STARR

INSIGHTS

SMARTER CARS

UNDERSTANDING HOW CHANGES IN CAR MANUFACTURING CHALLENGE THE PRODUCT RECALL MARKET

CHALLENGES IN AUTOMOTIVE MANUFACTURE

The rapid proliferation of electric vehicles (EVs) and the increasing integration of advanced electronics in car manufacturing have significantly transformed the automotive industry. However, these advancements create a new set of challenges, particularly in the realm of product recalls.

As vehicles become more complex, the potential for electronic and software-related malfunctions rises, necessitating a more sophisticated and efficient approach to identifying, managing, and executing recalls. This evolution not only tests the current recall infrastructure but also demands an enhanced focus on ensuring safety, reliability, and regulatory compliance amidst a swiftly changing technological landscape.

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RQA Group

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FROM COMBUSTION TO COMPUTER

While crude electric carriages were first invented in the late 1820's it wasn't until the early 21st century that interest and demand for electric vehicles finally began to take off.

Technology found within both internal combustion engines (ICE) and electric vehicles (EVs) has developed at a rapid pace. With this speed of change and constant upgrading of parts and software, it becomes important to understand the intricacies of product recall risks associated in the automotive sector.

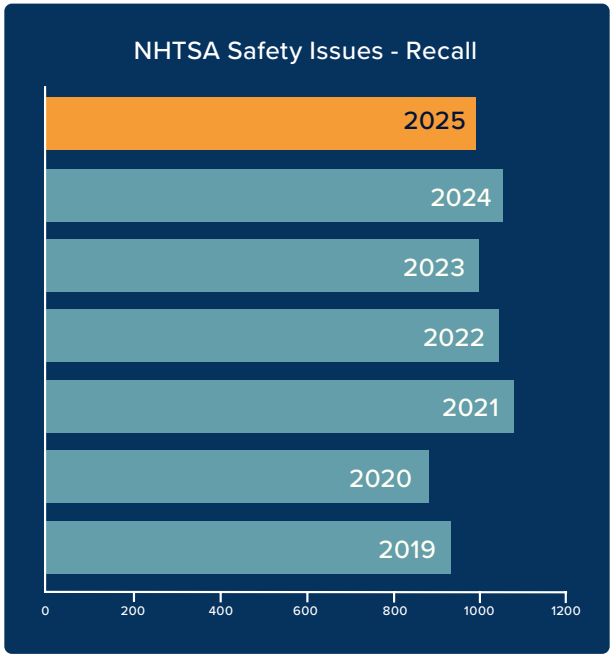
According to National Highway Traffic Safety Association (NHTSA), the total number of safety product recalls was slightly down in 2025 compared to 2024. However, the number of events remains elevated above historical experience and the number of individual vehicles recalled is at historic levels.

"WHILST THE RECENT FIGURES SHOWING A FALL IN THE NUMBER OF AUTOMOTIVE RECALLS IN THE USA AND UK ARE A WELCOME TREND IT IS PERHAPS TOO EARLY TO SAY IF THIS IS THE START OF A DOWNWARD SHIFT OR THE EFFECT OF MANUFACTURING LOSSES DURING THE PANDEMIC PERIOD, ONLY TIME WILL TELL."

ROGER HUGHES, PRINCIPAL CONSULTANT, RQA GROUP

The shift towards electronification in automobiles has been a gradual yet transformative process. Today, approximately 80% of a light vehicle is comprised of electronic components, signifying a shift in automotive design and functionality.

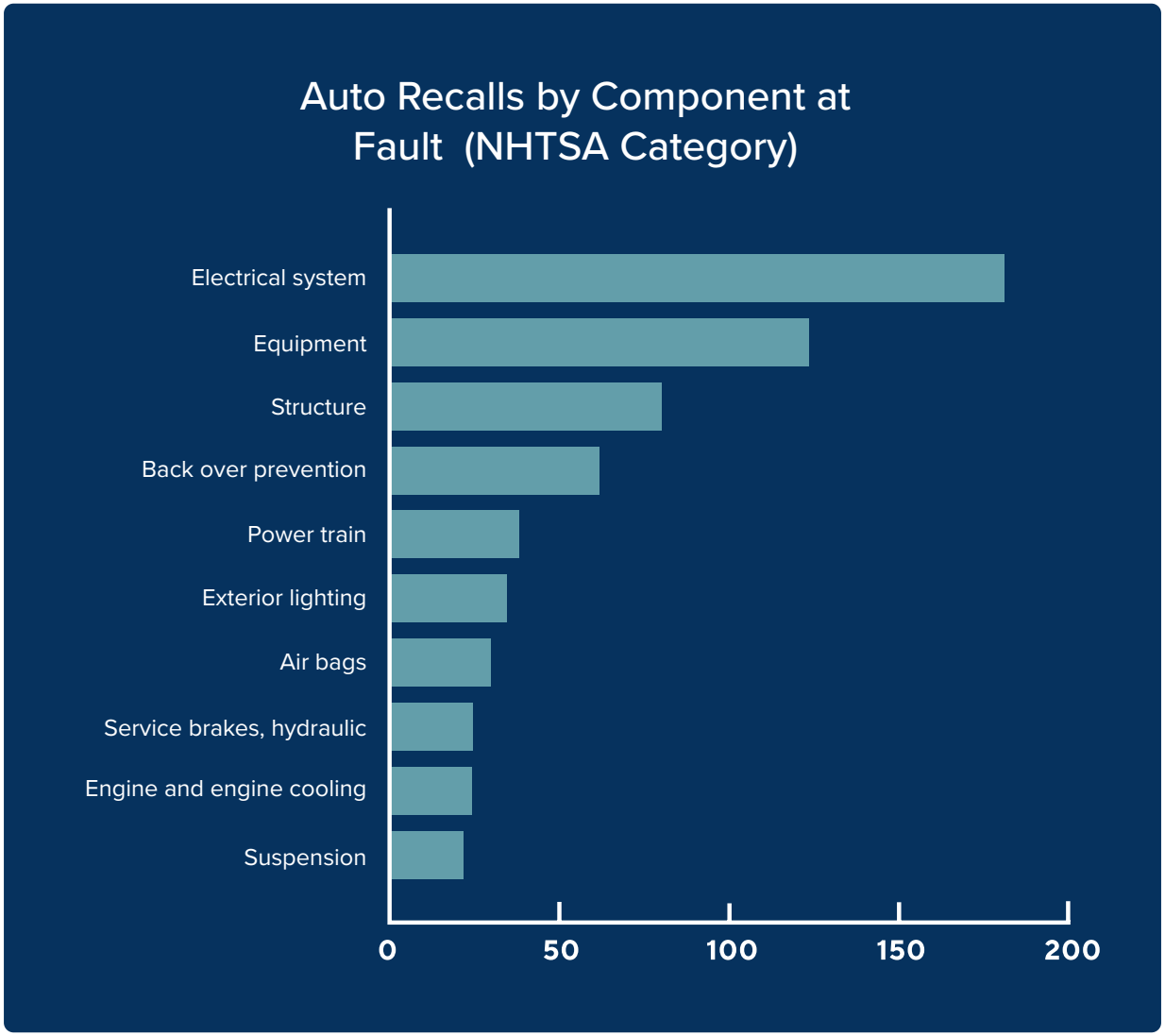
While the transition to EVs is predominantly driven by environmental concerns and government mandates, it also presents a host of novel challenges, particularly in terms of engineering knowledge, product safety and quality assurance.



COMPONENT AT FAULT

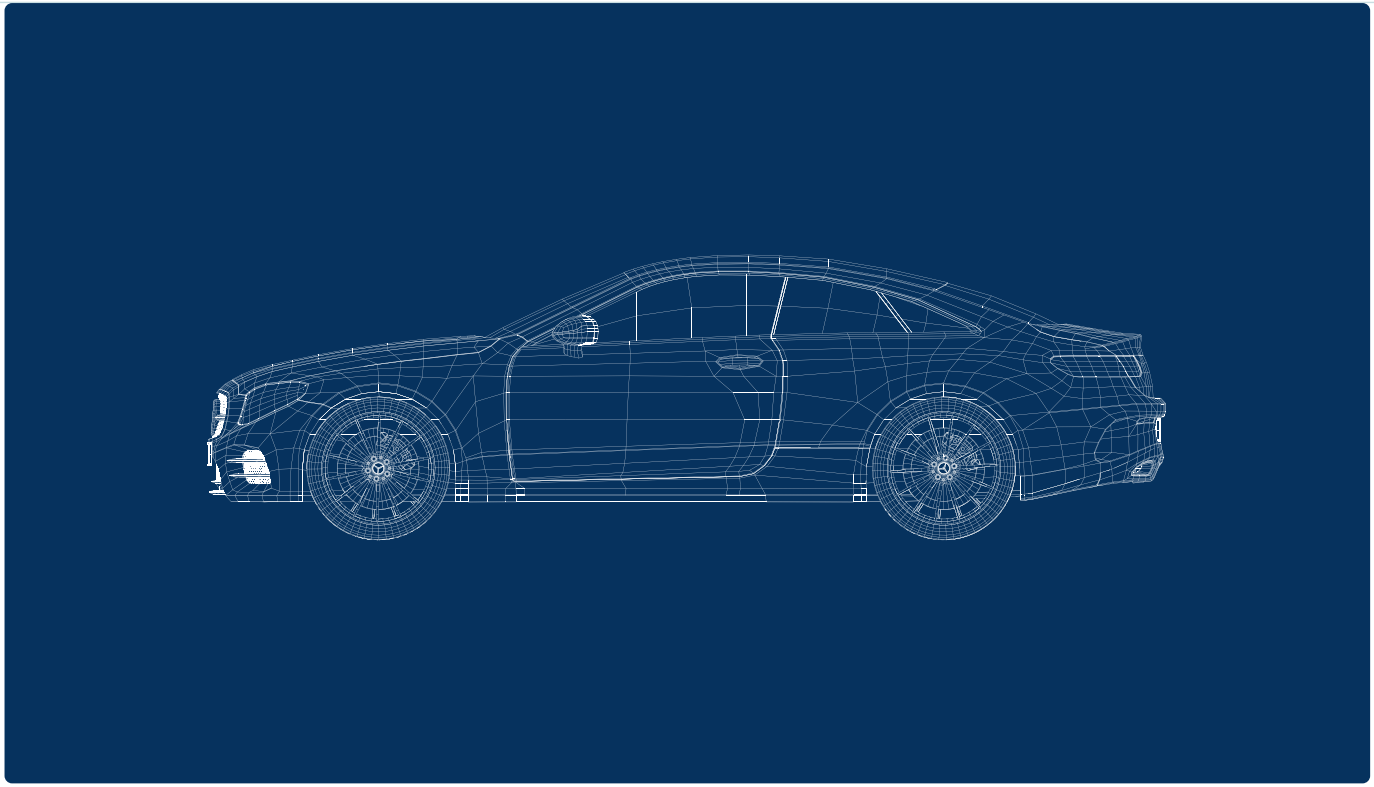
One of the primary challenges stems from the intricate nature of electric vehicle componentry, notably lithium-ion batteries. These high-energy-density power sources, while revolutionary in their capabilities, also pose inherent risks. With intense competition driving manufacturers to produce lighter, more efficient batteries at a lower cost, the pressure to innovate often outpaces the ability to thoroughly test and validate new technologies. The result is a heightened risk of safety incidents, including overheating and potential thermal runway—a reality underscored by recent recalls in the industry affecting vehicle populations in the hundred thousands.

With batteries costing between $10,000 and $20,000, this means there are significant cost implications for product recalls to repair or replace the batteries, resulting in claims well into the millions of dollars.



Whilst 'Electrical system' is a broad category, they remain responsible for the most recalls by some margin.

DISRUPTION



Compounding the challenge of rapid product development is the increasingly complex global supply chain, which has been further strained by a variety of factors:

Pandemic: National lockdowns globally caused by the outbreak of Covid-19 meant the supply of raw materials and finished goods were slowed or temporarily stopped between 2020 and 2022. We could see a repeat of this if there was another pandemic.

Cargo: Suez Canal blockages and the current Red Sea shipping crisis have continued to cause major disruption in the movement of goods with 30% of global container trade transiting through the area.

Global political events: Russia-Ukraine war has triggered sanctions along with hampering trade route operations and critical logistics. There are also ongoing territorial tensions in Taiwan which could further impact key supply chains.

Catastrophes: In 2024, significant catastrophic events have impacted critical infrastructure relevant to the automotive industry. The collapse of the Baltimore bridge, a vital conduit for one of the United States' largest ports, has had considerable repercussions for the US auto market. Additionally, the earthquake in Taiwan, a key global hub for semiconductor manufacturing, led to a temporary halt in production, further straining the supply chain.

From sourcing raw materials to manufacturing critical components, automotive supply chains are constantly susceptible to a myriad of disruptions that can ripple through the entire production process. These disruptions not only lead to delays in vehicle production but also force original equipment manufacturers (OEMs) to seek alternative suppliers risk.

The shortage of semiconductors, essential for powering advanced driver assistance systems (ADAS) – automated technology that uses sensors and cameras to aid road safety, i.e. adaptive cruise control, and other critical vehicle functions, has exposed vulnerabilities in the automotive industry's supply chain resilience. According to the American Automotive Policy Council, there are over 1,000 semi-conductors in every car. If one is missing, a car cannot be shipped.

The reliance on fabless (where manufacturing is outsourced to a third party) semiconductor manufacturers, coupled with geopolitical tensions and export restrictions, has further exacerbated the semiconductor shortage, creating a ripple effect felt across the entire automotive ecosystem.

MITIGATION

In light of these challenges, stakeholders across the industry must adopt a proactive approach to mitigate product recall risk. Core question need to be asked:

How robust is their supplier's management processes?

What contingency plans do they have in place?

How rigorous is the suppliers product testing in order to detect issues early?

> "WHAT IS CLEAR IS THAT SOFTWARE RELATED RECALLS ARE MORE PREVALENT, BUT WHAT IS NOT REVEALED IS WHERE A SOFTWARE UPDATE HAS BEEN USED AS THE REPAIR METHOD FOR A PROBLEM IN AN ELECTRO-MECHANICAL SYSTEM WHERE TRADITIONALLY A PHYSICAL COMPONENT WOULD BE REPLACED.
>
> AND FINALLY THE AUTOMOTIVE SECTOR SHOULD BE MINDFUL OF THE DETERMINATION BY SOME REGULATORS TO ENSURE THAT PARTS FOR RECALLS TAKE PRECEDENCE OVER PRODUCTION AND THAT DELAYS IN NEW MODELS AND STOPPAGES OF PRODUCTION LINES COULD BECOME A REGULAR FINANCIAL LOSS WHEN SUPPLIERS ARE UNABLE TO MEET THE DEMAND OF BOTH CURRENT PRODUCTION AND RECALL ACTIVITIES."
>
> Roger Hughes, Principal Consultant, RQA Group

By anticipating potential disruptions and ensuring stringent quality assurance standards throughout the supply chain, manufacturers can safeguard against costly recalls and protect consumer trust.

Furthermore, the emergence of software-driven technologies presents a new frontier in automotive risk management. As vehicles become increasingly reliant on complex software systems, the importance of skilled technicians cannot be overstated.

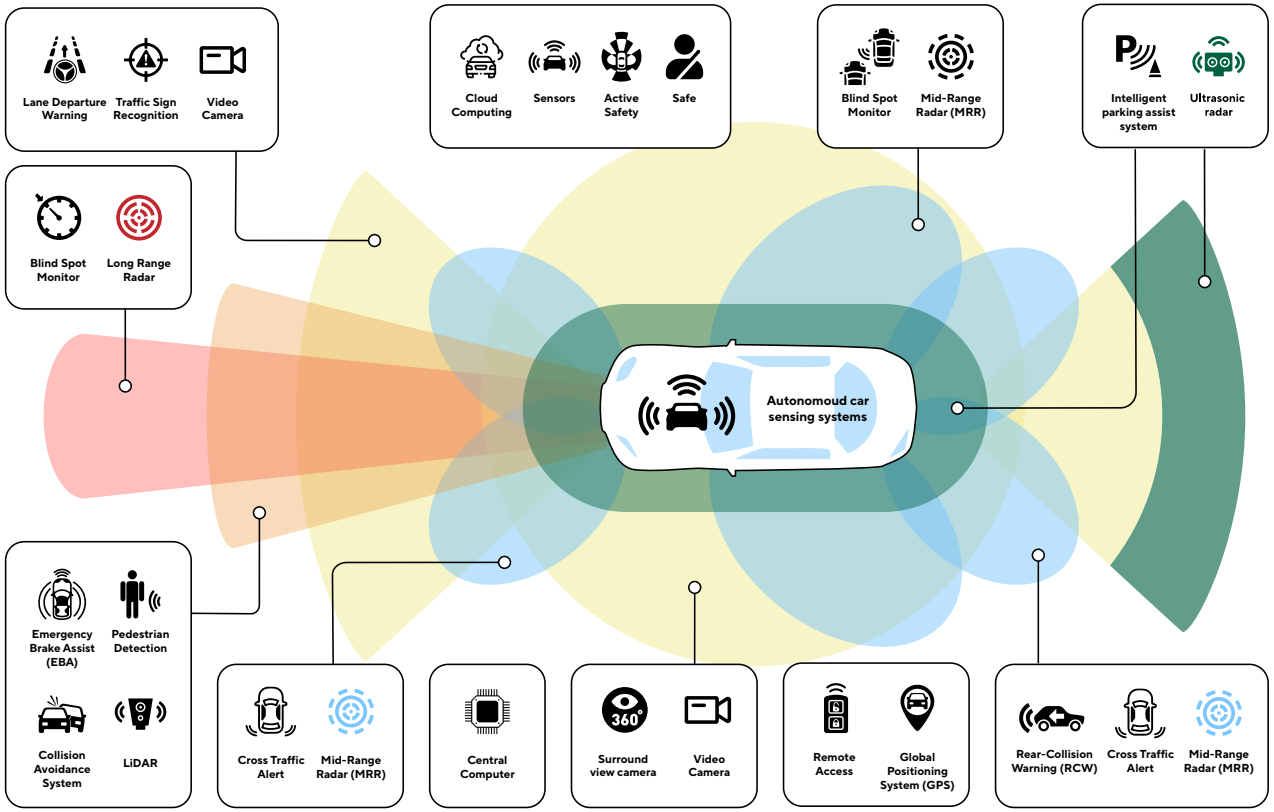
Addressing the skills gap in software engineering and investing in comprehensive testing infrastructure are critical steps in mitigating the risks associated with software-related recalls.

ADAS PRESSURE POINTS

Another area of concern is Advanced Driver-Assisted Systems (ADAS) design issues. ADAS technologies, including safety features such as adaptive cruise control, lane-keeping assistance, and automatic emergency braking, are heralded as the future of automotive safety, promising to reduce accidents and improve road safety. However, the integration of these systems has created a new dimension of risk for insurers.

Design flaws or malfunctions in ADAS components can have far-reaching consequences, potentially leading to systemic issues across a fleet of vehicles. Design-related recalls have greater potential to affect a large population of vehicles simultaneously. This systemic risk poses significant challenges for insurers, as widespread recalls can lead to substantial financial liabilities and reputational damage.

In 2023, Tesla recalled more than two million cars after the US regulator found that its driver assistance system, Autopilot, was partly defective. Whilst a software update should be an easy and quick fix (conducted remotely with an over-the-air update, versus physically recalling the vehicles which can extend to years), the numbers are scary – one of the largest ever recalls in the US.



To effectively manage the risks associated with ADAS and design issues, insurers must prioritise proactive risk assessment and mitigation strategies. This includes conducting thorough evaluations of ADAS components during underwriting processes, as well as ongoing monitoring of emerging safety concerns and regulatory developments.

Collaboration with automotive manufacturers and industry experts is essential to stay abreast of technological advancements and ensure that insurance policies are appropriately aligned with evolving risk profiles. As we've seen with Tesla, software within electrical components is ever important and manufacturers need to upskill in these areas to keep up to speed.

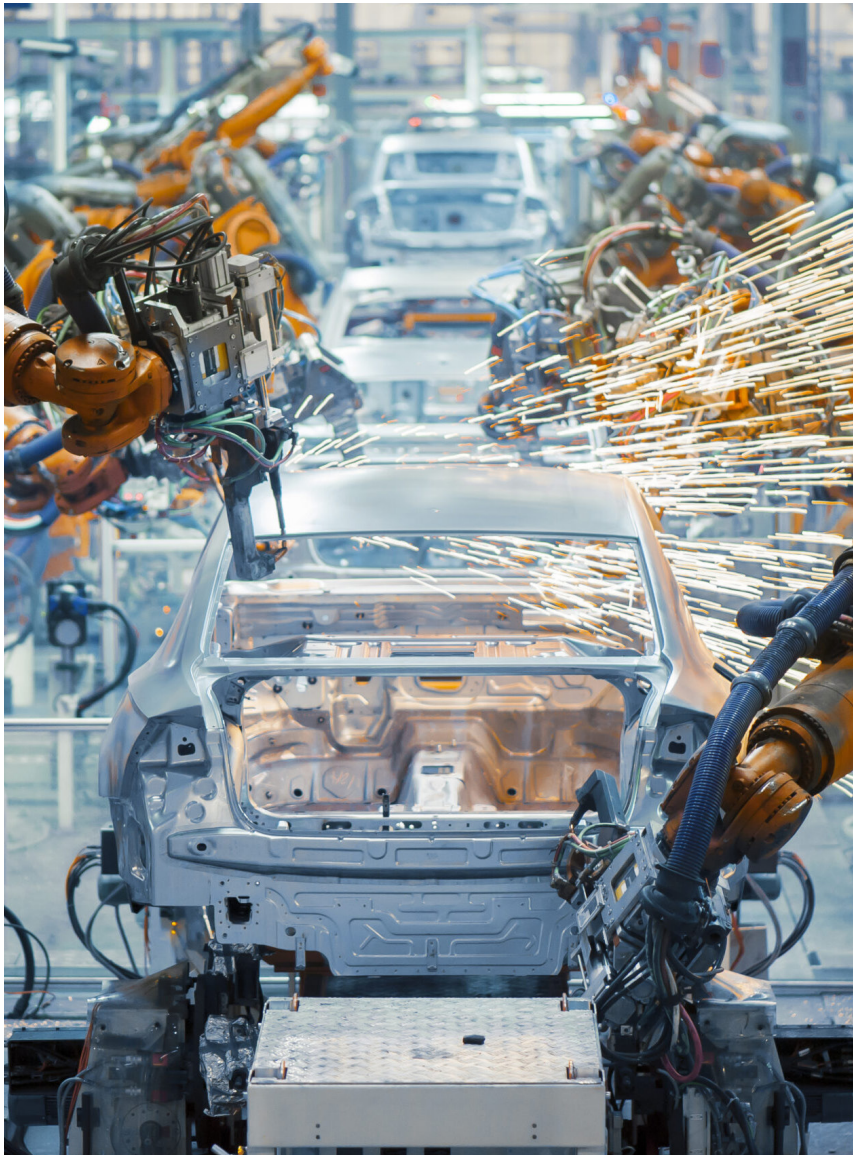
CRISIS MANAGEMENT AT STARR

Our Crisis Management insurance offering continues to evolve, supporting businesses to anticipate, mitigate and respond to complex, fast-moving risks. Led by Jon Atkinson, an experienced specialty underwriter, the team has grown in both capability and reach, reflecting increasing demand across sectors where product integrity and rapid response are critical.

Through our partnership with RQA Group, policyholders benefit from global expertise in product risk and crisis management, including 24/7 incident response, pre-incident consultancy and specialist claims support.

At Starr, we combine global reach, a strong balance sheet and empowered underwriting expertise to deliver responsive, data-led solutions. That means clear decisions, practical support and the confidence of a partner who can act quickly when it matters most.

As industries such as automotive continue to evolve, so too do the risks they face. Our Crisis Management cover is designed to keep pace, providing the insight, support and speed required to manage product recall events effectively.



EMPOWERING BROKERS THROUGH CLARITY AND RESPONSIVENESS

For brokers navigating a broad range of property and specialty risks, Starr brings global capability and local expertise through its London and Lloyd's platform.

Backed by a strong balance sheet and a data-led approach, our underwriters are empowered to respond quickly, provide clear direction and deliver practical solutions. We work in close partnership with brokers to remove friction, support confident decision-making and help close business efficiently.

We meet the moment by delivering clarity where it matters most.

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