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Global Trade Holds its Ground





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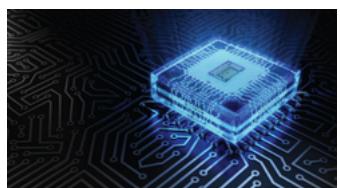
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Global Trade Holds its Ground

New data shows global trade reached record levels in 2025 as regional and sector shifts reshaped international flows.

With today's news headlines dominated by trade wars, sanctions and rising protectionism, it's easy to believe that globalization is unravelling. But is that really the case? Not quite, says the [World Economic Forum \(WEF\)](#). In fact, the opposite is true. According to the [United Nations Conference on Trade and Development \(UNCTAD\)](#), global trade broke records last year as it surged past the \$35 trillion mark, despite all the turmoil and concern over tariffs and trade wars.

That number represents a \$2.2 trillion increase (or a roughly 7% jump) over 2024's global trade volumes. UNCTAD says trade in goods comprises about \$1.5 trillion of that increase and that services expanded by roughly \$750 billion. It points to East Asia and Africa as two regions seeing the strongest level of growth last year:

- East Asia's exports recorded the strongest growth over the past four quarters (9%), with intra-regional trade growing by 10%.

By industry, manufacturing anchored growth for the year as electronics led gains on sustained AI-related demand, while agriculture expanded on higher trade in cereals, fruits and vegetables and oils. The automotive sector weighed on overall

- North America's exports fell by 3% in the third quarter but grew 2% over the previous four quarters. UNCTAD says imports were stronger, rising 6% over the same period.
- Europe continued to grow in the third quarter, though at a slower pace. European exports rose 2% in the third quarter and 6% over the last four quarters, while imports increased by 1% in the third quarter of 2025.
- Intra-regional trade was also strong for South America, with trade within the region rising 3% in the third quarter and 7% over the last four quarters.
- Africa showed solid growth in imports of 10% for the prior four quarters and 3% in the third quarter of 2025.

performance as trade declined across most vehicle categories, with hybrids the only area of growth, UNCTAD reports. Commodities delivered mixed results as iron and steel surged, but lower mineral fuel prices kept broader natural-resource trade subdued.

"A recent analysis of international flows reveals a surprising truth: global trade is shifting, but global connectivity overall has proven to be remarkably resilient," WEF reports. "Global exchange remains near historic highs. The increasing trade in Asia, the Middle East and Africa outweighs the shrinkage of US trade."

China Posts Strong Export Volumes

One country that continues to defy the prevailing narrative around slowing global trade is China. Despite tariffs, trade restrictions and ongoing geopolitical friction, it posted solid export performance in 2025, driven by its scale, manufacturing depth and continued demand from key markets.

In fact, China's annual trade surplus hit a record \$1.2 trillion last year, even as exports to the U.S. dropped by 20%, [CNBC](#) reports. Citing Chinese customs data, it says exports surged 6.6% (in U.S. dollar terms) in December, compared to a year earlier. Imports rose 5.7% in December from a year earlier, topping expectations for a 0.9% growth, which was strongest since September last year when they climbed 7.4%.

"As Chinese exporters have ramped up shipments to non-U.S. markets, the growing trade imbalance has prompted concerns from major trading partners, including the European Union," the publication adds, noting that Chinese officials have pledged to "expand imports and work toward balancing trade."

Can the Momentum Keep Up?

The World Bank recently raised its forecast for China's growth in 2026 to 4.4%, 0.4 percentage point higher than its June projection, anticipating further fiscal stimulus, continued resilience of exports and improved investment sentiment.

In "[China's record trade surplus shows it can thrive without the US, but can it keep its winning streak going?](#)" Simone McCarthy discussed the record trade surplus and the probability of a repeat performance in 2026. "Whether or not that engine can keep going at the speed that it has is uncertain," she writes, "and depends on the extent to which countries continue to throw up trade barriers against Chinese goods."

As for world trade as a whole, UNCTAD is predicting weaker momentum this year. "Slower global growth, rising debt, higher trade costs and continued uncertainty are likely to weigh on trade flows."

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All-Electric Semi Truck Hits the Road in California

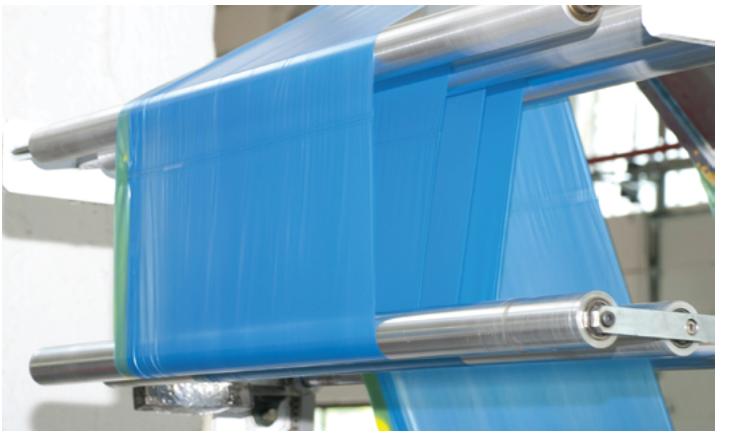
Early deployments of electric semi-trucks provide new data on range, efficiency and operational fit for commercial freight operations

The transportation industry is one of the biggest contributors to greenhouse gas (GHG) emissions in the U.S., where light-duty vehicles and medium/heavy-duty trucks generate about 80% of the sector's total emissions, according to the U.S. Environmental Protection Agency (EPA). This makes transportation a prime candidate for electrification, particularly for moving freight—a place where even incremental sustainability improvements can translate into meaningful emissions reductions.



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Mastering Plastic Volume Audits for ERP Compliance and Risk Mitigation



Assumption-based data weakens ERP compliance strategies and increases EPR fee exposure. Building a defensible plastic volume baseline and improving supplier oversight can transform audit readiness into a long-term advantage.

An effective enterprise resource planning (ERP) compliance strategy cannot rely on rough estimates when it comes to plastic volumes. Guesswork creates vulnerabilities across regulatory filings and brand credibility. With extended producer responsibility (EPR) legislation and the introduction of plastics taxes, organizations are facing increasing pressure to accurately account for material usage.

Inaccurate data leads to miscalculations of fees and a lack of confidence in sustainability claims. Companies that continue to base decisions on unverified packaging data risk falling behind as stakeholders demand traceability and readiness for compliance reviews at any time.

Why Plastic Volume Guessing Creates a Hidden Enterprise Risk

Plastic volume estimates create ripple effects that compound across cost recovery and supplier decision-making. When data is based on averages or outdated specifications, errors carry through into EPR filings and plastic tax assessments. Traditional supply planning practices, which are [designed to respond efficiently to known variables](#), struggle when unforeseen events, such as resin shortages or packaging redesigns, disrupt the supply chain flow. In those moments, relying on unverified assumptions leaves teams exposed.

Volume uncertainty becomes a serious liability when packaging changes happen on short notice and no updated weights

or materials are logged. Regulatory bodies and customers now expect traceability, which proves that the reported numbers can be traced back to verified components and methods. Without defensible data, organizations face scrutiny and loss of trust in compliance and commercial environments.

The True Cost of Inaccurate Plastic Volume Data

Inaccurate plastic volume data can lead to underpayment or overpayment of EPR fees and plastic levies, which directly affect financial performance and regulatory standing. [EPR packaging laws apply variable fees](#) based on the amount of packaging generated and its recyclability. Incorrect weights or misclassified materials create immediate risk.

These discrepancies ripple into procurement, where inaccurate figures weaken negotiating power and lead to disputes with suppliers over packaging specifications. Recycled-content claims based on estimated or unverified data may fail to align with the actual materials used, which exposes companies to greenwashing accusations and lost credibility. As more jurisdictions adopt stricter EPR laws, traceability and transparency become nonnegotiable, and volume estimation is no longer defensible.

Establishing the Audit Scope and Boundaries

A strong ERP compliance strategy begins by clearly defining the organizational and packaging boundaries in plastic volume

audits. Business units and distribution channels covered by reporting may fall under different EPR regulations. It also involves primary packaging that holds the product, secondary packaging such as trays and tertiary packaging like pallets used in logistics. Each packaging type carries different weights and recyclability profiles, which directly influence fee structures.

Compliance becomes more complex because [EPR requirements and fees vary](#) by state. For example, California, Oregon and Colorado each apply different fee models and reporting cadences. This fragmentation makes standardized estimation methods unreliable. Companies must also set treatment rules for exceptions, such as promotional kits, to ensure consistency and auditability. Without well-defined boundaries and clear exception handling, ERP systems can't support traceable reporting, and the organization risks noncompliance.

A Practical Plastic Volume Audit Framework

Auditing plastic volume demands a structured process that builds traceable and verifiable data. Each step should reinforce data integrity and ensure alignment with compliance and procurement goals. Here are the key steps involved in auditing plastic volume:

- **Define audit boundaries:** Establish the scope by selecting which business units, packaging types and regions to include.
- **Select a sampling strategy:** Focus on top packaging suppliers and regions with the most stringent EPR packaging laws or fees.
- **Gather and validate source data:** Collect data from ERP systems, packaging specifications and supplier declarations.
- **Physically verify packaging components:** Weigh packaging parts or full units on calibrated scales and document the test methods and personnel involved.
- **Standardize calculation logic:** Apply consistent units of measure and conversion factors for all material types and formats.
- **Create audit documentation:** Store evidence such as weigh tickets, spec sheets and revision history to support future reviews or disputes.
- **Roll up and reconcile data:** Aggregate weights by supplier and region to ensure traceability and consistency with financial and compliance reports.
- **Review and approve results:** Have cross-functional teams validate findings and sign off before results are loaded into ERP or reporting systems.

Operationalizing the Audit into Ongoing Controls

Plastic data should be treated as controlled master data to support consistency and audit readiness. As automation accelerates across the industry, with [55% of consumer-packaged goods representatives](#) believing packaging and processing will benefit most, organizations must align their data practices accordingly. Establishing clear ownership across functions is critical, including procurement teams managing supplier data and packaging teams overseeing spec changes.

Updates should be triggered by events like supplier changes, packaging redesigns and material substitutions. To maintain data integrity, a governance cadence that includes quarterly reviews of high-impact items and a comprehensive annual audit is ideal. This approach supports compliance with extended producer responsibility laws and positions the organization for smarter automation in packaging operations.

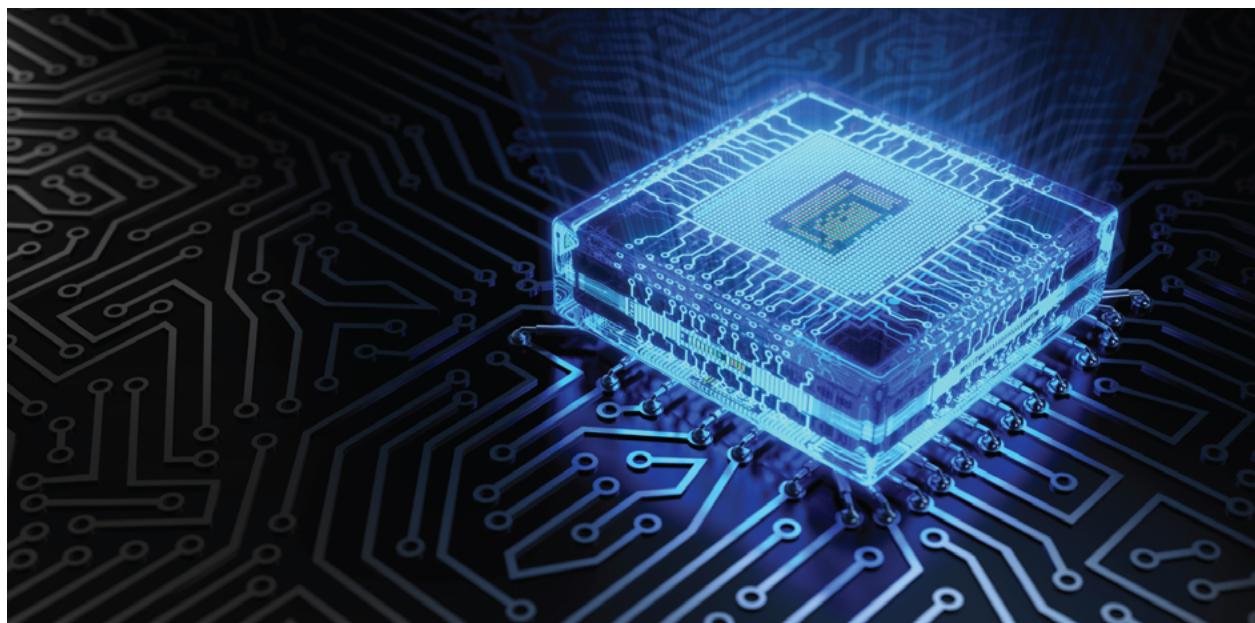
Common Failure Points That Break Plastic Audit Programs

Plastic volume audits often fail when key controls are missing or overlooked. Many organizations rely too heavily on supplier-provided estimates without validating the methods used, which undermines data accuracy. Tertiary packaging components, such as stretch wrap and pallet straps, are frequently excluded, despite their significant contribution to the total plastic weight. Low operational efficiency further complicates matters, [leading to extended setup times](#) and a lack of control over how packaging is consumed or substituted.

These inefficiencies complicate maintaining accurate records, especially when version control for packaging specs and bill of materials is lacking. Substitutions during material shortages often go undocumented, which creates blind spots in compliance and procurement systems. One-time audits, if not tied to repeatable governance processes, quickly become outdated. Under EPR packaging laws, these gaps incur fees, penalties and reputational risks when reported data can't be traced back to verified, up-to-date sources.

From Estimates to Audit-Ready Plastic Data

Estimates create hidden reliability gaps, while audits bring defensibility to every reporting line. By building a plastic volume baseline, organizations can reduce EPR fee exposure and transform that data into supplier governance and structured master data controls. A strong ERP compliance strategy ensures this process is transparent and resilient across business units and jurisdictions.



The AI Boom is Driving a Memory Chip Shortage

As investment in artificial intelligence grows, memory chip supplies are tightening for the electronics, automotive and enterprise markets.

Artificial intelligence (AI) had a banner year in 2025 as companies moved from experimentation to deployment. AI tools became part of day-to-day operations across industries, increasing spending on data centers, infrastructure and computing hardware.

That demand is now affecting the semiconductor supply chain. As chipmakers prioritize memory used in AI systems, supplies of conventional memory are tightening, with implications for availability, pricing and production planning across consumer electronics, automotive and enterprise markets.

All of this popularity is straining another part of the technology supply chain: memory chip production. As chip manufacturers shift capacity toward higher-margin AI-related products, traditional memory supplies are tightening, costs are rising and lead times are lengthening out.

“An acute global shortage of memory chips is forcing artificial intelligence and consumer-electronics companies to fight for dwindling supplies, as prices soar for the unglamorous but essential components that allow devices to store data,” [Reuters](#) reports. It says Japanese electronics stores are limiting

the number of hard-disk drives shoppers can buy; Chinese smartphone makers are warning of price increases; and Microsoft, Google and ByteDance are all working ahead to secure supplies from memory-chip makers.

“The squeeze spans almost every type of memory, from flash chips used in USB drives and smartphones to advanced high-bandwidth memory (HBM) that feeds AI chips in data centers,” Reuters adds, noting that prices in some segments have more than doubled since February. “The memory shortage has now graduated from a component-level concern to a macroeconomic risk,” Greyhound Research’s Sanchit Vir Gogia, told the publication.

No Silver Bullet

A quick solution to the chip shortage problem seems unlikely at this point. In “[AI boom is fueling a memory chip shortage that could hit cars and phones](#),” CNBC says both chipmakers and analysts are warning of a memory chip shortage that could hit the consumer electronics and automotive industries in 2026, “as companies prioritize massive demand from the artificial intelligence boom.”

Analysts say these supply constraint concerns come as chip manufacturers focus on advanced memory chips used in AI computing, with less focus on production needed for consumer products. “The AI build-out is absolutely eating up a lot of the available chip supply, and 2026 looks to be far bigger than this year in terms of overall demand,” analyst Dan Nystedt told CNBC. The issue is that AI servers run mostly on processors from chip designers like Nvidia, and those processors use a type of memory known as high-bandwidth memory (HBM). The news outlet says the memory industry has also experienced downturns in recent years, and that’s led to under-investment in the industry.

“They’re building new capacity now,” it adds, “but it will take time to get running.”

No Firm Supply Commitments

The potential impacts of the memory chip crisis came to light in November, when the CEO of Semiconductor Manufacturing International Corp. (SMIC) delivered a warning during an earnings call. Manufacturers of cars and smartphones that use memory will face pricing pressure and supply uncertainty next year, he said, and nobody is offering “firm supply commitments” right now.

“People don’t dare place too many orders for the first quarter next year,” he said, according to [Reuters](#). “Because no one knows how many memory (chips) will actually be available, [or] how many phones, cars, or other products it can support.”

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Meta Harnesses Nuclear Power for its Data Centers

Rising AI energy demands push tech companies to rethink data center power.

Artificial intelligence (AI) lives in the headlines these days, with one news hook being just how much energy it takes to power the data centers that are used to train and run AI models. Since 2020, Pew Research Center estimates that these facilities’ electricity consumption has increased substantially. After hitting a record high in 2024, that consumption is expected to more than double by 2030.



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Supply Chain Connect provides supply chain and purchasing professionals with essential news, information and analysis about the technology and business trends that impact the global supply chain industry.

The card features the Supply Chain Connect logo on the left, a portrait of Dr. Bill Bradford in the center, and the Flip Electronics logo with the tagline "Making Obsolescence Obsolete" on the right. Text on the right side identifies him as Dr. Bill Bradford, President of Flip Electronics.

2026 Semiconductor Trends to Watch: The Rising Risk of Obsolescence

Dr. Bill Bradford of Flip Electronics unpacks the 2026 semiconductor trends to watch, revealing how Moore's Law, AI demand and global volatility are accelerating component obsolescence and what supply chain leaders can do now to stay ahead.

In this episode of Supply Chain Connect, Dr. Bill Bradford, President of Flip Electronics, joins the show to break down the key 2026 semiconductor trends to watch, with a special focus on the rising risk of component obsolescence. Dr. Bradford explains how Moore's Law, post-pandemic inventory shifts, AI-driven capacity demands and geopolitical uncertainty are squeezing legacy chips and putting long-life sectors like aerospace and defense, industrial, medical and automotive at risk. Dr. Bradford also shares a practical playbook for staying ahead of end-of-life shocks and counterfeit exposure.

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The card features the Supply Chain Connect logo on the left, a portrait of Sree Mangalampalli in the center, and the FourKites logo with the tagline "FOURKITES" on the right. Text on the right side identifies him as Sree Mangalampalli, Vice President of Digital Transformation Solutions at FourKites.

Closing the Execution Gap: How AI Agents Transform Supply Chain Orchestration

Sree Mangalampalli of FourKites shares how purpose-built AI agents and digital twins are reshaping global supply chains.

In this episode of Supply Chain Connect, Sree Mangalampalli, Vice President of Digital Transformation Solutions at FourKites, shares how AI and digital twins are reshaping global supply chains. Mangalampalli discusses real-world inbound and outbound challenges, how purpose-built AI agents orchestrate end-to-end operations, how leaders can build trust in AI and much more.

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Closing the Supply Chain-Consumer Disconnect

New research underscores a growing disconnect between customer expectations and supply chain capabilities.

For most consumers, the term “supply chain” barely registered before the global pandemic left the store shelves stripped clean and extended order lead times for everything from household furniture to semiconductors to automobiles. Suddenly, items that either could be had with a short trip to the store, a half-day at an auto dealership or an online order were taking months to fulfill.

Amid that disruption, supply chains moved from the background to the forefront of everyday purchasing decisions. Consumers began paying attention to availability, delivery timelines and pricing in ways they hadn’t before, often with little visibility into the forces shaping those outcomes. Years later, that awareness remains, but expectations have continued to rise, widening the gap between what consumers want and what supply chains are able to deliver.

Shifting Policies are Straining Supply Chains

The pandemic may be firmly in the rearview mirror, but new survey data reveals that consumer expectations continue to outpace supply chain realities. Based on responses from both shoppers and supply chain leaders, the research under-

scores growing tension around delivery options, pricing, availability and trust at a time when supply chains are under increasing pressure from tariffs, compliance requirements and volatile demand.

In its [Supply Chain Integrity Outlook 2026](#), Impinj says tariff tensions highlight a disconnect between affordability and reality for consumers. Concerns around tariffs and trade shifts are introducing even more uncertainty, with 84% of supply chain leaders saying that changing foreign trade policies are affecting their planning. These uncertainties are creating the need for sourcing adjustments (54%) and increased customer prices (53%).

Impinj also found that consumer tolerance for these cost increases is limited, with more than half (56%) of customers saying they would stop buying a product if tariff-related costs were passed onto them. “This tension further highlights the widening gap between global supply chain realities and consumer expectations for product affordability and availability,” the company says.

Other Key Report Findings

The report explored various different aspects of the supply chain-consumer disconnect, with some of the other findings being:

- **Food supply chains struggle with safety, compliance and waste.** More than half (59%) of food supply chain leaders are concerned with meeting FDA traceability requirements; over one-third expect to miss the deadline; and food brands lose an average of \$79 million annually to food waste. (The original compliance date for the Food Traceability Rule was Jan. 20, 2026 but the [FDA has proposed](#) extending the compliance date for the rule by 30 months.)
- **Counterfeit products also remain a big problem.** According to the survey, 78% of retailers and retail goods suppliers say preventing unauthorized or fake versions of their products from reaching the market is a problem. Most (71%) report damage to brand reputation or revenue as a result. Consumers have low tolerance for counterfeits: 58% say they would stop buying a brand that unknowingly sold them a counterfeit product.
- **Fraudulent shipping is on the rise.** Seventy-six percent of companies surveyed reported an increase in fraudulent shipping incidents, mirroring the 38% of consumers who say they’ve been victims themselves (including receiving the wrong item or never getting a package that was marked as delivered). Also, 60% of consumers say one fraudulent shipping experience would cause them to abandon a brand altogether.

• **Buyers want more convenient pickup and delivery options.** More than half (56%) of supply chain leaders face increasing pressure to provide faster, more flexible delivery and pickup options, while 51% of consumers say they’re likely to stop buying from brands that don’t offer convenient choices.

• **Viral commerce drives demand volatility.** Impinj says social media and influencer trends drove 42% of purchases in 2025. That trend created unpredictable spikes in demand, with half of supply chain leaders struggling to keep up and 52% saying that rapid demand shifts are the “biggest threat to supply chain integrity” (up nearly 30 percentage points from 2024).

On a positive note, Impinj says confidence in organizational supply chain integrity is high right now, with 77% of senior supply chain professionals reporting a high level of supply chain integrity within their organization (up from 60% last year). And 95% of supply chain leaders believe their organizations are equipped to drive accurate supply chain visibility, while nearly half (49%) say they are consistently driving accurate, 360-deg. real-time supply chain visibility (compared to 33% last year).

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Manufacturing PMI Hits a New Low in December

Tariffs, rising input costs and weak demand continue to pressure U.S. manufacturers.

The U.S. manufacturing sector couldn’t catch a break in 2025, ultimately wrapping up December on its weakest footing of the year. Activity remained uneven across the sector, with most industries still contracting and only limited areas showing signs of stability as the year came to a close.



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New Cybersecurity Guidance Takes Aim at AI-Related Risk

Organizations and individuals have until the end of January to submit feedback on new AI-focused cybersecurity guidance developed by NIST.

In an era where artificial intelligence (AI) is becoming integral to our daily lives, the technology is being put to use on the cybersecurity front. It can analyze vast amounts of data for threat detection, predict potential attacks using behavioral analytics and automate response to security incidents. Unfortunately, these capabilities can also be weaponized by cyber-criminals to carry out more sophisticated, damaging attacks.

It's the classic "double-edged sword" technological innovation scenario, and one that the U.S. government is taking seriously. In December, the National Institute of Standards and Technology (NIST) released a preliminary draft of its Cyber AI Profile, which focuses on these three key areas:

- **Securing AI systems:** identifying cybersecurity challenges when integrating AI into organizational ecosystems and infrastructure.
- **Conducting AI-enabled cyber defense:** identifying opportunities to use AI to enhance cybersecurity, and understanding challenges when leveraging AI to support defensive operations.

What's in the Profile?

Cybersecurity Framework Profile for Artificial Intelligence provides guidelines for using the NIST Cybersecurity Framework to "accelerate the secure adoption of AI," the agency said in a [press release](#). The profile helps organizations think about how to strategically adopt AI while addressing emerging cybersecurity risks that stem from AI's rapid advance. "Regardless of where organizations are on their AI journey, they need cybersecurity strategies that acknowledge the realities of AI's advancement," said NIST's Barbara Cuthill.

The draft resulted from a yearlong effort on the part of NIST cybersecurity and AI experts. Over that time, more than 6,500 individuals contributed to the project. After releasing an initial concept paper in February 2025, conducting a workshop the following April, and hosting a series of community of interest meetings in the summer, NIST released a preliminary draft of the profile for a 45-day public comment period.

Once finalized, the profile will help organizations incorporate AI into their cybersecurity planning by suggesting key actions to prioritize, highlighting special considerations from specific parts of the CSF when considering AI, and providing mappings to other NIST resources, including the AI Risk Management Framework. Cuthill said the authors hope to continue developing the profile as a useful tool.

"The Cyber AI Profile is all about enabling organizations to gain confidence on their AI journey," she said in the press release. "We hope it will help them feel equipped to have conversations about how their cybersecurity environment will change with AI and to augment what they are already doing with their cybersecurity programs."

Helping Organizations Stay Secure

Cybersecurity Dive says NIST's new cybersecurity initiative is part of the agency's broader focus on helping organizations manage AI's benefits and drawbacks. In 2023, the agency released an AI Risk Management Framework, and in 2024 it released a generative AI profile for the framework. In August, NIST published a document intended to help organizations secure their AI systems using the agency's existing and widely adopted security controls catalog.

Through the end of January, NIST is soliciting feedback from the public and will use that input to develop an initial public draft. Following the 45-day comment period, NIST plans to develop the initial public draft for release in 2026.

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The "Lights-Out" Warehouse: A Feasibility or a Costly Dream?

Lights-out warehouses represent an automated future where operations run without on-site human workers, leveraging advanced robotics and management systems to increase efficiency and reduce errors.

The concept of a lights-out warehouse currently exists between ambition and reality. As automation technologies advance, supply chain leaders are exploring what is technically possible while considering financial and logistical capabilities. Understanding how these facilities work is the first step toward a stable transition.



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Generative AI Finds Its Footing in the Supply Chain

How generative AI can reshape planning, decision-making and execution across today's complex, interconnected B2B supply chains.

Artificial intelligence (AI) is touching all aspects of business and life right now, but more advanced versions of the technology are already making their way into supply chain operations and applications. Among them, generative AI (or “GenAI”) is gaining attention for its ability to support planning, decision-making and execution in ways traditional automation cannot.

So what exactly is GenAI and how does it work? By [IBM's definition](#), it's a technology that uses sophisticated machine learning models (aka, deep learning models algorithms) that simulate the learning and decision-making processes of the human brain. These models work by identifying and encoding the patterns and relationships in huge amounts of data, IBM continues, and then using that information to understand users' natural language requests or questions and respond with relevant new content.

Applying GenAI in the B2B World

Unlike traditional AI, which mainly analyzes existing data, GenAI produces new text, images, code, audio and video that often resemble human-produced work. In the supply

chain context, that can mean generating scenario plans, summarizing complex data sets, drafting operational guidance or responding to real-time disruptions with recommended actions.

These capabilities are especially useful in the B2B world, where operations are complex, margins are tight and decisions tend to ripple across multiple teams, systems and partners. It's a place where being able to move from data to direction quickly can make the difference between staying on plan and scrambling to recover.

“As technology and global trade flows rapidly change, B2B supply chains must become more intelligent, efficient, and agile,” DHL explains in [“Generative AI in B2B Supply Chains: What It Is, and Why It Matters.”](#) “GenAI is a key tool in achieving this goal. As large language models and related technologies mature, they get better at generating insights, drafting documents, engaging in natural-language dialogues, and simulating scenarios.”

DHL highlights some of the ways companies are using GenAI in the supply chain:

- **Forecasting and predictive demand.** GenAI models ingest historical demand data alongside variables like seasonality, promotions, regional shifts and external signals to generate scenario ranges for future demand. Rather than producing a single forecast, the models surface multiple demand outcomes and probabilities, helping planners stress-test inventory positions, capacity decisions and sourcing strategies before conditions change.
- **Customs compliance automation and shipping intelligence.** Customs, duties, import and export regulations, and shipment visibility are still bottlenecks and sources of cost. “Generative AI automates parts of customs documentation, HS and HTS code classification checks, route-risk assessment, and shipment intelligence,” DHL explains.
- **Buyer, supplier and partner communications (onboarding, procurement, etc.).** GenAI automates and accelerates communication flows in procurement and in supplier and partner ecosystems. Specific use cases cited by DHL include supplier onboarding, buyer queries and contract drafting.

DHL is also using GenAI-enabled voice robots to call customers and help them understand inbound duties due on their shipments. “Before current GenAI capabilities became available, this type of automation wouldn't have been possible,” it says. Additional uses include GenAI-enabled system interfaces and deploy optimization algorithms that streamline warehouse tasks, and shipping solutions that help DHL “increase order fill rates and preempt errors, improving overall efficiency and customer experience.”

The Age of the Autonomous Supply Chain

DHL isn't alone in its quest to apply GenAI to longstanding supply chain challenges around planning, compliance and coordination. “Less than a year ago, it seemed like that day when generative AI would bring about a new era of supply chain autonomy—one where AI could adeptly make all the inventory and logistics decisions—was still far off,” one group of academics explains in [HBR](#). “But to the astonishment of many experts, including us, that day has arrived, at least in the lab.”

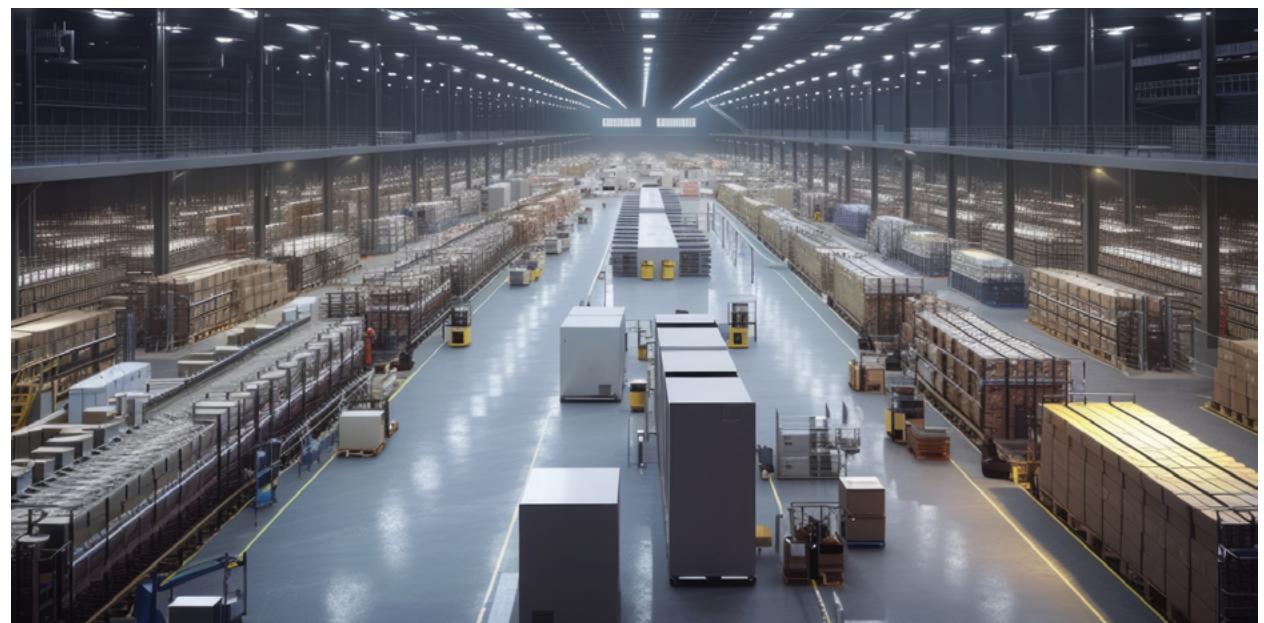
The group's own experiment revealed a divide in the capabilities of current GenAI models, although it says emerging models may soon outperform their predecessors. In the end,

they say these four factors will determine the success of the advanced technology in the supply chain:

- **Reliability.** “No amount of orchestration can fix a model that cannot understand the task or follow instructions.”
- **Guardrails.** They say policies that constrain a gen AI agent's range of possible actions can materially improve both efficiency and reliability.
- **Curated data.** “LLMs don't reason like humans,” the authors say. “The data that helps your team can distract an AI agent, leading to worse decisions and higher costs.”
- **Better prompts.** The authors say prompt design can significantly improve the performance of less-capable models, but note that it may offer “limited benefit” for more-capable models.

Ultimately, the group concludes that the “age of the autonomous supply chain is at hand,” and that success will be about more than just deploying powerful models. “It will demand a new form of leadership that orchestrates intelligence rather than executes tasks, one that designs systems for learning rather than compliance.”

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7 Supply Chain & Logistics Innovations from CES 2026

From AI-driven digital twins to autonomous robots, CES 2026 highlighted practical technologies reshaping how goods are made, moved and delivered.

Every January, the global technology sector converges on Las Vegas for CES, billed as the “most powerful tech event in the world,” by its makers. The event draws manufacturers, startups, analysts and anyone else looking for signals about what technologies are moving from concept to commercial reality.

CES 2026 delivered on that promise, with a notably strong presence from companies focused on supply chain, logistics and transportation. Across the show floor, exhibitors highlighted tools aimed at improving execution, visibility and resilience in increasingly complex global operations.

Here are seven different supply chain and logistics innovations that made their debut at CES 2026:

1) Industrial AI digital twins for end-to-end supply chain management. At the show, [Siemens unveiled](#) new digital twin capabilities that connect real-time operational data with AI-driven simulation. These tools allow man-

ufacturers and logistics operators to model production lines, warehouse flows and transportation scenarios before making physical changes, uncovering hidden capacity and reducing capital spend.

2) AI-driven adaptive manufacturing and supply chain systems. Also at CES, Siemens and NVIDIA announced that they'd be expanding their existing partnership to build AI-native industrial systems that continuously adapt production and supply chain operations. The focus is on AI-powered decision-making that anticipates disruptions, optimizes throughput and adjusts operations dynamically.

3) Autonomous airport logistics robots. Oshkosh Corporation debuted autonomous robots designed to manage aircraft ground operations, including cargo handling and turnaround logistics, according to [ABC News](#). The technology aims to reduce delays, improve safety, and keep freight and baggage moving during labor shortages and severe weather events.

4) AI-optimized mobility and logistics infrastructure. Not surprisingly, all across the CES 2026 exhibition floors companies were highlighting AI-driven mobility technologies that extend beyond passenger vehicles into logistics, including autonomous ground vehicles, drones and robotics for freight movement. According to ABC News, most of these innovations focused on reducing transportation bottlenecks and improving network efficiency.

5) Next-gen warehouse and manufacturing robots. Hyundai Motor Group and Boston Dynamics showcased new humanoid and mobile robots designed for manufacturing and warehouse environments, [Korea Times](#) reports. These robots target material handling, pallet movement and repetitive tasks that remain difficult to staff due to ongoing labor shortages.

6) Physical AI models for autonomous logistics and robotics. NVIDIA was busy at CES, where it also introduced new “physical AI” models designed to help robots understand and operate in real-world environments, according to [ZDNET](#). These models accelerate the development of autonomous vehicles, warehouse robots and industrial automation systems by improving perception, reasoning and motion planning.

7) Multiple advanced manufacturing and supply chain automation platforms. As a whole, CES 2026 placed a strong spotlight on advanced manufacturing technologies that blend automation, robotics and AI-enabled industrial software. [Consumer Technology Association \(CTA\)](#) says exhibitors demonstrated solutions aimed at improving productivity, safety and supply chain resilience across factories and distribution networks.

“Manufacturing is transforming fast, and CES 2026 shows what it takes to build the next industrial era,” says Gary Shapiro, CTA CEO and vice chair, in a [press release](#). “The technologies shaping production, logistics and supply chains are moving from experimentation to real-world deployment.”

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What Supply Chain Topics Do You Care About?

Supply Chain Connect and two of our partner brands plan to hold a series of webinars later this year to explore important topics impacting supply chains. Please tell us which topics you care about the most.



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5 Ways to Shield the Electronics Supply Chain From Cyberthreats

Five practical steps electronics companies can take to reduce supply chain cyberrisk.

The electronics supply chain has become a prime target for cybercriminals because it moves sensitive information across many systems, depends on third-party access and is only as secure as its least-protected supplier. When one partner slips, the ripple effects can travel quickly across connected systems and teams. This is why companies should be paying close attention to the weakest links in those connected, expansive supply chains.

Supply chain attacks as a whole have been increasing since early 2025, when [Cylble's dark web researchers](#) observed claims of 31 such attacks. Since then, cyberattacks with supply chain implications have averaged 26 a month. Each incident has the potential to impact many downstream customers, Cylble warns, with one ransomware group claiming that a recent attack yielded data on 41,000 customers of a company. "Ransomware attacks, data breaches, zero-day exploits and IP theft have been among the recent incidents impacting the supply chain," it adds.

The attacks often start at the micro level, with a compromised login at a component supplier, for example. From there, it moves into shared tools like supplier portals where design files, bills of materials and pricing data are shared. Before long, that access can extend into enterprise resource planning (ERP) environments that support ordering and fulfillment. And with that, a single issue can quickly ripple across manufacturers, distributors, logistics partners and other stakeholders.

"Electronic supply chains are complex. They involve a mixture of suppliers, sites and software tools. Each link contributes to some weakness," Priya Bhalla writes in ["Cybersecurity Considerations for Electronics Supply Chain Management Systems."](#) "These systems are targeted by attackers, who can have a large impact. One breach can halt production, retard delivery, or open key product designs. Even small-scale disruptions can be costly in time and money."

Here are five things organizations can do now to close common cybersecurity gaps in electronics supply chains:

1) Know your own systems. It sounds fundamental, but strong cybersecurity really starts with knowing your systems. For best results, Bhalla says companies should maintain a clear view of the software programs they use, who can access them and where the data is stored. "Access control plays a big role," she adds. "Users should only have access to what they need to do their job. This limits damage if an account is compromised."

2) Use clear data rules. Data is the core of supply chain management and includes supplier details, pricing, product designs and production plans. "If this data is exposed or changed, the impact can be serious," says Bhalla. She recommends encryption as a simple but powerful tool. "Data should be encrypted when stored and when shared," Bhalla says. "This helps keep information safe even if it's intercepted."

3) Recognize, map and prioritize the threats. The first step in implementing supply chain security is assessing all possible risks, and that means understanding the supply chain and its key components by inventorying suppliers and assessing their security posture. [BlueVoyant](#) recommends grouping vendors into risk profiles; prioritizing each third party by their vulnerability level, access to your data and systems and impact on your organization; and using questionnaires and onsite visits to assess supply chain security. "Identify the weakest areas in the supply chain," it adds, "and supplement these vendors or ask them to improve their security."

4) Get everyone onboard with the cause. The bad actors have different motives ranging from ransom to sabotage to intellectual property theft. And their attacks can take many forms, such as malicious code injections into legitimate software, hijacking software updates or attacks on IT and operational technologies. "As cyberattacks increase, supply chain leaders need to coordinate with security and risk management leaders to understand these threats," BlueVoyant says. "All leaders should work together to jointly manage supply chain security risks."

5) Always be monitoring. Lastly, [IBM](#) tells companies to put time and effort into developing a well-defined, adaptable, data-based approach to cybersecurity. By conducting regular risk assessments, establishing and following security protocols, and continuously monitoring the situation, companies can stay out in front of the problem and avoid the biggest risks. "Regularly review and update your cyberrisk management policies to ensure they are up-to-date and relevant," it adds. "This will help you stay ahead of evolving threats and maintain the security of your supply chain."

Avnet Insights Survey: Engineers Embracing AI and Confronting Its Challenges

Avnet's fifth annual survey finds engineers integrating the technology into more products while gauging its substantial potential.

Artificial intelligence's (AI) integration in designed products and solutions is here, and engineers are embracing the technology while identifying the challenges it may present. This is according to Avnet's fifth annual Avnet Insights survey, which has been keeping a pulse on how engineers are responding to the market—and looking ahead—since 2021.



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