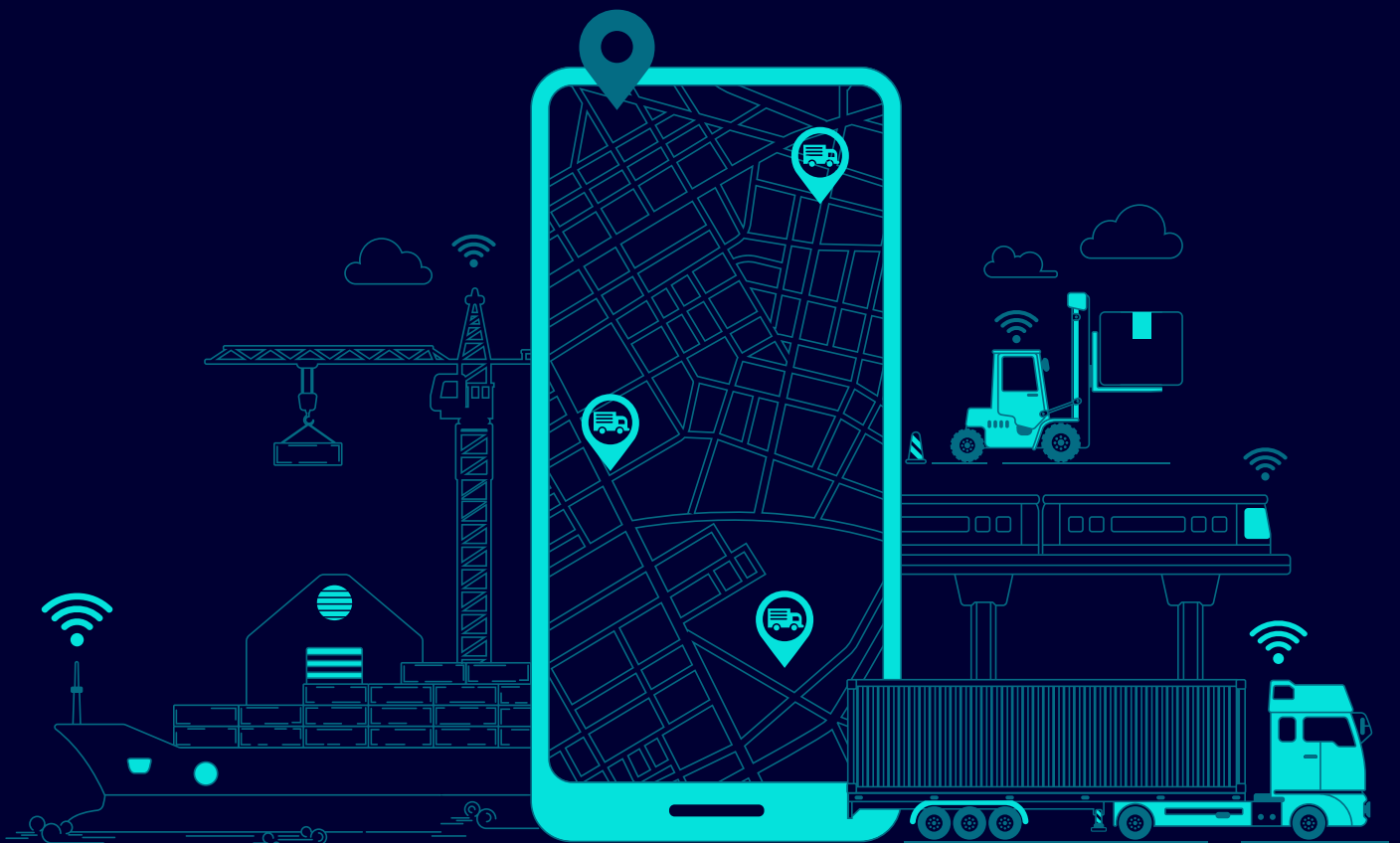


Engineered for Uncertainty

WHAT IT TAKES TO BUILD AGILE, RESILIENT AUTOMOTIVE SUPPLY CHAINS TODAY



The automotive industry is contending with profound, ongoing disruption. From semiconductor shortages and geopolitical conflicts to growing demand for electric vehicles (EVs), these pressures have upended production and reshaped market dynamics, forcing manufacturers to adopt innovative, proactive strategies.

Global instability, critical material shortages and the rapid digitization of vehicles are converging to underscore the need to build resilient, agile supply chains.

Transformation is critical. To stay ahead, automakers must accelerate supplier diversification, risk management technologies and strategic partnerships. Leveraging digital tools and data-driven insights can help manufacturers enhance resilience, improve procurement efficiency and ensure long-term competitiveness.

- **\$210 billion¹** The ongoing semiconductor shortage has caused significant economic strain, with stabilization still years away.
- **90%** of the world's rare earths are supplied by China, and leading automakers such as Mercedes-Benz, BMW and Ford are stockpiling critical materials and diversifying sources to protect production².
- **+500%** increase in demand for EV-critical minerals like lithium, cobalt, and nickel by 2030 amplifies supply chain pressures³.

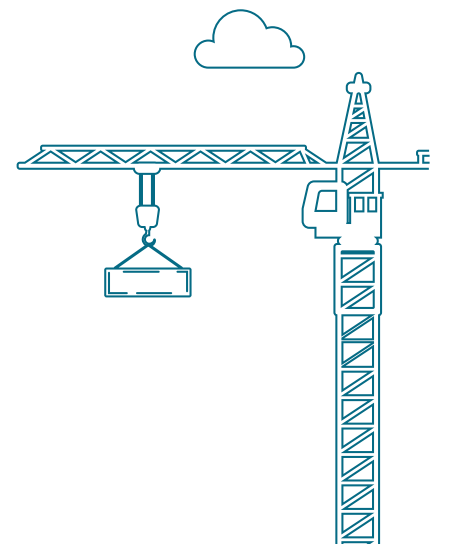
A FRAGILE SYSTEM, EXPOSED

In early 2021, Ford was forced to halt production of its best-selling F-150 trucks due to a global semiconductor shortage. Plants in Michigan and Missouri cut shifts or temporarily shut down, all because of a \$1 chip.

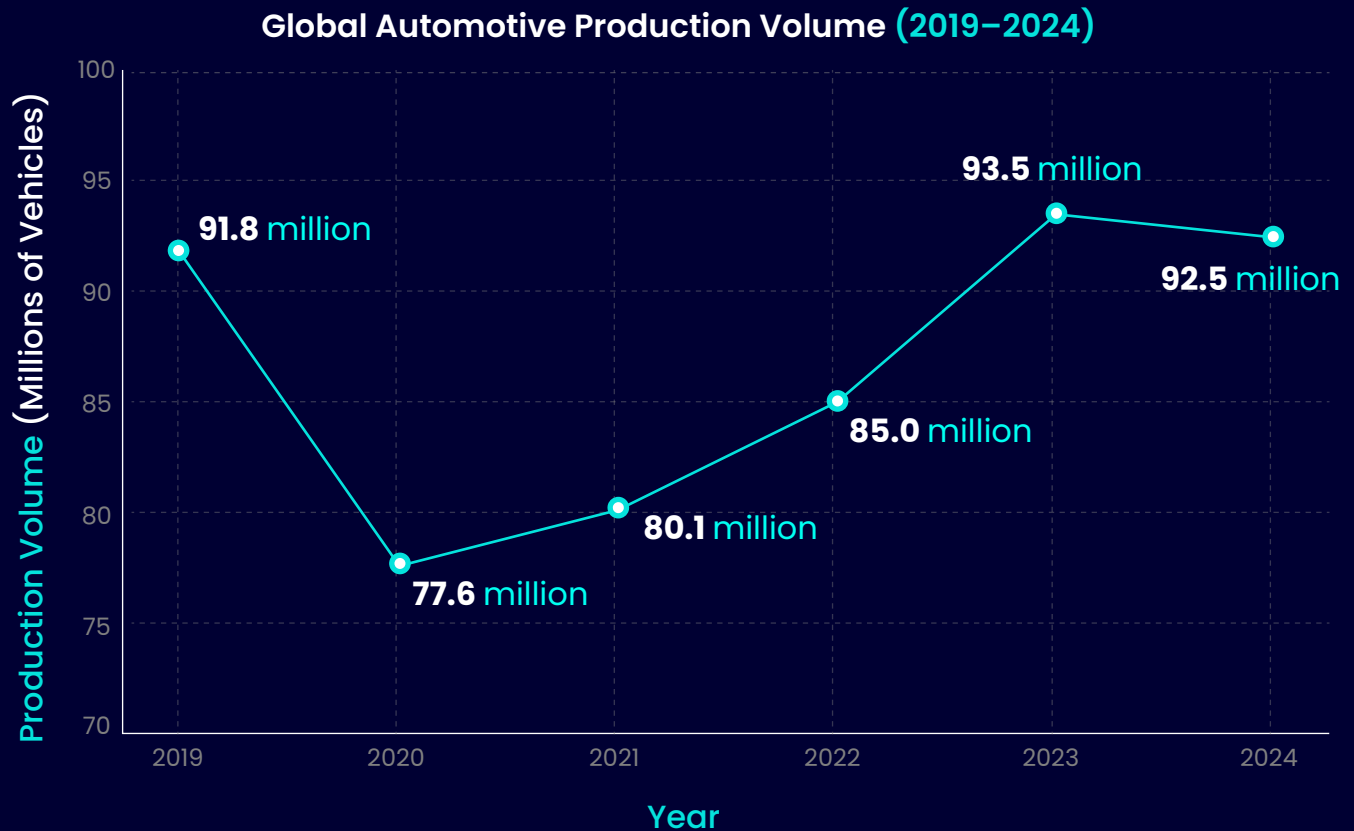
What seemed like a supply hiccup quickly ballooned into a crisis, costing automakers billions and exposing just how brittle global supply chains had become.

This wasn't a one-off. From raw material shocks and pandemic shutdowns to EV-driven demand spikes and shifting trade policies, automotive procurement has become a high-stakes balancing act. Production disruptions aren't anomalies anymore. They're part of the landscape.

To compete, automakers must go beyond reactive strategies. This means investing in visibility, supplier agility, and digital tools that allow supply chains to flex, adapt, and anticipate future risks. Because in today's market, even a one-dollar component can stall an entire industry.



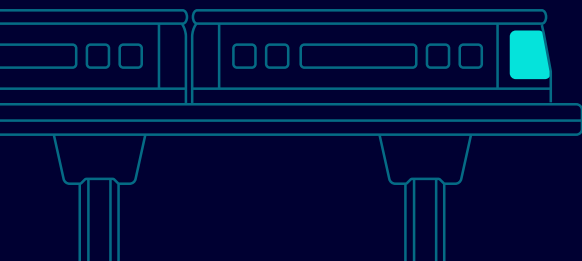
PRODUCTION REDUCTIONS DUE TO GLOBAL SUPPLY CHAIN DISRUPTIONS

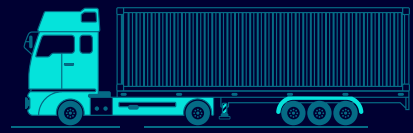


Source: International Organization of Motor Vehicle Manufacturers (OICA)

The line chart illustrates the reduction in global automotive production volume due to supply chain disruptions from 2019 to 2024. Each data point represents the reduction for that specific year only — the values are not cumulative. Key insights:

- **2020 and 2021** represent the most severe years, primarily due to COVID-19 and semiconductor shortages.
- **2022–2023** show a gradual recovery, with disruptions easing.
- **2024** sees a slight downward turn, driven by supplier insolvencies and macroeconomic uncertainty.





The sharp rise in disruptions during 2020 and 2021 underscores the urgent need for stronger, more agile supply chain strategies.

Recent events show that automotive companies must adopt proactive strategies, anchored in digital transformation, supplier collaboration, and predictive analytics, to safeguard themselves from future shocks and build long-term resilience.

SEVEN YEARS THAT SHOOK THE SUPPLY CHAIN

The last seven years have redefined what risk looks like in the automotive industry. Trade wars, a global pandemic, energy shocks, raw material shortages, tariff upheavals and other disruptions have exposed how fragile and interdependent the system has become.

2019 – Trade Wars Light the Fuse

The U.S.-China trade tensions escalated, leading to tariffs and disruptions in key automotive components like electronics. Manufacturers began recognizing the need to diversify their supplier base.

2020 – COVID-19 Exposes Weaknesses

As vehicles became increasingly software-driven, the industry's reliance on microchips grew. The resulting strain on global semiconductor supplies revealed significant vulnerabilities, especially due to a halt in production as a result of COVID-19.

2021 – The Semiconductor Crisis Peaks

With demand surging across sectors, including consumer electronics, semiconductor shortages caused widespread production stoppages. Automotive manufacturers prioritised high-margin vehicles but still faced steep losses.

2022 – War Sparks a Raw Material Crisis

While some recovery occurred, the Ukraine war and lingering semiconductor shortages continued to disrupt production. Raw materials, especially wiring harnesses, were in short supply.

2023 – The EV Boom Meets Logistical Bottlenecks

As the recovery continued and the demand for EVs surged, geopolitical tensions and residual logistical challenges persisted, causing some production disruptions.

2024 – Red Sea Crisis Disrupts Auto Production

The escalation of geopolitical tensions in the Red Sea region led to blockades along critical maritime routes, including the Suez Canal. This disruption severely impacted the transportation of automotive components, causing increased shipping costs and delays and shortages across the industry.

2025 – Tariff Pressures Rewrite the Playbook

Beyond earlier trade wars, the U.S. has expanded tariffs on EVs, batteries, and critical minerals to support domestic manufacturing. These policies are prompting automakers to rethink sourcing strategies, accelerate nearshoring, and improve supply chain agility.

STRATEGIZING FOR THE FUTURE

These cascading disruptions have made one thing clear: the old supply chain playbook no longer works. To build supply chains that can endure volatility and support long-term growth, automakers must focus on three strategic imperatives:

1. Resilience

Building resilient supply chains begins with reducing over-reliance on single suppliers or regions. Automakers must extend diversification strategies beyond semiconductors to include critical EV materials, ensuring secure, multisource procurement networks.

2. Flexibility

AI-driven platforms and IoT solutions are transforming supply chain management. Real-time data and predictive analytics enable automakers to adapt swiftly to disruptions, maintain production schedules and optimize costs.

3. Sustainability

The automotive shift to EVs is accelerating demand for ethically sourced and sustainable raw materials. Developing closed-loop supply chains, including recycling batteries, will be critical to meeting both regulatory and market demands.

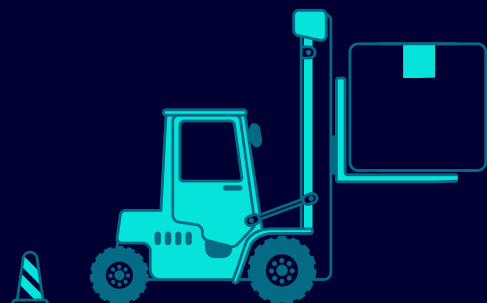
BUILT FOR IMPACT HOW GEP TRANSFORMS AUTOMOTIVE SUPPLY CHAINS

GEP uses advanced technology and strategic insights to fortify supply chains for leading automotive manufacturers. By focusing on predictive risk management, supplier collaboration, and cost optimization, GEP enables companies to transform reactive strategies into proactive ones.

Our AI-powered platforms, GEP SMART™ and GEP NEXXE™, are system-agnostic and built for speed, transparency, and adaptability in a rapidly evolving regulatory landscape.

Proven Impact:

- Over \$400M in savings for a global automotive client in just five years
- 275% ROI for an automotive OEM by streamlining processes
- 12,000 saved annual labor hours through process automation for an automotive OEM
- Nearly 2x improvement in business case expectations through workflow optimisation and co-sourcing models

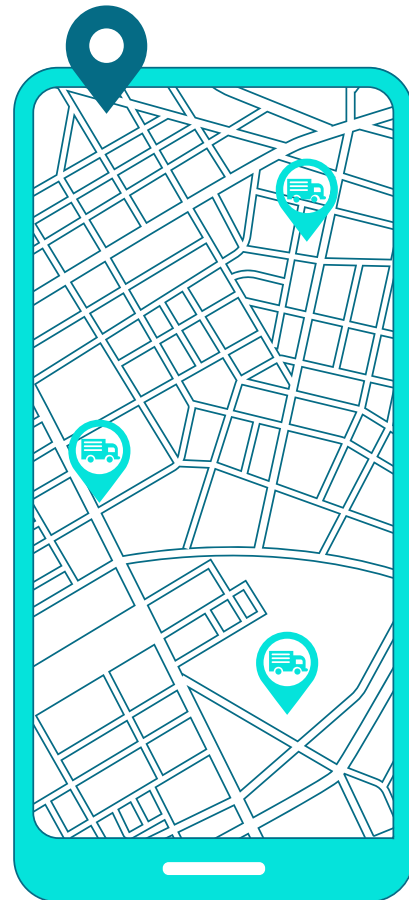


LEADING THROUGH WHAT'S NEXT

For automakers, survival depends on resilience and agility. Recent history shows that reactive fixes are no longer enough. To thrive, manufacturers must embrace a proactive approach that harnesses the power of AI, IoT and supplier partnerships.

GEP supports this shift with the tools, insights and expertise automakers need to fortify supply chains, build resilience and ensure long-term success.

While uncertainty persists, by leveraging advanced technologies, strategic partnerships, and data-driven insights, automakers can transition from merely managing crises to anticipating and overcoming them.



¹ Timothy Yost, "Shortages related to semiconductors to cost the auto industry \$210 billion in revenues this year, says new AlixPartners forecast," AlixPartners, 23 September 2021 | <https://www.alixpartners.com/newsroom/press-release-shortages-related-to-semiconductors-to-cost-the-auto-industry-210-billion-in-revenues-this-year-says-new-alixpartners-forecast/>

² Victoria Waldersee and Christoph Steitz, "China's rare earth export curbs hit the auto industry worldwide," Reuters, 4 June 2025 | <https://www.reuters.com/business/autos-transportation/some-european-auto-supplier-plants-shut-down-after-chinas-rare-earth-curbs-2025-06-04/>

³ Benedikt Sobotka, "The great minerals scramble: how can we provide the materials needed for the energy transition?", World Economic Forum, 18 January 2023 | <https://www.weforum.org/stories/2023/01/minerals-metals-energy-transition-davos2023/>

GEP® delivers AI-powered procurement and supply chain solutions that help global enterprises become more agile and resilient, operate more efficiently and effectively, gain competitive advantage, boost profitability and increase shareholder value.

Fresh thinking, innovative products, unrivaled domain expertise, smart, passionate people — this is how GEP SOFTWARE™, GEP STRATEGY™ and GEP MANAGED SERVICES™ together deliver procurement and supply chain solutions of unprecedented scale, power and effectiveness. Our customers are the world's best companies, including more than 550 Fortune 500 and Global 2000 industry leaders who rely on GEP to meet ambitious strategic, financial and operational goals.

A leader in multiple Gartner Magic Quadrants, GEP's cloud-native software and digital business platforms consistently win awards and recognition from industry analysts, research firms and media outlets, including Gartner, Forrester, IDC, ISG, and Spend Matters.

GEP is also regularly ranked a top procurement and supply chain consulting and strategy firm, and a leading managed services provider by ALM, Everest Group, NelsonHall, IDC, ISG and HFS, among others. Headquartered in Clark, New Jersey, GEP has offices and operations centers across Europe, Asia, Africa and the Americas. To learn more, visit www.gep.com.

AUTHOR

Klaire Sohns

Connect With GEP



GEP SMART

GEP SMART is an AI-powered, cloud-native software for direct and indirect procurement that offers comprehensive source-to-pay functionality in one user-friendly platform, inclusive of spend analysis, sourcing, contract management, supplier management, procure-to-pay, savings project management and savings tracking, invoicing and other related functionalities.

GEP NEXXE

GEP NEXXE is a unified and comprehensive supply chain platform that provides end-to-end planning, visibility, execution and collaboration capabilities for today's complex, global supply chains.

Built on a foundation of big data, artificial intelligence and machine learning, GEP NEXXE is next-generation software that helps enterprises make supply chain a competitive advantage.

100 Walnut Avenue, Clark, NJ 07066 | P 732.382.6565 | info@gep.com | www.gep.com

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