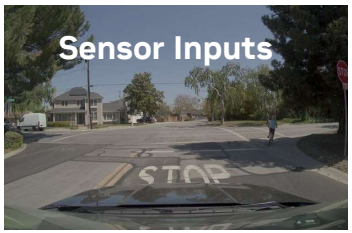
Design-time



Design-time safety (Chapter 2):
- Safety architecture
- AI train-time safety
- AV platform safety
- Data flywheel and processes

Validation-time guardrails (Chapter 4):
- Metrics
- Coverage – top-down
- Coverage – bottom-up
- Data flywheel and processes

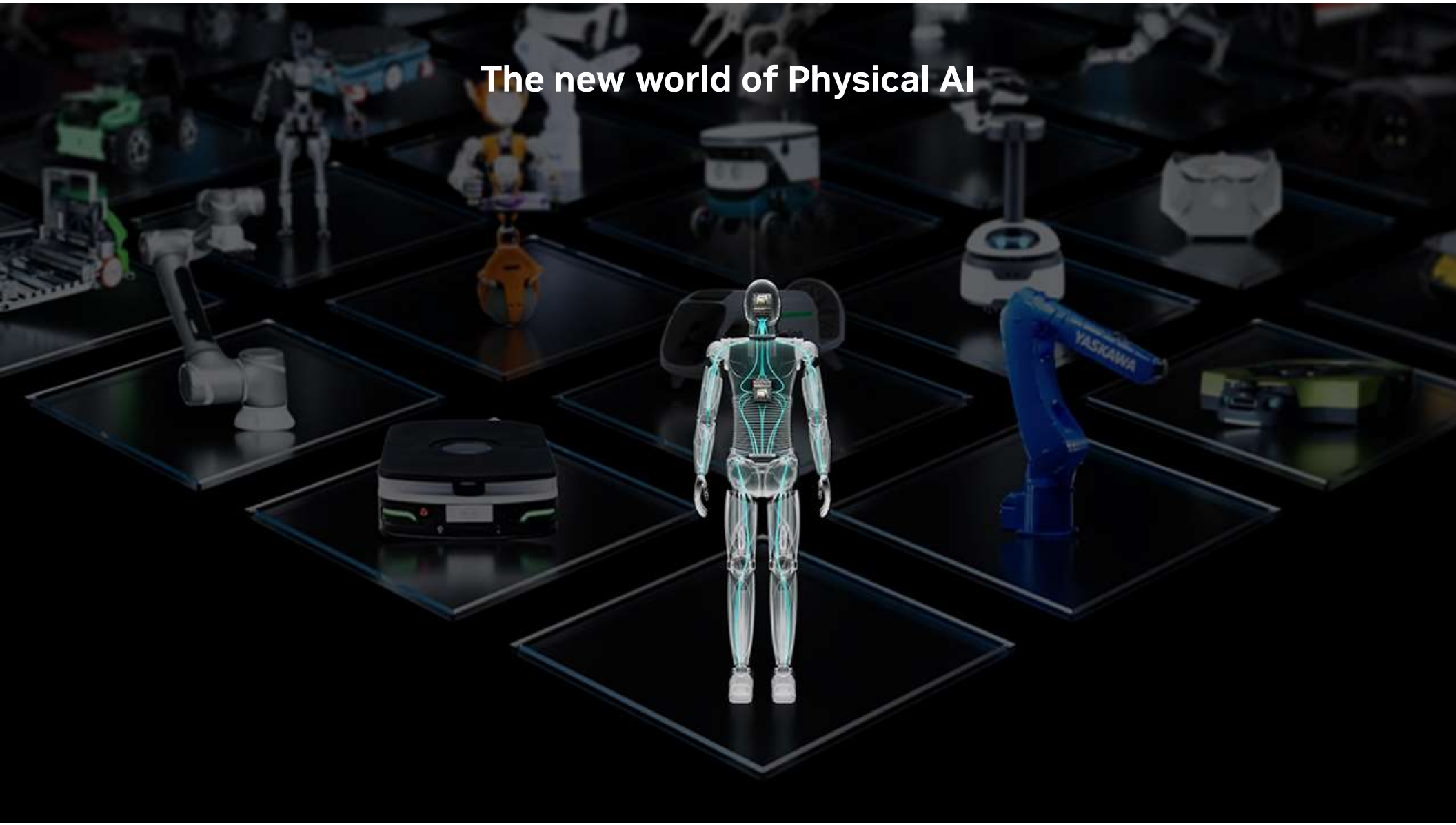
Run-time



Deployment-time guardrails (Chapter 3):
- Run-time monitoring – HW
- Run-time monitoring – SW
- Arbitration
- Data flywheel and processes

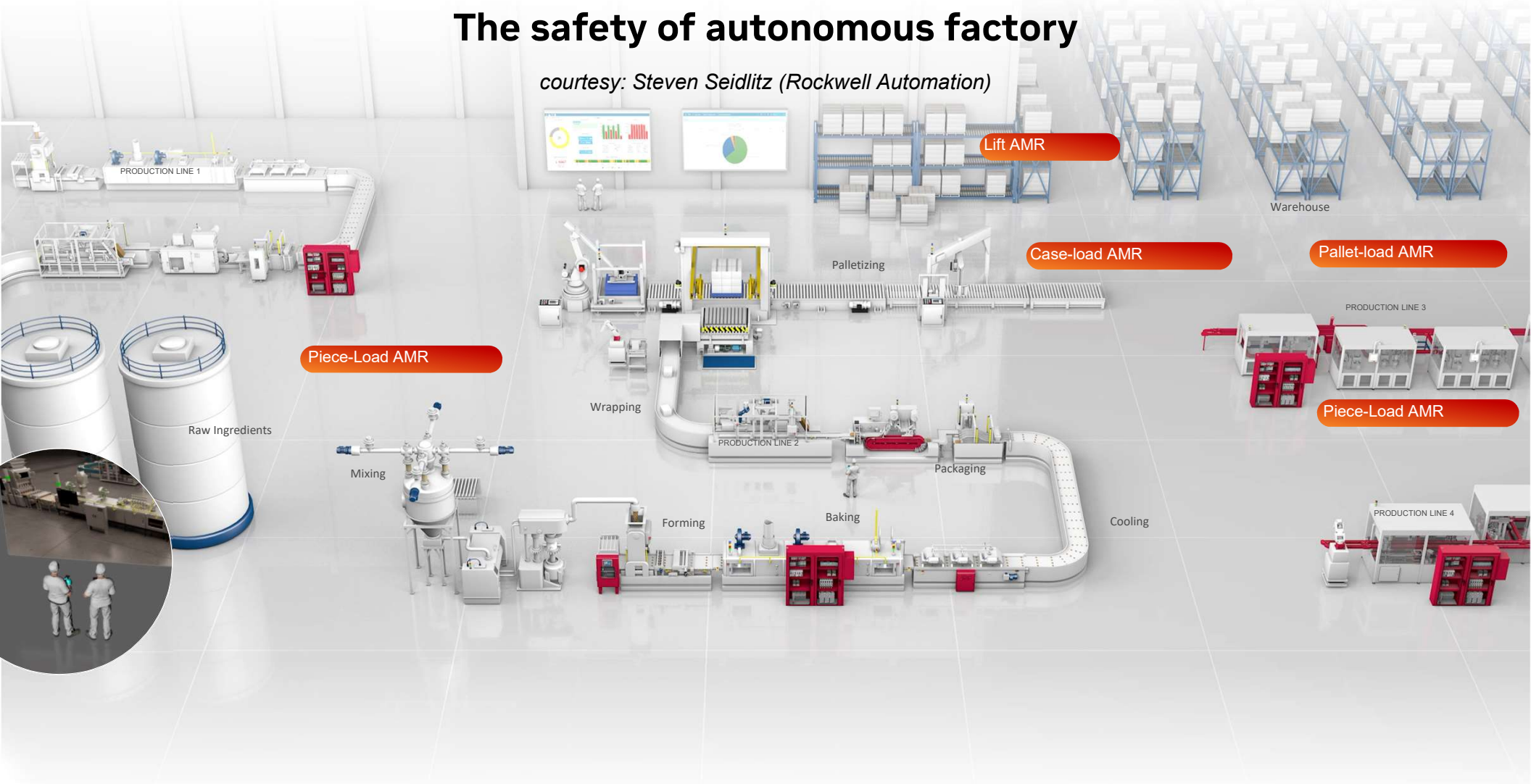
Safety Regulation and Standardization in the Era of AI-Based AV (Chapter 5):
- Standardization challenges
- Regulatory challenges
- NVIDIA AI Systems Inspection Lab

From AVs to general Physical AI (Chapter 6):
- How Halos extends to Physical AI
- NVIDIA IGX elements
- Outside-in safety


The new world of Physical AI
YASKAWA

The safety of autonomous factory

courtesy: Steven Seidlitz (Rockwell Automation)



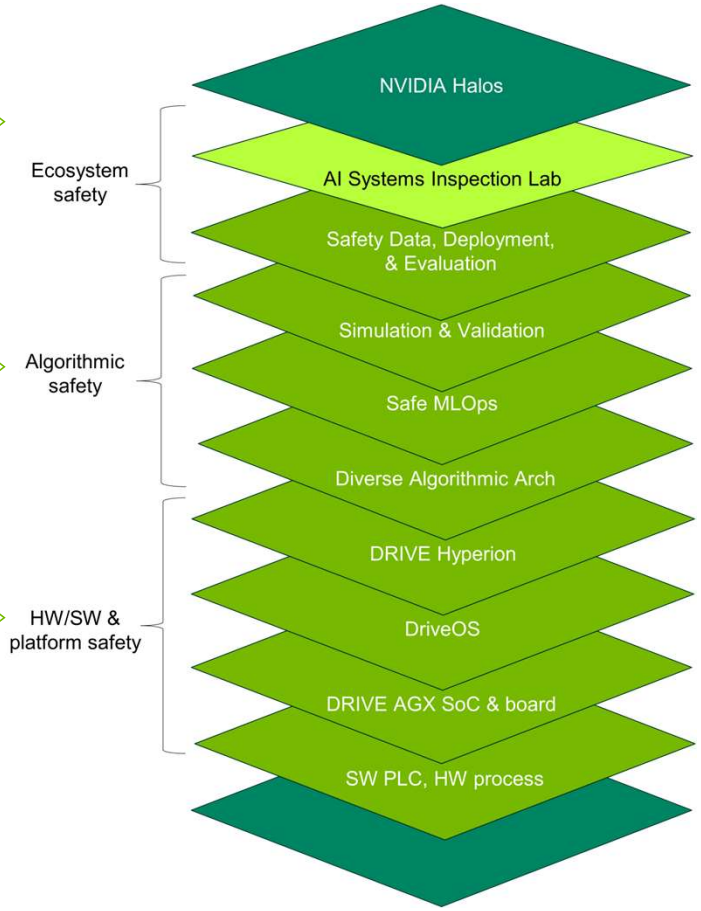
Extending Halos to general Physical AI

Reuse

Fully reusable
AI systems Inspection Lab scope extended beyond AV from April 2025

Safety framework reusable
with variants related to sector specific application requirements (e.g. slower but closer interaction with humans & objects)

HW and SW mostly reusable
with variants related to different standards and architectures (e.g. IEC 61508 vs ISO 26262, different sensors, no Autosar, ...)



Extensions

Physical AI dataset

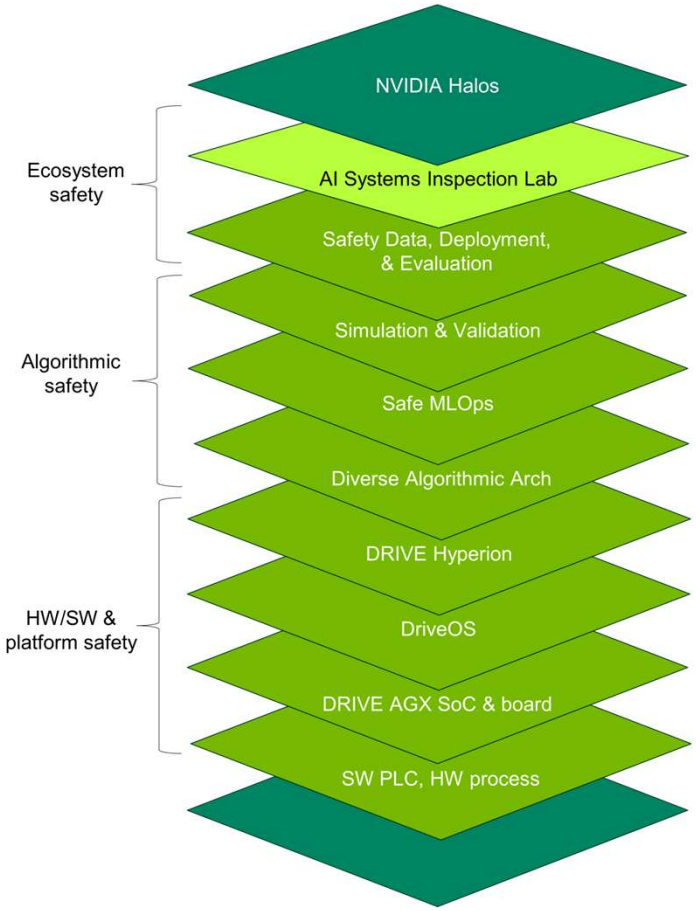
NVIDIA GR00T

Outside-in safety

IGX platform
Holoscan Sensor Bridge

Extending Halos to broader Physical AI

Reuse



Extensions

IGX platform
Holoscan Sensor Bridge

NVIDIA IGX

Enterprise-ready
AI platform
for safe and secure
industrial edge, robotics
and humanoids

NVIDIA IGX safety elements

HW
- IGX SoC with related Safety Extensions
- IEC 61508 SIL 2
- ISO 13849 Cat 3 / Pl D

SW
- Safety Extension Package
- Safety MCU reference code
- Safety Protocol (Edge Safety Link) & Holoscan Sensor Bridge

Doc
- Safety Application Note
- Safety Manual and FMEDA
- Inspection report by TUV Rheinland

HW/SW & Platform Safety

AI
- Framework to implement outside-in safety

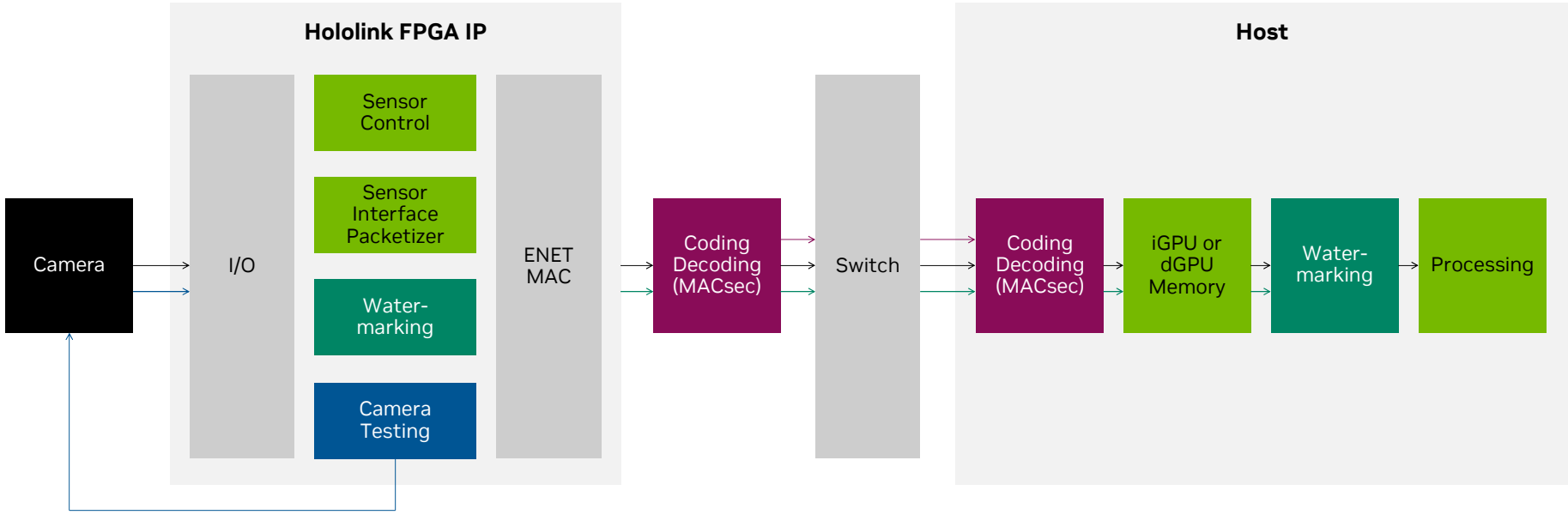
Algorithmic Safety

Holoscan Sensor Bridge (HSB)

End to End Sensor Architecture with Safety and Security

HSB supports an end-to-end safety concept targeting IEC 61508 SIL 2

Failures addressed: repetitions, deletions, insertions, resequencing, corruption, delay, masquerading; configuration, memory and processing errors



The safety standardization landscape beyond AV

ASIL ISO 26262
-
D
C
B
A
QM

AgPL ISO 25119
-
e
d
c
b
a
QM

+ ISO 18497

SIL IEC 61508
SIL 4
SIL 3
SIL 2
SIL 1
-
-

PL ISO 13849
-
Pl e
Pl d
Pl c Pl b
Pl a
-

+ IEC/TS 62998
+ …

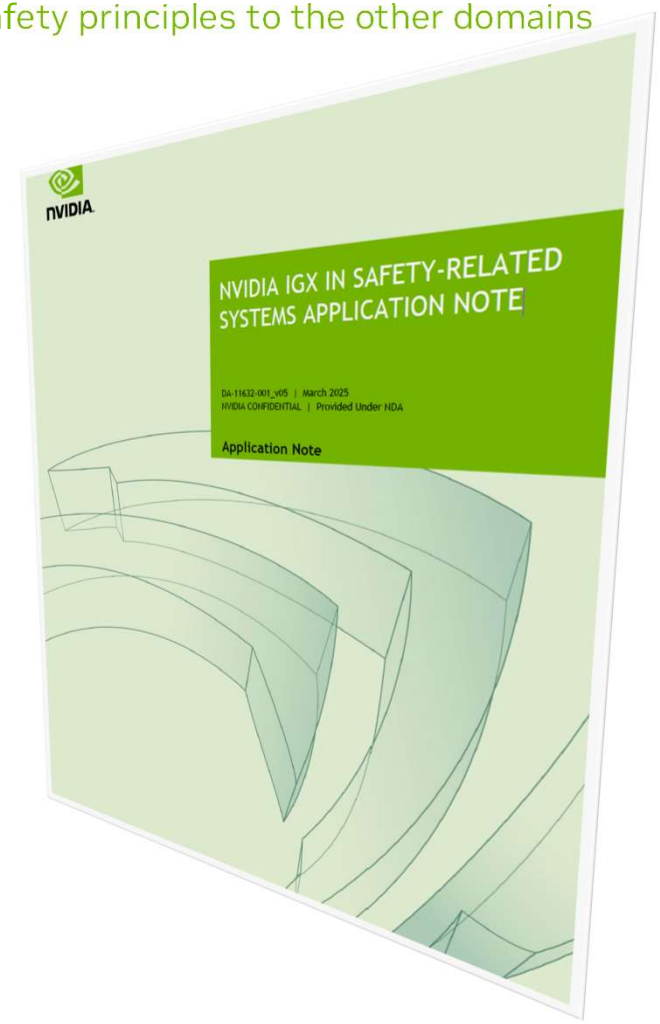
DAL DO-178C/254
-
DAL A
DAL B
DAL C
DAL D
-

Humanoids
ongoing…
ISO/NP 25785
IEEE Study Group on Humanoid Robots

NVIDIA IGX Safety Application Note

Guide on how to apply AV safety principles to the other domains

TABLE OF CONTENTS

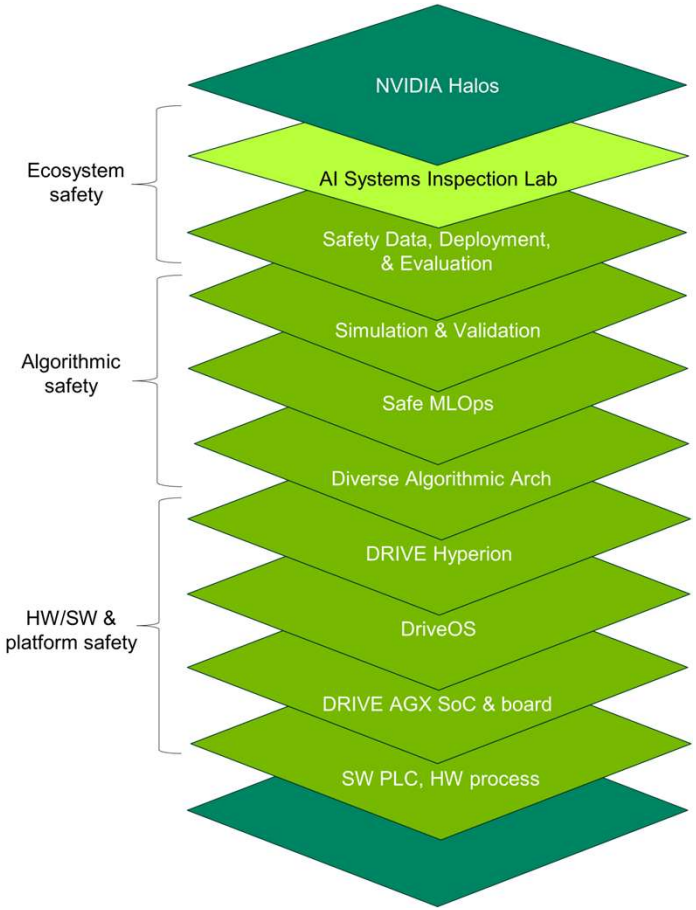


Inspected by TÜV Rheinland

Extending Halos to broader Physical AI

Reuse

Extensions



Outside-in safety

Outside-In Safety

from alert to action

- To provide expanded situational awareness and oversight in contexts such as warehouses.

Expanded Situational Awareness

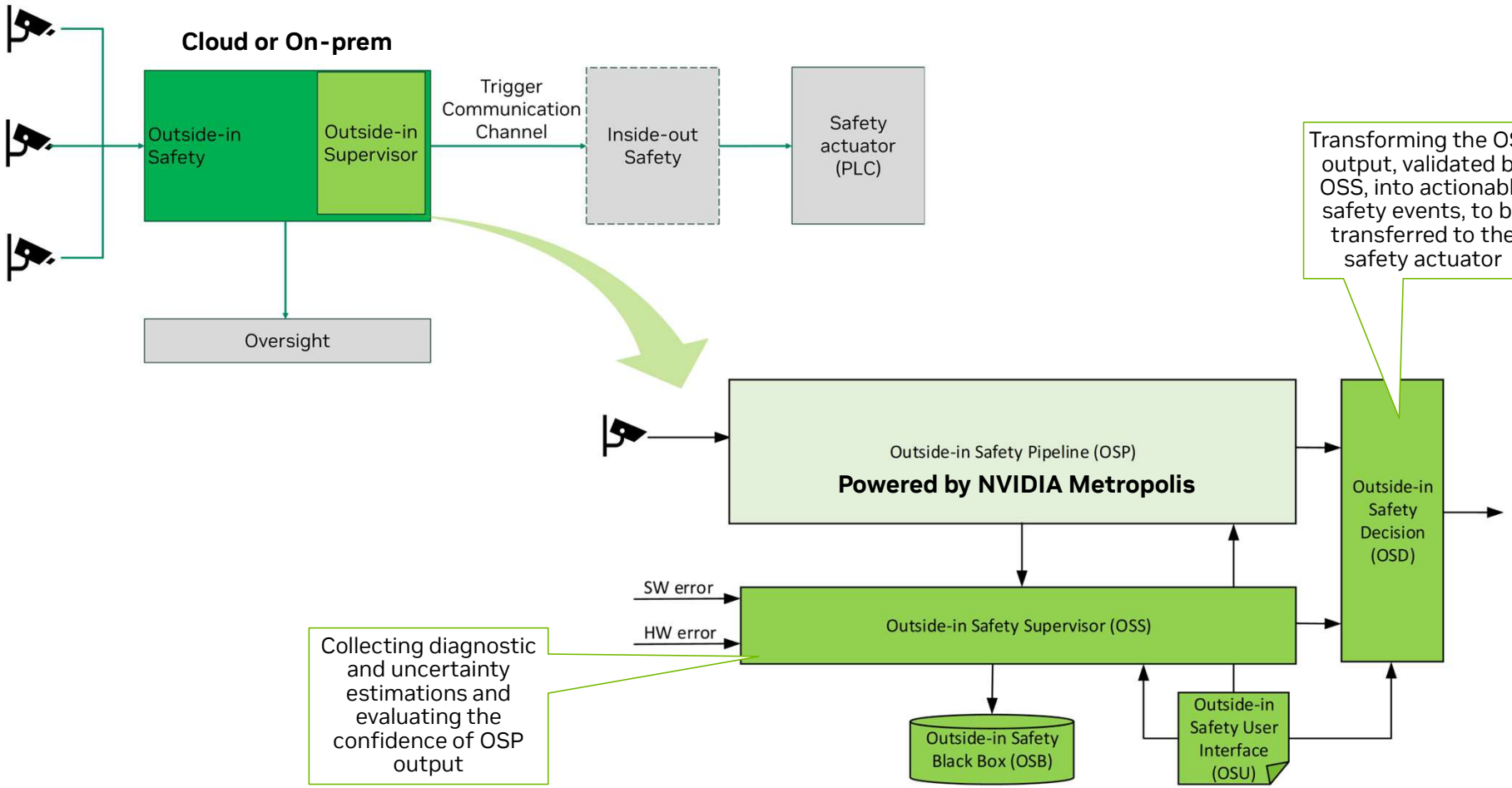
Detect potential safety events such as intrusion into the area where a robot is operating, or upcoming collisions due to occlusions being not detected by inside-out safety

Oversight

Oversight for robot “flight control”, teleoperation (emergency rescue) or adaptive behavioral planning

- Triggers from outside-in safety are consumed by inside-out or final safety actuators (e.g. PLC).

NVIDIA's Outside-in safety architecture



Ecosystem Enablement and Customer Stories

NVIDIA AGX Orin
NVIDIA IGX

BLUEWHITE

Autonomous stack for agriculture growers and OEMs. Founded in 2017 with R&D in Tel Aviv and commercial operations in the USA, Bluewhite offers an aftermarket solution that transforms any tractor into a fully autonomous vehicle.

Its kit integrates perception, vehicle and implement control, and an intelligence engine powered by NVIDIA AGX Orin, enabling real-time field intelligence AI through sensor fusion.

Designed for harsh off-road conditions, the system has accumulated over 75,000 commercial autonomous hours in permanent crops.

bluewhite

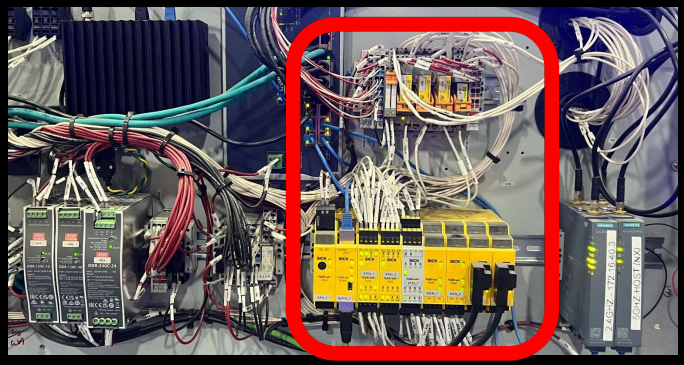
NVIDIA IGX

FORT Robotics

FORT is developing an extensible safety platform specifically designed for industrial machines and robots running AI that's configurable by non-specialists, compatible with legacy machine control systems, and safety certified to common functional safety standards. The combination of FORT's Robotics Control Platform with Nvidia IGX enables the consolidation and virtualization of traditional safety and physical AI quickly and certifiably.

- Enable the use of AI for safety critical applications
- Unify data paths to enable the sharing of sensor data for safety critical and non-safety applications
- Integrate both safety critical control and high-performance compute in a single platform supporting multiple level of safety criticality
- Speed deployment with highly-configurable, pre-certified safety functions

FORT Robotics



NVIDIA Jetson
NVIDIA IGX

ManoMotion

An AI-driven technology shift is needed to convert the today's Reactive Post injury Situation into an intelligent Predictive Safety approach, saving lives and consequential damages to all stakeholders.

- Revolutionizing the Workplace Safety with Vision-based AI Technology ManoMotion Solution

> Solution

- Works on existing equipment
- Tracks hand and body
- Multi-user solution
- Real-time response
- Prevents accidents
- Customizable
- In production

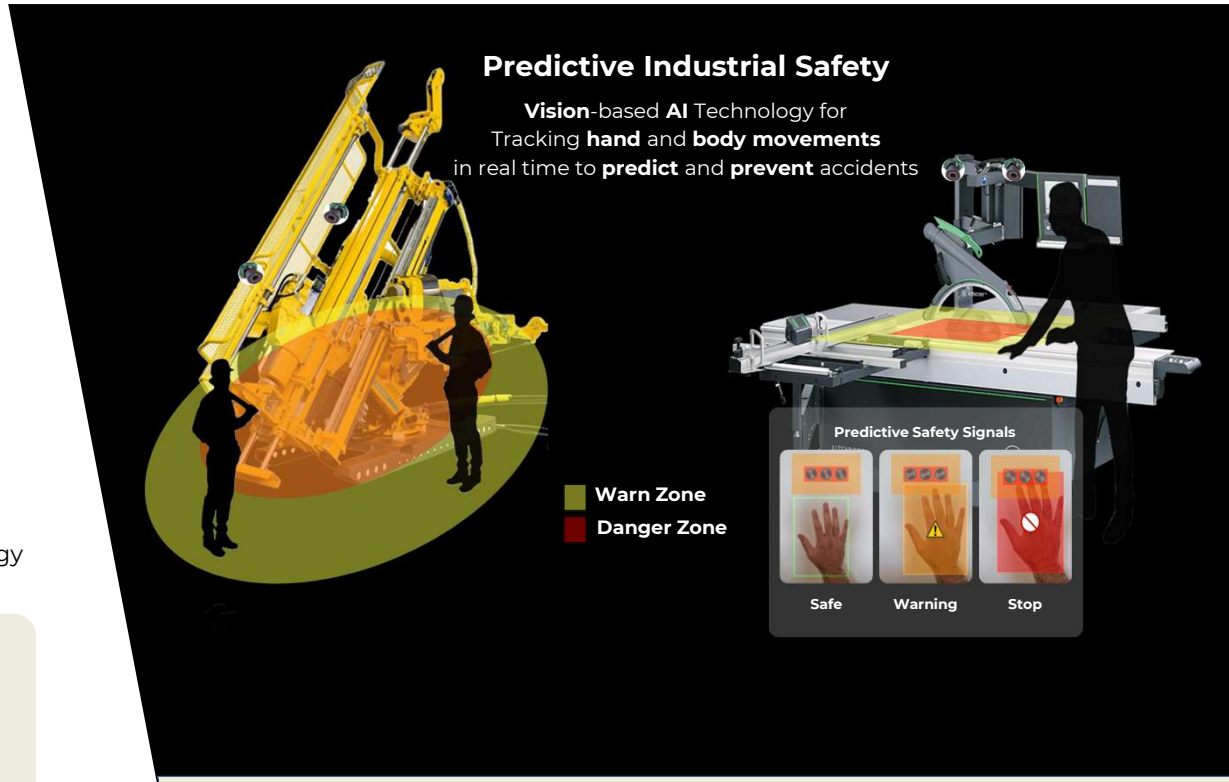
> Benefits

- Boost in productivity
- Increases safety by preventing or minimizing long term damage
- Requires less space reducing machine footprint
- Lowers Insurance Premiums
- Minimizes down time
- Reducing negligence based investigations

> Product

- Patented Framework
- Single/Multi-Camera Input
- Framerate 90+
- Cross-platform
- Compatible with safety standards

MANOMOTION



"Empowered by the NVIDIA Jetson platform, ManoMotion SaferHands ensures unparalleled real-time responsiveness, dynamically adapting to changing conditions on the fly.

SaferHands eliminates the need for a complex tech overhaul, streamlining the integration process for companies seeking a swift and effective enhancement to their safety protocols."

CEO, ManoMotion

"Our measurement results show that the ManoMotion camera-based system was able to detect hand movements very reliably at an early stage, triggering the safety system thus preventing injuries to the hand".

Fraunhofer Institute, Germany

Beyond AV – Other Safety Sessions at GTC

AI-Driven Safety at the Edge: Minimize Industrial Incidents [S71452]
Thang Nguyen, Senior ML Scientist and Head of R&D, ManoMotion AB
Wednesday, March 19 3:00 PM - 3:40 PM PDT

The Impact of AI in Industrial, Robotics, and Medical Safety and Security [S72815]
Bodo Seifert, Sr. Automotive Functional Safety Engineer and Practice Lead, TUV Rheinland of North America, Inc.
Steven Seidlitz, Rockwell
Riccardo Mariani, VP Safety, NVIDIA
Wednesday, March 19 4:00 PM - 4:40 PM PDT

Unfolding Humanoids Safety [CWE72631]
Mathias Blake, Platform Architect, NVIDIA
Leela Karumbunathan, Sr. Hardware Product Manager, NVIDIA
Riccardo Mariani, VP Safety, NVIDIA
Suhas Hariharapura Sheshadri, Sr. Software Product Manager, NVIDIA
Thursday, March 20 10:00 AM - 10:50 AM PDT

Physical AI and Robotics conference sessions

Thanks !

Scan the QR code below to visit NVIDIA Halos website and Contact Us to join the Halos community, or be informed on our future initiatives and get involved!

or contact:

mpavone@nvidia.com
rmariani@nvidia.com