

**Gartner**<sup>®</sup>

# Top Strategic Technology Trends for 2022

12 Trends Shaping the  
Future of Digital Business



## CEOs want three things: Growth, digitalization and efficiency.

From COVID-19 to political unrest to climate change, organizations are constantly buffeted by unexpected events. But the promise of digital business as a way to thrive and outperform the competition during these disruptions remains clear.

As an IT leader, the responsibility for supporting the technical end of digital business rests squarely on your shoulders. You have an opportunity to embrace force-multiplying innovations to accelerate growth and strategically drive your organization forward.

These innovations will deliver:

- **Trusted digital connections** for your people and devices everywhere
- **Solutions to rapidly scale** digital creativity anywhere
- **Innovative capabilities** to accelerate business growth beyond today

These trends build on and reinforce one another. Taken together, our top strategic technology trends for 2022 will help you to meet your CEO's priorities to scale, adapt and grow.



**David Groombridge**  
VP Analyst, Gartner  
Infrastructure and  
Communication Services

## TRENDS

---

Data Fabric

Cybersecurity Mesh

Privacy-Enhancing  
Computation

Cloud-Native Platforms

Composable Applications

Decision Intelligence

Hyperautomation

AI Engineering

Distributed Enterprise

Total Experience

Autonomic Systems

Generative AI

# Engineering Trust

What is technology without trust? Digital business requires a resilient and efficient IT foundation at its core. Without a well-designed base, there is no way to scale cost-efficiently.

IT is responsible for engineering the trust necessary in our connected world with our first four trends.



## TRENDS

---

Data Fabric

Cybersecurity Mesh

Privacy-Enhancing  
Computation

Cloud-Native Platforms

Composable Applications

Decision Intelligence

Hyperautomation

AI Engineering

Distributed Enterprise

Total Experience

Autonomic Systems

Generative AI

# Data Fabric

The value of data has never been more clear. But often, data remains siloed within applications, which means it's not being used as effectively as possible.

Data fabric integrates data across platforms and users, making data available everywhere it's needed.

Within inbuilt analytics reading metadata, data fabric is able to learn what data is being used. Its real value exists in its ability to make recommendations for more, different and better data, reducing data management by up to 70%.

## How It's Used Today:

The Finnish city of Turku found its innovation held back by gaps in its data. By integrating fragmented data assets, it was able to reuse data, reduce time to market by two-thirds, and create a monetizable data fabric.



By 2024, data fabric deployments will quadruple efficiency in data utilization while cutting human-driven data management tasks in half.

Source: Gartner

## → How to Get Started:

Identify priority areas to introduce data fabric solutions by using metadata analytics to determine current data utilization patterns for ongoing business operations.

Prioritize areas with significant drift between actual and modeled data.

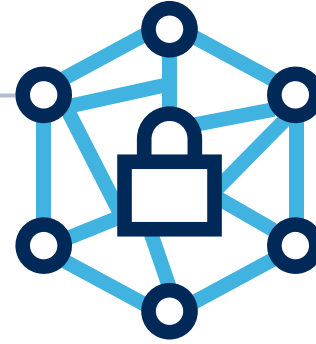
# Cybersecurity Mesh

Digital business assets are distributed across cloud and data centers. Traditional, fragmented security approaches focused on enterprise perimeters leave organizations open to breaches.

A cybersecurity mesh architecture provides a composable approach to security based on identity to create a scalable and interoperable service. The common integrated structure secures all assets, regardless of location, to enable a security approach that extends across the foundation of IT services.

## How It's Used Today:

An organization in the technology space was struggling to create value from its threat intelligence program. Using a cybersecurity mesh approach, they integrated multiple data feeds from distinct security products to better identify and respond more quickly to incidents.



By 2024, organizations adopting a cybersecurity mesh architecture to integrate security tools to work as a cooperative ecosystem will reduce the financial impact of individual security incidents by an average of 90%.

Source: Gartner

## → How to Get Started:

Prioritize composability and interoperability when selecting security solutions.

Build a common base framework to compose and integrate security solutions.

# Privacy-Enhancing Computation

The real value of data exists not in simply having it, but in how it's used for AI models, analytics, and insight.

Privacy-enhancing computation (PEC) approaches allow data to be shared across ecosystems, creating value but preserving privacy.

Approaches vary, but include encrypting, splitting or preprocessing sensitive data to allow it to be handled without compromising confidentiality.

## How It's Used Today:

DeliverFund is a U.S.-based nonprofit with a mission to tackle human trafficking. Its platforms use homomorphic encryption so partners can conduct data searches against its extremely sensitive data, with both the search and the results being encrypted. In this way, partners can submit sensitive queries without having to expose personal or regulated data at any point.



By 2025, 60% of large organizations will use one or more privacy-enhancing computation techniques in analytics, business intelligence or cloud computing.

Source: Gartner

## → How to Get Started:

Investigate key use cases within the organization and the wider ecosystem where a desire exists to use personal data in untrusted environments or for analytics and business intelligence purposes, both internally and externally.

Prioritize investments in applicable PEC techniques to gain an early competitive advantage.

# Cloud-Native Platforms

Lift-and-shift cloud migrations focus on taking legacy workloads and placing them in the cloud. Because these workloads weren't designed for cloud, they require a lot of maintenance and don't take advantage of any of the benefits.

Cloud-native platforms use the core elasticity and scalability of cloud computing to deliver faster time to value. They reduce dependencies on infrastructure, freeing up time to focus on application functionality instead.

## How It's Used Today:

A major Indian bank built a cloud-native platform to create a portfolio of new digital financial services. The bank was able to reduce the time to open an account to just 6 minutes and add instant digital payments.

Deployment of a new microservices architecture enabled the integration of savings, virtual debit card and credit card services, allowing the system to easily scale to over 3.5 million transactions in two months.



By 2025, cloud-native platforms will serve as the foundation for more than 95% of new digital initiatives — up from less than 40% in 2021.

Source: Gartner

## → How to Get Started:

Minimize basic lift-and-shift migrations that don't take full advantage of cloud attributes.

Invest in cloud-native platforms and adopt modern principles of application architecture.

# Sculpting Change

With the trusted foundation in place, the next focus is technologies that enable the organization to scale its digitalization efforts.

But IT cannot match the pace of change alone. Fusion teams — made up of IT and business staff — will collaborate and drive innovation to rapidly digitize the business. IT's job is to provide the tools to allow fusion teams to sculpt the change, as our next trends show.



## TRENDS

---

Data Fabric

Cybersecurity Mesh

Privacy-Enhancing  
Computation

Cloud-Native Platforms

Composable Applications

Decision Intelligence

Hyperautomation

AI Engineering

Distributed Enterprise

Total Experience

Autonomic Systems

Generative AI



# Composable Applications

Fusion teams face many challenges: They can lack coding skills, be locked into the wrong technologies and are often tasked with fast-paced delivery.

Composable applications are made up of packaged-business capabilities (PBCs) or software-defined business objects. PBCs — for example representing a patient or digital twin — create reusable modules that fusion teams can self-assemble to rapidly create applications, reducing time to market.

## How It's Used Today:

Ally Bank has created PBCs representing repeatable capabilities such as fraud alerting, which its fusion teams can assemble in low-code environments, saving over 200,000 hours of manual effort.



By 2024, the design mantra for new SaaS and custom applications will be “composable API-first or API-only,” rendering traditional SaaS and custom applications as “legacy.”

Source: Gartner

## → How to Get Started:

Champion composable architectural principles in all new technology initiatives, including application modernization, new engineering and the selection of new vendor services. Buy standard PBCs on application marketplaces.

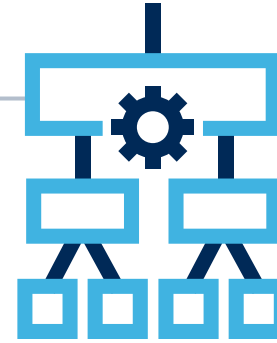
# Decision Intelligence

Decisions can be influenced by a multitude of experiences and biases, but in a world of rapid change, organizations must make better decisions, faster.

Decision intelligence improves organizational decision making by modeling decisions through a framework. Fusion teams can manage, evaluate and improve decisions based on learnings and feedback. Integrating data, analytics and AI allows the creation of decision intelligence platforms to support, augment and automate decisions.

## How It's Used Today:

Product-centric organizations can create a competitive edge in strategic product decisions by using decision intelligence to analyze competitor strategies and evaluate historic decisions.



By 2023, more than a third of large organizations will have analysts practicing decision intelligence, including decision modeling.

Source: Gartner

## → How to Get Started:

Start using decision intelligence in areas where business-critical decision making must be improved with more data-driven support or AI-powered augmentation, or where decisions can be scaled and accelerated with automation.



# Hyperautomation

Increased focuses on growth, digitalization and operational excellence have highlighted a need for better, more widespread automation.

Hyperautomation is a business-driven approach to identify, vet and automate as many business and IT processes as possible. It requires the orchestrated use of multiple technologies tools and platforms, including RPA, low-code platforms and process mining tools.

## How It's Used Today:

A global oil and gas company has 14 concurrent hyperautomation initiatives. These initiatives include targeted task automation, industrializing over 90 different areas including intelligent document processing, and automation of geoscience and offshore oil drilling operations. Decisions on what to automate are made strategically and are premised on targeted business outcomes for either quality, time to market, business agility or innovation for new business models.

By 2024, diffuse hyperautomation spending will drive up the total cost of ownership 40-fold, making adaptive governance a differentiating factor in corporate performance.

Source: Gartner

## → How to Get Started:

Establish holistic mapping and prioritization of collective initiatives, rather than islands of task automation, to ensure synergistic and coordinated business outcomes.

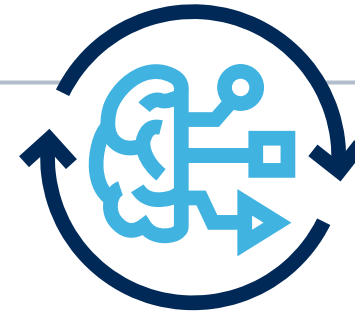
# AI Engineering

AI provides game-changing solutions to enable organizations to emerge from the pandemic in a strong position, but merely adopting AI won't do it. Organizations must optimize AI.

AI engineering is the discipline of operationalizing updates to AI models, using integrated data and model and development pipelines to deliver consistent business value from AI. It combines automated update pipelines with strong AI governance.

## How It's Used Today:

Unity Health Hospital in Toronto recognizes that AI credibility is critical for acceptance by its physicians. Its fusion teams work to build trust by showing physicians the reliability of AI results — and the gaps.



By 2025, the 10% of enterprises that establish AI engineering best practices will generate at least three times more value from their AI efforts than the 90% of enterprises that do not.

Source: Gartner

## → How to Get Started:

Implement AI engineering as a strategic differentiator for creating and maintaining production AI value. Establish and refine AI engineering practices that incorporate best practices from DataOps, ModelOps and DevOps.

# Accelerating Growth

When the foundation and building blocks are established, it's time to focus on technology trends that maximize the value of what the organization creates.

These technologies exemplify the IT force multipliers that will win business and market share.



## TRENDS

---

Data Fabric

Cybersecurity Mesh

Privacy-Enhancing  
Computation

Cloud-Native Platforms

Composable Applications

Decision Intelligence

Hyperautomation

AI Engineering

Distributed Enterprise

Total Experience

Autonomic Systems

Generative AI

# Distributed Enterprise

Distributed enterprise arose from two different areas. On one side, employees working remotely as a result of COVID-19 needed different tools and increased flexibility. On the other side, consumers increasingly aren't available via traditional, physical avenues.

Distributed enterprise is a virtual-first, remote-first architectural approach to digitize consumer touchpoints and build out experiences to support products.

## How It's Used Today:

- Armoire's digital dressing room allows customers to try styles virtually.
- Merrill Lynch uses geolocation to enable clients to find a nearby financial advisor.
- Enterprise drone usage will rise a hundredfold in the next 10 years to support remote customers.



By 2023, 75% of organizations that exploit distributed enterprise benefits will realize revenue growth 25% faster than competitors.

Source: Gartner

## → How to Get Started:

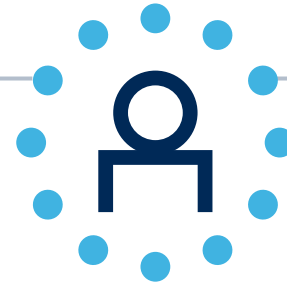
Plan to pivot business models to capture market share from customer and consumer changes due to remote working, by adopting “virtual first, remote first” architectural principles. Provide the tools for fusion teams to rapidly develop and improve customer-facing technologies.

# Total Experience

Total experience unifies four disciplines: customer experience, user experience, employee experience and multiexperience to create a better experience for consumers and employees. The goal is to interconnect and enhance each of these for a more holistic overall experience for all stakeholders.

## How It's Used Today:

Fidelity Spire uses a total experience approach in its financial services. Analytics and AI learn client behaviors to proactively respond to a client's next action and to create realistic training simulations for staff. Unified identity services help clients move easily through self-service onboarding and provide integration to the advisor's view, across multiple touchpoints.



By 2026, 60% of large enterprises will use total experience to transform their business models to achieve world-class customer and employee advocacy levels.

Source: Gartner

## → How to Get Started:

Instruct teams pursuing experience improvement initiatives to partner with and learn from others. Make all leaders of experience-related initiatives equally responsible for solving the combined needs of customers and employees.

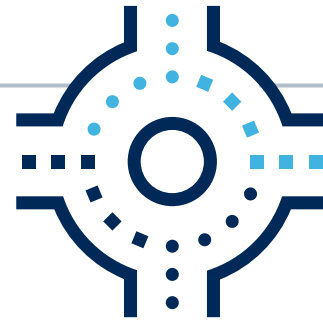
# Autonomic Systems

As organizations grow, traditional manual management can't scale at the same rate.

Autonomic systems are self-managing physical or software systems that learn from their environments. But unlike autonomous or automated systems, they can dynamically modify their own algorithms with no software updates. This allows rapid responses to change, enabling management at scale of complex environments.

## How It's Used Today:

Ericsson manages thousands of cellular phone masts in complex environments. Its autonomic systems use reinforcement learning and digital twins to dynamically optimize 5G network performance.



By 2024, 20% of organizations selling autonomic systems or devices will require customers to waive indemnity provisions related to learned behavior of their products.

Source: Gartner

## → How to Get Started:

Pilot autonomic technologies in cases where early adoption will deliver agility and performance benefits in managing complex software or physical systems.



# Generative AI

For the most part, AI is trained to produce conclusions, but true force-multiplying technologies can innovate on their own.

Generative AI is a form of AI that learns a digital representation of artifacts from sample data and uses it to generate new, original, realistic artifacts that retain a likeness to the training data but don't repeat it. That allows generative AI to be an engine of rapid innovation for enterprises.

## How It's Used Today:

The U.K. Financial Conduct Authority has used generative AI to create synthetic payment data, from 5 million records of real payment data. The synthetic dataset will be used to create new fraud models without revealing individuals' data.



## → How to Get Started:





Accelerate content production and R&D efforts, by selecting proven uses of generative AI to accelerate creation of new products, and increase the personalization of artifacts.

By 2025, generative AI will account for 10% of all data produced, up from less than 1% today.

Source: Gartner

# Actionable, objective insight

Explore these additional complimentary resources and tools for IT leaders:

<p><b>eBook</b> </p> <p><b>2022 CIO Agenda</b> Create an action plan to master business composability.</p> <p><a href="#">Download eBook</a></p>	<p><b>Roadmap</b> </p> <p><b>The IT Roadmap for Digital Business Transformation</b> Avoid pitfalls and lead smart, effective digital transformations.</p> <p><a href="#">Get Roadmap</a></p>	<p><b>Template</b> </p> <p><b>IT Strategic Planning Guide</b> Turn strategy into action with this one-page IT strategic planning template.</p> <p><a href="#">Download Template</a></p>	<p><b>eBook</b> </p> <p><b>5 Key Actions for IT Leaders for Effective Decision Making</b> Turn effective decision making into your competitive advantage.</p> <p><a href="#">Download eBook</a></p>
---	---	--	--

Already a client?

Get access to even more resources in your client portal. [Log In](#)

# Get More.

Get actionable, objective insights to deliver on your most critical priorities. Our expert guidance and tools enable faster, smarter decisions and stronger performance. Contact us to become a client:

**U.S.:** 1 844 424 3279

**International:** +44 (0) 3301 620 681

[Become a Client](#)

**Learn more about Gartner for IT Leaders**

[gartner.com/en/information-technology](https://gartner.com/en/information-technology)

**Stay connected to the latest insights**

