Gartner®

Top Strategic Technology Trends 2024

Gartner Top 10 Strategic Technology Trends **2024**

1. AI as Partner: AI Trust, Risk and Security Management (AI TRiSM)
2. Be Safe: Continuous Threat Exposure Management (CTEM)
3. Protect the Future: Sustainable Technology
4. Developer-Driven Self-Service: Platform Engineering
5. Accelerate Creation: AI-Augmented Development
6. Tailor Your Tailor's Work: Industry Cloud Platforms
7. Optimize Decision-Making: Intelligent Applications
8. Power AND Responsibility: Democratized Generative AI
9. Push the Pioneers: Augmented Connected Workforce
10. Buyers With Byte(s): Machine Customers

Tech trends research helps you prioritize your investments in the age of AI

In the fast-evolving age of artificial intelligence (AI), these innovations can help your organization build and protect itself while generating value.

Some are driven by AI; others help you to operate and grow effectively and safely as customer expectations and business models evolve with AI.

You may have pioneered some of these technologies already; others may be new, but all help you establish the infrastructure, governance and tools that your organization and its employees need as we move toward enhanced resilience and autonomic activities. Done right, these technologies deliver benefits like:

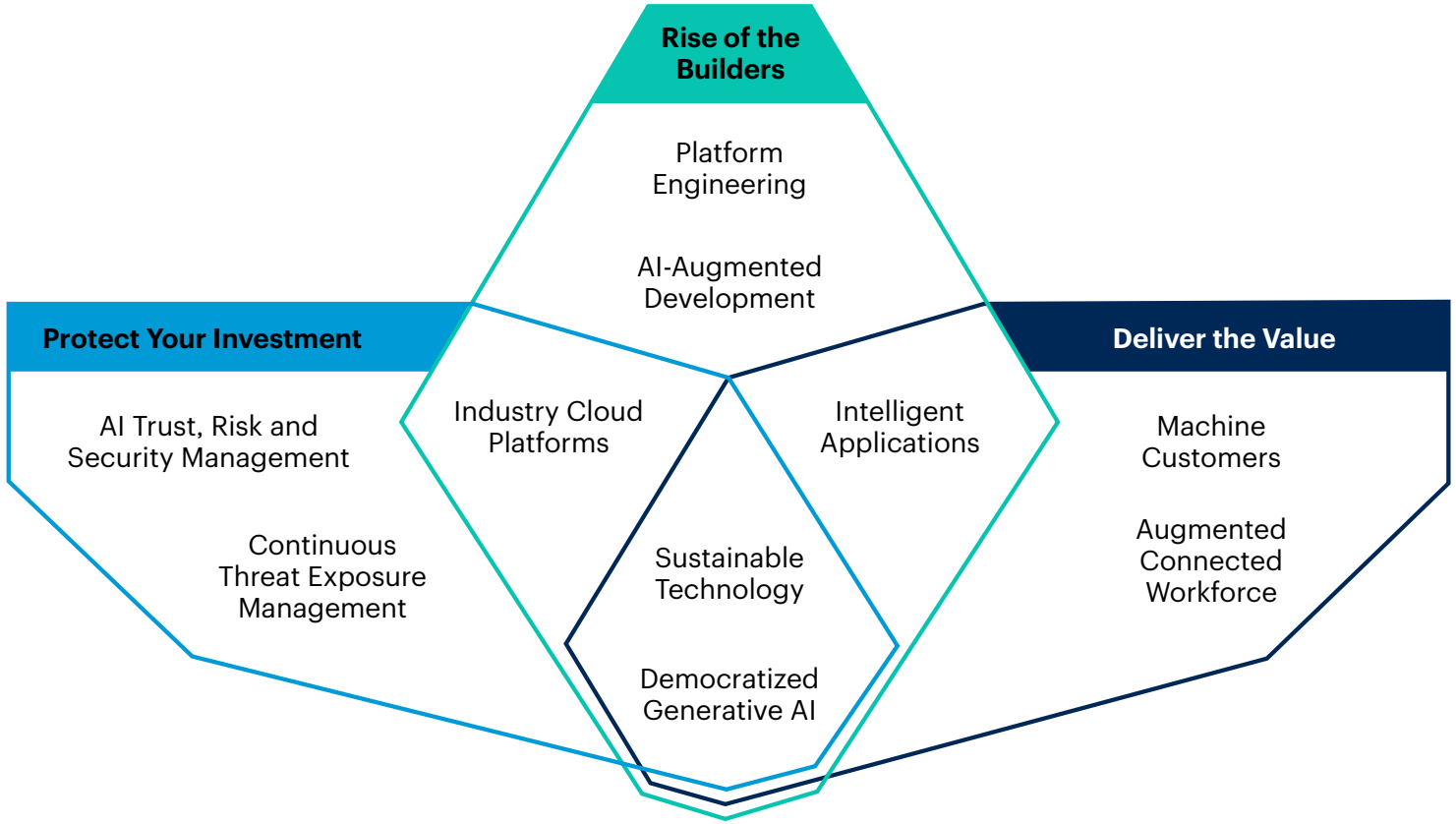
- Trust and confidence that you can use AI safely
- Sustainable activities within the ecosystem in which you operate
- Dedicated technologies for specific tasks, industries and functions
- More speed and productivity with minimum extra investment or effort
- Greater value for both internal and external stakeholders

Whether and when you adopt these technologies depends first and foremost on your organization's business goals and your current starting position. Without delivering on business goals, you are not delivering true value.

Bart Willemsen
VP Analyst, Gartner

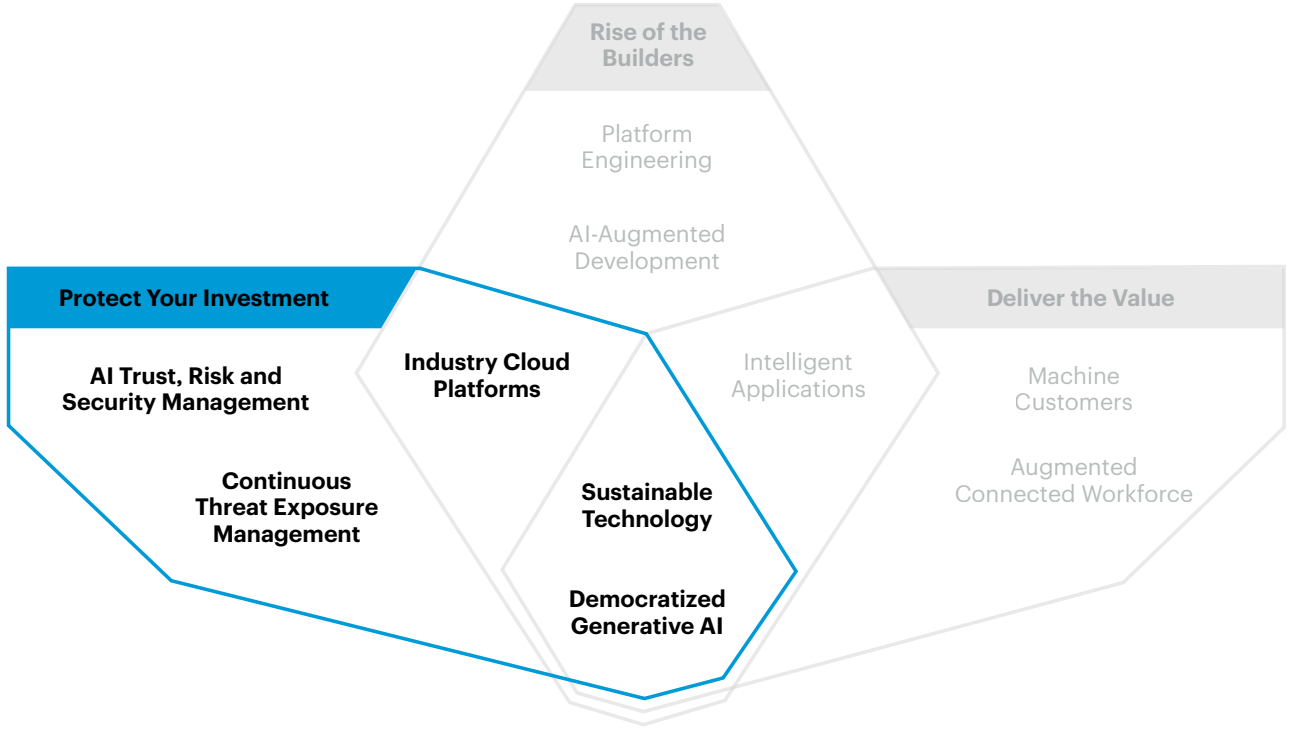
Build and protect your organization while generating value

Gartner expects these 10 trends — which each fall into one or more categories — to factor into many business and technology decisions over the next 36 months. Your business goals will determine which you plan to leverage, and when.



Protect your investment

Secure the benefits from past and future strategic technology decisions to make them last.



What to do

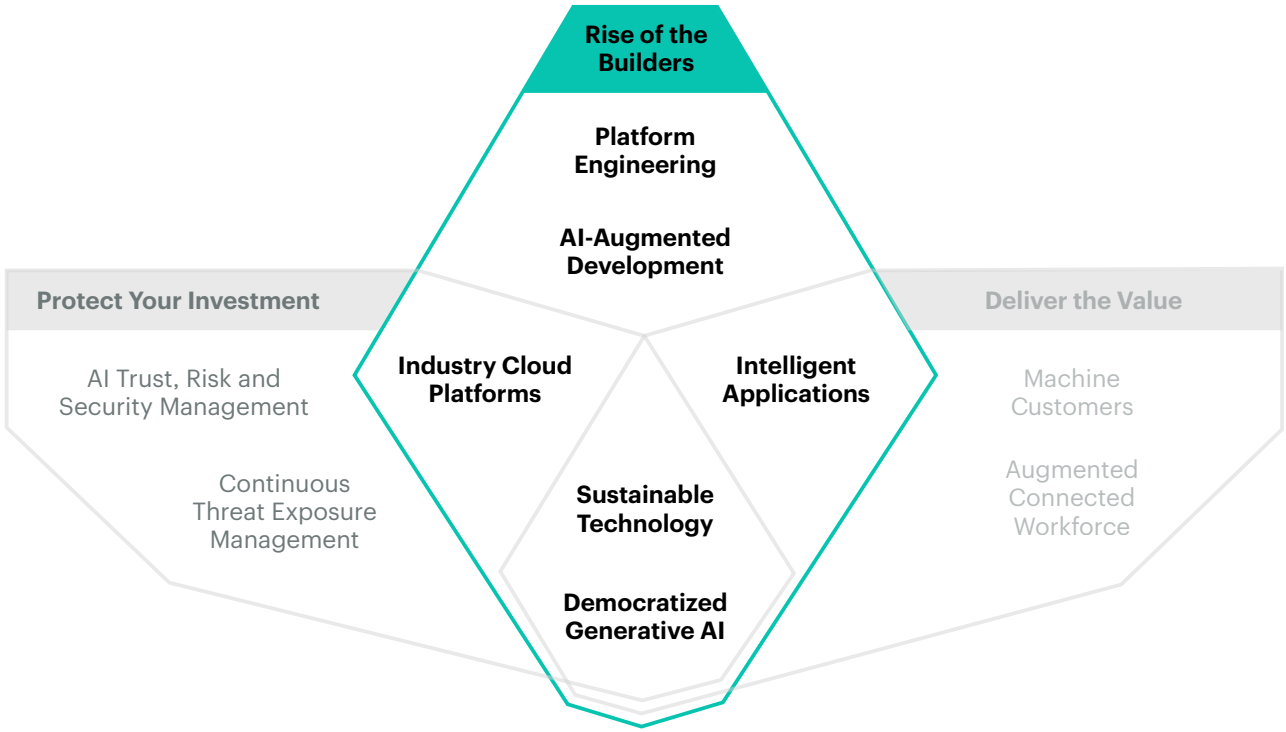
- **Be deliberate** — the time for unbridled/ undirected experimentation is no more.
- Include investment in protective measures when calculating **perceived ROI.**
- Tailor developments with distribution in mind while **securing your rights.**

In Action: AI TRiSM

Fidelity Investments deployed hundreds of AI models through a model operations framework. It followed detailed control steps to consistently monitor deployments for potential problems, such as drift, enabling Fidelity to respond to them before the need for escalation. As a result, Fidelity increased model-to-production speed by 100% and reduced the time to find and resolve issues by 80% (cutting it from weeks to hours).

Rise of the builders

Empower your people and developers to build solutions using the right technology for each function.



What to do

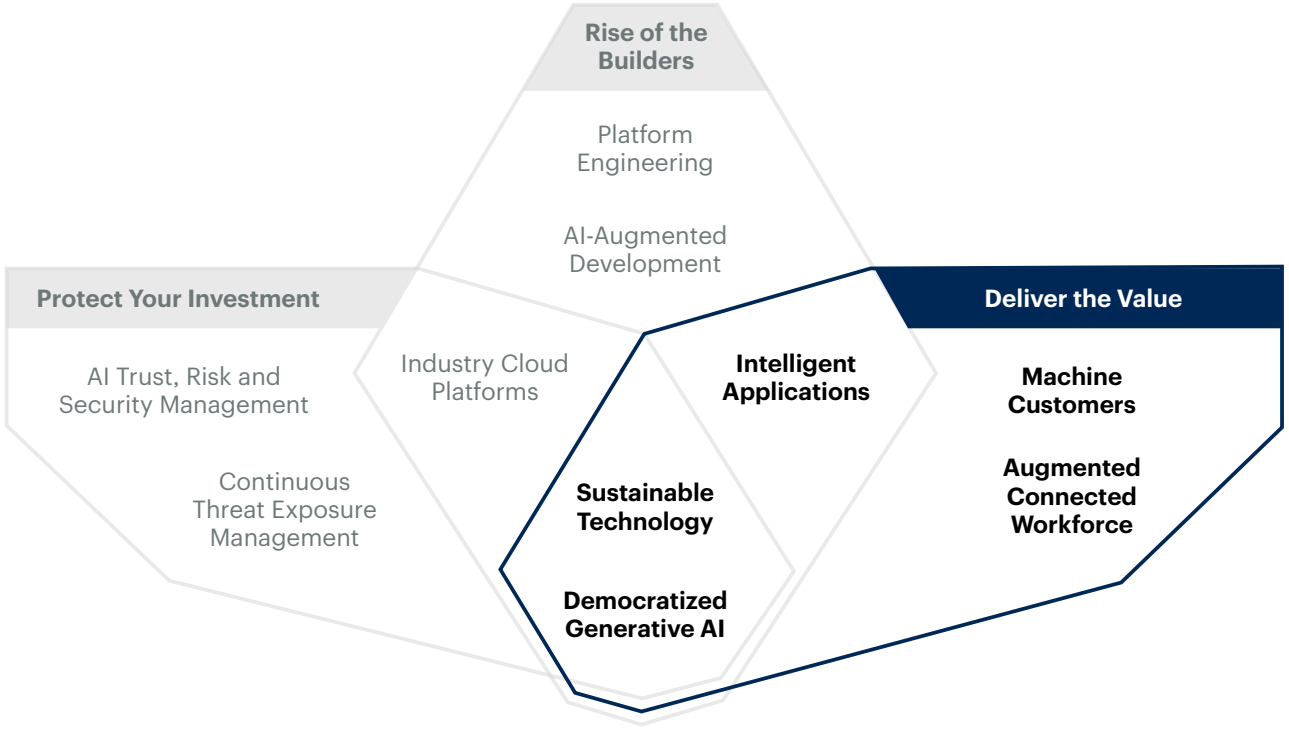
- Use technology **benefitting YOU** (and your specialists).
- Develop a roadmap for allowing **nonspecialists to create,** as well.
- Work closely with business stakeholders to **determine scope and capability.**

In Action: Platform Engineering

BP has enabled its employees to create their own solutions with limited involvement from IT. BP developed a broad portfolio of digital platforms to match its users' capabilities and needs. It automated security testing, component scanning and licensing, and release automation.

Deliver the value

Commit to a cycle of refining and accelerating value optimization while maintaining operational excellence.



What to do

- Make **continuous adjustments** to meet internal and external customer demand, which makes this a virtuous cycle.
- Include approaches for **algorithm-based customers** and your internal staff.
- Facilitate controlled access to quickly changing **digital tools.**

In Action: Augmented Connected Workforce

Merck has a dedicated program for extended reality designed to maximize the use of employee time. The program was developed with HR and L&D partners, business unit leads and operations. Frontline workers champion use cases across knowledge transfer, testing and training. Each manufacturing site is provided with templates to guide deployment and change management. As a result, 70% of subject matter expert time was redirected from non-value-added work, and an average of two weeks was saved on training and time to competence.

What to know about the Top 10 Strategic Technology Trends

Learn more about each trend and how to get started.

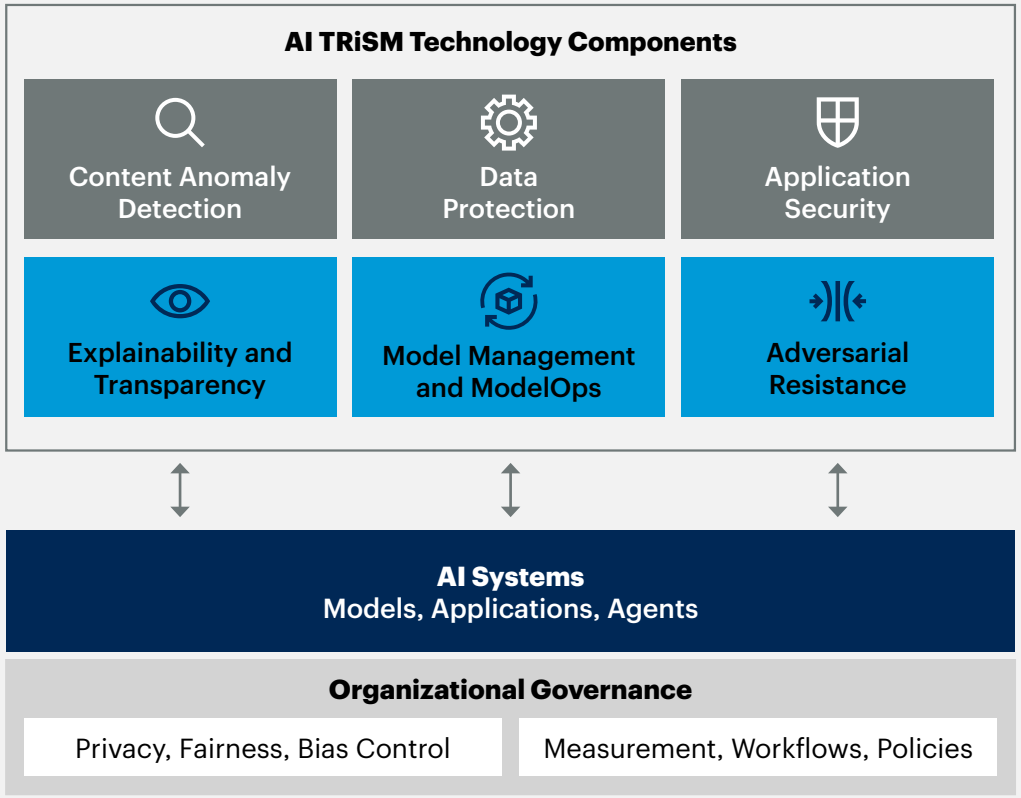
1

AI Trust, Risk and Security Management

(AI TRiSM)

Supports AI model governance, trustworthiness, fairness, reliability, robustness, transparency and data protection

AI TRiSM Technology



AI system users need to acquire this tech to fill gaps in builder/owner solutions

Responsibilities exclusive to builder/owner

Source: Gartner

1
AI TRiSM

Gartner predicts

By 2026, enterprises that apply TRiSM controls to AI applications will increase accuracy of their decision making by eliminating 80% of faulty and illegitimate information.

Source: Gartner

Why trending?

- Those who actively use AI TRiSM controls move more of their AI projects into production, achieve more business value, and experience enhanced model precision and consistency, than those who don't.
- Organizations that use AI models managed with TRiSM can enhance bias control in decisions while increasing fairness in AI-driven applications.
- AI model explainability must be constantly tested through model monitoring. This ensures that original explanations and interpretations of AI models remain active during model operations.

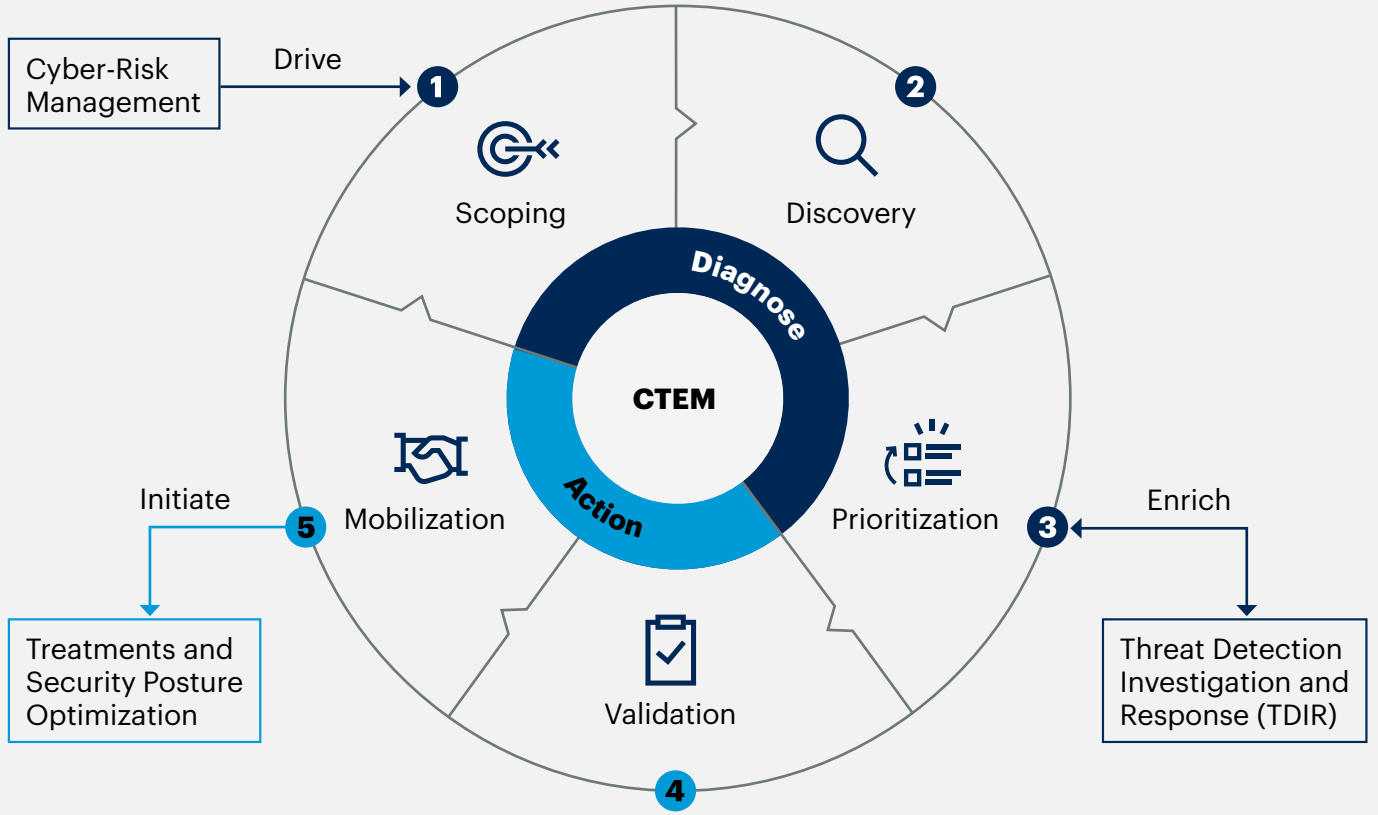
How to get started

- Set up a task force or dedicated unit to manage your AI TRiSM efforts.
- Work across your organization to effectively manage best-of-breed toolsets as part of a comprehensive AI TRiSM program.
- Define acceptable use policies, and establish a system to methodically record and approve access to AI models and attestations of actual uses.

2 Continuous Threat Exposure Management (CTEM)

A pragmatic and systemic approach to continuously adjust cybersecurity optimization priorities

Continuous Threat Exposure Management



Source: Gartner

2
CTEM

Gartner predicts

By 2026, organizations prioritizing their security investments based on a CTEM program will realize a two-thirds reduction in breaches.

Source: Gartner

Why trending?

- This approach to security aligns exposure assessment cycles with specific business projects or critical threat vectors.
- Both patchable (vulnerabilities) and unpatchable exposures are addressed.
- The exposure and remediation priorities of the enterprise are validated by weighing in the attacker's view and testing the effectiveness of security controls.
- Expected outcomes from tactical and technical response are shifted to evidence-based security optimizations supported by improved cross-team mobilization.

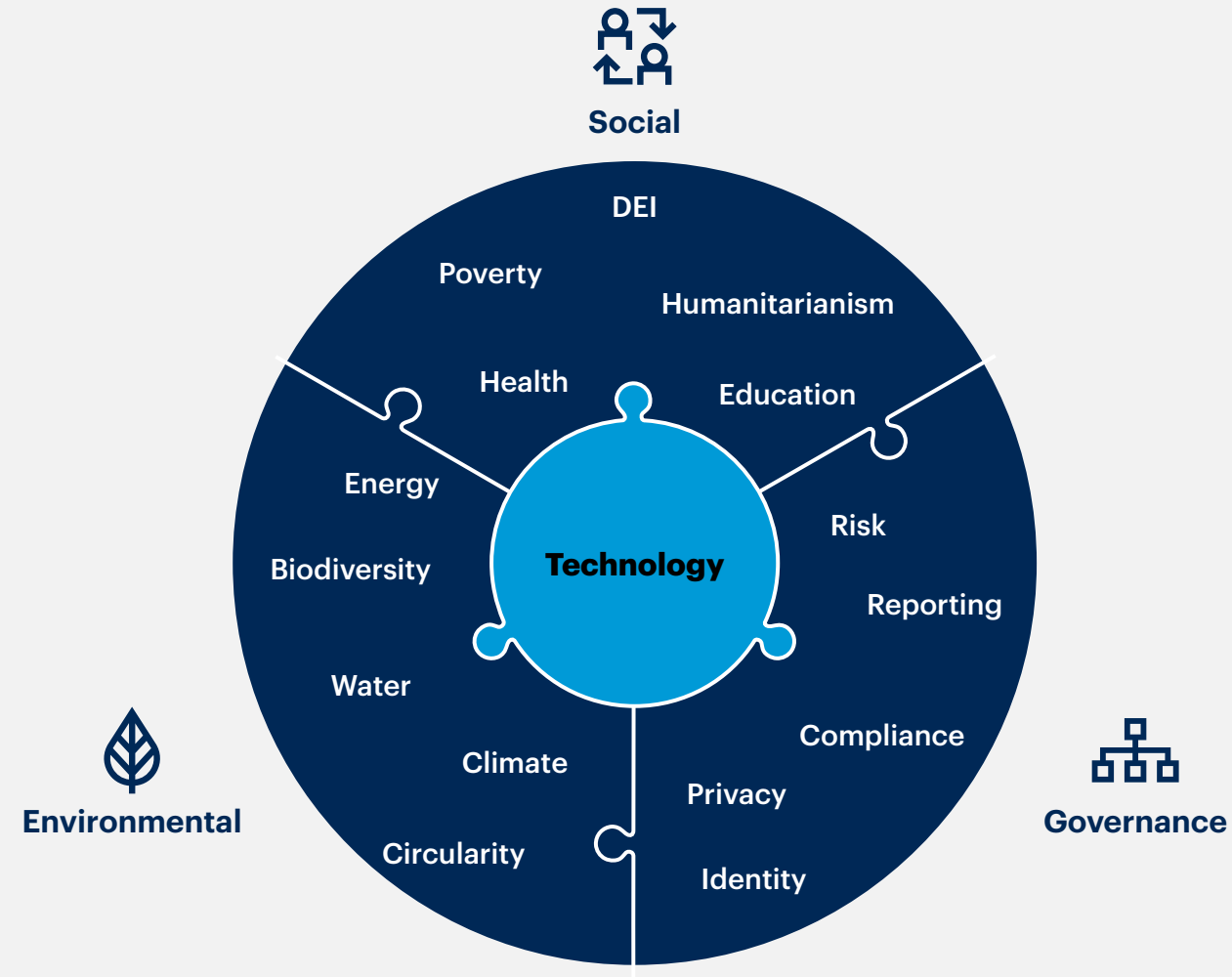
How to get started

- Integrate CTEM consistently with risk awareness and management programs to provide a relatable business-led focus and business value-based prioritization of exposure mitigation.
- When expanding a vulnerability management program, get momentum with operational wins that frequently lie in improving the prioritization of findings through validation techniques.
- Embrace cybersecurity validation technologies to augment your existing prioritization workflows and enhance cybersecurity readiness.

3 Sustainable Technology

A framework of digital solutions used to enable environmental, social and governance (ESG) outcomes that support long-term ecological balance and human rights

Sustainable Technology Framework



Source: Gartner

3 Sustainable Technology

Gartner predicts

By 2027, 25% of CIOs will have compensation linked to their sustainable technology impact.

Source: Gartner

Why trending?

- Environmental technologies prevent, mitigate and adapt to risks in the natural world.
- Social technologies improve human rights outcomes, well-being and prosperity.
- Governance technologies strengthen business conduct, oversight and capacity building.
- Sustainable technologies provide insights necessary for improving overall performance.

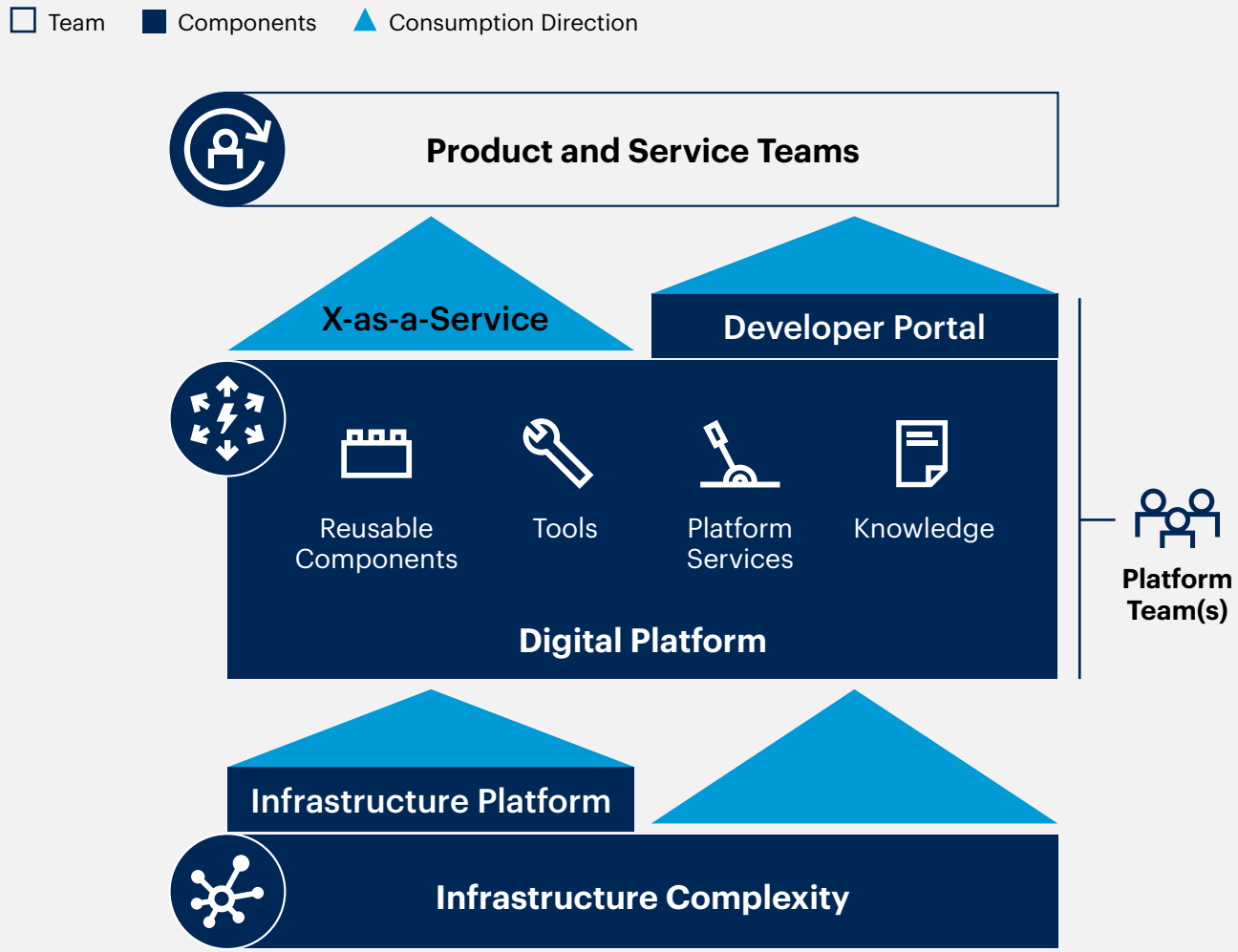
How to get started

- Select technologies that will help drive sustainability in your industry and that are identified as priority for the business and key stakeholders. This may include cloud services, AI and others.
- Involve your ethics board in developing a roadmap for structured decision making. Instead of finding trade-offs, pursue optimization of any value in favor of improved overall organizational sustainability.
- Use the Gartner Hype Cycle™ for Sustainability, 2023, to find the right balance between the well-established and leading-edge technologies for your enterprise sustainability.

4 Platform Engineering

The discipline of building and operating self-service internal platforms — each platform is a layer, created and maintained by a dedicated product team, designed to support the needs of its users by interfacing with tools and processes

Diagram of Platform Engineering



Source: Gartner

4 Platform Engineering

Gartner predicts

By 2026, 80% of software engineering organizations will establish platform teams as internal providers of reusable services, components and tools for application delivery.

Source: Gartner

Why trending?

- This practice optimizes the developer experience and accelerates delivery of business value.
- It reduces cognitive load through improvement of the developer experience and productivity.
- Developers' abilities to independently run, manage and develop their applications is improved, while ensuring reliability and security.
- Key talent retention is also improved.

How to get started

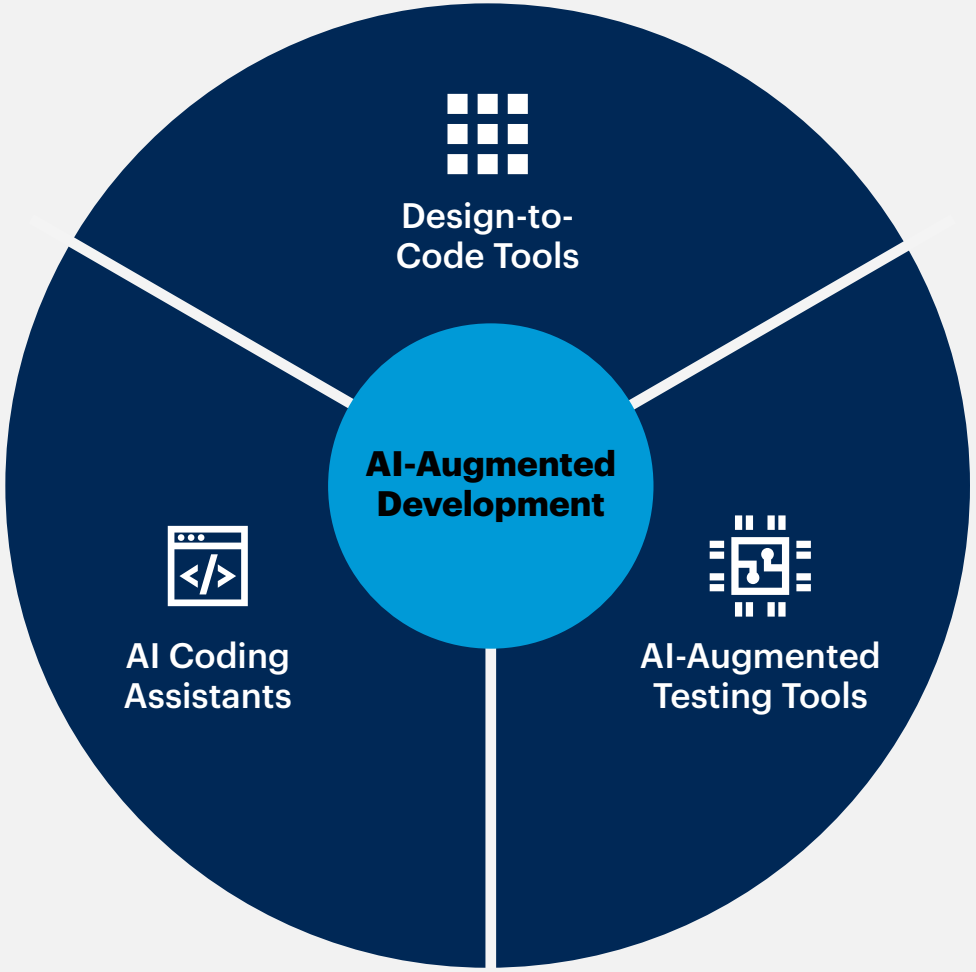
- Curate and build internal platforms with reusable, composable, configurable platform components, knowledge and services.
- Treat the platform as a product. Work with end users to identify and prioritize whatever technical capabilities, tools and processes are most useful to them, and then build a platform around that.
- Build a product management culture, with routine collaboration between platform engineers and the end users they serve, where they can share bidirectional feedback in a safe and productive environment.

5

AI-Augmented Development

The use of AI technologies, such as generative AI and machine learning (ML), to aid software engineers in creating, testing and delivering applications

3 Components of AI-Augmented Development



Source: Gartner

5
AI-Augmented Development

Gartner predicts

By 2028, 75% of enterprise software engineers will use AI coding assistants, up from less than 10% in early 2023.

Source: Gartner

Why trending?

- AI-augmented development tools integrate with an engineer's development environment to produce application code, translate legacy code to modern languages, enable design-to-code transformation and enhance application testing capabilities.
- AI-assisted software engineering improves developer productivity and enables development teams to address this increasing demand for software to run the business.
- AI-infused development tools allow software engineers to spend less time writing code, facilitating an increased focus on higher level activities, such as the design and composition of compelling business applications.

How to get started

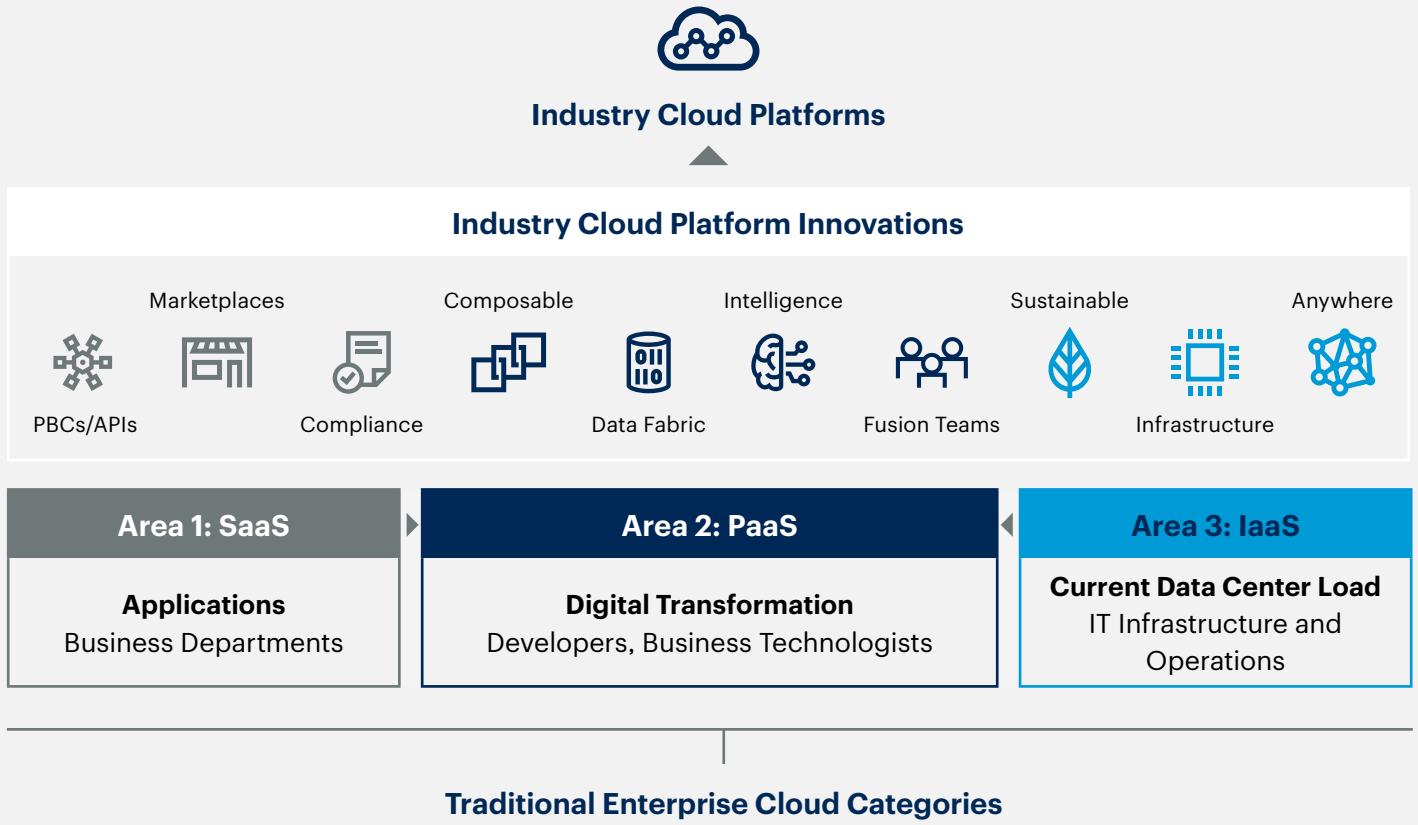
- Establish a team of senior software engineers who can evaluate AI code generation tools to determine the best way to deploy and use these tools.
- Evaluate and deploy AI testing tools, as these will become mandatory elements of your application testing processes.
- Select or establish a design system with reusable UI design and front-end components, and enable this design system with design-to-code capabilities.

6

Industry Cloud Platforms

Address industry-relevant business outcomes by combining underlying SaaS, PaaS and IaaS services into a whole product offering with composable capabilities

Industry Cloud Platform Evolution



Source: Gartner

6 Industry Cloud Platforms

Gartner predicts

By 2027, more than 50% of enterprises will use industry cloud platforms to accelerate their business initiatives, up from less than 15% in 2023.

Source: Gartner

Why trending?

- Industry cloud platforms (ICPs) are tailored cloud proposals specific to your industry and can further be tailored to your individual organization's needs.
- IT leaders can use the composability of these platforms to gain the adaptability and agility to respond to accelerating disruption in their organization's industry.
- ICPs deliver on industry-specific outcomes that are relevant to the mission-critical priorities of the vertical segment.
- Technology and IT leaders can use the composable approach that ICPs take toward creating industrywide capabilities by (re)composing a differentiating proposition, which is unique for their customer and partner ecosystem.

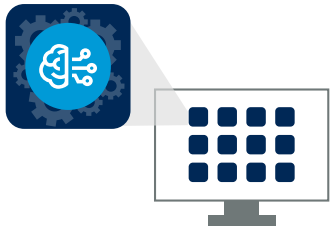
How to get started

- Use ICPs to complement the existing portfolio of applications (like an exoskeleton) by introducing new capabilities that add significant value, rather than start by replacing existing capabilities.
- Create rules for when ICP functions should be deployed as production platforms to optimize and modernize by enhancing existing processes, and when these functions should be actively restructured to enable more differentiated transformation and innovation initiatives.
- Begin building composability capabilities by engaging enterprise technologists and fusion teams to build enterprisewide understanding and support for the ICP journey.

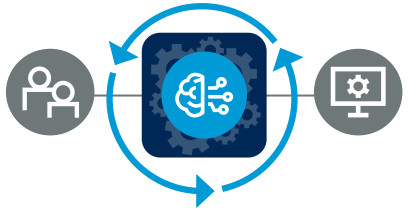
7 Intelligent Applications

Consumer or business applications that are augmented with AI and various connected data from transactions and external sources

Intelligent Applications



Intelligence is a foundational capability for applications.



Intelligent applications better automate and augment work across a broader range of use cases.

Applications do more, much of which is done independently either by themselves or with other applications.

Source: Gartner

7 Intelligent Applications

Gartner predicts

By 2026, 30% of new apps will use AI to drive personalized adaptive user interfaces, up from under 5% today.

Source: Gartner

Why trending?

- Generative AI can truly make apps more intelligent — transforming the experience of customers, users, product owners, architects and developers.
- Infused with data from transactions and external sources, intelligent applications push insights within apps business users already use, so they won't need separate business intelligence tools to assess and understand the state of their business.
- AI can add predictions or recommendations, instead of more procedural features, allowing apps to be tailored to the user, improving outcomes and advancing data-driven decision making.

How to get started

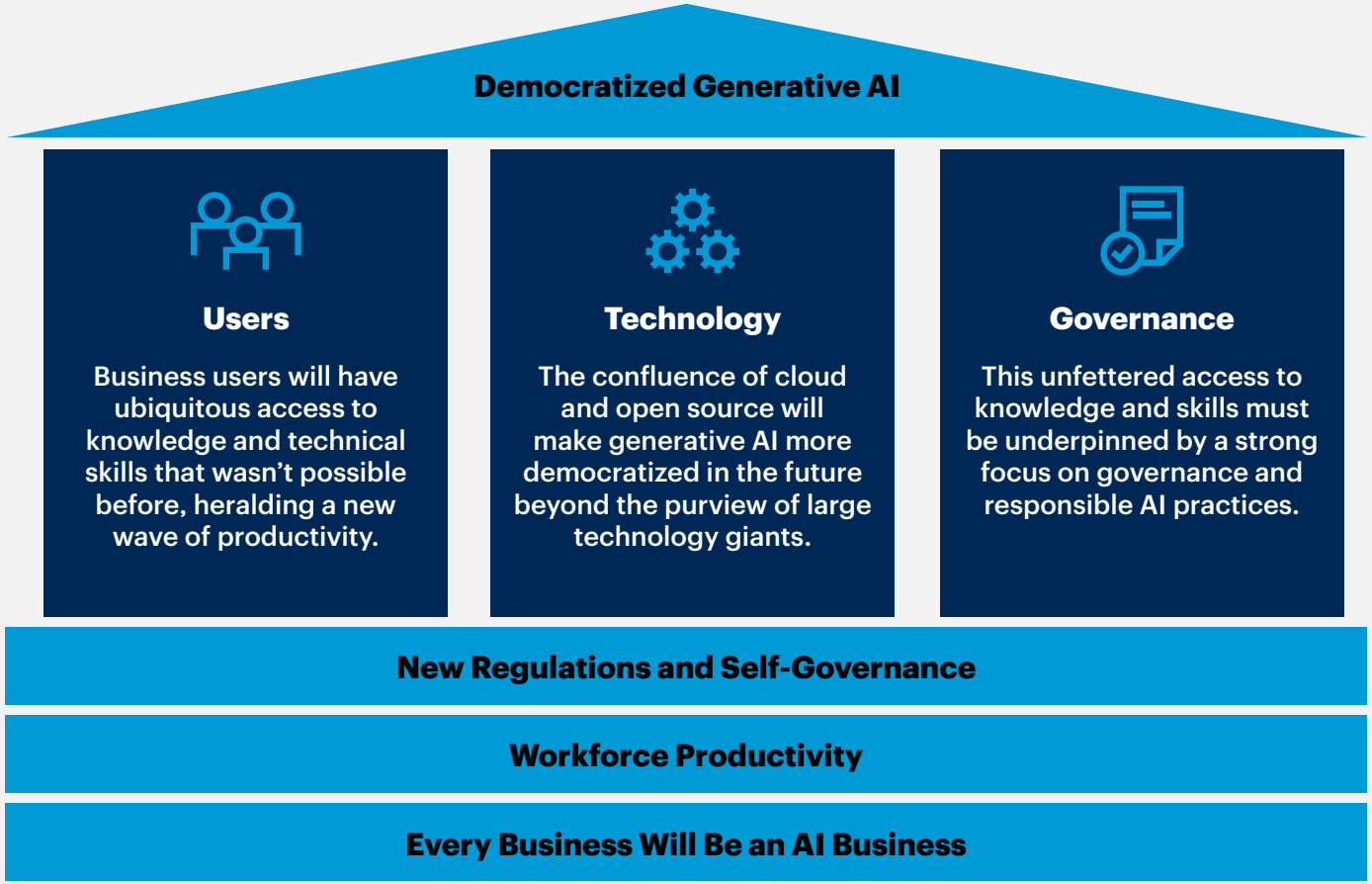
- Establish a center of excellence or similar team to capture, explain, catalog, map and monitor the breadth and depth of intelligence as a capability for your apps.
- Assess how intelligent applications transform the scope, purpose and functionality of your enterprise apps.
- Establish a clear and shared understanding of intelligent applications and their potential use cases throughout your organization.
- Evaluate the impact on your wider portfolio of apps and services as you expand the range and scope of intelligent applications in the medium to long term.

8

Democratized Generative AI

The ability to create net new content (images, speech, text and more) and its widespread availability will democratize access to information and skills, making it one of the most disruptive trends of this decade

Democratized Generative AI



Source: Gartner

8 Democratized Generative AI

Gartner predicts

By 2026, more than 80% of enterprises will have used generative AI APIs, models and/or deployed generative AI-enabled applications in production environments, an increase from fewer than 5% today.

Source: Gartner

Why trending?

- Democratizing access to generative AI across the organization offers the potential to automate a broad range of tasks, boosting productivity, reducing costs and offering new opportunities for growth.
- It has the ability to transform the way virtually all enterprises compete and do work.
- Democratization of information and skills across a broad set of roles and business functions will follow.
- Vast sources of information — both internal and external — can be made accessible and available to business users via natural language conversational interfaces.

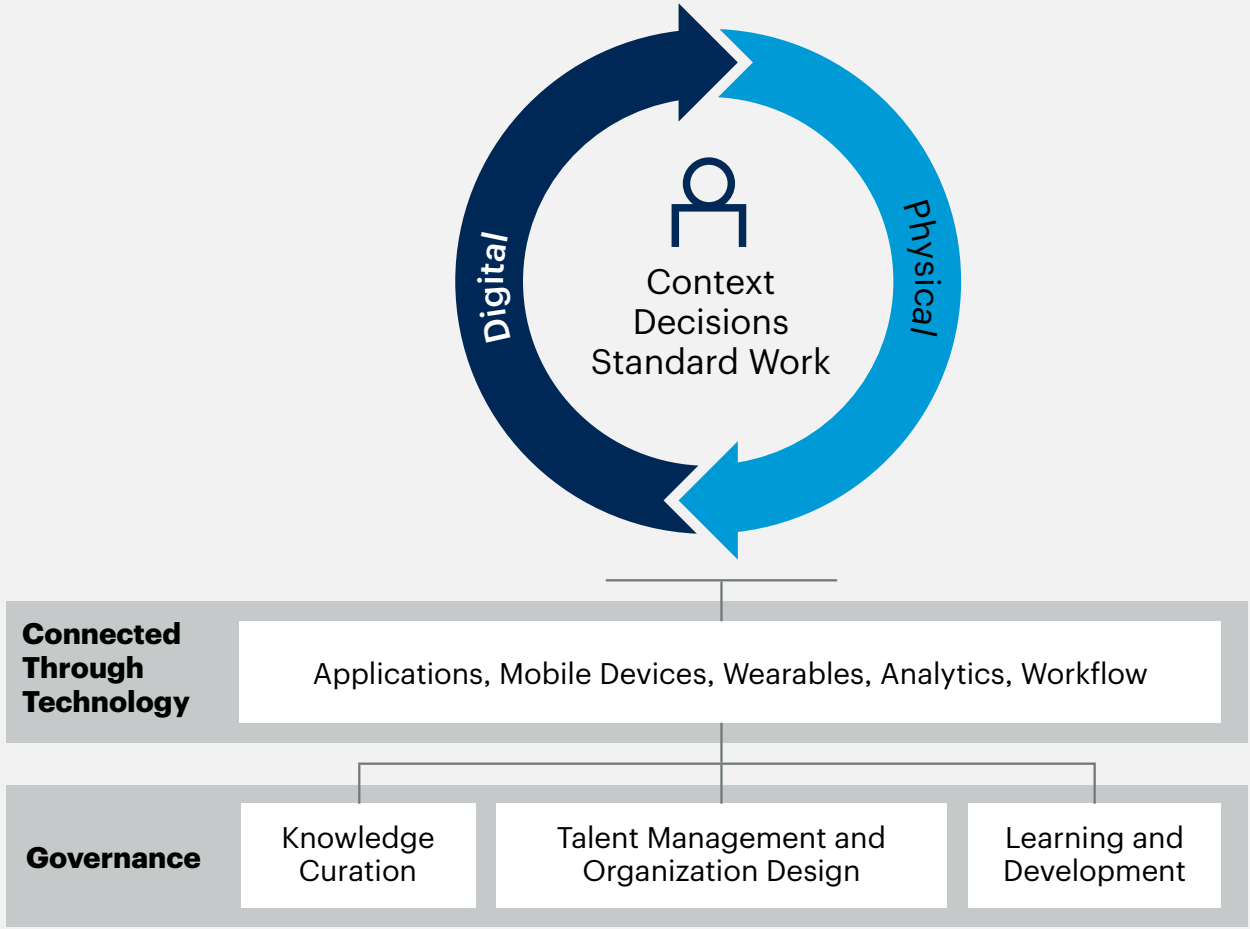
How to get started

- Create a prioritized matrix of generative AI use cases based on technical feasibility and tangible business value, and clearly outline a time frame for piloting, deployment and production across these use cases.
- Employ a change management approach that prioritizes employee training and well-being by equipping them with the knowledge to use generative AI tools safely and confidently, while reassuring them on how these tools will be an assistant to them in automating routine tasks.
- Build a portfolio of quick wins and differentiating and transformational generative AI use cases that combine initiatives with hard ROI and those delivering benefits and competitive advantage that are difficult to initially quantify directly in financial terms.

9 Augmented Connected Workforce

A strategy to optimize the value delivered by human staff by establishing a connective tissue that optimizes use of intelligent technology, workforce analytics and skill augmentation to accelerate and scale talent building

A Framework for the Augmented Connected Worker



Source: Gartner

9 Augmented Connected Workforce

Gartner predicts

Through 2027, 25% of CIOs will use augmented connected workforce initiatives to reduce time to competency by 50% for key roles.

Source: Gartner

Why trending?

- This strategy accelerates new (digital) skills required for work — across all job types.
- It provides the opportunity for digital tools to reduce time to competency for new hires.
- Smarter work will be made possible through advancements in workplace automation and AI, requiring the workforce to be increasingly able to manage complex issues.

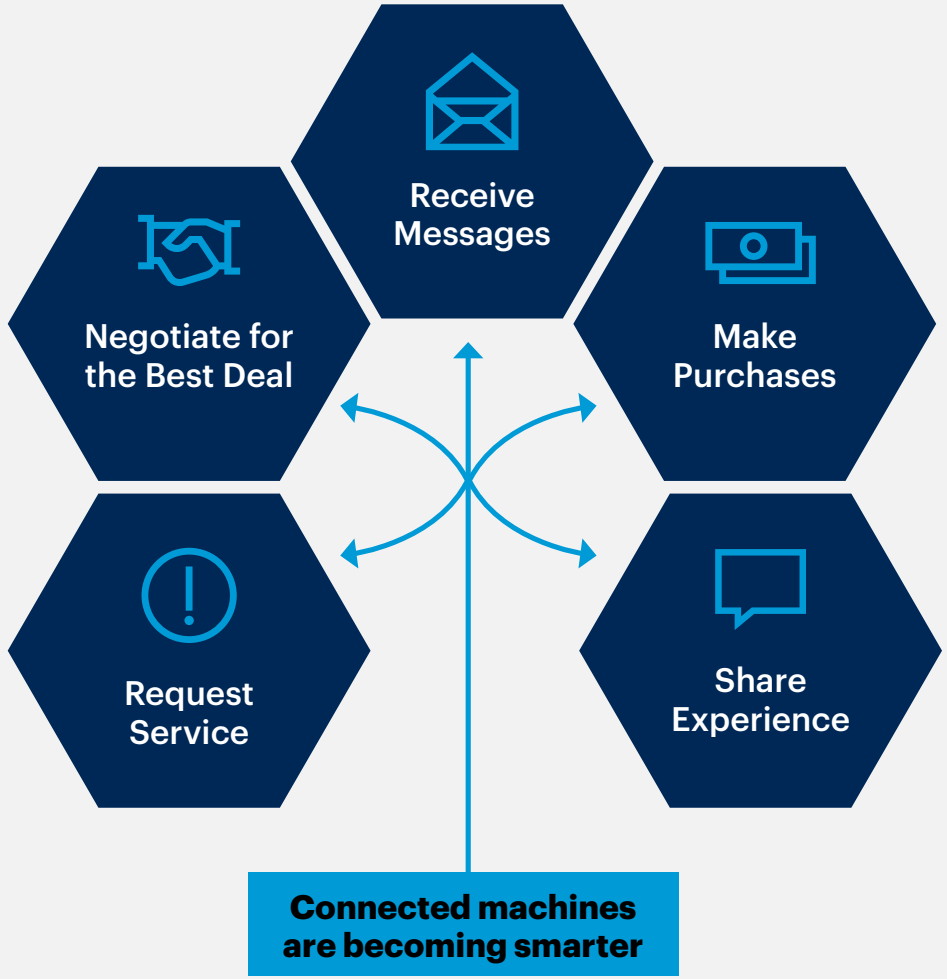
How to get started

- Prioritize time to competency for inexperienced workers who perform in highly complex environments — quantify results such as faster onboarding.
- Create a cross-functional program consisting of leaders from IT, HR, sales, customer service and supply chain; as a group, decide which workforce segments to prioritize investment in and which outcomes to pursue.
- Design employee experiences that are augmented with intelligent technology.
- Create insights and guided recommendations that help employees accomplish what would otherwise be impossible within existing constraints of time and cognitive capacity.

10 Machine Customers

Nonhuman economic actors that purchase goods and services in exchange for payment

5 Behaviors of Human and Machine Customers



Source: Gartner

10 Machine Customers

Gartner predicts

By 2028, machine customers will render 20% of human-readable digital storefronts obsolete.

Source: Gartner

Why trending?

- For the first time in human history, companies will be able to make their own customers.
- By 2028, 15 billion connected products will exist with the potential to behave as customers, with billions more to follow in the coming years.
- They will impact trillions of dollars in purchases by 2030 and eventually become more significant than the arrival of digital commerce.

How to get started

- Create a Machine Customer Investigation team by enlisting senior representatives from strategy, IT, product development, sales, marketing, supply chain and service.
- Create one to three scenarios that explore the market opportunities, such as the Internet-of-Things-enabled products that might arise in the situations/activities where customers use your products and services today.
- Start architecting the data sources and API platform needed to serve machine customers that should not or will not use your human-readable digital storefront.

Next Steps

Making strategic technology decisions that drive business goals

Technology decisions to make in the next 3 years

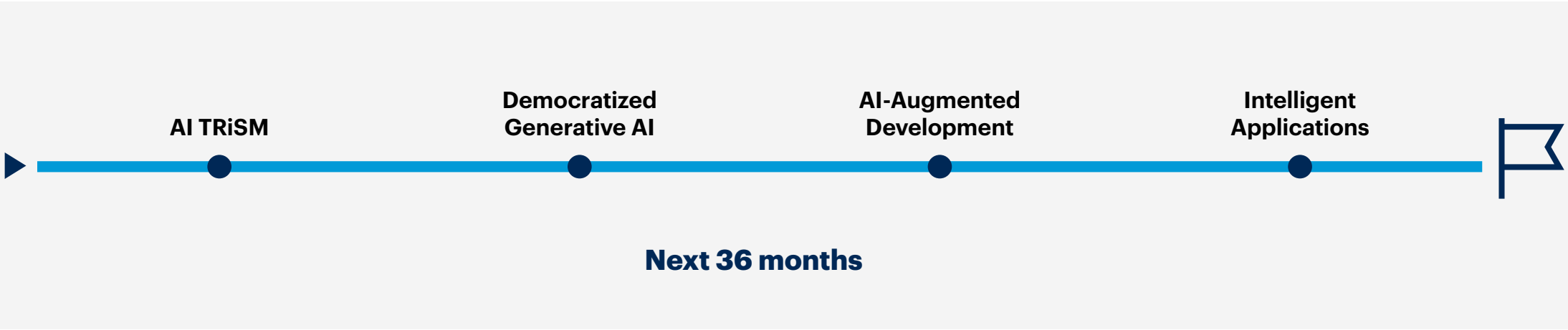
Your next steps will depend on which innovations are most likely to impact your ability to achieve business goals and how soon you can begin to adopt or plan to adopt them.

The fictive example below illustrates the rollout of various innovations a CIO might plan to deliver on a stated business outcome.

For more on how to make strategic technology decisions, see Gartner Strategic Planning Essentials for IT.

Sample business goal and timeline

Accelerate digital and become more AI-driven



How does Gartner select the top strategic technology trends?

Each year, Gartner selects top trends that are important strategically because they are expected to:

- Significantly impact or be impacted by a technology
- Require a response from C-suite executives responsible for digital and/or IT strategy
- Demand a response (either a decision to act or action itself) in the next 0-36 months

Gartner expects these trends to create an imperative to act among at least 20% of our IT clients, making them broadly applicable to digital, IT and technology leaders and the strategic ambitions of many CEOs.

Different trends will impact different organizations in different ways, so first evaluate which of these trends present opportunities and risks to your organization's strategic direction.

This will help you develop relevant roadmaps to enable reliable and sustainable business growth and outperform the competition.

Actionable, objective insight

Explore these additional complimentary resources and tools for IT leaders:

eBook

2024 CIO Agenda

Discover the top priorities CIOs must address in 2024.

Download eBook

Roadmap

The IT Roadmap for Digital Business Transformation

Avoid pitfalls and lead smart, effective digital transformations.

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Template

Build an IT Strategic Plan

Turn strategy into action with this one-page IT strategic planning template.

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Tool

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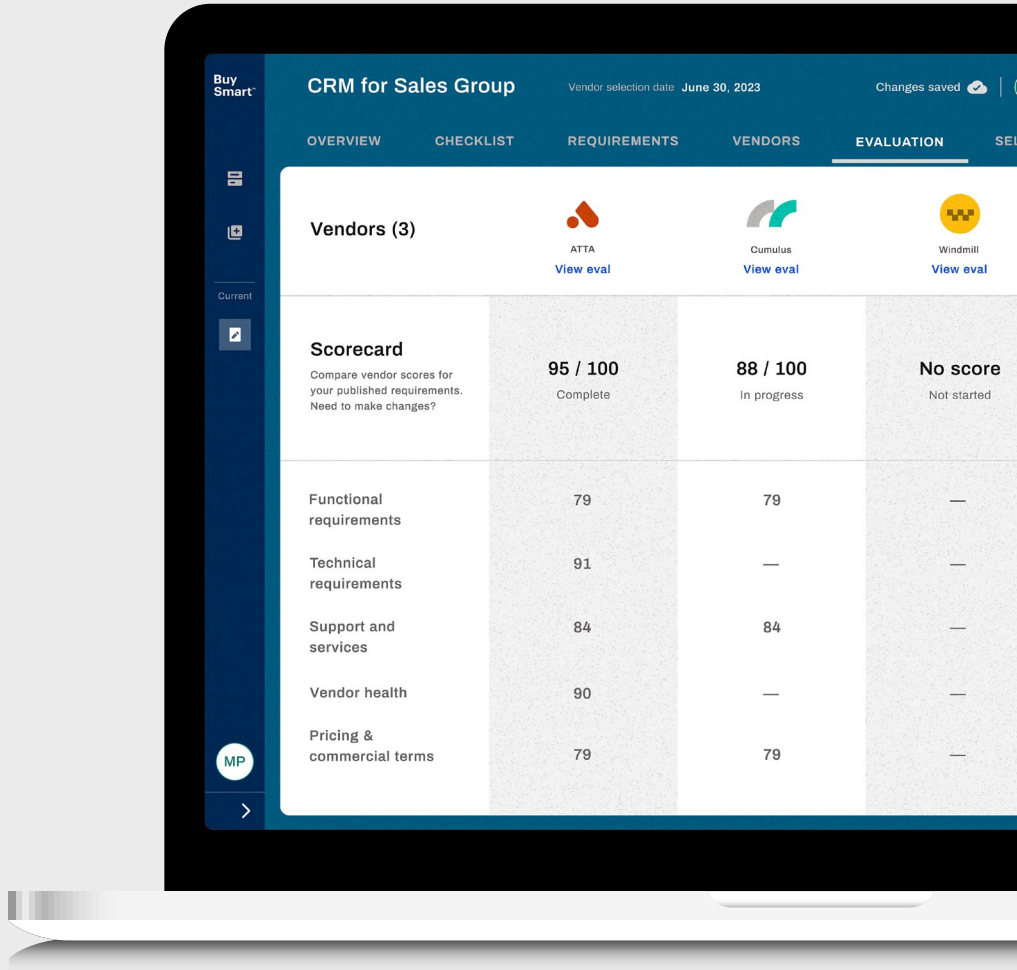
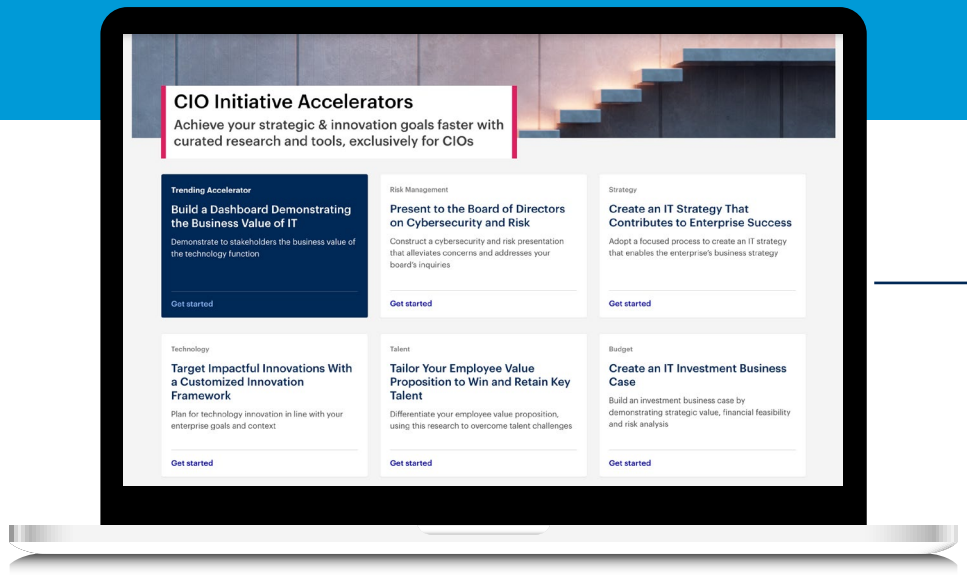


Learn More

Discover Evaluate Select Optimize

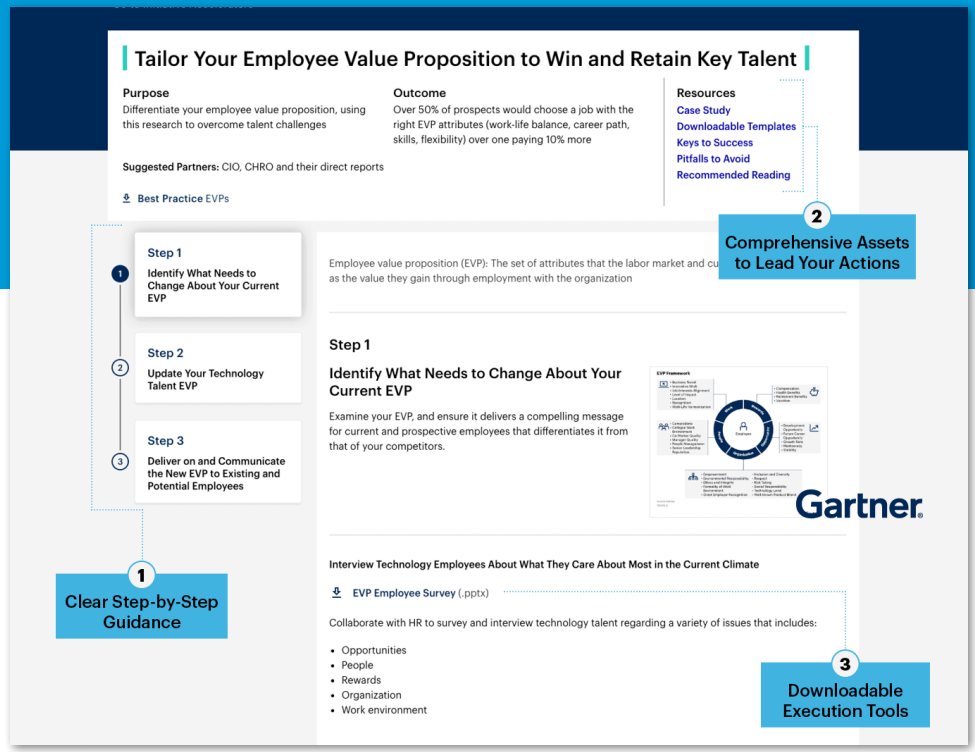
Gartner CIO Initiative Accelerators

These thoughtfully curated, self-service tools provide step-by-step guidance on execution, complete with downloadable templates, case studies and quick lessons — all within one unified experience.



Each Initiative Accelerator offers ...

- Clear step-by-step guidance
- Comprehensive assets to guide your actions
- Downloadable execution tools
- A thoughtfully curated, self-service experience



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