Top Strategic Technology Trends for 2025

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By Gene Alvarez, Tom Coshow, **and 11 more**

Initiatives: Technology Innovation and Strategy

We've identified the 10 strategic technology trends that will have the most impact in the next five years and beyond — trends that span AI imperatives and risks, new frontiers of computing and human-machine synergy. Tracking these will help IT leaders shape the future with responsible innovation.

Overview

Opportunities

- Agentic AI brings imperatives and risks and will enable organizations to transform the nature and efficiency of work, processes and decision making. However, it will also drive the need for advancements in AI governance technology. The technology created to defend organizations from the effects of disinformation will protect people, organizations and society.

- New frontiers of computing keep expanding the potential for benefit but also bring threats. Quantum computing will break today's cryptography, exposing everyone to risk. Tiny, ultra-low-cost wireless tags and sensors will enable new business models and ecosystems. New energy-efficient compute models will meet the demand for more computing and sustainably. The growing numbers of computing models provide an opportunity for integration and orchestration to optimize the use of all models.

- Human-machine synergy is increasing, with the creation of next-level interactions between physical and virtual experiences. Robots that perform more than one function will integrate into humans' daily lives. Technology will bring the ability to directly access and improve thoughts and emotions for enhancing human cognition and performance, and bringing about new ways to help people thrive.

Recommendations

- Identify opportunities to add agentic AI to workflows where significant demand for scale and efficiency exists and adaptability is required. Ensure fairer AI systems by considering multiple perspectives when designing and evaluating AI methods. Include deepfake detection in systems such as identity verification.

- Develop policies to ease the transition to new cryptographic algorithms. Identify information blind spots and early opportunities to collect data from your physical environment using ambient intelligence. Use computing more efficiently by switching to greener cloud providers. Manage the complexity of using diverse computing models building a robust and scalable orchestration layer for provisioning and managing resources.

- Invest in the necessary infrastructure for spatial computing. Adopt a policy of "polyfunctionality by default" for all robot deployments. Set up proofs of concept for neurological enhancement solutions where you have applicable use cases.

What You Need to Know

Shape the Future With Responsible Innovation

Organizations face the challenge of continually having to innovate to meet business challenges and disruptions. As new technologies arise, they present many opportunities but increasingly bring ethical challenges and considerations. Organizations must act responsibly to balance innovation while retaining the trust of their customers, employees and partners. This research will help you shape the future for your organization with responsible and ethical innovation.

AI imperatives and risks abound as organizations move forward with AI agents. This, combined with other aspects of AI, will drive a need for AI governance platforms within organizations, enabling all to use AI responsibly and ethically.

Malicious actors using AI to accelerate the spread of disinformation can cause significant damage to an organization, its customers, partners and employees. Enterprises will need technologies to track the spread of information by, or about, their organization to assess the truth of that information and create trust. Organizations must also protect themselves from malicious actors using synthetic media to gain real-time access to their systems and spread misinformation.

New frontiers of computing are being created, requiring organizations to look differently at how they compute. As new security measures will be needed, information in the shadows today must become visible in the future.

Organizations will need to meet growing compute demand while lowering their carbon footprint. They also must integrate and orchestrate many compute models, operating them as one in the most efficient way to meet their rising computing needs.

In these new frontiers of computing, quantum computing threatens to break today's cryptology, exposing everyone to risk. A new cryptology is needed to protect organizations and society.

Tiny, ultra-low-cost wireless tags and sensors will make possible real-time, large-scale tagging, tracking and sensing — enabling new business models and ecosystems.

The increasing demand for computing and the lack of energy to support it drives the need for new energy-efficient compute models. The optimization of the growing numbers of new computing models working with all existing models will push organizations to focus on integration and orchestration of computing.

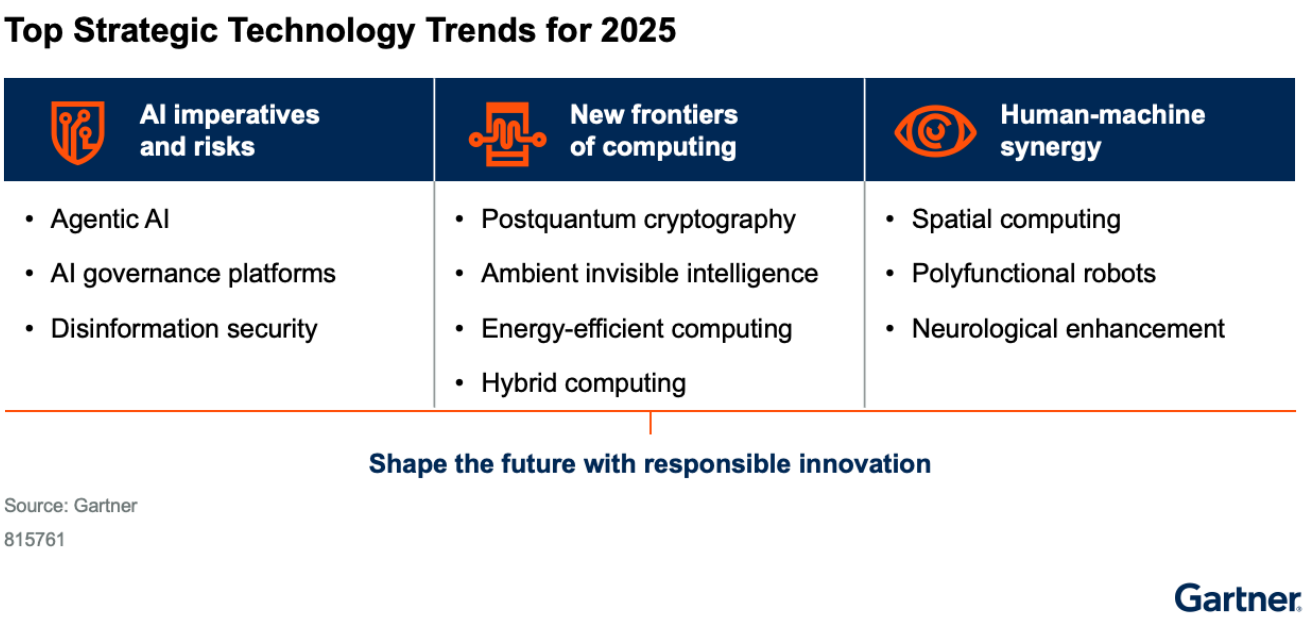
Advances in the way humans and machines work together are creating a new level of **human-machine synergy.** The creation of next-level interactions between physical and virtual experiences will bring together the physical and digital world through spatial computing.

Humans will have robots working side-by-side with them in the same environment and even can become teammates. Robots' ability to perform more than one function will integrate them into humans' daily work and home experience.

Humans will become integrated with machines through wearable or implanted technologies, and neurological enhancement will give us the ability to directly access and improve thoughts and emotions. This will enhance human cognition and performance, bringing about new ways to help humans.

Wearables and implanted technologies, along with polyfunctional robots, will forever change how humans and machines work together, moving us into a world where all these technologies exist to benefit humans.

Figure 1: Top Strategic Technology Trends for 2025



Trend Profiles. Click links to jump to profiles

AI Imperatives and Risks	New Frontiers of Computing	Human-Machine Synergy
Agentic AI	Postquantum Cryptography	Spatial Computing
AI Governance Platforms	Ambient Invisible Intelligence	Polyfunctional Robots
Disinformation Security	Energy-Efficient Computing	Neurological Enhancement
	Hybrid Computing	

Figures

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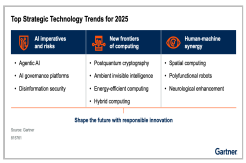

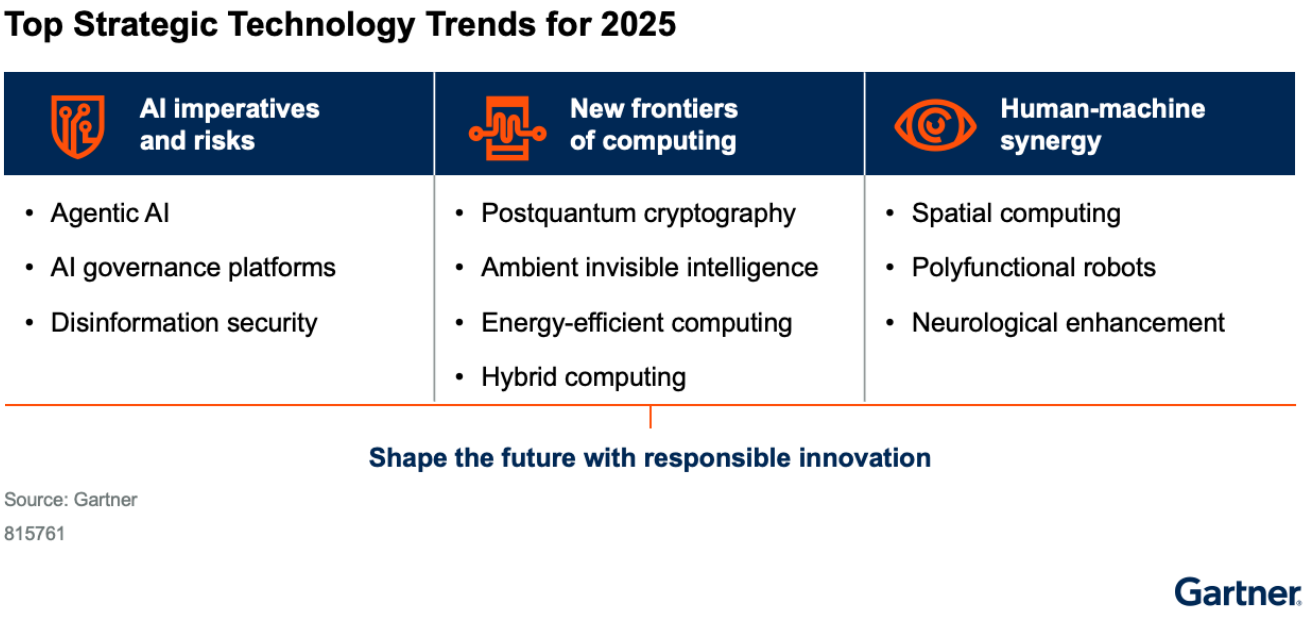

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