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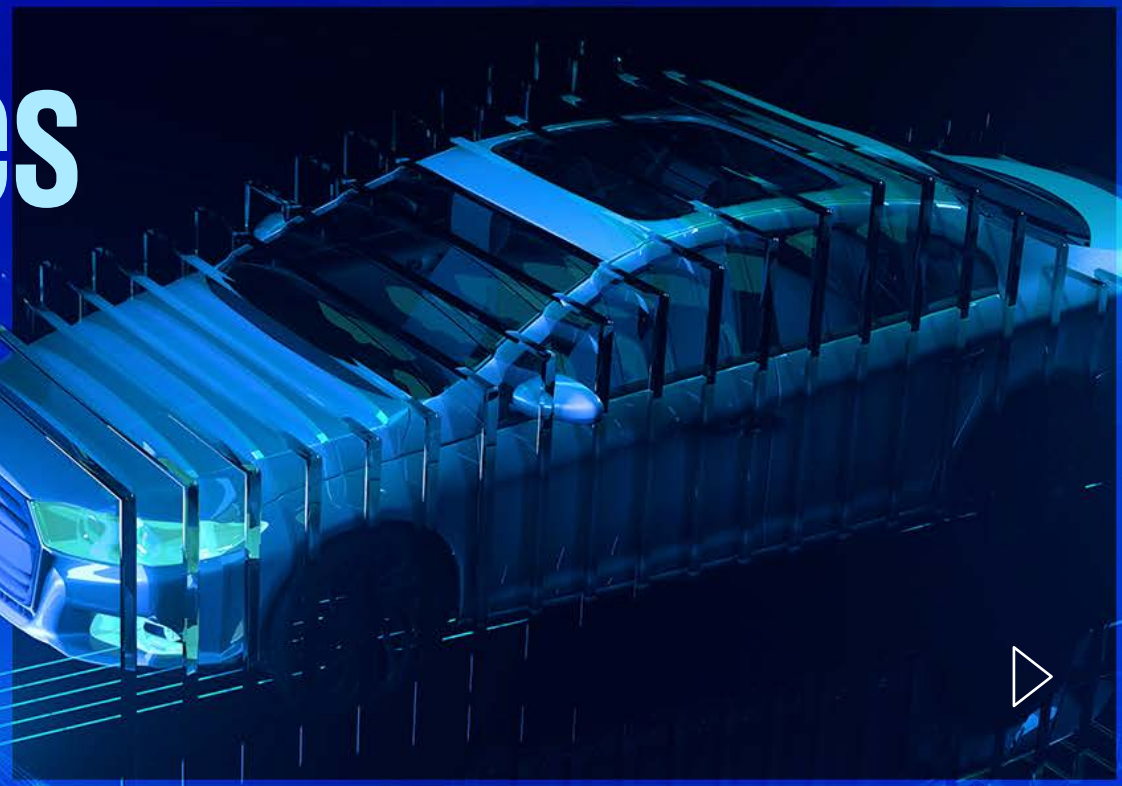
From algorithm to action:

Autonomous vehicles and transportation



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Autonomous vehicles and transportation

There has been a marked increase in the number of autonomous vehicles on our roadways, with the level of control over and responsibility for the physical asset moving farther away from the human driver to the AI model. Applications range from common driver-assist features to fully autonomous robotaxis and delivery fleets. This is a fundamental transfer of operational responsibility that most organizations must be intentional in navigating.

The same transfer is under way across adjacent transport modes. Automated train operations have been running on metro and light rail systems for years, and increasingly autonomous flight management and ground movement systems are advancing in aviation. Both operate under mature, prescriptive certification regimes, which demonstrate that it is possible to achieve assurance, operating protocols, and engineering that put safety and security first for physical AI (PAI) systems.

On highways, roads, and railways, there is no window of safety in which a person or a fallback system can intervene. Failures in documented cases have cost human life, alongside injury, litigation, suspended operating permits, and lasting damage to public confidence. For organizations planning to deploy PAI assets in their fleets, the crucial undertaking is to reassign the operating task from a human employee to an AI model and reconfigure the liabilities, the incident-response burden, and the evidentiary record along with it.



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What organizations must plan for

In this new reality, safety has moved to far more complex and nuanced territories than passing crash tests. Organizations must think about managing the PAI risks of a learning system in an unpredictable world. Both automotive makers and fleet adopters must embrace embedding trust and safety into PAI design, development, deployment, and monitoring. Important actions to consider include:



Align IT and operational technology

Planning for this transfer means extending established automotive functional safety and operational technology security principles beyond the manufacturing realm and into the operator's own governance.



Define the operational design domain

Establish hard, verifiable boundaries for where and under what environmental conditions the autonomous system can operate safely, such as weather, lighting, road types, speed ranges, and traffic density.



Structure the shared-responsibility model

Clearly define the handoff of risk and liability between the vehicle manufacturer (maker) and the fleet operator or owner (adopter), particularly for software updates, maintenance, and incident response.



Govern fleet-wide software releases

Unlike a human-operated fleet, in which errors are generally isolated, an autonomous fleet may run the same software build across every asset. A defect introduced during model retraining or an over-the-air update can therefore propagate fleet-wide. To contain that risk, organizations should roll out changes in stages across defined fleet segments, sites, environments, and geographies; confirm performance against safety and security metrics before expanding deployment; and keep rollback capabilities available. Evaluate every update should be not only for how well it was tested but also for how many assets it could reach before a fault was detected.



Preserve the evidentiary record

Set retention periods, chain of custody, and access rights for regulators, insurers, and claimants before an incident occurs so that what the vehicle perceived and why it acted in a particular way can be reconstructed afterward.

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What organizations must plan for *(continued)*

Define remote assistance and human fallback

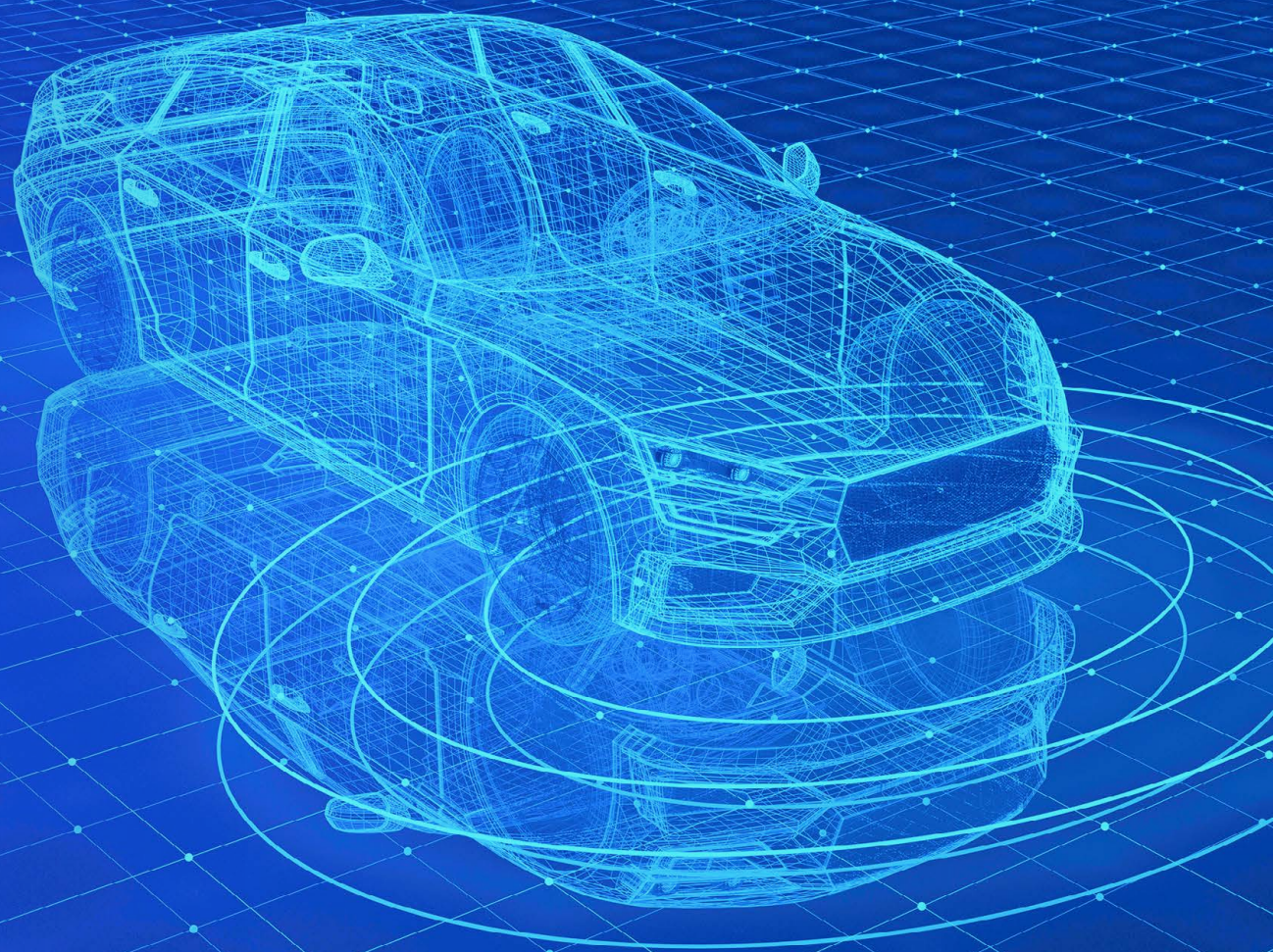
Treat remote support as safety-critical infrastructure, with defined escalation criteria, connectivity and latency assurance, supervisor-to-vehicle ratios that hold under simultaneous events, and specified vehicle behaviors when assistance is unreachable.

Ensure ecosystem compliance

This involves managing a patchwork of evolving global and state-level regulatory requirements while establishing rigorous certification programs and continuous audit mechanisms for all third-party partners, from rideshare operators to maintenance and calibration providers.

Prepare the workforce and response protocols

As driver responsibilities shift to remote supervision, fleet technicians, and incident-response teams, makers and adopters must establish immobilization protocols before deployment.



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Wins for our clients

The pain point

The solution

The value

01

Scaling governance models alongside rapid expansion

Rapid growth placed immense pressure on existing operational structures in an organization, creating a need for specialized expertise to identify governance vulnerabilities and strengthen operational risk management across scaling operations.

Established an enterprise-grade risk program

Architecting the internal audit functions, governance structures, and controls required to operate as a mature enterprise in a highly regulated environment.

Foundation for sustainable growth

The enterprise develops the operational discipline and robust internal controls necessary to manage global scale, meet stakeholder expectations, and support sustainable growth.

02

Aligning market expansion with evolving regulatory requirements

Accelerated expansion across new regions required navigating intricate local compliance environments, where non-standardized evaluation approaches risked slower decision cycles and heightened execution risk.

Architected a strategic market entry methodology

Conducting an “outside-in” commercial due diligence assessment that integrated financial, operational, and regulatory analysis, and developing a unified enterprise compliance and governance framework as a core component of this new strategy.

Smarter, faster global expansion

The organization moves from a reactive, ad-hoc market entry process to a proactive, repeatable playbook. It can now quickly disqualify unviable markets and confidently accelerate entry into promising ones, backed by a clear understanding of both the commercial opportunity and the compliance pathway.

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Wins for our clients *(continued)*

03

The pain point

Managing third-party risk

Scaling the partner ecosystem created a requirement for unified evaluation standards, rigorous due diligence, and ongoing risk monitoring to mitigate inconsistent qualification and oversight processes that increased operational and reputational risk.

The solution

Architected a formal third-party certification program

Creating a robust, evidence-based process to ensure all third parties meet the client's operational, quality, and risk requirements.

The value

Secure and scalable partner ecosystem

The company can safely leverage a network of certified partners to rapidly expand its operations and partner ecosystem while maintaining brand integrity and risk standards.

04

The pain point

Demonstrating operational readiness and risk management effectiveness

Increasing regulatory and market scrutiny necessitated the creation of rigorous and evidence-based metrics to validate the maturity, consistency, and effectiveness of core operational safeguards.

The solution

Co-developed and implemented the operational risk and governance framework methodology

Turning the brand promise into a documented and measurable operating model through appropriate policies and procedures.

The value

Enhanced public trust & brand equity

The organization possesses a demonstrable risk-management and governance program that it can share with key stakeholders and oversight bodies to build trust, protect its brand, and support confidence in its operations and growth strategy.

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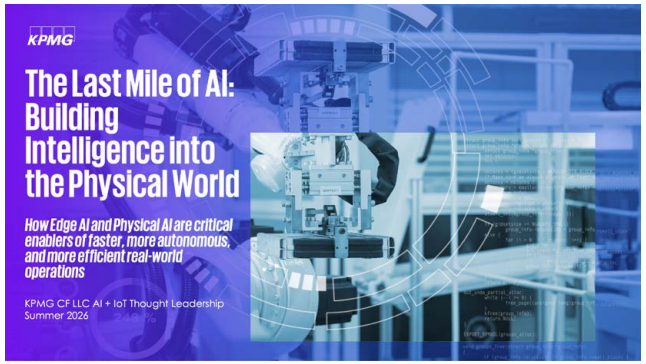

The Last Mile of AI: Building Intelligence into the Physical World



From algorithm to action: A framework for safe and secure physical AI

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DASD-2026-20824