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Gartner for IT Leaders

Over 100 Data, Analytics and AI Predictions Through 2031

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Gartner annual predictions highlight the key trends and scenarios shaping data, analytics and AI across an ever-broadening range of industries and initiatives. Data and analytics (D&A) leaders should use these predictions to enhance their vision, strategy, operating model and delivery roadmap planning.

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Analysis

Strategic planning assumptions (SPAs) — also known as "Gartner predictions" — are statements of Gartner positions and actionable advice about the future (see Figure 1). SPAs help our clients identify, understand and plan for change as well as prepare for the potential business and human impacts arising from those changes. In particular, our D&A SPAs examine how such capabilities might change in the coming years and how you might use these as guidance to innovate and strengthen your capability. Use these as a base for establishing or further qualifying external drivers that will affect how your D&A function will deliver value and ultimately drive success for your enterprise.

The pace of change is faster than ever, so predicting the pivot point at which to move from old to new capabilities has become a critical part of any strategic plan. Gartner clients have come to rely on our annual predictions both as input for their strategic plans and as alerts to potentially disruptive changes. For most enterprises, investments and other business decisions during the next few years are likely to be made by finding a point of balance between the old and the new.

Figure 1: Gartner's mainstream predicts

Source: Gartner
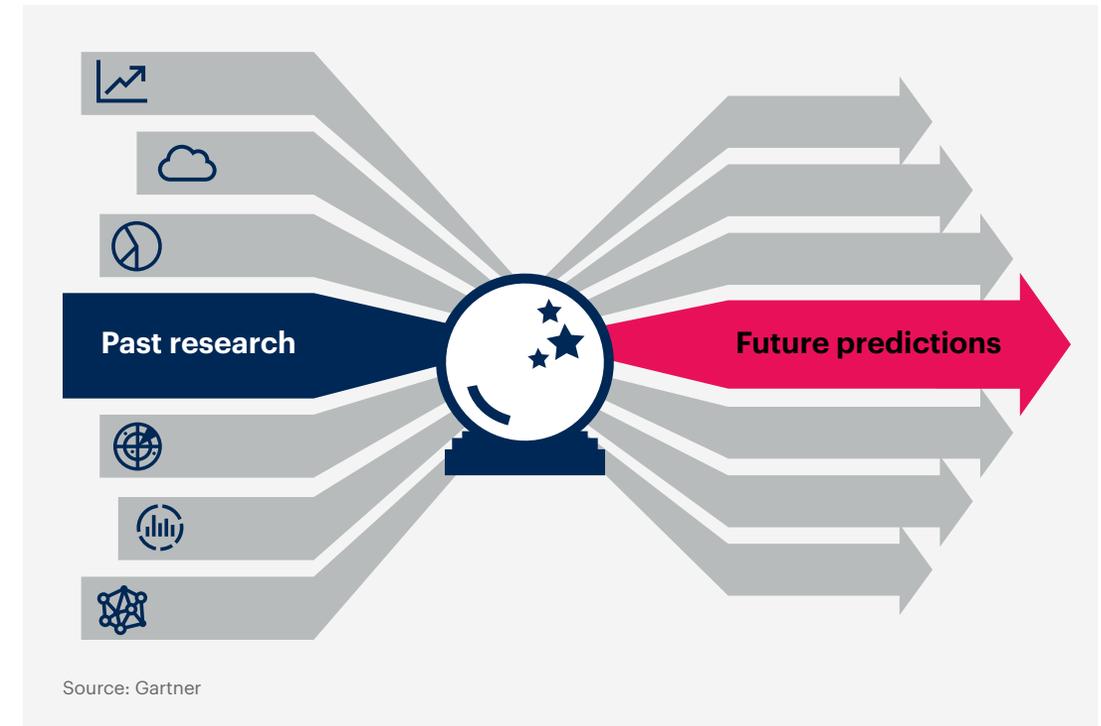
Data, analytics and AI are critical elements across nearly all industries, business functions and IT disciplines in every sector — a dynamic reflected across Gartner Predicts 2025 materials. Most significantly, data, analytics and AI are key to a successful digital business. This collection of more than 100 data, analytics and AI-related SPAs through 2031 summarizes predictions released in the Gartner Predicts 2025 series. Include these in your planning for successful strategies:

Note that:

- Planning for possible alternative future scenarios is a vital aspect of modern leadership and requires well-defined operating practices, both to address the potentially unrealistic expectations arising from AI hype as well as the current climate of volatility, uncertainty, complexity and ambiguity (VUCA). This is not just an exercise in determining what is likely. Understanding the possibility space even if unlikely is critical for planning.

- The point of an SPA is not to be "right." The point is to provoke thinking and provide direction.

- Use SPAs as a basis for defining, refining and stress-testing your D&A strategy and program planning. (This may be particularly relevant for first-movers who want to make longer-term strategic bets.)

- Evaluate any near-term flags that indicate whether a prediction is trending toward truth or away from it in order to prioritize investment in your D&A operating model.

- In general, predictions with longer time horizons have a lower probability of coming true than those with shorter time horizons.

Key highlights

2025 is a year that has further established AI, including generative AI (GenAI), as critical drivers for business operations and innovation, and, therefore, highly visible across our organizations all the way up to the executive.

AI represents a golden opportunity for chief data and analytics officers (CDAOs — see Note 1) and other D&A leaders, potentially giving them the mandate to drive or significantly influence AI strategy. Without AI-ready data, the promise of AI will fail to materialize. Foundational concepts of strong data management and governance are on the critical path to success, and these can themselves benefit from an accelerated path to impact powered by AI.

Now as AI investment and hype are at frenetic levels, 2025 is the year that the D&A function can further assert itself, with the CDAO being a pivotal role for AI success. However, we note that planning horizons are collapsing — five year ambitions may never materialize, 18-month to two-year expectations need to be adaptable, and even near-term delivery plans may be subject to significant unforeseen impacts. There is a need for wider perspective and careful scrutiny, given that AI is transformational in ways other technologies have not been. Can data, analytics and AI deliver the goods?

The intense visibility and urgency regarding AI presents a new opportunity for CDAOs to bring D&A into the consciousness and interest of those who may have previously resisted, creating nearly unlimited possibilities for business value, influence and impact. In this rapidly evolving landscape, speed to embrace and adapt to change will be a key differentiator between D&A leaders who succeed and those who do not.

Note: Some recommended content may not be available as part of your current Gartner subscription.

D&A leaders, strategy and innovation

The acceleration of GenAI has heightened the need for CDAOs to reinvent themselves and their function. To succeed, CDAOs must champion their role in AI, find new AI funding models and accelerate AI-ready data, data governance, and D&A and AI literacy.

Predicts 2025: CDAOs Must Embrace Their Role in AI or Risk Credibility Loss

- By 2027, 75% of CDAOs who have not established themselves as an indispensable strategic collaborator in their organization's AI success will lose their C-Level position.

- By 2027, organizations that emphasize AI literacy for executives will achieve 20% higher financial performance compared with those that do not.

- By 2029, D&A organizations that have a profit and loss model will have secured 15% more funding than those relying solely on annual funding.

- By 2028, 75% of first-time CDAOs who have not received specific role training and mentorship will leave the position within three years, reassessing their desire and aptitude.

- By 2027, 40% of organizations will have reignited knowledge management initiatives due to GenAI demand for role-based augmentation and automation, in order to increase revenue and lower costs.

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Analytics, business intelligence and data science

The consequences and repercussions of the enlivened analytics and AI collision continue to unfold. To navigate the opportunities and risks, D&A leaders must adapt current systems, pilot new approaches augmented by AI and build sustainable initiatives that scale.

Predicts 2025: AI-Powered Analytics Will Revolutionize Decision Making

- By 2028, GenAI and robotic process automation (RPA) techniques will automate the migration of 40% of content between analytics platforms, reducing vendor lock-in and driving competitive pricing.

- By 2027, organizations will implement small, task-specific AI models, with usage volume at least three times more than those of general-purpose large language models (LLMs).

- By 2027, 50% of business decisions will have been augmented or automated by AI agents for decision intelligence.

- By 2028, 60% of existing dashboards will be replaced by GenAI-powered narrative and visualization.

- By 2027, 80% of D&A leaders will calculate and communicate new AI value expectations and initiative trajectories due to setbacks and AI fatigue.

Figure 2: The components of AI-powered analytics

Source: Gartner
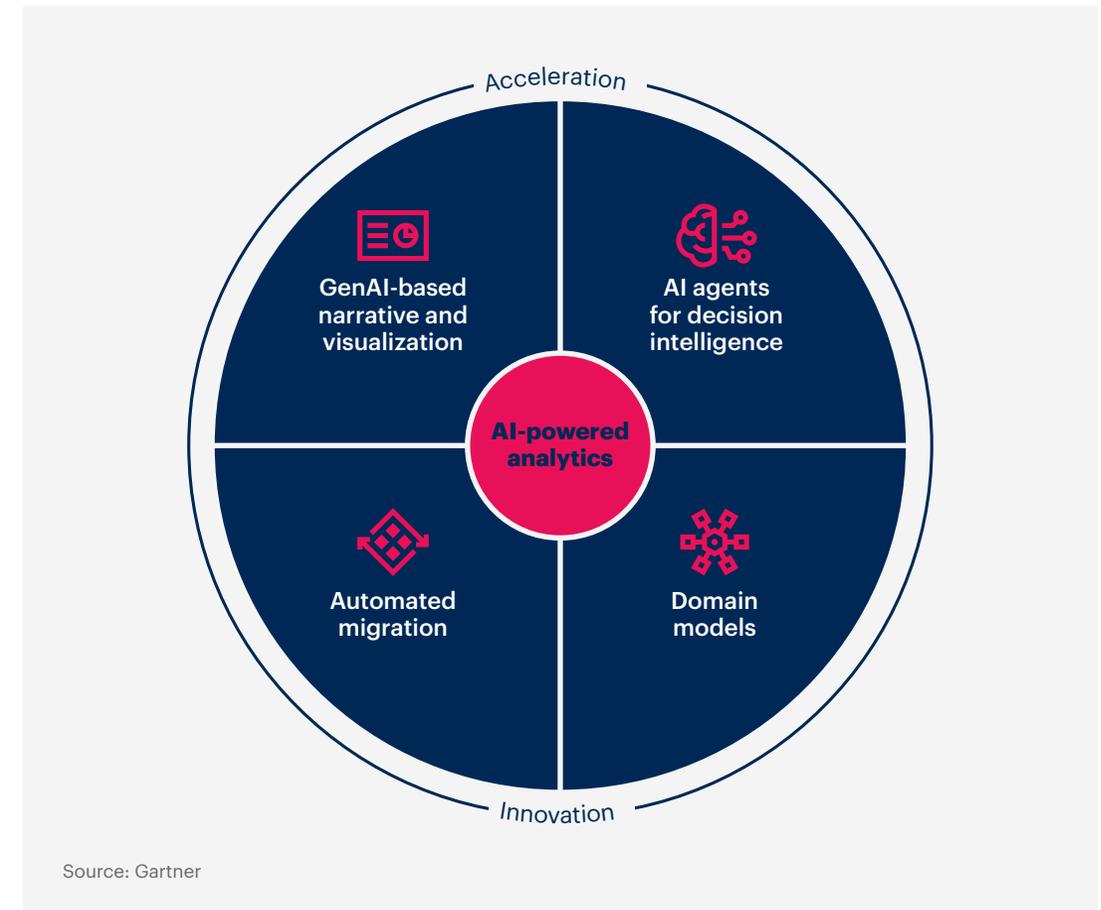
Artificial intelligence

In the next five years, AI will transform enterprise technology, reshaping technical debt and talent needs. This change will prioritize skills in AI evaluation, integration, FinOps and operations, fostering agile processes that let IT leaders adapt to advancements and maintain a competitive edge.

Predicts 2025: AI's Impact on the Future of Enterprise Technology

- By 2027, inaccurate cost and budget calculations for AI projects will drive 60% of large enterprises to adopt and apply FinOps practices to their AI initiatives.

- By 2028, AI-powered tools will automatically replatform or rebuild 50% of legacy applications.

- By 2028, 25% of enterprise breaches will be traced back to AI agent abuse, from both external and malicious internal actors.

- By 2026, a composite score for evaluating the machine intelligence of GenAI solutions will emerge and become a key differentiator for the comparative evaluation of AI offerings.

- By 2027, there will be three times more open positions for AI engineers than for data scientists, as pretrained AI solution development displaces custom-made machine learning (ML) training.

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Data management and infrastructure

The rapid emergence of GenAI has affected almost every aspect of the data management landscape. Gartner's predictions will help data management leaders plan for the disruptive impact of GenAI (and AI in general) on their data management solutions, architectures, operating models, skills and use cases.

Predicts 2025: 4 Ways AI Will Disrupt Data Management Markets and Solutions

- By 2028, the fragmented data management markets will converge into a "single market" around data ecosystems enabled by data fabric and GenAI, reducing technology complexity and integration costs.

- By 2027, AI assistants and AI-enhanced workflows incorporated in data integration tools will reduce manual intervention by 60% and enable self-service data management.

- By 2026, natural language will become the dominant method to query and interface with existing data management ecosystems, leading to 10 times better data consumption.

- By 2027, AI will automate the optimization of 40% of D&A spending in cloud-based data ecosystems.

- By 2028, 80% of GenAI business applications will be developed on organizations' existing data management platforms, reducing implementation complexity and time to delivery by 50%.

Figure 3: The impact of AI on data management solutions and markets

Source: Gartner

IT Leadership Predictions
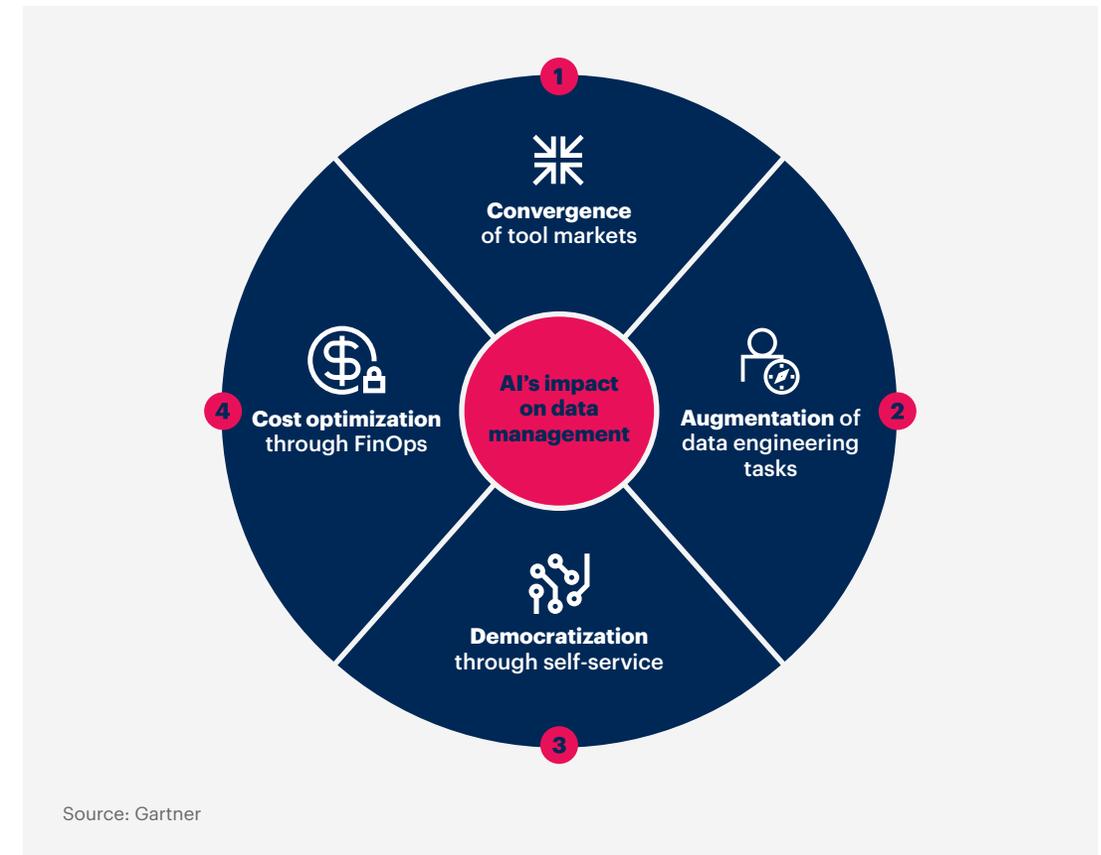
Data and AI security and privacy predictions

AI and the advent of quantum computing challenge many of the conventions currently used to dictate how personal data should be handled and protected. Security and risk management leaders should use these business and technology insights to adjust expectations and preparations for future developments.

Predicts 2025: Privacy in the Age of AI and the Dawn of Quantum

- Through 2027, 10% of consumers will deceive digital products on a daily basis to avoid privacy restrictions on access or function.

- By 2027, more than 40% of AI-related data breaches will be caused by the improper use of GenAI across borders.

- Before 2028, at least one jurisdiction will ban a major GenAI platform following data confidentiality or content compromise.

- By 2028, investments in data protection focused on integrity are expected to approach or reach the same level as those for confidentiality.

- By 2029, increasing data protection costs due to quantum computing will cause organizations to delete the majority of personal data, rather than risk exposure.

Through 2027
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Gartner predicts that cybersecurity is entering a period of AI turbulence. Security and risk management leaders must evaluate upcoming AI progress in light of disappointments from early GenAI deployments and amid AI agent washing.

Predicts 2025: Navigating Imminent AI Turbulence for Cybersecurity

- By 2027, 90% of successful AI implementation in cybersecurity will be tactical — task automation and process augmentations — rather than role replacing.

- By 2027, AI agents will further automate credential stealing and compromise authentication communication channels, reducing the time it takes to exploit account exposures by 50%.

Adoption of GenAI has led to an increased risk of data exposure and larger attack surfaces. Gartner predicts that, through 2027, security and risk management leaders will explore creative tactical and strategic methods for minimizing the increased risk of sensitive data exposure.

Predicts 2025: Managing New Data Exposure Vectors

- By 2026, 75% of organizations running GenAI initiatives will reprioritize their data security efforts, shifting their spending from structured data security initiatives to unstructured data security initiatives.

- By 2027, organizations incorporating intent detection and real-time remediation capabilities into data loss prevention (DLP) programs will realize a one-third reduction in insider risks.

- By 2027, 40% of security teams will promote experimentation with GenAI to uncover data security risks associated with GenAI tool adoption.

Figure 4: Evolution of data security

DLP = data loss prevention
Source: Gartner
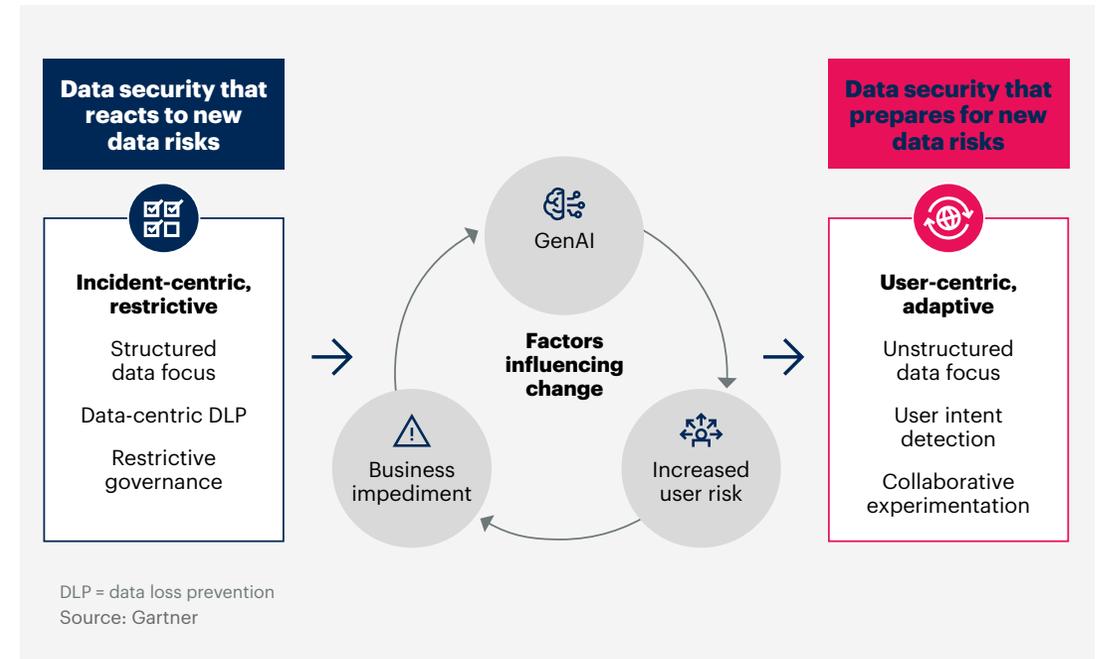
Technology innovations in augmented humans, drones, autonomous vehicles, AI and quantum-integrated assets are propelling cyber-physical systems (CPS) to new frontiers in all industries. This note helps security and risk management leaders anticipate and prepare for the future of CPS security.

Predicts 2025: Securing the New Frontiers of Cyber-Physical Systems

- By 2028, AI regulations in at least one G20 country will prohibit AI agents from directly controlling CPS in critical infrastructure.

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AI regulations in **at least one G20 country** will prohibit AI agents from directly controlling CPS in critical infrastructure.

Figure 5: Current state of physical to digital convergence
Percentage of respondents

Category	Percentage
Have multiple mature major initiatives that contribute to revenue generation	25%
Have at least one major initiative, and/or a small number of pilots	33%
Piloting and experimenting	20%
It's under discussion and has reached the planning stage	18%
It's not a strategic focus and we haven't started thinking about it yet	4%

78% ongoing efforts around physical-digital convergence

n = 873; all services buyers, excluding "not sure"
Q: Which of the following statements best reflect the current state of physical-digital convergence in your organization?
Source: 2024 Gartner Digital Business Buying Drivers Survey

Project, program and portfolio management

Program and portfolio management leaders must maintain strategic focus and deliver business results during the disruptive times that most face in the foreseeable future. Use these predictions and their accompanying recommendations to update both strategic and tactical plans for 2025 and beyond.

Predicts 2025: Program and Portfolio Management Leaders Tackle Disruption

- By 2028, 70% of project management office (PMO) leaders will use AI-enabled PPM tools to predict project delays and overruns with great accuracy, enabling proactive mitigation strategies.

By 2028
70%

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Figure 6: PPM leaders must be prepared for disruption

Potential disruptions

- Geopolitical disruption
- Economic disruption
- Natural disasters
- Human-made disasters

PPM leaders/PMO

- Outcome focus
- Resilient foundation

Consistent value

Source: Gartner
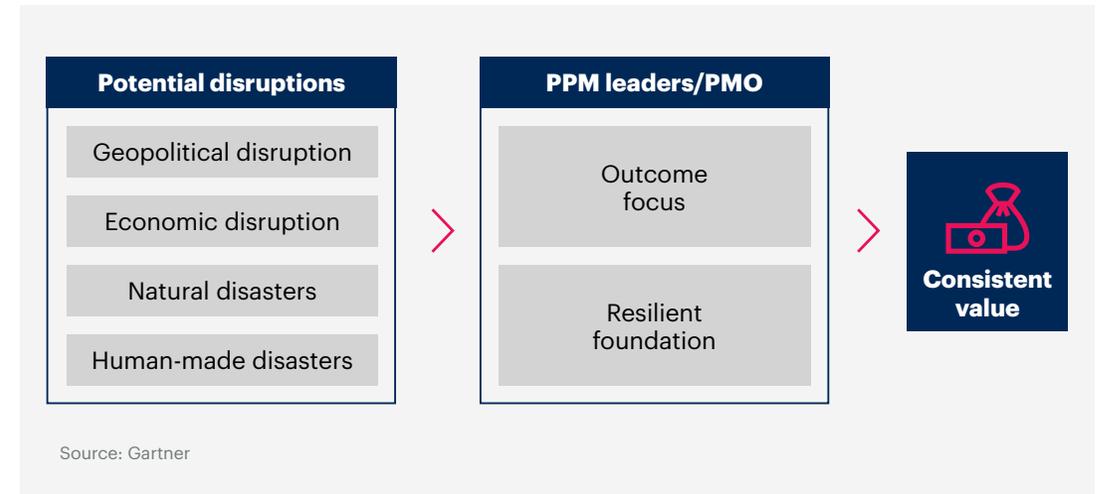
Software engineering

AI is reshaping software development by boosting productivity and expanding the types of work employees do. To fully benefit from this innovation, software engineering leaders must integrate diverse skills, foster collaboration and shift focus from measuring outputs to evaluating business value.

Predicts 2025: Navigating the Rise of AI in Software Engineering

- By 2028, 80% of organizations will report that AI agents consume the majority of their APIs, rather than developers.

- By 2028, GenAI will enable 40% of software team members to come from nontraditional software engineering or technical educational backgrounds, up from 20% in 2025.

- By 2027, the number of UX designers in product teams will decrease by 40%, as AI-powered tools democratize UX work.

- By 2027, AI-augmented software development will drive significant productivity improvements but only deliver an average of 8% improvement in business outcomes.

Figure 7: Expected versus realizable value from GenAI in software engineering

Source: Gartner

Digital Business Function Predictions
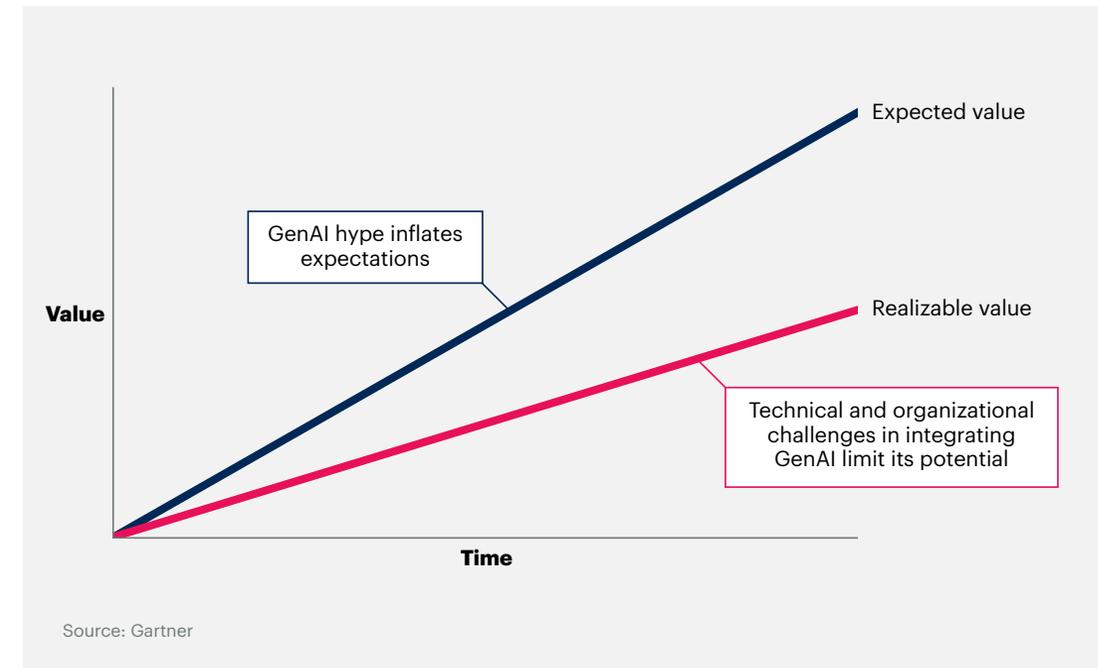
CRM sales and digital commerce

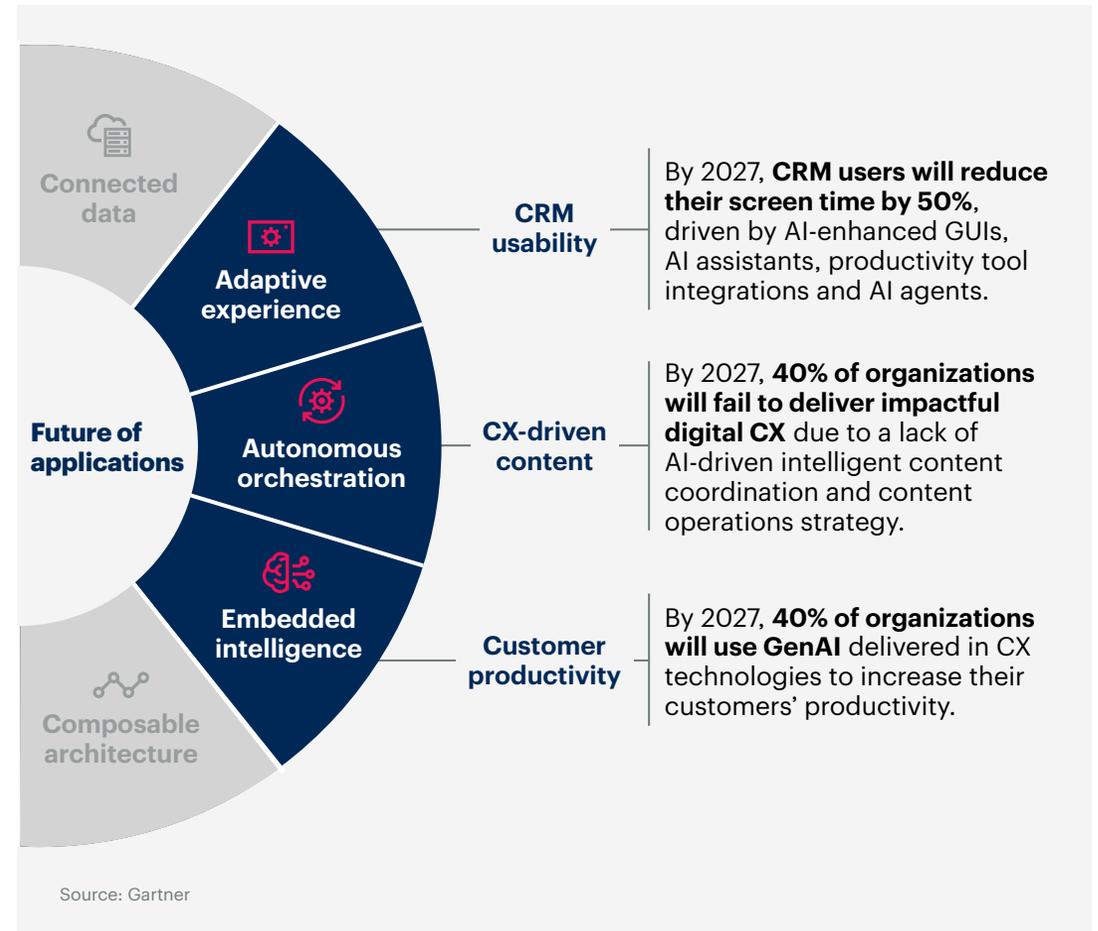In the coming years, advancements driven by AI and GenAI will continue to shape how applications leaders transform their CRM and customer experience (CX) operations. CRM users will reduce their screen times, intelligent content coordination will increase CX and customer productivity will become the new target.

Predicts 2025: AI Continues to Shape the Future of CRM and CX

- By 2027, CRM users will reduce their screen time by 50%, driven by AI-enhanced GUIs, AI assistants, productivity tool integrations and AI agents.

- By 2027, 40% of organizations will fail to deliver impactful digital CX due to a lack of AI-driven intelligent content coordination and content operations strategy.

Figure 8: Predicts 2025: CRM strategy and CX

Connected data

Adaptive experience

CRM usability

By 2027, **CRM users will reduce their screen time by 50%**, driven by AI-enhanced GUIs, AI assistants, productivity tool integrations and AI agents.

Future of applications

Autonomous orchestration

CX-driven content

By 2027, **40% of organizations will fail to deliver impactful digital CX** due to a lack of AI-driven intelligent content coordination and content operations strategy.

Embedded intelligence

Customer productivity

By 2027, **40% of organizations will use GenAI** delivered in CX technologies to increase their customers' productivity.

Composable architecture

Source: Gartner

Digital workplace

AI will have a transformational impact on the future of work — altering indelibly how we perform work in the future. CIOs should act on these bold predictions to prepare their organizations and workforces and create a symbiotic relationship between humans and machines at the workplace.

Predicts 2025: AI and the Future of Work

- By 2028, 40% of employees will first be trained and coached by AI when entering a new role or profession, up from less than 5% currently.

- By 2028, at least one-third of business decisions will be made semiautonomously or autonomously with the help of AI agents, up from less than 1% today.

- By 2028, 40% of services (primarily B2C but increasingly B2B) will be AI-augmented, with potential premiums for human-driven options.

- By 2028, less than 20% of application-development-related job postings will specify programming languages due to AI, low-code and assumed language proficiency.

- By 2030, half of enterprises will face irreversible skill shortages in at least two critical job roles due to GenAI accuracy decline, skill erosion and uncompetitive pay.

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AI is reshaping workplace applications and how people engage with them. Digital workplace application leaders can use these predictions about embedded intelligence, adaptive experience and autonomous orchestration to get ready for accelerating change.

Predicts 2025: Empowering Workers With Intelligent Applications

- By 2028, 80% of digital workers will use multimodal interfaces with GenAI, significantly improving task efficiency and workplace accessibility.

- By 2028, the knowledge graph will have access to nearly 70% of meeting transcripts and notes to return information from prior meetings.

- By 2028, more than 20% of digital workplace applications will use AI-driven personalization algorithms to generate adaptive experiences for the worker.

- By 2028, 20% of digital workers will create tools for themselves and their teammates to manage the noise from embedded intelligence in workplace applications.

Figure 9: The future of partnership between digital workers and intelligent application

Source: Gartner
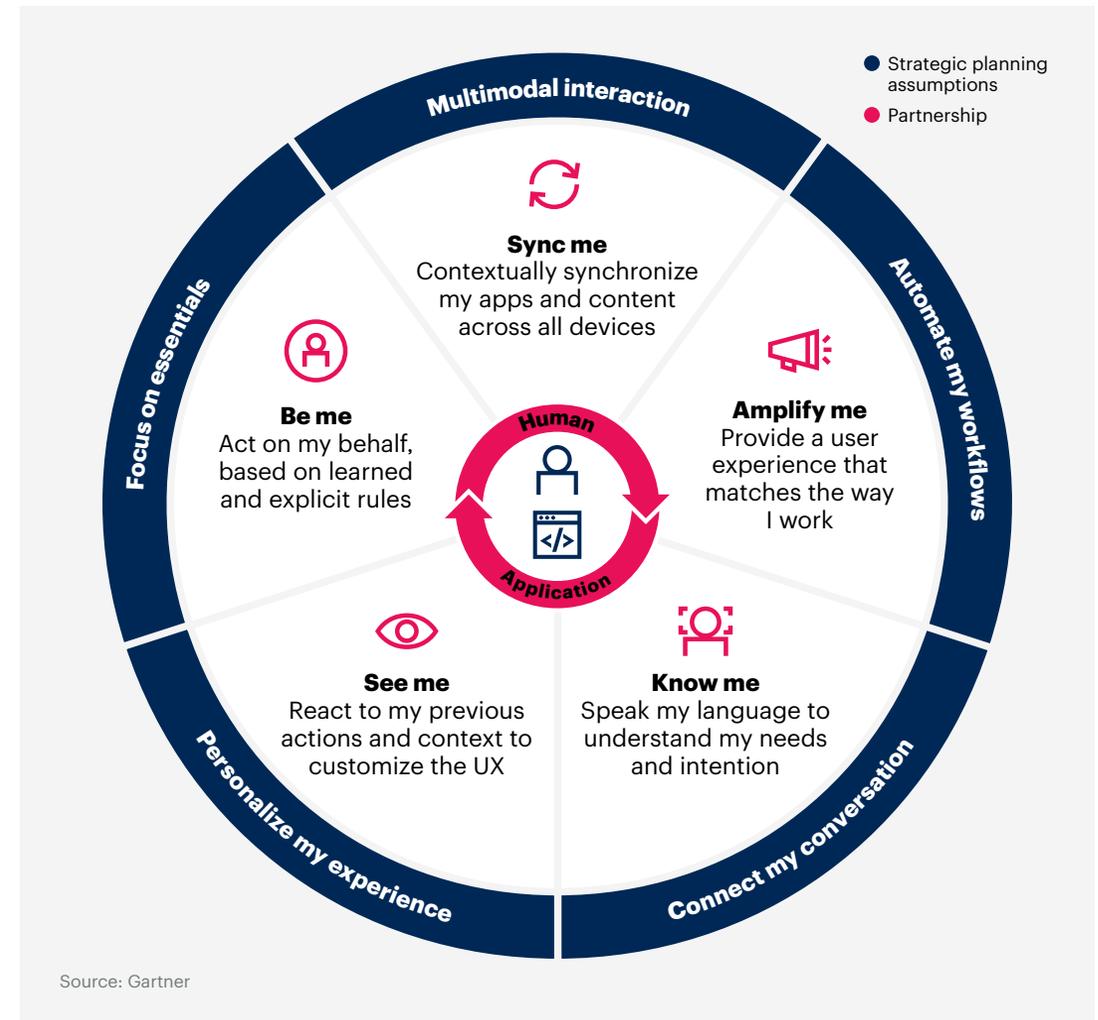
Finance

As AI permeates routine finance operations, progressive CFOs look for strategic opportunities that AI offers. The forward-looking predictions covered in this document present four areas where the next generation of AI capabilities introduce compelling and differentiating value to finance.

Predicts 2025: AI Elevates Finance's Role to Strategic Enabler

- By 2028, 60% of finance organizations will use AI-enabled scenario planning as a primary business partnering initiative.

- By 2028, finance organizations adopting automated data retrieval platforms will save up to 75% of time spent on data management.

- By 2029, one-third of finance staff will occupy "shared jobs," in which AI and a person are responsible for performing a single job role together.

- By 2028, 70% of finance organizations will use AI analysis with connected device data for real-time and improved decision-making on operational cost and cash flow management.

Figure 10: Differentiating value from AI
Illustrative

Source: Gartner
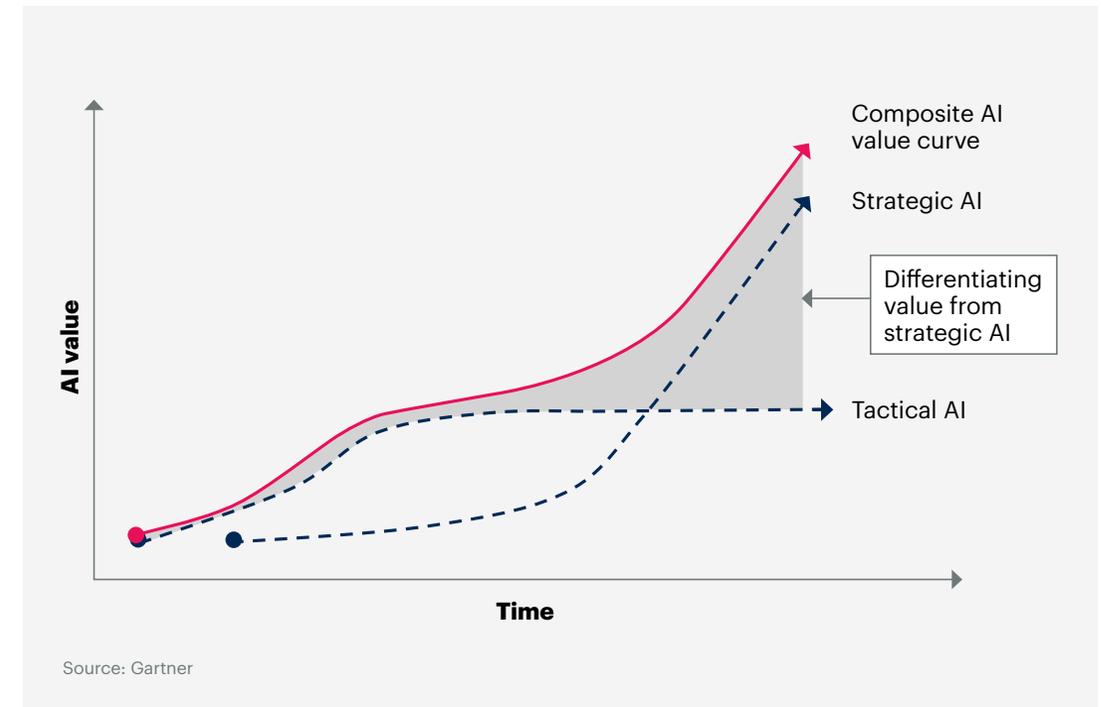
Human resources and talent management

As AI reshapes HR, CHROs face fairness, governance and data privacy challenges that complicate their ability to attract and retain top talent. Use these business and technology insights to prepare the organization for navigating emerging risks, ensuring ethical AI use and achieving robust data protection.

Predicts 2025: AI Revamps Recruitment Processes and Skills Management

- By 2028, 30% of recruitment teams will use AI agents to complete certain recruitment activities such as fulfillment of high-volume positions and early-stage recruitment.

- By 2028, 50% of large organizations will invest in multiple AI-enabled skills management solutions.

By 2028,

30%

of recruitment teams will use AI agents to complete certain recruitment activities such as fulfillment of high-volume positions and early-stage recruitment.

Figure 11: Prepare a team for the move to a skills-based state

Business unit people partner (Business talent insights)

Business unit capability manager (Specific talent implications)

Recruiting leader (Talent sourcing)

Business unit leader (Business goal)

L&D leader (Development opportunities)

HR technology leader (Scale skills sensing with AI)

Talent management leader & strategic workforce planning (Skills adjacencies)

Rewards leader (Performance rewards)

Source: Gartner

Marketing

CMOs are contending with organizational changes, privacy concerns and fallout from misinformation overload, all while AI cements its place within the marketing function. Use these business and technology insights to prepare for disruption and position the organization to capitalize on unique opportunities.

Predicts 2025: Marketers Must Prepare to Serve Human and Machine Customers

- By 2026, more than one-third of web content will be developed exclusively for AI and search engine consumption.

- By 2027, 85% of customer data will be collected from automated interactions or those led by AI agents.

- By 2027, mobile app usage will decrease by 25% as audiences shift to using AI assistants.

Figure 12: Expected change in company identity over the next five years
Percentage of leaders selecting each statement

Our company's identity does not need to change — **16%**

Our company's identity must completely or significantly change — **84%**

n = 187 marketing leaders
Q. To the best of your knowledge, to what extent will your company's identity (e.g., mission, brand, culture) need to further change or evolve over the next five years to successfully achieve your company's objectives?
Source: 2024 Gartner Marketing and Narrative Impact Survey

Procurement and sourcing

Procurement's operating context is changing rapidly. These predictions can help chief procurement officers to understand evolving trends in data and analytics, AI, staffing models and supplier risk management to effectively plan for rapid evolution in procurement.

Predicts 2025: Procurement Addresses Data Challenges and Embraces Rapid Change

- By 2027, 85% of procurement organizations will still be improving data quality in an effort to exploit efficiencies from technologies like GenAI.

- By 2028, 60% of CPOs will fail to realize the anticipated value of advanced analytics due to poor D&A governance.

- By 2028, 40% of procurement teams will have implemented at least one AI agent.

By 2028,

85%

of procurement organizations will **still be improving data quality** in an effort to exploit efficiencies from technologies like GenAI.

Supply chain planning and operations

Within five years, chief supply chain officers (CSCOs) will need to forge strategic partnerships across the value chain to deliver growth, mitigate risk and succeed with new technology. CSCOs should use these predictions to focus investment in talent and technology and to enhance human decision processes with AI to drive growth.

Predicts 2025: Supply Chain Strategy — Growth, People and AI, and Commitments

- By 2028, 15% of day-to-day supply chain decisions will be made autonomously by AI agents, freeing up humans to focus more on critical decisions.

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Figure 13: Predicts 2025: Supply chain strategy for growth, people and AI, and commitments
Illustrative

Profitable growth	Workforce strategy	Digital transformation	Supply chain sustainability	Risk readiness
30% adoption of customer effort score (CES)	**60%** failed digital adoption from lack of L&D investment	**15%** of decisions made autonomously	**60%** of enterprises hit interim GHG targets	**28 million** people in forced labor

Source: Gartner
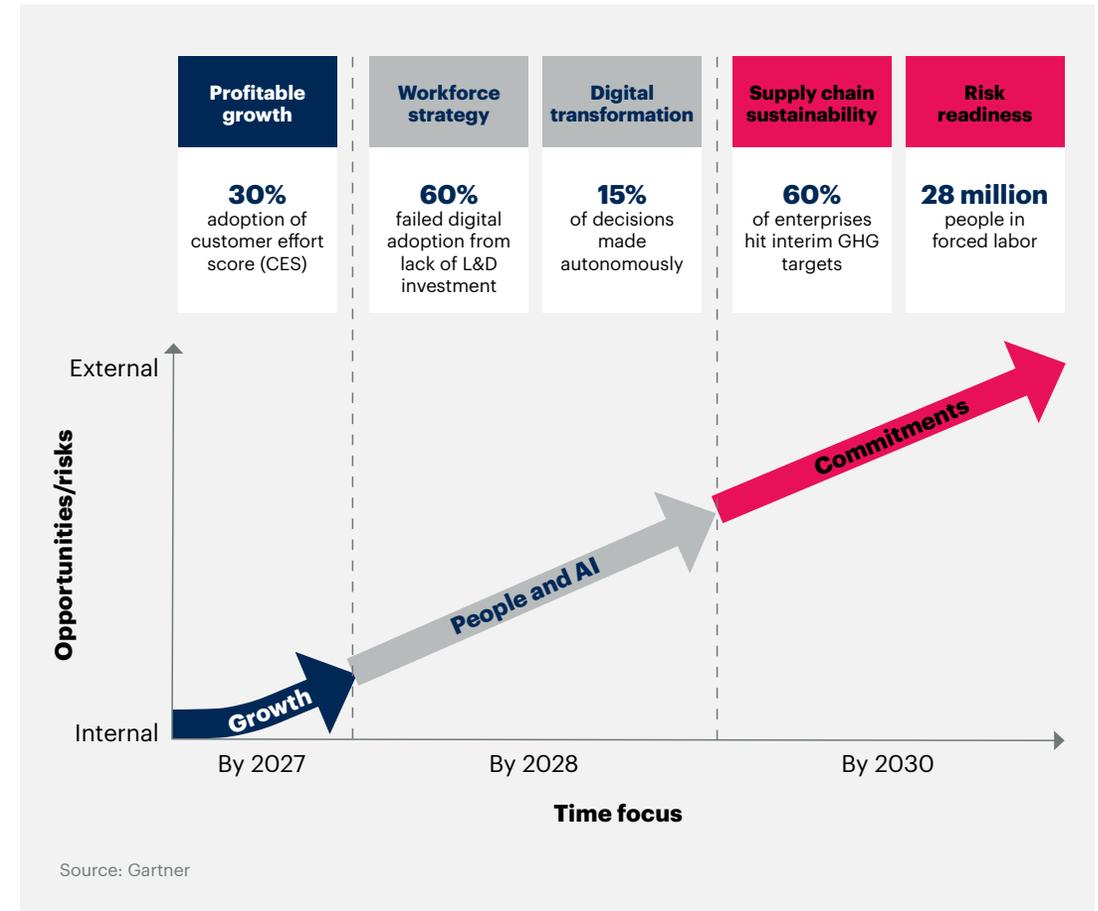
Supply chain technology leaders often cite improving their market position as a key driver for investing in supply chain planning technology. Use these predictions to discover where future risks and opportunities lie for supply chain planning technology.

Predicts 2025: Supply Chain Planning Technology

- By 2027, 50% of data integration efforts within planning system implementation will be accelerated by GenAI for code development and analysis.
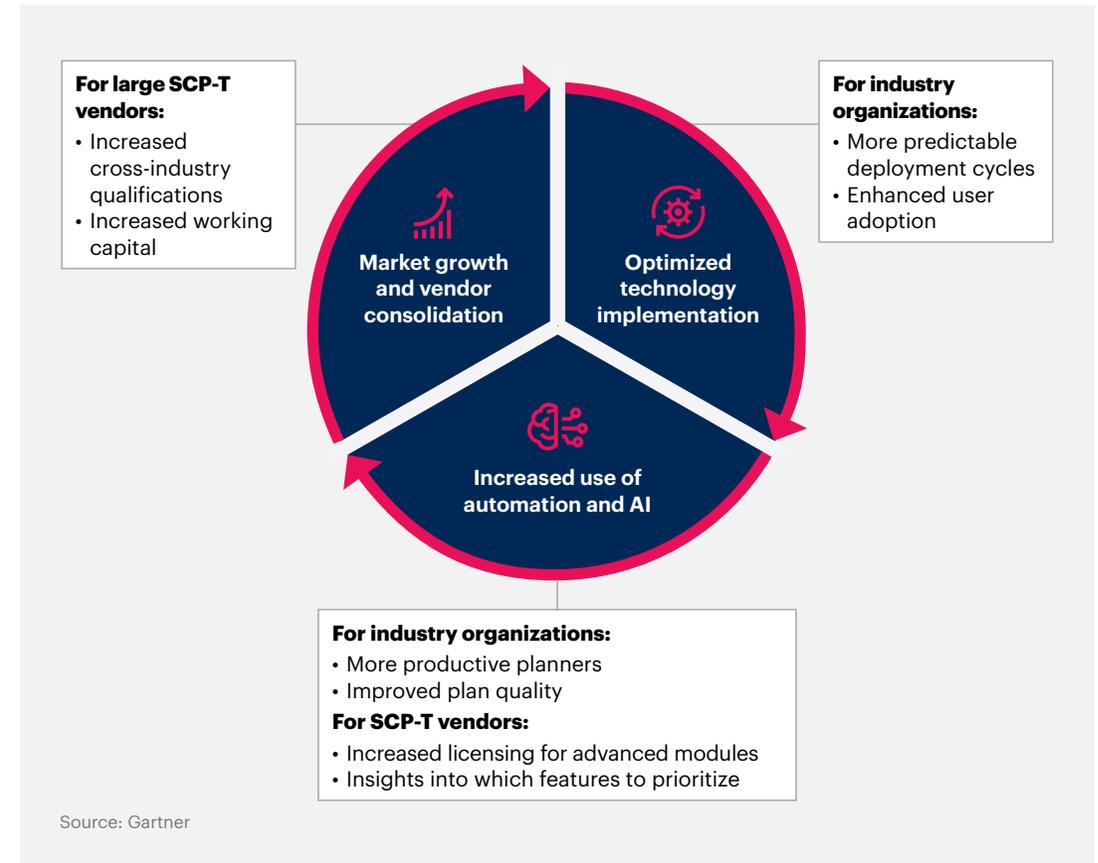
- By 2030, 70% of large organizations will have adopted AI/ML-based forecasting to predict future demand.

- By 2029, over 70% of B2C organizations will rely on digital-only representations of customer behavior to predict new product demand.

Figure 14: Synergistic effects will drive consolidation and solution advancement

For large SCP-T vendors:
- Increased cross-industry qualifications
- Increased working capital

For industry organizations:
- More predictable deployment cycles
- Enhanced user adoption

Market growth and vendor consolidation

Optimized technology implementation

Increased use of automation and AI

For industry organizations:
- More productive planners
- Improved plan quality

For SCP-T vendors:
- Increased licensing for advanced modules
- Insights into which features to prioritize
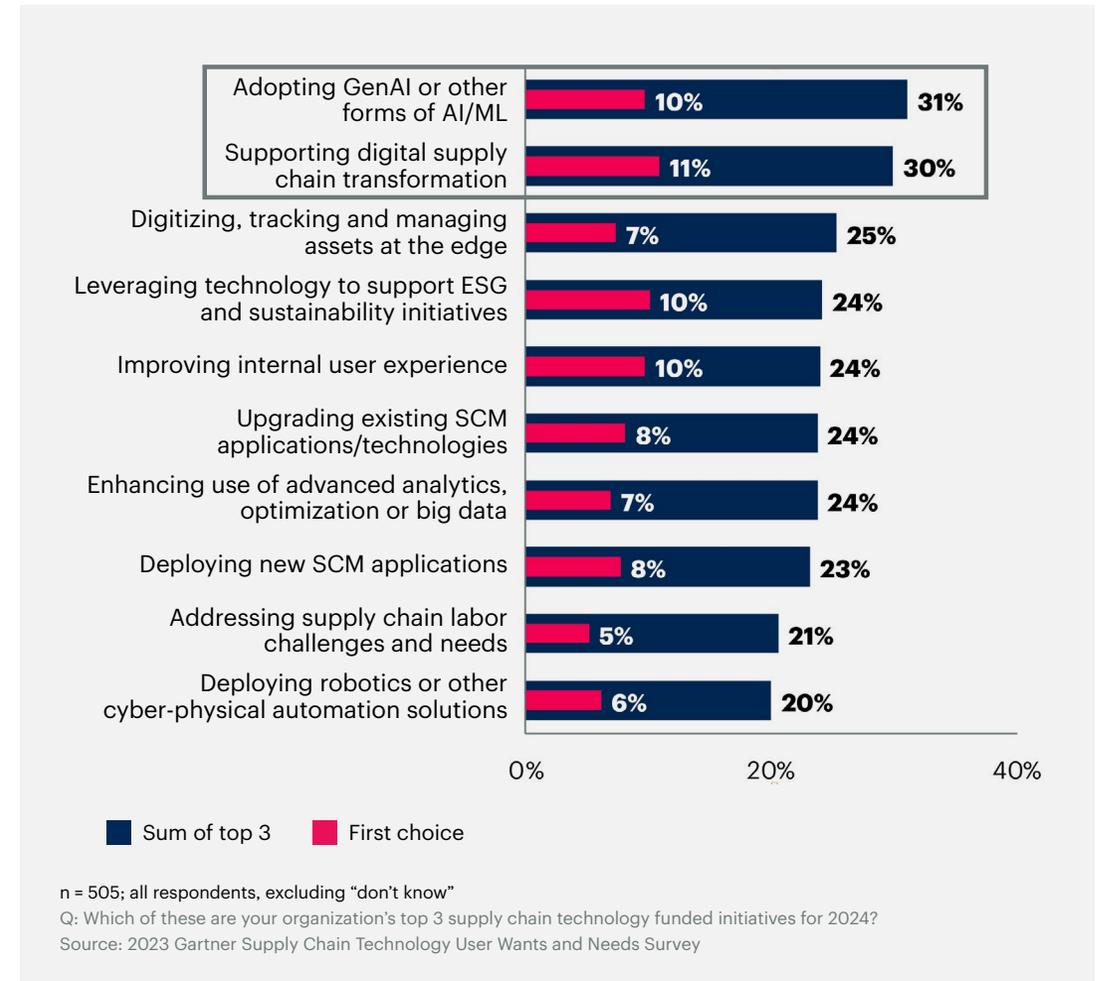
Source: Gartner

Supply chain technology will incorporate iPaaS and GenAI agents at a far higher rate in the next several years and supply chain orchestration platforms will grow rapidly. Supply chain technology leaders can use these predictions to discover where future risks and opportunities lie.

Predicts 2025: Cross-Functional Supply Chain Technology

- By 2030, 50% of cross-functional supply chain management solutions will use GenAI agents to autonomously execute decisions within the supply chain ecosystem.

- By 2028, only 20% of analytics and decision-making platforms will have a decision-centric UI to model and track decisions, leading to a failure in value realization of such deployments.

Figure 15: Funded supply chain technology initiatives

Funded supply chain technology initiatives:

Initiative	First choice	Sum of top 3
Adopting GenAI or other forms of AI/ML	10%	31%
Supporting digital supply chain transformation	11%	30%
Digitizing, tracking and managing assets at the edge	7%	25%
Leveraging technology to support ESG and sustainability initiatives	10%	24%
Improving internal user experience	10%	24%
Upgrading existing SCM applications/technologies	8%	24%
Enhancing use of advanced analytics, optimization or big data	7%	24%
Deploying new SCM applications	8%	23%
Addressing supply chain labor challenges and needs	5%	21%
Deploying robotics or other cyber-physical automation solutions	6%	20%

Legend: Sum of top 3 (dark blue), First choice (pink)

n = 505; all respondents, excluding "don't know"
Q: Which of these are your organization's top 3 supply chain technology funded initiatives for 2024?
Source: 2023 Gartner Supply Chain Technology User Wants and Needs Survey

Industry Predictions

Banking and investment services

The rise of AI-enabled machine customers will profoundly transform the banking sector. CIOs can use these predictions to capitalize on the growth of autonomous businesses in the banking industry.

Predicts 2025: Bank CIOs Embrace Machine Customers, Digital Twins and Digital Currencies

- By year-end (YE) 2028, 25% of total customer service interactions between customers and their banks will be enabled by machine customers.

- By YE 2027, 75% of Tier 1 banks will maintain digital twins of their customers.

- By YE 2029, 15% of new account openings will be for autonomous machine customers themselves to support their own demand for banking and payment services.

- By YE 2029, 25% of machine customer transactions will rely on digital currencies to support autonomous business, such as deposit tokens, stablecoins and central bank digital currencies (CBDCs).

Communications service providers and telecommunications

Through 2025 and beyond, AI and GenAI will be a significant force that affects all other technologies that communications service providers (CSPs) work with. The predictions outlined here can help CSP CIOs make long-range plans, maximize the potential of AI and GenAI usage and understand how it will impact the business.

Predicts 2025: AI and Generative AI Technologies in CSPs

- By 2027, 50% of CSPs will have redesigned their optical transport architectures and will have begun to add fiber and/or higher-capacity systems to cater to bandwidth and latency requirements driven by GenAI.

- By 2026, at least 50% of CSPs will have deployed GenAI models for customer-facing and service experience use cases.

- By 2028, GenAI adoption in CSP customer support will lead to a 25% headcount reduction, requiring workforce reorganization.

- By 2027, 50% of CSPs will use AI to achieve their carbon-footprint-related goals. managing data by 40%.
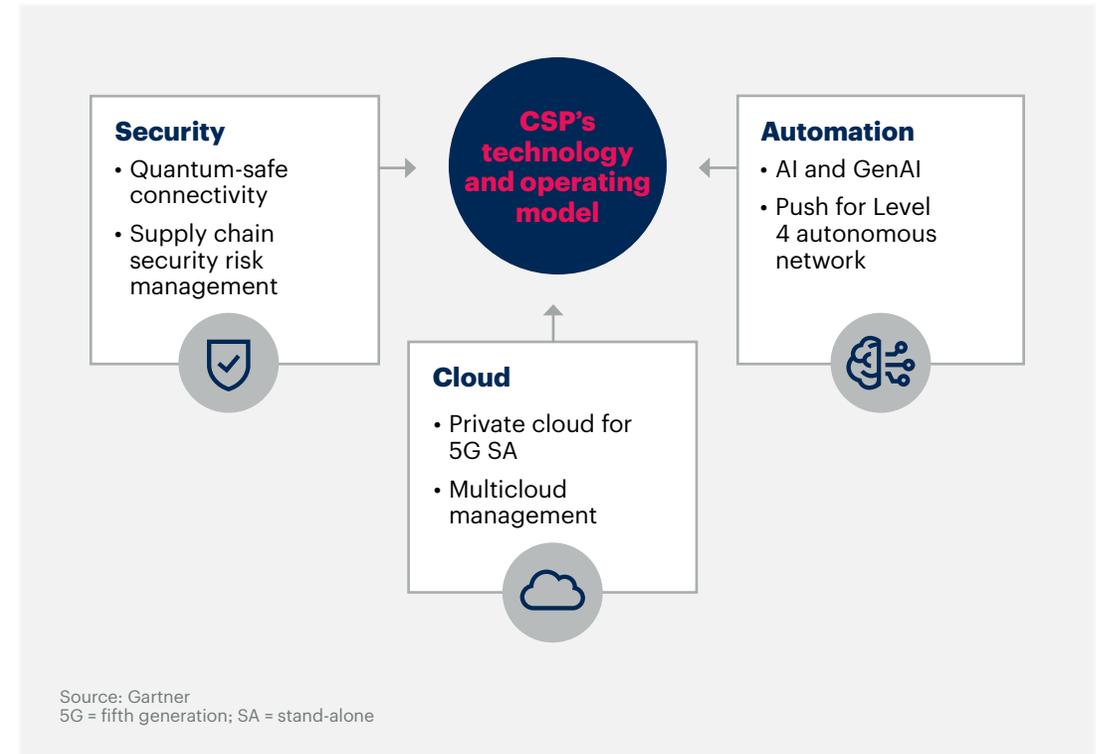
Cloud (for infra and management applications), security (supply chain and quantum-safe) and automation (AI, GenAI and Level 4 autonomous networks) will shape technology and operating model shifts over three to five years. CSP CIOs should use these five predictions for long-range planning.

Predicts 2025: CSP Technology and Operations Strategies

- Through 2028, 80% of 5G stand-alone deployments will use private cloud to address data sovereignty, regulatory and cost concerns.

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80% of 5G stand-alone deployments will use private cloud to address data sovereignty, regulatory and cost concerns.

Figure 16: Areas of tech and operating model change for long-range planning in CSPs

Security
- Quantum-safe connectivity
- Supply chain security risk management

CSP's technology and operating model

Automation
- AI and GenAI
- Push for Level 4 autonomous network

Cloud
- Private cloud for 5G SA
- Multicloud management

Source: Gartner
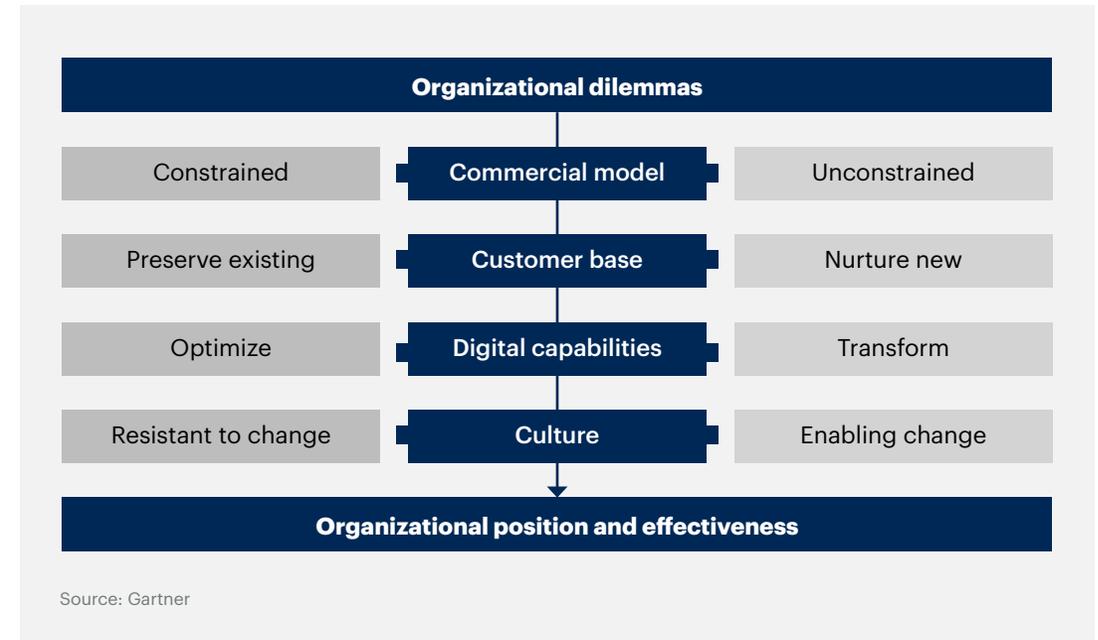5G = fifth generation; SA = stand-alone

Education

Education CIOs are balancing ambitions for new technology innovation with demands for operational efficiency and cost management. These tensions, along with the continued focus on student experience and organizational competitiveness, create a complex landscape that education CIOs must navigate.

Predicts 2025: Education Dilemmas, Data Foundations and New Directions

- By 2028, less than 15% of school systems worldwide will have achieved the data governance, management and readiness required to unlock AI-enabled innovation in K-12 education.

- By 2028, over 70% of teaching, research and student-submitted content at all levels of education will be developed with support from GenAI.

Figure 17: Education dilemmas for 2025–2030

	Organizational dilemmas	
Constrained	Commercial model	Unconstrained
Preserve existing	Customer base	Nurture new
Optimize	Digital capabilities	Transform
Resistant to change	Culture	Enabling change
	Organizational position and effectiveness	

Source: Gartner

Healthcare

IT cost optimization will become increasingly complex as more departmental workflows and processes integrate technology. Healthcare provider CIOs can use these predictions to help predict how this will affect electronic health record (EHR) markets, drive investments in care affordability and modernize patient data collection.

Predicts 2025: Healthcare Provider CIOs Pursue Digital Care Cost Optimization and Value Realization
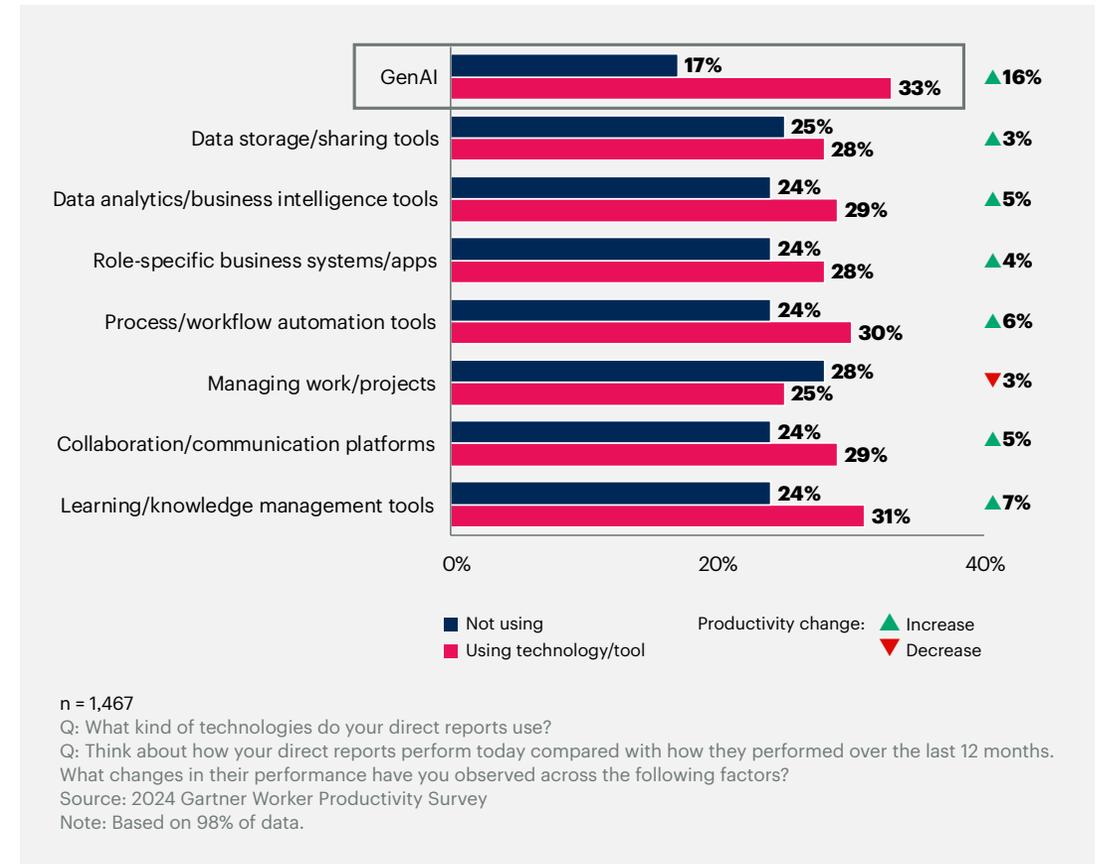
- By 2030, 40% of clinical patient data will be collected through ambient intelligence, utilizing a combination of sensors such as automated medical devices, computer vision and environmental Internet of Things (IoT).

Economic pressures, demands for technology advancement, and the proliferation of AI and GenAI are forcing payers to reevaluate and reshape how they do business. Our predictions can help healthcare payer CIOs prepare for investments that will reduce costs, improve revenue and optimize the business.

Predicts 2025: AI Reshapes How U.S. Healthcare Payer CIOs Do Business

- By 2027, GenAI solutions will reduce administrative cost by 30% for most health insurers with more than one million members.

- By 2027, 25% of payer organizations' legacy applications will be replaced, stemming from an increased reliance on industry cloud platforms spurred by rapid adoption of AI.

- By 2027, 20% of payers will yield a faster ROI in AI investments by prioritizing and investing in organizational culture and employee experience — outpacing the revenue of their competitors.

Figure 18: Technologies and tools that impact employee productivity
Percentage of respondents reporting changes in productivity

n = 1,467
Q: What kind of technologies do your direct reports use?
Q: Think about how your direct reports perform today compared with how they performed over the last 12 months. What changes in their performance have you observed across the following factors?
Source: 2024 Gartner Worker Productivity Survey
Note: Based on 98% of data.

Industry

In 2025 and beyond, data will continue to play a pivotal role in transforming industry enterprises' value propositions. Key to this transformation for industry product leaders will be embracing edge computing, catering to machine customers and facilitating product servitization.

Predicts 2025: Data Transforms Industry Value Propositions

- By 2028, product leaders who target AI, GenAI or IoT use cases will double their consumption of edge technologies to meet real-time processing needs.

- From 2024 to 2028, the number of machine customer requirements in product solutions will grow to four times the human customer requirements delivered.

From 2024 to 2028,
the number of machine customer requirements in product solutions will grow to four times the human customer requirements delivered.
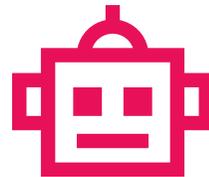
Insurance

By adopting a futuristic mindset and challenging traditional paradigms, insurance CIOs can position organizations for competitive advantage and ensure alignment with CEO expectations. The 2025 Gartner strategic planning assumptions focus on critical strategies that separate CIOs from the pack.

Predicts 2025: 5 Unconventional Strategies Insurance CIOs Can Adopt

- By 2027, the 10 fastest growing insurance companies will merge business and AI strategies, which can no longer be separated from each other.

- By 2029, insurance CIOs will spend 30% of their time managing machine employees, as processes are automated and reinvented through AI agents.

- By 2028, insurers will find that technical debt from AI and GenAI will accumulate at four times the speed of conventional technical debt in their n-tier application architectures.
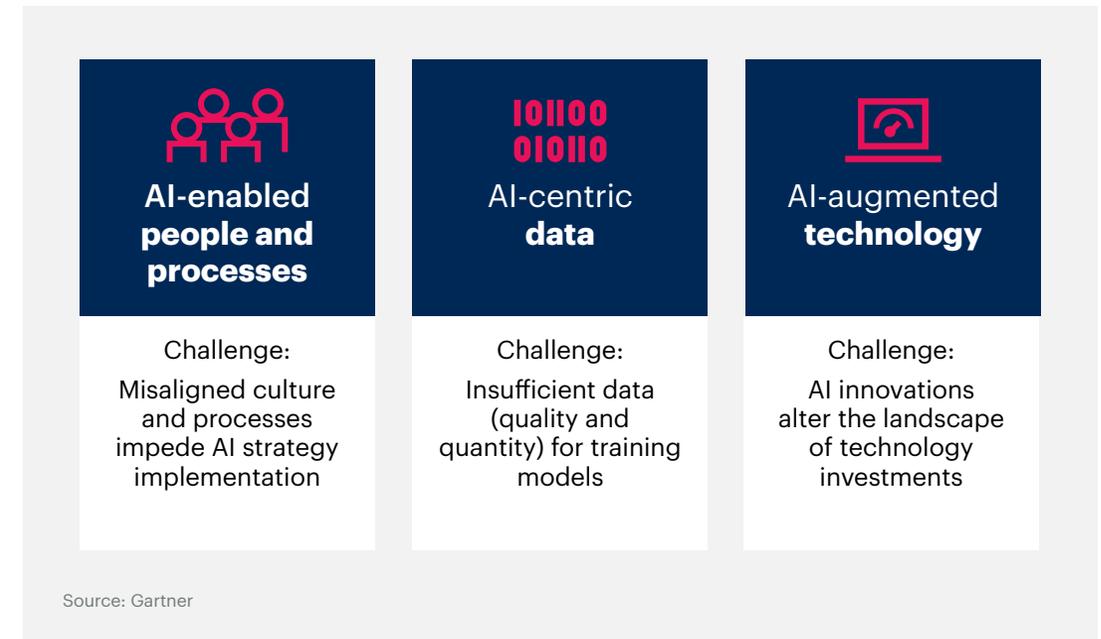
Life sciences

AI-driven transformation will redefine the life sciences, presenting complex challenges on the journey from promise to practice. CIOs must monitor GenAI failure signals, capitalize on digital twin acceleration and prepare for AI assistants in order to make their AI strategies a success.

Predicts 2025: CIOs Prepare for AI to Reshape Life Sciences

- By 2027, nontechnology-related reasons, such as high costs, poor culture integration, lack of proper governance and misaligned processes, will cause 40% of GenAI project failures in life sciences.

- By 2027, 30% of the top 20 life science organizations will leverage GenAI-generated synthetic data to advance their digital twin initiatives, using it to augment existing datasets and enhance in silico modeling.

- By 2028, 30% of the top 20 life science organizations will use AI assistants for content development and review, leapfrogging modular content approaches.

Figure 19: Realizing the value of AI in the digital life sciences organization
Features and challenges

AI-enabled people and processes	AI-centric data	AI-augmented technology
Challenge: Misaligned culture and processes impede AI strategy implementation	Challenge: Insufficient data (quality and quantity) for training models	Challenge: AI innovations alter the landscape of technology investments

Source: Gartner

Manufacturing and consumer goods

Gartner predicts that customers will dictate new product designs, intelligence will shift to the edge, off-road vehicles will become electrified, and customers will prioritize sustainability in their purchases. All manufacturing CIOs must stay informed about these predictions to remain competitive and provide new services and capabilities to their customers.

Predicts 2025: What Manufacturing CIOs Need to Be Aware of by 2030

- By 2028, 45% of consumers will share personalized data in exchange for more discreetly manufactured products, an increase from 21% in 2025.

- By 2030, frontline workers will require only two weeks to onboard due to advancements in GenAI and agentic AI technologies, a reduction from six months in 2025.

Demands to grow revenue and lower costs continue to dominate consumer goods board conversations. While these pressures are not new, these predictions explore new paths CIOs at consumer goods companies can take to expand and transform business as usual.

Predicts 2025: Consumer Goods Dives Into New Experiences for Volume-Driven Growth

- By 2028, the top 10 consumer goods companies will achieve a 10% increase in sales through data collaboration with retailers.

- By 2028, half of the top 10 luxury brands will enable consumers to use AI-enabled apps on their mobile devices to identify counterfeit merchandise.

Figure 20: 5 Predictions for 2025

Source: Gartner
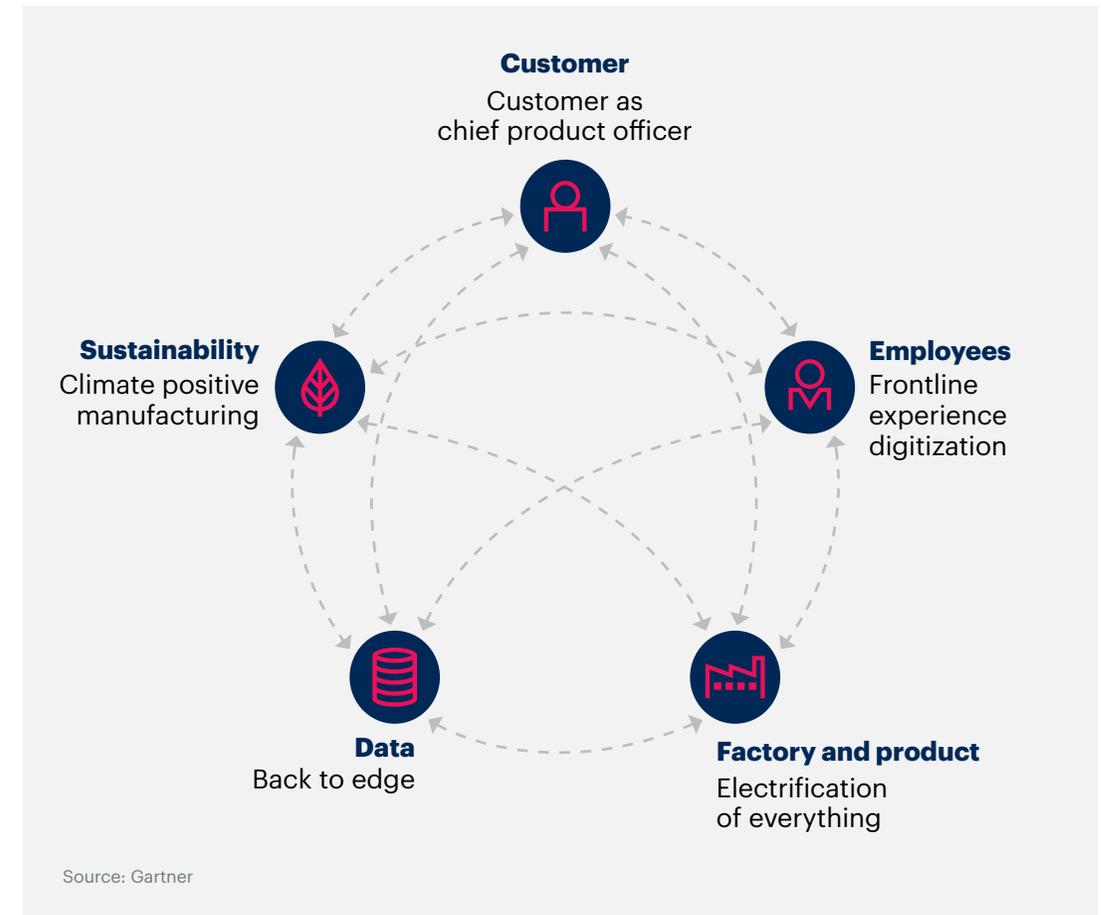
Oil and gas

Despite projecting confidence in the future for oil and gas, there are contradictory market signals and short-term headwinds. Digital investments leveraging AI are essential to bolster resilience ahead of strategic goals. CIOs can use these predictions to prepare for shifting enterprise priorities.

Predicts 2025: The Resurgent Quest for Resilience in Oil and Gas

- By 2027, 40% of oil and gas companies will initiate projects to radically transform their technology governance model to combat operational complexity caused by rampant AI democratization.

- By 2027, 75% of AI-enabled optimization will take place in back-office functions as opposed to frontline operations, offering faster benefits and lower risk than frontline operations.

- By 2028, 20% of exploration activities in oil and gas companies will be directed by AI, as it is more cost-effective than traditional methods of reservoir modeling.

Figure 21: Continuing uncertainty drives conflicting CIO priorities

Source: Gartner
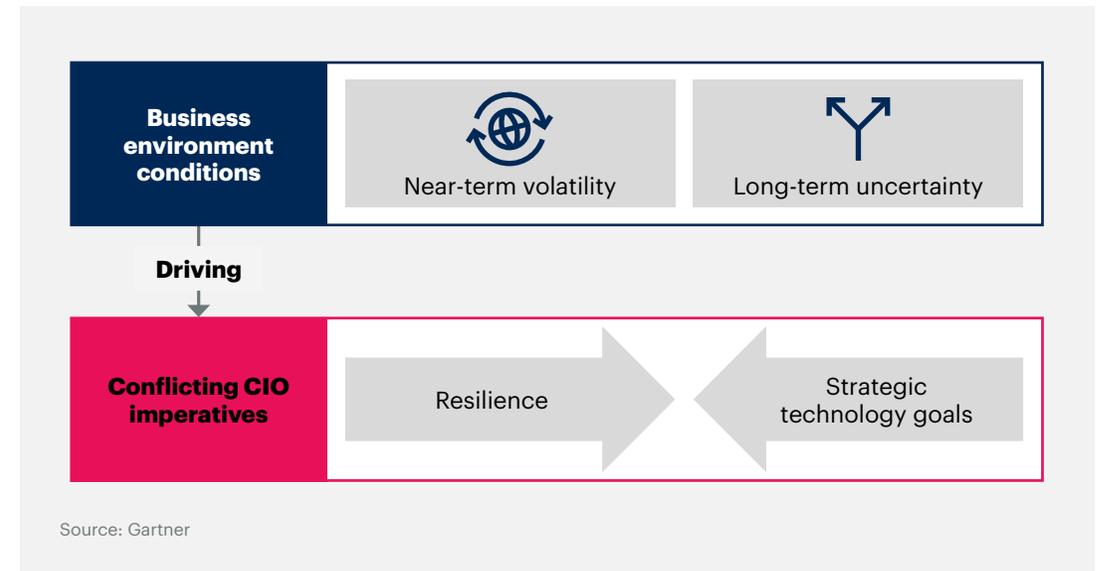
Power and utilities

The digital nexus (connecting, communicating and controlling resources) creates new value propositions for resource availability, orchestration and management. These predictions help CIOs leverage open data and decision intelligence to ensure resilient services in an increasingly complex landscape.

Predicts 2025: Navigating the Digital Nexus in Power and Utilities

- By 2027, 40% of power and utilities will deploy AI-driven operations in control rooms, reducing human error risks, but increasing cyber-physical system security vulnerabilities.

- By 2027, utilities using open data will lower their cost to serve by 10%, benefiting from shared data and observability to reduce operational expenses.

Retail

While digital channels have transformed retailing, physical stores remain consumers' primary point of purchase and the hub of unified retail commerce execution. These predictions can help retailer CIOs create a compelling hyperimmersive experience across digital and physical storefronts.

Predicts 2025: Transform Retail Stores' Profitability With Private Label, Role-Specific GenAI and Computer Vision

- By 2027, over 50% of Tier 1 retailers will pivot from general to role-specific GenAI for store associates or risk increased labor churn.

- By 2029, up to 30% of Tier 1 retailers will deploy advanced computer-vision-based analytics in their physical store locations, tripling from less than 10% today.

Figure 22: Utility digital nexus

Source: Gartner
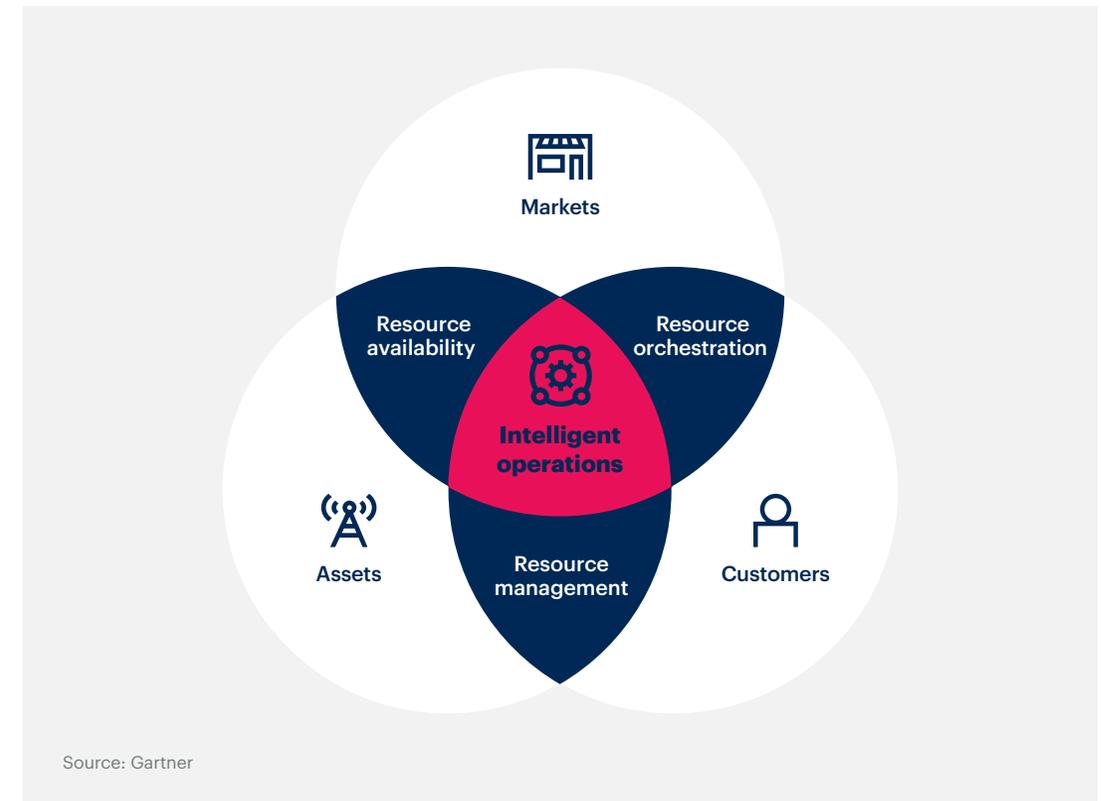
Technology and service providers (TSPs)

In the never normal era, volatility, uncertainty, complexity and ambiguity are accelerating AR commoditization. These predictions prepare AR leaders to pivot toward an indispensable, augmented AR function by embracing GenAI, aligning to evolving business goals and redefining AR's talent strategy.

Predicts 2025: Make Analyst Relations Indispensable in the Never Normal

- By 2028, 90% of AR leaders will adopt GenAI for at least one use case. Two-thirds of these use cases will focus on productivity — such as RFI management — while the remaining one-third will address creativity.

- By 2028, 70% of AR teams will face a C-Level requirement to replace the budget for at least one AR headcount — net new or already existing — with GenAI investment.

Transportation

In the next two to five years, the transportation industry will increasingly adopt autonomous vehicles at airports and for ride-hailing, while urban transport providers will use mobility data to enhance collaboration. CIOs can plan ahead using these top predictions for transportation for 2025.

Predicts 2025: Transportation

- By 2028, 75% of fleet vehicles with an Android Automotive OS will share data with a third-party telematics application, up from less than 1% in 2025.

- By 2029, half of the urban transportation ecosystem services in Europe will be enabled by data exchanged in data spaces.

Figure 23: The never normal
Continuous disruptions impacting organizational strategy and business outcomes

Source: Gartner
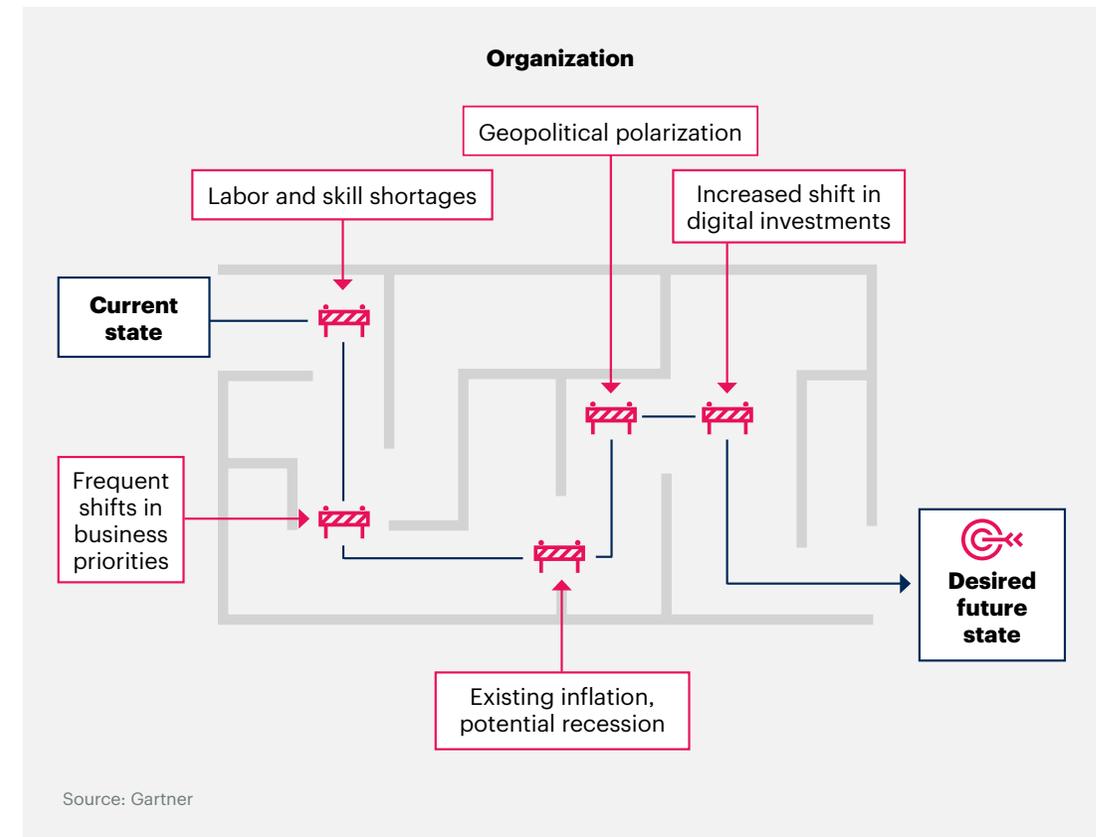
Notes

1. Definition of CDAO role

Chief data and analytics officer refers to the business leadership role that has responsibility on behalf of the enterprise for data and analytics assets and external data and analytics ecosystem. The CDAO champions data and analytics value creation, establishes governance as a strategic discipline, and builds the critical foundations of a data-driven enterprise — strategy, culture and data literacy. Equivalent titles for this role are chief data officer, chief analytics officer (if the CDAO role or equivalent is not in the enterprise), chief/head of data and analytics and other variations.

How Gartner supports your priorities

As you stay ahead of the latest trends and predictions, Gartner offers the depth and breadth of CIO and CDAO priorities.

Gartner Priorities Navigator™ for Chief Information Officers

CIO Impact on Digital Business Strategy & Execution | **Digital Performance** | **CIO Executive Leadership Development** | **CIO Leadership of Culture & People**

- Enable Digital Business Strategy & Design
- Drive Enterprise Governance of Technology
- Support Digital Products & Services
- Assess & Improve Digital Performance
- Distribute Technology Leadership
- Develop Executive Leadership
- Evolve IT Org Structure
- Create & Execute IT Strategy
- Lead Org Change & Shape Culture
- Evolve Operating Models
- Build an Adaptive Technology Workforce
- Build Software & Deliver Applications
- Demonstrate the Business Value of IT (2024)
- Deliver D&A, AI and Digital Platforms
- Modernize I&O and Cloud
- Foster Technology-Enabled Innovation
- Track & Assess Disruptive Trends
- Evaluate Emerging Technologies
- Manage Technology Risk
- Manage Technology Financials

Digital Foundations | **CIO Innovation Leadership** | **Technology Finance, Risk & Value Management**

Gartner Priorities Navigator™ for Chief Data & Analytics Officers

Lead a World-Class D&A Organization

- Become a Successful D&A Leader
- Create an Actionable Data, Analytics and AI Strategy
- Establish and Evolve an Operating Model
- Organize and Develop Data, Analytics and AI Talent
- Discover the Potential of Data, Analytics and AI for the Business
- Scale Data, Analytics and AI Platforms and Ecosystems
- Engage Stakeholders and Align Expectations
- Architect and Optimize the Technology Landscape
- Demonstrate ROI and Measure Business Value of Data, Analytics and AI Initiatives
- Identify Business and Emerging Technology Trends
- Drive Culture Change to Support Data-Driven Decisions
- Manage Data, Analytics and AI Governance and Assets
- Manage Risk Aspects of Data, Analytics and AI
- Execute and Embed Data, Analytics and AI Initiatives Effectively

Evolve Technology and Process Capabilities to Support D&A | **Build Trust and Mature D&A Culture** | **Drive Quantifiable Value With D&A Solutions for the Business**

Gartner for Chief Information Officers

Gartner provides insights, tools and guidance to support initiatives from improving digital delivery and evolving IT organizational structure to modernizing I&O and cloud while upskilling and retaining talent. By working with Gartner, CIOs can measurably impact the bottom line, demonstrate the value of IT and drive organizational objectives.
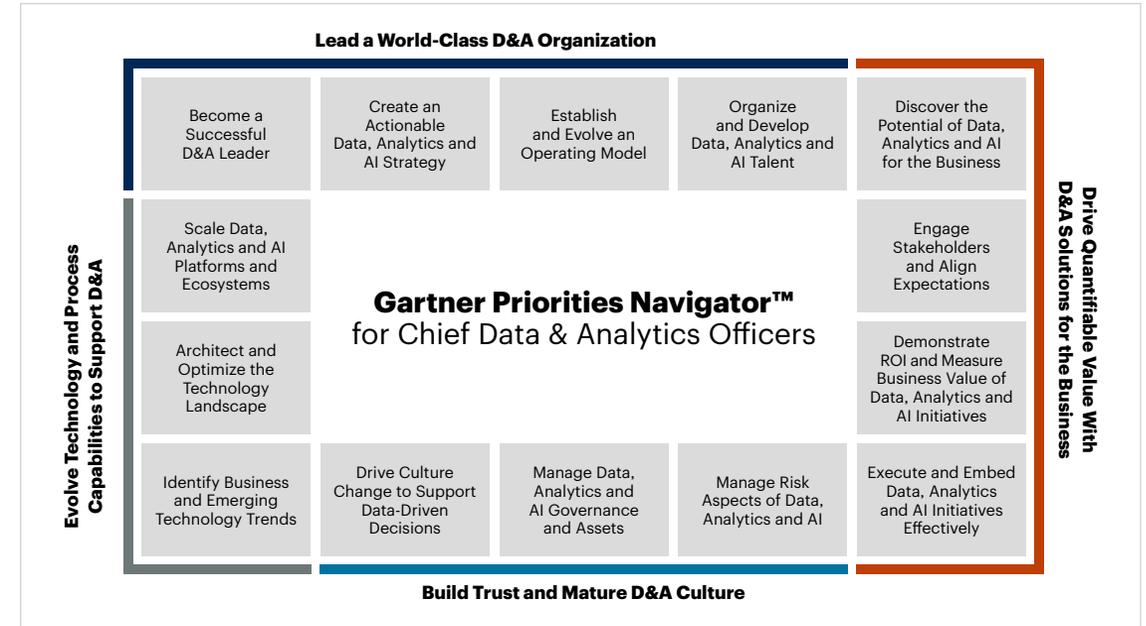
Gartner for Chief Data & Analytics Officers

Gartner offers insights, tools and guidance to help CDAOs address four essential needs: lead a world-class D&A organization, drive quantifiable value with D&A solutions for the business, build trust and mature D&A culture, and evolve technology and process capabilities to support D&A.

Source: Gartner

Actionable, objective insights

Explore these additional complimentary resources and tools
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Guide

Get AI Ready — What IT Leaders Need to
Know and Do

Ready your enterprise to capture AI opportunities and
bolster your cybersecurity.

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With Data, Analytics and AI

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