In partnership with

Retail 2026:

10 Trends in Retail Technology

January 12, 2026

Executive Summary

We present 10 key technologies that we expect to be influential in retail in 2026 in two major categories—agentic AI and in-store technology, including discussions of what we think is significant today and in the year ahead.

Coresight Research Analysis

Agentic AI

1. ***We Have Now Entered the Agentic Commerce Age***. Shoppers can now make purchases from within AI chatbots, and several retailers, marketplaces, and technology vendors are now leveraging agentic commerce.
2. ***Agentic AI Can Greatly Reduce Reaction Time in Managing Supply Chains***. Supply chains have seen early use of agentic AI, which can create scenarios, forecast outcomes and suggest options when a disruption occurs.
3. ***Robots and AI Agents Can Take Warehouse Management to the Next Level***. Advances in AI promise to improve the simulation of warehouses through a tighter connection with the physical world, optimizing the activity of both robots and humans.
4. ***AI Can—Finally—Realize the Goal of Hyper-personalization at Scale***. The power of AI agents could leverage shopper data and large-language models to deliver relevant, personalized messages to consumers.

In-Store Technology

5. ***Sensors and AI Are Enabling Attribution in In-Store Retail Media***. Advances in shopper tracking technology enable the connection of shoppers and dwell time with in-store ads.
6. ***Multiple Technologies Can Track Inventory in Real Time***. Retailers can benefit from autonomous robots, fixed cameras and item tags to keep accurate inventory counts to avoid detrimental out-of-stocks.
7. ***Associates Can Wield AI in the Palms of their Hands***. Associate mobile computers with cameras can also run GenAI models, putting the power of AI and computer vision (CV) in their hands.
8. ***More-Intelligent Checkout Kiosks Can Prevent Losses and Greatly Reduce Friction***. Self-checkout kiosks are adding advanced AI functions, which helps delight customers by getting them out the door faster.
9. ***Devices and AI Require Distributed Computing Power Among the Cloud, Edge and Device***. The proliferation of connected devices and their processing requires AI compute to be located in the physical store (i.e., on the edge) and even in the associates hands.
10. ***Sensors Can Collect Data to Improve the Customer Experience***. Advanced AI and affordable sensors are now generating richer in-store data, enabling retailers to finally deliver a seamless omnichannel experience and gain deeper insights into their customers' actions and desires.

Contents

Introduction

As we enter 2026, retailers and brands have even more powerful technologies available, powered by multiple AI modalities and techniques, which in turn enable other technologies such as improved analytics and computer vision.

2025 is the year in which agentic AI became mainstream. The year saw a boom in the tools for creating agents, supply-chain software vendors launched agents, and AI chatbot companies launched simple, but functional, agents for enabling commerce. The agentic AI space is in its very early stages, and enterprises and consumers stand to benefit as agents become more powerful and interact with other agents.

GenAI, just two years old, continues to find commercial applications, even serving as the basis for new companies and business models. Basic automation and machine learning (ML) continue to offer sizable benefits for enterprises, in their ability to find relationships among data and create forecasts and optimize efficiency. Advances in AI/ML are helping to scale computer vision applications, which enables multiple use cases in the physical store.

Directional Outlook

Retailers and brands stand to benefit from the tangible benefits of investing in AI hardware—such as new capabilities, business models, efficiency, revenue growth, and improved customer relationships—all by deploying advanced AI technologies in retail.

Sector Outlook

We view the following categories as the most compelling within retail technology:

- **Agentic AI**. AI agents build upon GenAI technology, and they can autonomously decide which action to take, take it (with human permission), create forecasts and use reason to evaluate the quality of their conclusions. The technology promises to eliminate much routine tasks and can add the power of automation to other labor-intensive tasks. GenAI has already enriched the shopper's product discovery and research process, and shopping agents promise to reduce friction and reinvigorate the shopping experience.
- **Associate AI Handhelds**. Advances in processors for mobile computers have enabled them to run large-language models, putting the power of GenAI in associate's hands. Combining this technology with computer vision enables associates to analyze shelves to determine how to manage gaps and planograms.
- **Computer Vision (CV)**. CV is a powerful, versatile "Swiss Army Knife" technology that continues to improve as the power of AI improves. By its very nature, CV is a critical in-store technology that provides the digitization and capture of an enormous amount of data in the physical store, complementing the rich data captured online. It is foundational for optimized inventory tracking, self-checkout, loss prevention, and understanding shopper behavior, and more and better applications continue to be developed.

Tailwinds and Headwinds

The table below highlights our view on the tailwinds driving spending on retail technology and the headwinds that could mitigate spending.

Tailwinds

- Continued economic and retail sales growth
- A permanent competitive environment, driving innovation
- Agentic AI, which can automate routine functions and optimize workflows
- Alternative revenue sources, such as retail media, monetizing data and licensing infrastructure

Headwinds

- Persistent inflation and weak consumer confidence
- The consequences of making the wrong technology bets
- Increased investment in AI, which could reduce investment in other technologies
- The speed of adoption, regulation, and skill development for emerging AI capabilities inside an organization

AI Continues to Advance at a Rapid Pace

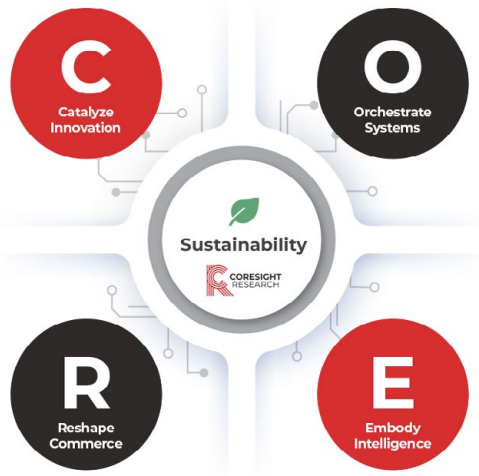
Many flavors of AI—AI/ML, GenAI and now agentic AI, in addition to traditional algorithms and automation—underly many of our retail-tech trends due to the power they offer to automate processes, perform analyses and optimization, find relationships among data and generate content. Although agentic AI is currently generating enormous amounts of excitement, retailers and other enterprises can still realize substantial value from more-established AI types such as AI/ML, CV, and GenAI.

To extract the maximum value from AI in retail, all systems need to work together smoothly. For example, retailers can use inventory data to decide which products to advertise on social media, and also ensure that those same products are promoted in-store and in special offers. If these systems are not linked, the retailer could end up promoting items that are out of stock, which harms customer satisfaction and loyalty.

With steady advancements in AI, Coresight Research has updated its CORE AI framework, with CORE 3.0 the most-recent version. In its most recent incarnation, CORE 3.0 provides a framework for retailers to evaluate AI, in four key areas:

- **Catalyze Innovation**—to generate new revenues and efficiencies.
- **Orchestrate Systems**—to continuously self-adjust.
- **Reshape Commerce**—to unlock the power of agents.
- **Embody Intelligence**—with AI embedded everywhere.

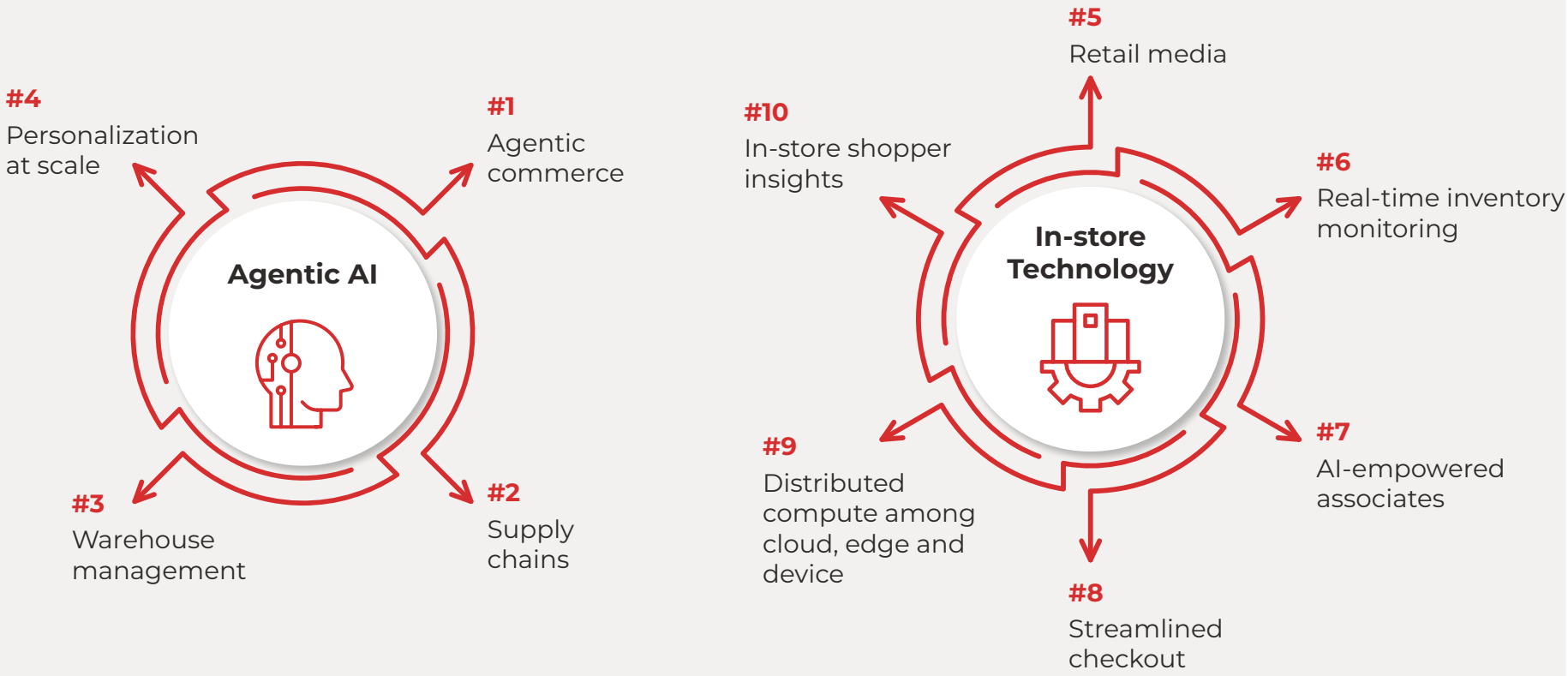
Figure 1.
The Coresight Research CORE 3.0 Framework



Top 10 Trends in Retail Technology: Coresight Research Analysis

Figure 1 summarizes the top 10 retail technology trends for 2026, categorized into the following areas: retail media and marketing, in-store technology, supply chain and logistics, and pure AI technology. We delve into each trend below.

Figure 2.
10 Trends in Retail Technology for 2026



Source: Coresight Research

We Have Now Entered the Agentic Commerce Age

Agentic AI

What's New in 2026

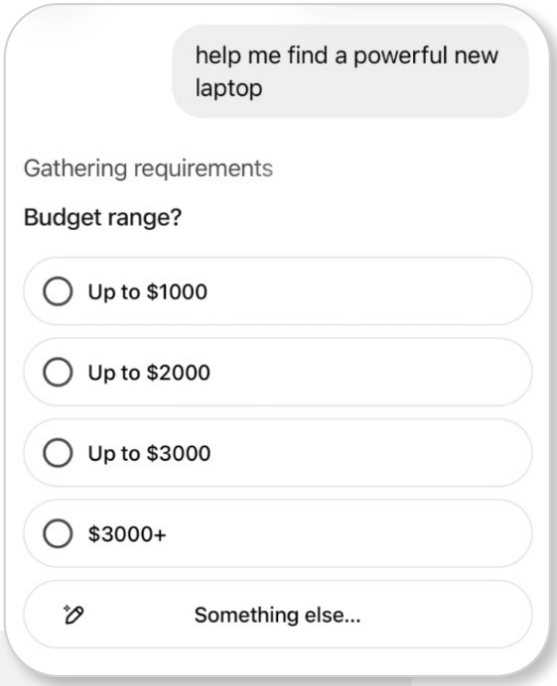
The age of agentic commerce is here.

Overview

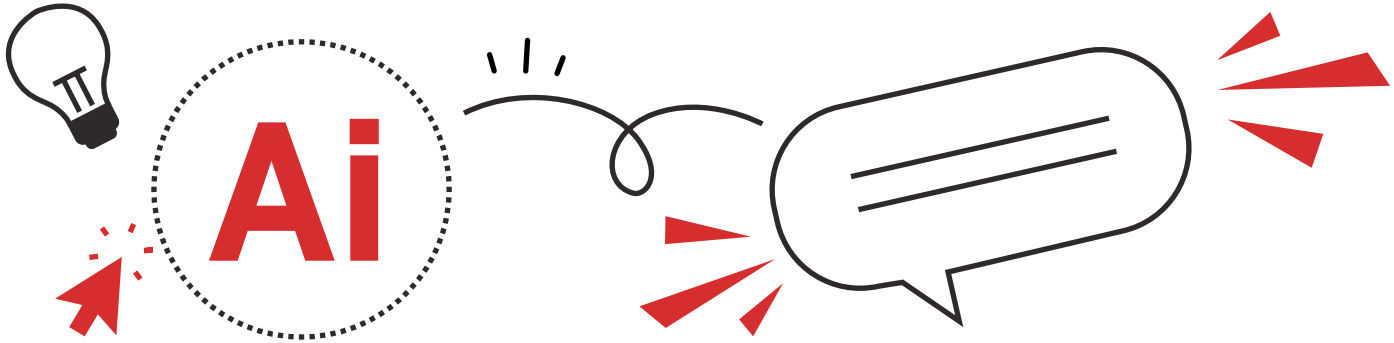
Agentic AI has now enabled AI chatbots to offer checkout technology, which we think is the first step towards an agentic universe in which an army of agents support shoppers as well as greatly enrich their shopping experience.

The e-commerce world changed on September 29, 2025, with OpenAI's announcement of an agentic commerce platform in cooperation with **Etsy** and **Shopify**, with subsequent announcements of integration with **Salesforce** Agentforce Commerce and **Walmart**.

The appeal of conducting commerce on an AI chatbot is irresistible, as US retail sales are expected to be a $5.5 trillion market according to Coresight Research estimates, and OpenAI reporting 800 million users on a daily basis. Many shoppers have already been using the platform for product search and discovery.



Shopping research agent in ChatGPT
Source: OpenAI



A Coresight Research survey of consumers conducted in October 2025 found that more than half of consumers planned to use AI chatbots frequently or occasionally to assist in holiday shopping—and this survey notably preceded the OpenAI announcement.

The initial implementation of agentic commerce is rudimentary; however, it will improve markedly over time If a product is not linked with OpenAI, the shopper is dropped off on the retailer's website; if it is, the OpenAI agent passes the information on to the retailer, and the retailer completes the transaction and manages payment, shipping and returns as well. A shopper can only purchase one item at a time at a retailer, i.e., is unable to build a shopping cart.

Given the magnitude of the opportunity and the substantial power of the technology, we expect vendors to ultimately develop a finely tuned, user-friendly shopping experience. AI chatbots already leverage the strengths of the LLMs to deliver a shopping experience replete with product images, product summaries, key features and recommendations, which sharply differentiates them from the text-based interfaces of leading search engines.

Selected Examples

Company	Insight
Google	AI Mode shopping experience assists with product search and the "Buy for Me" agent can complete the transaction when the right product at the right price is located.
OpenAI	Instant Checkout function enables shoppers to complete purchases within the ChatGPT AI chatbot; initial retailers and platforms include **Etsy**, **Salesforce**, **Shopify** and **Walmart**.
salesforce	Agentforce agents on owned channels offer guided shopping, point of sale (POS), order management and routing, and merchandising. Initial customers include Early adopters include **NTO**, **Pacsun** and **Pandora**.

Read more on this trend: *Playbook: GenAI to Agentic AI—From Pilot to Powerhouse*

2 Agentic AI Can Greatly Reduce Reaction Time in Managing Supply Chains

What's New in 2026

Supply-chain management advances further from multiple types of AI.

Overview

Agent-powered supply-chain platforms will improve in 2026, increasingly predicting and even automatically handling emerging issues in a fraction of the time of that required by human supply-chain managers.

Supply chains were an ideal initial application for agentic AI due to their structured nature—a well-understood constellation of manufacturers, warehouses and transportation options—along with a constant stream of events that require analysis and action.

Inventory and supply chain management has benefited from quasi-agentic functions for some time, using automation and AI/ML to triage the many messages and alerts, passing the urgent ones on to a manager and automatically handling the non-critical ones. Agentic AI takes this management to a higher level, with its ability to autonomously execute actions and use reasoning to find the best of several options.

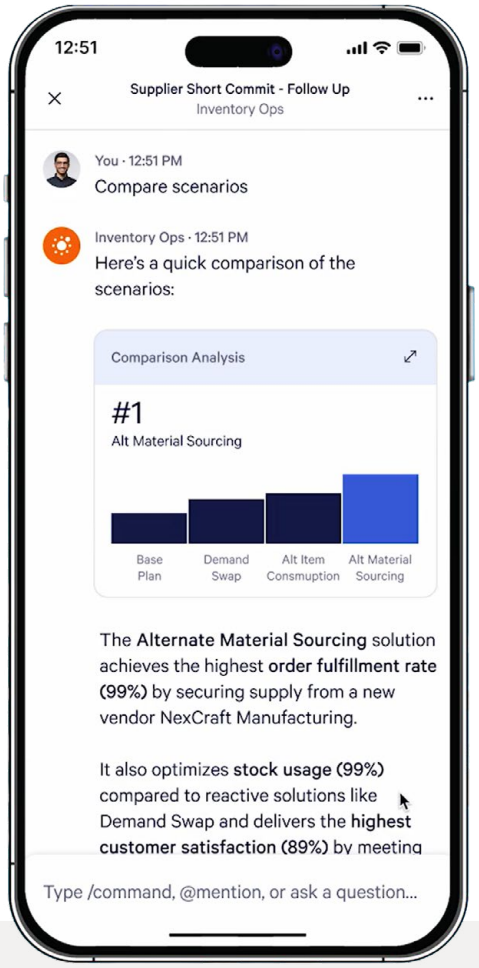
Due to their ability to execute actions on behalf of users, advanced agentic supply-chain agents can autonomously execute the following tasks:

- Become active when supply-chain events occur, such as a delay in a delivery or a snag in production
- Determine scenarios for possible action
- Forecast the expected outcomes for undertaking the scenarios
- Recommend the best course of action

The ability to react quickly, including performing analysis, enables supply chain managers to react much more quickly, as compared to having to submit a request to analysts or a data-science team and wait for the analysis before a decision can be made.

Several major supply-chain software vendors announced platforms and agents around the May 2025 time frame, including **Blue Yonder**, **Manhattan Associates** and **SAP**. **Kinaxis** subsequently announced its own agentic suite.

We think supply chains are an ideal first use case for agentic AI due to their structure—a known configuration of suppliers, supplier networks and transportation carriers—which lends itself to the optimization and computation at which AI excels.



Scenarios and forecasted outcomes generated by supply chain AI agent
Source: Blue Yonder

Selected Examples

Company	Insight
BlueYonder	Cognitive solutions platform for understanding supply chains and agents for inventory, shelf, logistics, warehouse and network operations.
Manhattan	AI agents include store manager, labor optimizer, wave inventory, contextual data and virtual configuration agents.
SAP	Agents for production planning and operations, change record management and supplier onboarding, with more planned in finance and HR.

Read more on this trend:
CEO Brief: Intelligent Inventory—Achieving Inventory Excellence

3 Robots and AI Agents Can Take Warehouse Management to the Next Level

What's New in 2026

AI-based simulation and humanoid robots could help overcome the challenges of warehouse management and store operations

Overview

Advances in AI simulation technology and robotics can advance warehouse simulation and optimization, as well as store operations, far beyond current capabilities.

In his 2025 CES keynote, **NVIDIA** CEO Jensen Huang boldly stated that predicting KPIs (key performance indicators) in managing warehouse operations was "impossible," yet with sufficient computing power, AI simulation software could generate a near-infinite number of warehouse scenarios at scale, which would enable a warehouse operator to estimate future KPIs and optimally place humans and robots.

To achieve this, the technology pairs physical AI with AI trained to understand the physical world in order to interact with it, for example in directing humanoid robots.

A simulation platform would require three platforms, powered by NVIDIA processors: an enterprise computing platform called DGX, an embedded computing platform called AGX (in the automobile or robot), which would run on simulation data created by Omniverse and Cosmos.

At the NRF 2025 Big Show, the **NVIDIA** keynote envisioned how agentic AI can assist in warehouse operations. For example, in an event such as a stack of boxes falling over, an agent could leverage computer vision, its reasoning capabilities and ability to take action to mobilize humans and forklifts to remedy the issue without the need of human intervention.

Warehouse robots come in several different forms, from robotic arms, autonomous mobile robots, to collaborative robots and humanoids. These robots are physical AI systems that interact with real world, which need real time controls and AI acceleration. An open ecosystem approach that connects with different cameras, sensors and other technologies is also important. Flexibility in compute, form factors and rugged long-lasting performance are key.

Prebuilt systems from the open ecosystem of robotics partners, including **Aaeon**, **Advantech** and **ASRock**, have a single-processor design for combining real time controls and AI. These robots are powered by Intel® Core Ultra™ processors, which reduce their complexity and provide scalability, with AI acceleration at the edge.

Humanoid warehouse robots
Source: Agility Robotics

Selected Examples

Company	Insight
AGILITY ROBOTICS	Developer of humanoid robots, such as flagship Digit, to work alongside humans in real-world, industrial locations.
Geek+	Offers Geekplus offers flexible, modular systems designed to handle several storage types for picking and sorting small goods to moving and storing heavy pallets.
intel	Edge AI compute platforms for robotics with long-lasting performance and AI acceleration, as well as a Robotics AI Suite for developers including AMR (autonomous mobile robots) and Cobot (collaborative robot) use cases.
NVIDIA	Combination of Cosmos software incorporates the laws of physics to predict the physical world and Omniverse platform to generate digital twins to simulate and predict interactions within physical spaces, such as in a warehouse.
UNISTOP TECH ADAPTIVE RETAIL SOLUTIONS	The Mr.R Robotic AI-powered autonomous retail solution is designed to operate 24/7 with minimal human intervention, integrating robotic automation, AI-driven retail management, and data intelligence to optimize operations and enhance the customer experience.

Read more on this trend: *The Future of AI, Supply Chains and Sustainability: Insights from CES 2025*.

4 Agentic AI Can—Finally—Realize the Goal of Hyper-personalization at Scale

What's New in 2026

Agentic AI could put AI horsepower behind personalization

Overview

The ability of agentic AI to command data and take action upon it, guided by instructions in natural language, could finally deliver on the elusive goal of offering personalization to every shopper.

GenAI offers enormous promise for delivering personalization, leveraging the facility of LLMs with language to turn customer data into relevant messages; however, the LLMs need an app or an agent to direct them, which requires software engineers, development time, as well as debugging and testing.

Agentic AI builds on GenAI, and the instructions that agents carry out can be written with natural-language prompts similar to those used to activate AI chatbots.

Figure 3 contrasts agentic AI and GenAI platforms.

Figure 3.
Comparison of Selected Agentic AI and GenAI Features

Criterion	GenAI	Agentic AI
Purpose	Generate media (text, images, audio, video, code)	Plan, decide and act to achieve goals
Interaction Model	Prompt and response	Set goals, plan, reason, act, adjust
Level of Autonomy	Low/none	High
Memory	None or short-term	Maintains state, memory and history
Action	Reactive	Proactive
Use of Tools	User-directed	Selects and uses tools automatically
Human Oversight	Human the loop	Human in the loop, also monitoring and guardrails
Risks	Hallucination, bias, data leakage	Unintended actions, runaway behavior, policy violations
Governance	Prompt controls, toxicity detectors	Guardrails, policies, kill switches

Source: Coresight Research

Agentic technology extends GenAI in four key ways:

- **Reasoning**—AI agents are able to evaluate the quality of their output and correct or improve upon it.
- **Use of Tools**—The agents can interact with external software and tools via interfacing with their APIs (application programming interfaces.)
- **Planning**—AI agents can follow steps in a workflow and autonomously generate plans for future action.
- **Collaboration**—Agents can collaborate with or operate other agents.

Agentic AI has already established itself in several areas—in customer support, in supply chain management, and in automating and managing routine, tedious tasks—and the technology could greatly disrupt marketing communication platforms. As GenAI has democratized data further—enabling everyone to turn corporate data stores into insights—agentic AI adds another layer of capabilities, in which marketers can use its power to flexibly obtain data, formulate personalized messages for consumers, and take action without requiring a pre-programmed marketing application.

Selected Examples

Company	Insight
blueshift	Suite of intelligent marketing agents to automate campaign management, streamline tasks, optimize engagement, and enhance personalization, including a marketing campaign organizer.
Walmart	A GenAI assistant today; future capabilities include reordering, service booking and understanding text, image, audio and video inputs.

Read more on this trend:
The Agentic AI Playbook: How to Redefine Retail with Intelligent Autonomy

5 Sensors and AI Are Enabling Attribution in Retail Media

In-store Technology

What's New in 2026

New technologies and agentic AI could dramatically change retail media

Overview

Although various screens have been deployed in physical stores for many years, the combination of new sensor types and the analytical capabilities of AI that are enabling targeted advertising and attribution in the store.

Deploying retail media in the physical store faces challenges due to the fragmentation of devices, vendors and technical challenges. The opportunity is enormous—Coresight Research estimates the global retail-media market at $203.9 billion in 2026, growing at an 11.1% CAGR to $279.7 billion in 2029.

Retail media encompasses audio (e.g., corporate or retail radio) as well as video and can interact with mobile apps to increase customer engagement. Advertisers need to schedule, manage and track their advertisements across multiple locations, on a local or national basis.

There are many disparate components to an in-store retail media system. Take a typical in-store retail media installation, which comprises a screen, connectivity, media player, and content which work in concert to display information, take measurements and transmit that data into meaningful insights. These functions supplement the need for installation, maintenance and monitoring of the hardware and equipment, which can each involve separate vendors, and a store needs a reliable Internet connection (as well as a backup). The retailer may not have the expertise to operate or maintain them—for example, a grocery retailer excels at selling groceries, rather than optimizing retail media networks.

To collect data for attribution, next-generation sensors can measure location, the shopping journey, dwell time, and demographic information (as permitted by local regulations), and AI's analytical prowess can correlate this data with images displayed and POS data for attribution.

Several in-store retail media formats.
Source: Hanshow

What's Driving the Trend

- **Computer vision and RF (radio frequency) technology**. These technologies now enable the accurate collection of data on the number of traffic and dwell times, as well as controversial demographic data. Data collection needs to follow local requirements, such as General Data Protection Regulation (GDPR) in Europe, CCPA (California Consumer Privacy Act and PIPEDA (Personal Information Protection and Electronic Documents Act) in Canada.
- **Agentic AI**. Agentic AI boost the deployment of in-store retail media, as agentic shopping agents bypass retailer' e-commerce homepages and search bars, taking the consumer directly to product description pages.

Selected Examples

Company	Insight
Hanshow	In-store marketing solutions include shelf-edge screens, large display screens and double-sided screens to display images and videos on the shelf.
rockbot	Retail audio (e.g., retail radio) and video hardware and services to retailers and gyms. Customers include **Ashley**, **Planet Fitness** and **Walmart**.
VusionGroup	Shelf-edge retail media solutions that can generate real-time personalized offers and promotions, which complement its electronic shelf-label (ESL) offerings. Key customers include **Carrefour** and German furniture retailer **POCO**; **Walmart** is a large ESL customer.

Read more on this trend: Innovator Matrix: Retail Media

6 Multiple Technologies Can Track Inventory in Real Time

In-store Technology

What's New in 2026

Computer vision and the expanded use of RFID tags are boosting shelf intelligence

Overview

Inventory-monitoring technologies such as robots, computer vision and item tags enable retailers to manage one of the biggest challenges to customer satisfaction: out of stocks.

Inventory accuracy or shelf intelligence are of paramount importance when physical stores are used as hubs for shipping, BOPIS and curbside pickup. Shelf accuracy has equal importance, as empty shelves can hurt customer sentiment, as well as sales, since unseen goods cannot be purchased. Out-of-stocks were cited as the dominant reason that shoppers left a store without making a purchase in an August 2025 consumer survey. The situation is even more unfortunate if the items were available in the back room, yet the retailer was unaware of the situation so as to correct it.

Figure 4.
Reasons Shoppers Left a Store without Making a Purchase (% of Respondents)

Base: 401 US consumers, aged 18+, surveyed on August 11, 2025
Source: Coresight Research

Technologies that detect out-of-stocks and turn them into actions include Inventory-scanning robots, shelf-edge cameras, RFID tags, and AI-based solutions.

Inventory-scanning robots are increasingly winning over retailers and other technologies, leveraging AI and computer vision. These robots provide irreplaceable “realograms” of the current state of shelves and report out of stocks, incorrect price tags and items in the wrong location.

RFID technology, though decades old, is seeing new use in grocery . **Kroger** and **Avery Dennison** have been using tags to locate and identify bakery items since October 2024, and in October 2025, **Walmart** and **Avery Dennison** announced the use of RFID tags in fresh categories, including meat, bakery and deli. In August 2025, **Qualcomm** announced the addition of RFID in a new Dragonwing AI-capable mobile processor, which would put the RFID capabilities into the hands of a much larger number of associates and increase adoption; early adopters include **Decathlon** and **EssilorLuxottica**.

AI-based solutions such as **Zebra**’s Workcloud Inventory Optimization monitor POS and other data, finding anomalies versus baseline values, and can identify out of stocks, fraud and waste and gaps in compliance.

Another innovative but ancient inventory-tracking technology is the scale. **Shekel** offers ultra-sensitive shelf scales that leverage AI to precisely track items on shelves, including solutions that work with existing shelving.

Selected Examples

Company	Insight
simbe	Autonomous robots scan inventory with cameras and RFID sensors, including fresh food. Customers include **Albertson’s**, **BJ’s**, **Schnuck’s**, **SpartanNash** and **Wakefern**.
VusionGroup	The Captana shelf-edge camera platform offers fixed camera, live-streaming computer vision, controlled by a dashboard with actionable recommendations.

Read more on this trend: *The State of In-Store Retailing 2025: The Dawn of New-Age Stores, Powered by Technology*.

7 Associates Can Wield AI in the Palms of their Hands

In-store Technology

What's New in 2026

Powerful AI and computer vision (CV)-powered associate mobile computers

Overview

Associates, even those at the first day of work, can access the knowledge and capabilities of the entire retailer in mobile computers to work at peak efficiency and offer superior service to shoppers.

While retailers such as **Best Buy**, **Target** and **Walmart** and others have developed GenAI tools for looking up company policies and procedures, answer engines and managing shifts, and performing language translation, recent advances in processor chips put the power of these functions into associates' mobile computers. Leading-edge processors contain AI cores that can run large language models on-device, bringing the benefits of GenAI to associates, and mobile computers from **Honeywell** and **Zebra** have integrated these chips.

Combining the power of GenAI with that computer vision enables the device to perform many functions for associated, especially the ability to scan shelves with the embedded cameras and turn these images into insights and suggested actions. The Merchandising Agent in the **Zebra** Companion identifies issues such as shelf gaps, misplacements, planogram issues (shown below), and inaccurate pricing and signage. Associate devices can also perform real-time language translation to support shoppers and associates that speak a variety of languages.

Zebra Mobile Companion analysis of store shelf on mobile computer
Source: Zebra Technologies

Selected Examples

Company	Insight
Honeywell	Handheld computers include an AI Assistant for inventory search and product identification.
ZEBRA	The **Zebra** Companion AI platform offers four main agents for associates: a knowledge agent, a sales agent, a device agent and a merchandising agent.

Read more on this trend:
RetailTech: Empowering Retail's Front Line, Creating Smarter Stores—Five Tech-Driven Strategies for Associate Enablement

8 More-Intelligent Checkout Kiosks Can Prevent Losses and Greatly Reduce Friction

What's New in 2026

AI-powered self-checkout functions can reduce friction and checkout times

Overview

Consumers detest friction in the shopping and checkout processes, such as waiting in line and a lack of associate support. Intelligent self-checkout kiosks can speed them through checkout and require less waiting for associate assistance.

AI-based solutions reduce queue times as well as checkout times, complementing CV-based solutions for queue measurement and self-checkout such as smart carts, personal shopper scanners, smartphone scanning apps and frictionless/checkout-free stores.

There is an enormous amount of CV and AI in place inside self-checkout kiosks, transforming them far beyond their outward appearance as barcode scanners and payment terminals. These advanced functions include:

- **Loss prevention**: state-of-the-art SCOs continue to evolve to identify multiple new emerging methods of theft and fraud, as well as unintentional errors, and determine the best remedy. They can "nudge" the customer to correct an intentional or unintentional error, avoiding the need for associate intervention, which halts the checkout process.
- **Produce identification**: identifying a piece of produce as an apple rather than as an orange saves consumers substantial time in looking up product codes. More than three in 10 shoppers avoid using self-service solutions when they plan to purchase fresh produce, according to **Diebold Nixdorf**.
- **Age verification**: identifying a shopper's age prevents the shopper from waiting for an associate to verify an ID for the purchase of alcohol or tobacco, which **Diebold Nixdorf** estimates affects 22% of all transactions.

Retailers have been testing systems to reduce loss at checkout and self-checkout, yet these systems depend heavily on GPU servers, which represent a significant investment for each store. Adding POS and self-checkout kiosks containing leading-edge processors with integrated AI capabilities such as Intel® Core Ultra™ processors can reduce the cost and complexity of deploying AI functions through removing the key barriers behind deploying these solutions..

Produce identification at self-checkout
Source: Diebold Nixdorf

Selected Examples

Company	Insight
ANGIBLE	Leverages advanced AI algorithms to detect, recover, and prevent shrink at self-checkout terminals for greater operational control and reduced losses.
Diebold Nixdorf	Vynamic SCO software performs produce identification, age verification and shrink reduction functions.
NCR VOYIX	Picklist Assist helps SCOs identify fresh items and catch misidentified or fraudulent transactions.
TOSHIBA	MxP Vision Kiosk is a compact, modular self-checkout solution that integrates advanced sensor fusion and computer vision.

Read more on this trend: *Reinventing Store Checkout: Minimizing Friction to Drive Business Growth*

9 Devices and AI Require Distributed Computing Power Among the Cloud, Edge and Device

In-store Technology

What's New in 2026

Compute is moving onto the edge and into associates' hands

Overview

The proliferation of devices inside the retail store—such as POS, self-checkout kiosks, Wi-Fi terminals, retail media screens, associate mobile computers, and a variety of sensors, including a lattice of cameras for monitoring, loss prevention and customer experience management—creates the need to host computing power in the store and in the associates' hands to analyze the data they generate to produce timely insights.

Since today's retail environments rely on many connected devices, stores need powerful computing capabilities right on-site. To meet demands for fast response times and reduce cloud service costs, retailers are shifting more computing from the cloud to in-store systems and even directly onto devices themselves.

Traditionally, store computing hardware and processor designers developed rack-computing hardware with AI functionality. As demand for AI compute has increased, leading vendors of processors such as AMD and Intel processors for PCs and handheld devices have added GPUs (graphics processing units) or NPUs (neural processing units), which can perform AI functions. Computing loads can be divided up and shared among the CPU (central processing unit), GPU and NPU. "AI PCs" with chips for AI acceleration are now widely available from major PC manufacturers.

Devices with Integrated AI compute are now being deployed, bringing down the cost of AI by providing performance on the edge device rather than in a server or in the cloud. For example, the POS unit pictured below contains an Intel® Core Ultra™ processor, which provides dedicated AI acceleration.

Point of sale terminal with AI accelerator
Source: Boxtec

For heavy AI compute needs, servers can contain multiple processors. The server depicted below is designed for CRM, data management, analytics and AI, and content management, among other functions and contains one or two Intel Xeon 6 processors and plus up to eight single-wide GPUs.

As mentioned in the prior section, "GenAI- and Agent-Empowered Associates," store associates can also greatly benefit from having AI functionality in the palm of their hands. In addition to servers and AI PCs, associate mobile computers contain processors with NPUs that can run large-language models (LLMs.) These devices work independently from the cloud and enable functionality such as shelf analysis, making product recommendations and providing product information, accessing corporate knowledge bases and language translation.

Hewlett-Packard Enterprise ProLiant DL380 Gen12 server
Source: CES

Selected Examples

Company	Insight
DELL Technologies	PowerEdge servers support AI model training and real-time inferencing
hp	Core Ultra™ processors power AI PCs for use in systems at the edge and Xeon 6 processors satisfy diverse power, performance, and efficiency requirements for many workloads, including AI.
intel	Core Ultra processors power AI PCs, and other processors power AI servers in data centers.

Read more on this trend: Retail Challenges Drive Edge Technology Investment

10 Advanced Sensors Can Collect Data to Improve the Customer Experience

What's New in 2026

New sensors can collect more-detailed data used to understand shoppers better and create a better experience

Overview

Retail stores are replete with sensors, monitoring the location and movement of inventory, performing loss prevention, enabling self-checkout, monitoring queue length, detecting shoppers' emotions, and increasingly, collecting data on customer activity within the store, going far beyond traditional electric-eye based traffic counting solutions. These sensors spin off a flood of data, which needs to be turned into actionable insights.

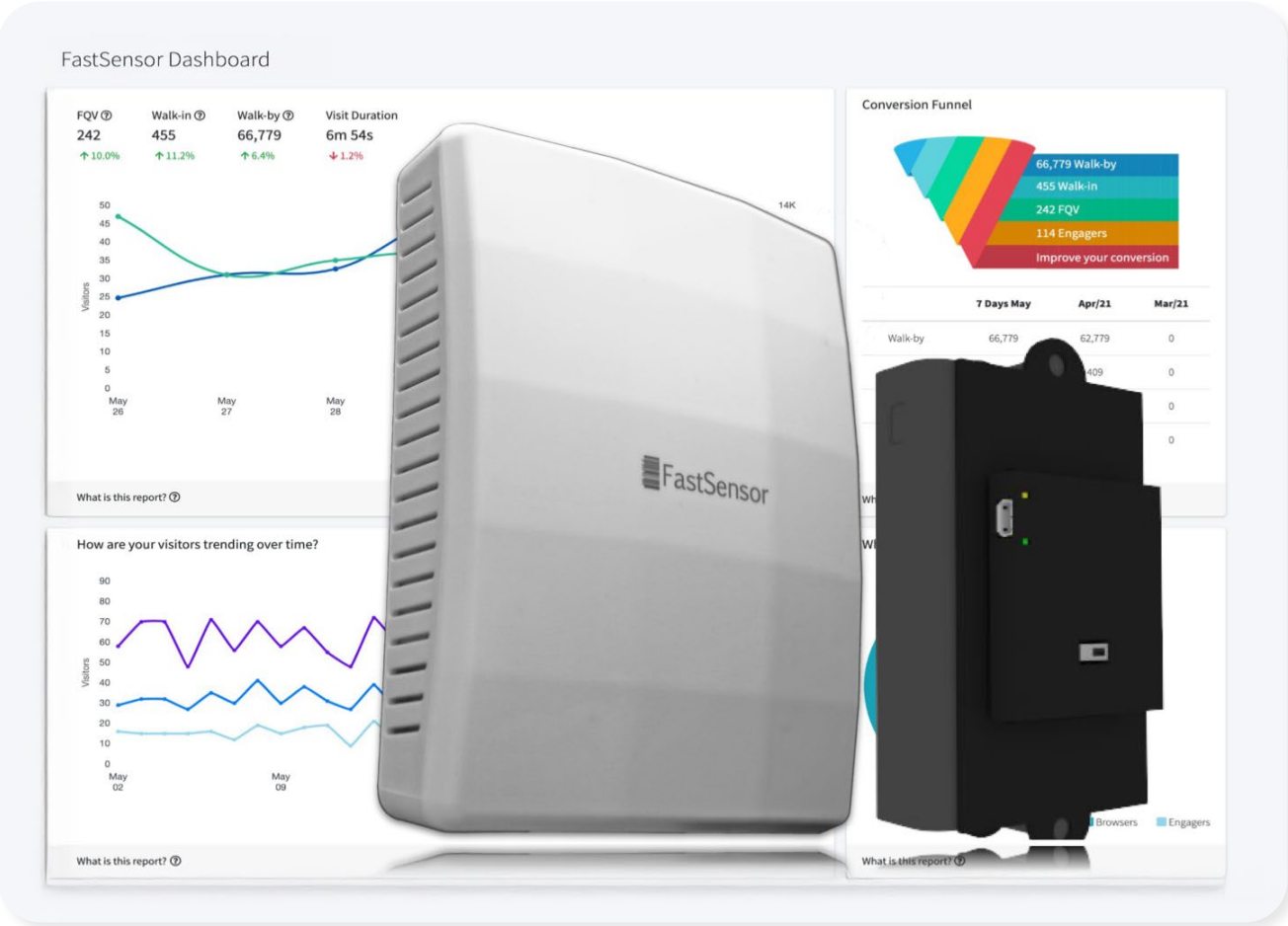
The expansion of retail media into the physical store creates the need for measurement for attribution purposes, as advertisers want to tie viewership of ads to justify their investment. State-of-the-art solutions can determine the dwell time in front of a screen, and map out the customer journey throughout the store until a stop at the POS.

There are several technologies for measuring dwell time and even tracking the shopper journey inside a retail store. Computer vision and RF (radio frequency) technologies can track the shopper's journey within a mall, and recent advances can track their shopper's journey inside the store.

Computer vision is a powerful technology, whose power continues to increase due advances in AI, however the technology's power also creates challenges, as cameras are able to track personally identifiable information (PII) and other potentially sensitive data such as age, sex and race. Retailers using facial-recognition technology have been the subject of lawsuits in certain states for collecting PII.

Customer-tracking systems can be programmed not to track or retain this information, despite its value. We note that CV systems for loss prevention can detect loitering, threatening behavior or brandishing weapons, but again do not retain PII. Shelf-edge cameras contain the basic technology for capturing customer data, and politicians have asserted that their counterpart, electronic shelf labels, could be used to track PII, though this is not their purpose.

RF-based customer tracking platforms offer accurate shopper tracking without the ability to collect controversial personal data, and the platforms are also programmed not to retain any PII. Their functionality centers on the RF signals that cellphones emit, which do not collect the identity of the user.



In-store hardware and retail dashboard
Source: FastSensor

Selected Examples

Company	Insight
FastSensor	RF-based solutions that collect and analyze data on shopper traffic within malls, convention centers, warehouses and retail stores.
Sensormatic by Johnson Controls	Traffic intelligence products including ShopperTrak analytics to measure and benchmark shopper traffic.

Read more on this trend:
RetailTech: Three Technologies Landlords Can Use to Take Malls to the Next Level.

What We Think

We have now entered the age of agentic AI, can automate routine work, democratize access to data and other forms of AI, and create a virtual workforce to help overcome labor shortages. Consumers have readily embraced AI chatbots for product search and discovery, creating an irresistible opportunity to include commerce functionality. We are optimistic that agents can further reduce friction and improve the experience in the shopping process, with consumers creating their own shopping agents to continuously search for desired products or prices, and agentic AI will enable new business models for retailers or independent entities to create their own agents to further enhance the shopping process.

Implications for Brands/Retailers

- Retailers and brands have multiple powerful technologies at their disposal to drive revenues, become more efficient, and improve customer relationships.
- Avoiding out-of-stocks is imperative, as it affects revenues and customer satisfaction, and there are multiple technologies for tracking inventory.
- Agentic AI could enable retailers to achieve substantial productivity gains and deliver personalization at scale.

Brands or Retailers Poised to Gain Advantage

- Massive retailers like **Amazon** and **Walmart** possess the wherewithal to develop their own agentic and traditional AI technology, which they can customize to achieve further advantage.
- Early agentic AI adopters of agentic commerce such as **NTO**, **Pacsun**, **Pandora** will gain a first-mover advantage over late adopters.
- Grocery retailers exploring RFID such as **Kroger** and **Walmart** can better track inventory, improving margins, as well as reduce the challenges associated with food waste.

Brands or Retailers That Risk Losing Advantage

- Time is quickly running out for using spreadsheet software for forecasting and inventory management to remain viable.
- Retailers lacking inventory visibility face a huge competitive disadvantage.
- Retailers and brands not linking AI technology to their business needs will miss the benefits of the technology.

Implications for Technology Vendors

- There is a new generation of startups whose business models are entirely built on GenAI, with another wave of startups leveraging agentic AI soon to follow.
- There are huge opportunities to develop AI agents for retailers, consumers, and even independent entities such as private shoppers.
- Computer vision continues to find ever-more use cases, as the underlying AI technology becomes more powerful.

Impacts from AI

- There are still business models and efficiencies to realize from traditional technologies, such as automation, algorithms and AI/ML.
- GenAI continues to find new use cases and still offers the democratization of data for all users; agentic AI adds the ability to execute actions to its facility with text and other media.
- We are in the early stages of agentic AI, particularly in agentic commerce, and there are likely never before-imagined applications around the corner.

Notes and Methodology

Data in this report are as of November 20, 2025.

Companies mentioned in this report are: Aaeon, Advanced Micro Devices, Inc. (NasdaqGS: AMD), Advantech Co., Ltd. (TWSE: 2395), Albertsons Companies, Inc. (NYSE: ACI), Amazon.com, Inc. (NasdaqGS: AMZN), ASRock, Avery Dennison Corporation (NYSE: AVY), Badger Technologies, Best Buy Co., Inc. (NYSE: BBY), BJ's Wholesale Club Holdings, Inc. (NYSE: BJ), Blue Yonder, a division of Panasonic Holdings Corporation (TSE: 6752), Boxtec, Decathlon SE, EssilorLuxottica Société anonyme (ENXTPA: EL), Etsy, Inc. (NYSE:ETSY), FastSensor, Google, a division of Alphabet Inc. (NasdaqGS: GOOGL), Hanshow Technology Co., Ltd. (SZSE: 301275), Honeywell International Inc. (NasdaqGS: HON), Kinaxis Inc. (TSX: KXS), Manhattan Associates, Inc. (NasdaqGS: MANH), NTO, NVIDIA Corporation (NasdaqGS: NVDA), OpenAI, Pacific Sunwear of California, LLC, Pandora A/S (CPSE: PNDORA), QUALCOMM Incorporated (NasdaqGS: QCOM), Salesforce, Inc. (NYSE: CRM), SAP SE (XTRA:SAP), Shekel, Simbe Robotics, Sensormatic, a division of Johnson Controls International plc (NYSE: JCI), Shopify Inc. (NasdaqGS: SHOP), SpartanNash Company, Stripe, Target Corporation (NYSE: TGT), Wakefern Food Corp., Walmart Inc. (NYSE: WMT), The Kroger Co. (NYSE:KR), Zebra Technologies Corporation (NasdaqGS: ZBRA)

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