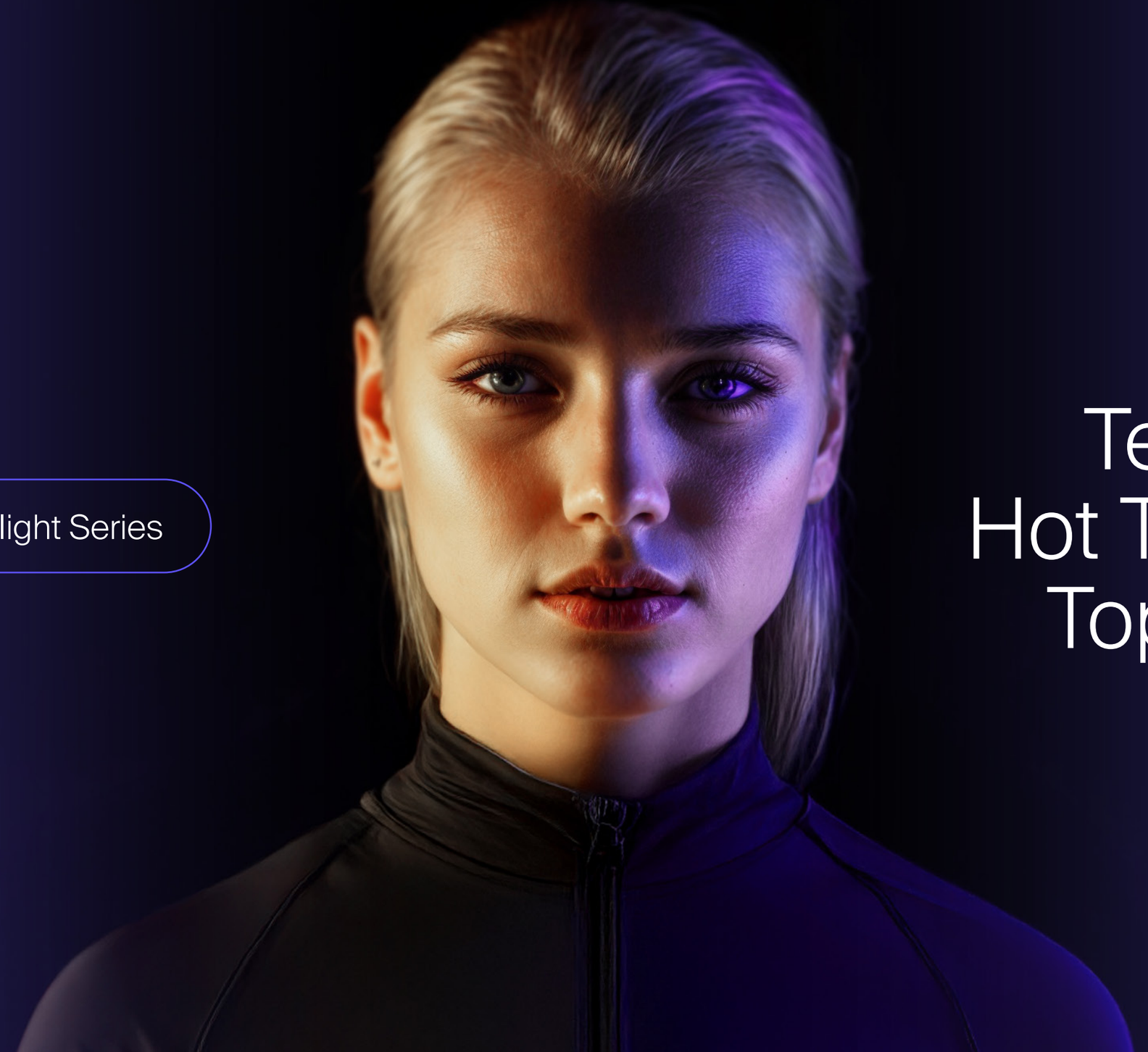
Softtek®

Spotlight Series



Tech Hot Topics: Top 25

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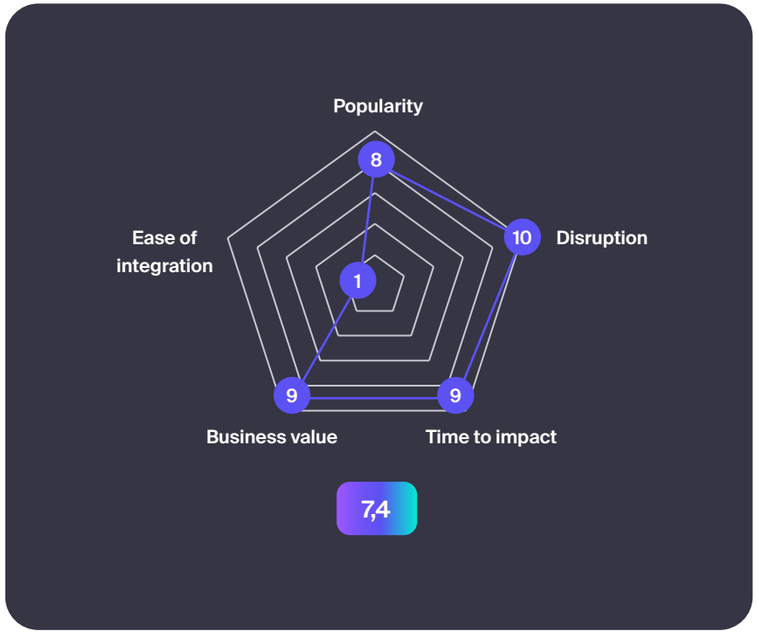
25 Hot Topics in 8 categories

The rapid advances in AI, cloud infrastructure, and data analytics are transforming industries and driving innovation. Topics such as Artificial General Intelligence, Edge AI, hybrid cloud strategies, and privacy-enhancing technologies are reshaping how businesses operate, offering new opportunities for automation, efficiency, and facilitating real-time decision-making. These trends promise to redefine the future of work, productivity, and customer experience.

- Artificial Intelligence
- Design
- Data and Software
- Business Innovation
- IT Infrastructure and Cloud
- Cybersecurity
- Customer Experience
- Sustainability

Key evaluation variables

The top **25 Hot Topics** are evaluated based on the 5 key variables explained below. From this analysis, **an average rating is obtained, reflecting the strategic relevance and potential impact** of each trend in the industry, thereby facilitating informed decision-making.



Popularity

Measures the recognition and adoption of the trend in the industry and its relevance across various sectors.
High (8-10) The trend is popular, widely adopted, and heavily invested in.
Medium (5-7) The trend is gaining traction but has not yet achieved widespread adoption.
Low (1-4) The trend remains niche, experimental, or has little visibility outside specialized sectors.

Disruption

Evaluates the potential of the trend to transform existing systems, business models, and industries.
High (8-10) Causes fundamental changes and can displace current systems.
Medium (5-7) Represents significant innovations but does not necessarily alter existing models completely.
Low (1-4) Represents incremental improvements without significantly altering the sector's dynamics.

Time to impact

The time horizon in which the trend has a real and measurable impact on company results.
High (8-10) Requires more than 5-8 years for widespread adoption and maturity.
Medium (5-7) Visible impact in 3-5 years, it will have relevant effects in the medium term.
Low (1-4) Immediate impact or within 1-3 years

Business value

Measures the potential to provide economic benefits, competitive advantage, or tangible value creation.
High (8-10) Promises high return on investment and competitive benefits.
Medium (5-7) It has significant value and offers moderate returns with potential for growth as it evolves.
Low (1-4) Its financial impact is uncertain or depends on external factors.

Ease of integration

An organization's ability to integrate the trend into its current processes and structure
High (8-10) Easy implementation with few technical barriers.
Medium (5-7) Requires some modifications in processes or infrastructure, but integration is feasible.
Low(1-4) Requires complex changes, specific infrastructure, or regulatory adaptation.

01

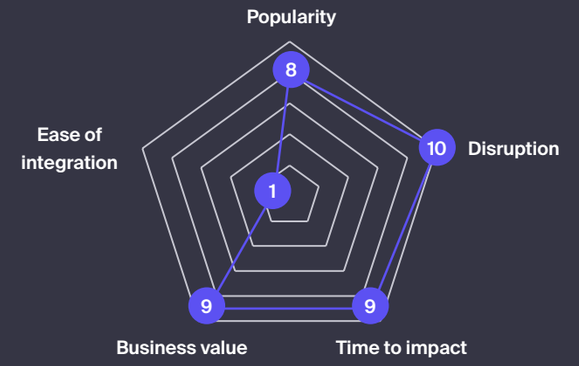
AGI will transform the world, driving innovation, redefining businesses, and unleashing infinite opportunities across various sectors

Artificial General Intelligence (AGI) is an advanced type of AI capable of **understanding, learning, and applying knowledge across various complex tasks**, similar to human intelligence. Unlike specialized AI (narrow AI), which is limited to specific functions, AGI can adapt and generalize skills, facing new challenges without the need for explicit programming.

Insight

The development of AGI is advancing rapidly, with companies like OpenAI and Google making progress through various stages. Currently, AI is in the "Reasoning AI" stage, capable of solving complex problems, but it has not yet reached the AGI stage. This progress **represents significant strategic opportunities in innovation, automation, and competitiveness,** but it also poses important challenges related to technological dependence, data sovereignty, and ethical and regulatory considerations.

Prioritization matrix



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Evolution of AI:
From initial AI with limitations to superintelligence.

Stage 3 — **Artificial Super Intelligence (Machine Consciousness)**
Hypothetical AI that surpasses human intelligence in all areas.

Stage 2 — **Artificial General Intelligence (Machine Intelligence)**
Human-level intelligence, capable of performing any cognitive task with reasoning, learning, and adaptability.

Stage 1 — **Artificial Narrow Intelligence (Machine Learning)**
Specialized in specific tasks (such as virtual assistants or recommendation systems).

Levels of evolution of Artificial Intelligence:
From natural language to organizational autonomy.

5 — **Organizational AI** performs the work of an entire organization without human intervention

4 — **Innovative AI** improves processes and suggests creative solutions

3 — **Autonomous AI** operates independently for several days with minimal supervision

2 — **Reasoning AI** with human-level problem-solving abilities

1 — **Conversational AI** interacts in natural language, like ChatGPT

Use cases

Customer Service: Provides personalized real-time service through data analysis.

Autonomous Systems: Makes complex real-time decisions, adapting to new situations, such as in autonomous cars.

Education: Personalizes learning paths and adjusts difficulty according to student progress.

Programming Intelligence: Understands and generates code, suggesting improvements

Healthcare: Analyze medical data for personalized treatments and early disease detection.

02

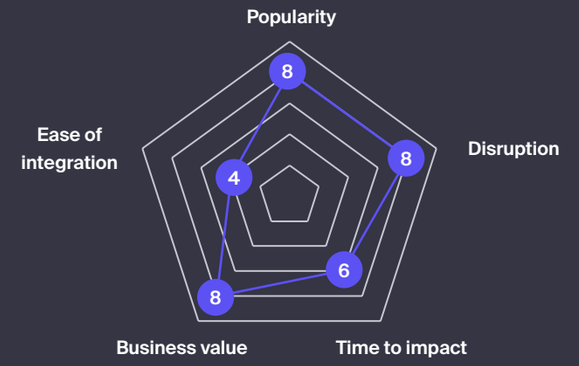
With Agentic AI, companies achieve a quantum leap in autonomy and efficiency, revolutionizing decision-making

Agentic AI is a type of artificial intelligence that includes **systems capable of operating autonomously or semi-autonomously**, making decisions, and executing complex tasks with minimal human supervision. These systems adapt to changing environments and are designed to execute and optimize workflows, enabling companies to make decisions and perform their work more effectively.

Insight

Agentic AI presents strategic opportunities by **automating tasks, improving decision-making, and increasing operational efficiency**. Companies like Salesforce, Microsoft, and ServiceNow are adopting Agentic AI to optimize customer service, sales, and IT operations. For businesses, integrating this technology with ethical standards and balancing autonomy with human oversight can drive innovation and enhance productivity, ensuring competitiveness in a rapidly evolving digital landscape.

Prioritization matrix



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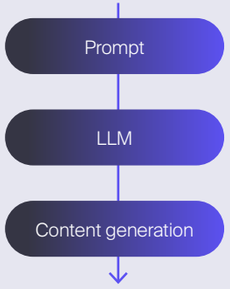
Generative AI vs. Agentic AI: two key approaches to artificial intelligence.

From content creation to autonomous decision-making.

Generative AI

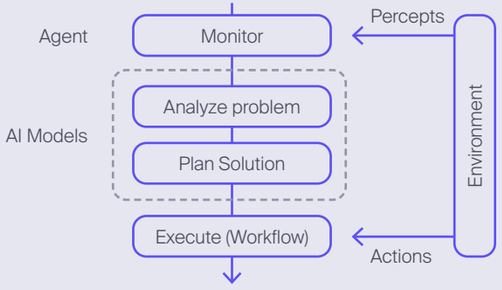


Focuses on content creation (e.g., text, images).

Depends on human prompts to generate responses.

Limited to generating content or answering queries.

Agentic AI



Focuses on decision-making and optimizing objectives.

Operates independently, optimizing specific objectives.

Able to perform complex tasks, search databases, and activate workflows.

Use cases

Customer Service: Enhances self-service, automates tasks, and uses digital humans for real-time interactions.

Content Creation: Helps generate personalized content quickly, saving time to focus on strategy.

Software Engineering: Automates repetitive coding tasks, increasing developers' productivity.

Healthcare: Analyzes medical data, automates administrative tasks, and provides 24/7 support to patients.

Healthcare: Analyzes medical data, automates administrative tasks, and provides 24/7 support to patients.

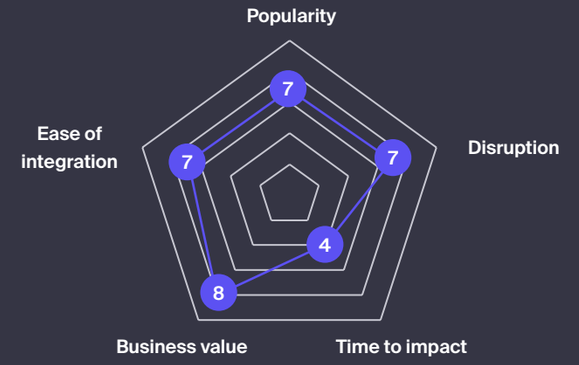
03 The rise of SLMs is transforming the world of AI, highlighting efficiency, privacy, and real-time functionality

Edge AI involves optimized artificial intelligence models (such as Small or Smart Language Models, SLMs) designed for specialized natural language processing tasks with fewer computational resources. By running directly on devices or networks close to the data source, they enable **real-time language processing, reducing latency and bandwidth usage** without relying on cloud servers.

Insight

SLMs and Edge AI allow companies to **leverage powerful AI without having to make significant investments in infrastructure.** With reduced latency and local data processing, companies can offer faster, more personalized, and secure services. Additionally, tools like TensorFlow Lite and MediaPipe facilitate the implementation of SLMs on Edge devices, enabling applications such as voice recognition and translation without the need for the cloud. This new era of Edge AI is transforming how we interact with technology by bringing AI directly to personal devices.

Prioritization matrix



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Key advantages of Edge AI and Small Language Models (SLM).

Optimized performance, low cost, and efficiency in local environments.

Scalability:

Specialized models scale across multiple devices without losing performance.

Speed:

Faster responses due to reduced inference networks and dedicated computing resources..

Accuracy:

Higher precision and fewer errors due to deep and focused training.

Affordability:

They can be implemented on more cost-effective platforms versus expensive centralized resources.

Prototyping:

They can serve as economical tools in environments with limited data, e.g., industrial experiments.

Use cases

Manufacturing: Predictive maintenance and quality control with local data analysis.

Transportation: Autonomous vehicles, traffic optimization, and real-time voice assistants for local data analysis.

Healthcare: Remote patient monitoring and secure real-time medical data analysis.

Telecom: Network management and customer support with local analysis for diagnostics, automation, and personalized services.

Smart Devices: Local voice command processing in smart speakers and devices.

04

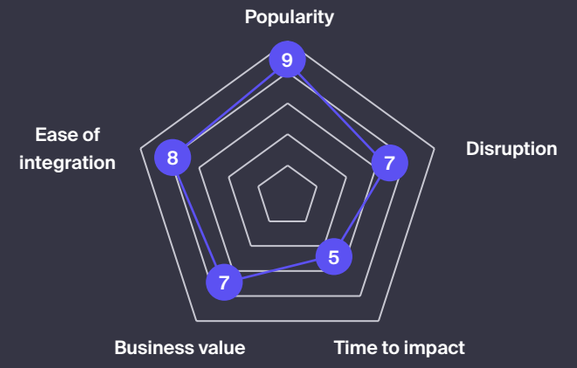
Open-Source AI unlocks unlimited innovation, fosters global collaboration, reduces costs, and enables companies to lead the future of AI

The term "Open-Source AI" describes AI models and technologies whose **source code is publicly accessible for anyone to use, modify, and share.** Making AI technology accessible to a global community fosters collaboration among developers, researchers, and companies worldwide, accelerating innovation and enabling equitable participation in AI development, regardless of financial or technical resources.

Insight

Open-Source AI provides companies with access to cutting-edge technologies and facilitates global collaboration, resulting in creative and affordable solutions. **This AI model aims to democratize access to advanced technologies**, especially for small and medium-sized enterprises looking to incorporate AI capabilities without significant initial technological investments. This facilitates the rapid integration of artificial intelligence into products and services, allowing them to compete effectively with large companies and accelerating their growth and innovation.

Prioritization matrix



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Best practices to foster collaboration in Open-Source AI.
Keys to building open, inclusive, and sustainable projects:

- Set clear goals and agreements
- Foster effective and transparent communication
- Ensure comprehensive documentation
- Use version control effectively
- Create an inclusive and diverse community
- Select the right tools for collaboration
- Regularly evaluate progress and improve
- Commit to ethical and responsible practices

Use cases

Collaborative Research: AI models such as TensorFlow and PyTorch enable global collaboration in improving algorithms.

Open Data Platforms: Platforms like OpenML facilitate the sharing of data, experiments, and models to solve problems together.

Community AI Projects: Hugging Face promotes global collaboration on NLP models for tasks like translation.

AI for Social Good: Initiatives like AI4Good bring together developers and organizations to tackle global challenges.

Collaborative Development: GitHub hosts AI repositories, allowing global contributions to the development and improvement of tools.

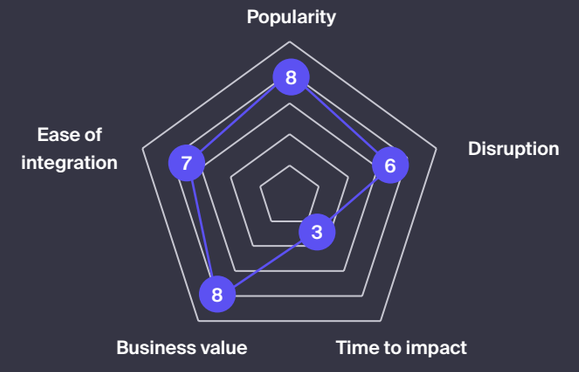
05 Evolving from traditional tools, Augmented Analytics uses AI to enhance decision-making, efficiency, and uncover hidden opportunities

Augmented Analytics refers to the integration of AI, machine learning (ML), and natural language processing (NLP) into **data analysis tools to automate complex analytical processes**, such as data preparation and the generation of proactive insights. This allows users to generate complex reports and obtain high-quality information without advanced technical knowledge, thus democratizing access to advanced analytics.

Insight

The adoption of Augmented Analytics democratizes access to advanced data analysis within organizations, **removing technical barriers and streamlining strategic decision-making** based on accurate information. By empowering non-technical teams with immediate and actionable insights, decision-making processes are accelerated, operational efficiency is increased, and dependency on specialists is reduced, enhancing competitive agility in the market. However, it also faces challenges such as data quality, accuracy, and bias, which require robust governance and complete, error-free datasets.

Prioritization matrix



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The evolution of analytics: From traditional reporting to augmented intelligence.

A journey towards autonomy, speed, and depth in decision-making

Traditional Analysis:
Dependent on IT, specialized tools, report generation.

Self-Service Analysis:
Greater autonomy, easy-to-use, information-focused.

Augmented Analysis:
AI and full automation for rapid and deep insights.

Pillars of augmented analytics: From data to intelligent decisions.

Key technologies to extract actionable value from information.

Data Automation
Optimizes quality and integration.

Visualization
Insights in intuitive charts.

Data Discovery
AI detects patterns and trends.

Automated Analysis
Proactive trend detection.

Natural Language
Queries without technical knowledge.

Prediction and Prescription
Suggests optimal decisions.

Use cases

Finance: Identifies inefficient spending patterns and optimizes budgets in real time.

Accounts Receivable: Predicts late payments and optimizes collection strategies.

Sales and Marketing: Enables the creation of better customer profiles and identification of cross-selling and upselling opportunities.

Manufacturing: Monitors production quality and predicts equipment failures for preventive maintenance.

Manufacturing: Monitors production quality and predicts equipment failures for preventive maintenance.

06

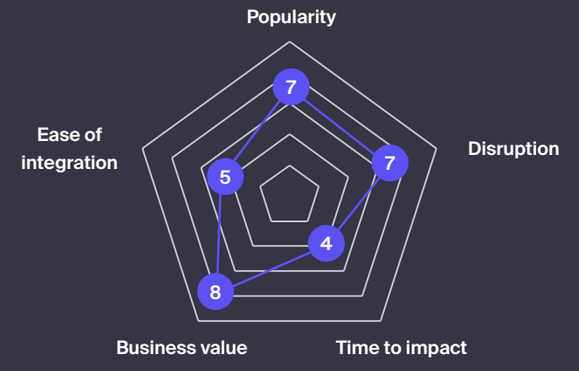
With Real-Time Data Streaming, companies gain speed, accuracy, and security, transforming decisions

Real-Time Data Streaming is a technology that allows for **the continuous collection, processing, and analysis of data as it is generated.** It enables companies to act on data instantly, detect anomalies, and respond to events in real time to achieve greater efficiency and faster insights. This is crucial for managing massive amounts of data that arrive quickly from a variety of sources.

Insight

The strategic adoption of Real-Time Data Streaming drives critical use cases such as **immediate fraud monitoring, dynamic service personalization, and proactive optimization of operational processes.** To fully leverage its potential, companies must address technical challenges such as scalability, minimal latency, security, and efficient management of large volumes of information, ensuring that the chosen solutions respond swiftly to the specific needs and strategic objectives of the business.

Prioritization matrix



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Real-Time Data Processing Architecture

From source to action: complete flow for streaming analytics

Data Collection	Stream Ingestion	Stream Storage	Stream Processing	Stream Analytics	Stream Destination
Continuous capture from multiple sources.	Transformation for processing.	Scalable real-time systems.	Validation and quality improvement.	Pattern and anomaly detection.	Delivery to final systems for visualization or automation.
IoT Devices, Apps, Sensors, Databases	Apache Kafka, Azure Event Hub, Gazette	Google Cloud, AWS Kinesis Data Streams, Estuary Flow	Apache Spark Streaming, Azure Stream Analytics	Analysis Tools	Databases, Data Warehouses, Third-Party Integrations

Use cases

Media Streaming: Delivers on-demand content with low latency, ensuring a high-quality user experience.

Financial Trading: Enables rapid response to market changes for better decision-making.

Credit Card Fraud Detection: Monitors transactions to immediately detect suspicious activities.

Delivery Truck Routing: Optimizes routes using real-time traffic and weather updates.

Cybersecurity: Detects and mitigates security threats in real-time, enhancing protection against cyberattacks.

07

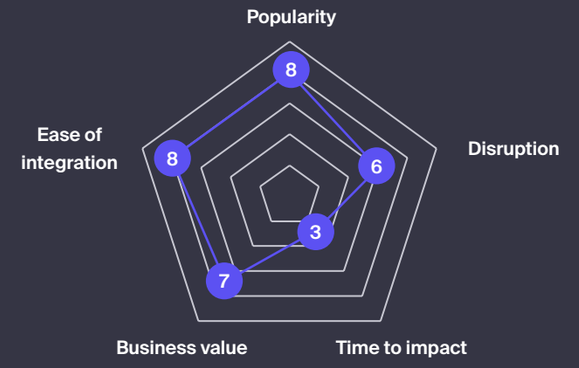
Augmented Development drives innovation and accelerates time-to-market through the collaboration between AI and human expertise

Augmented Development integrates advanced AI and ML technologies to optimize software development. Unlike the traditional approach based on manual coding, **it automates repetitive tasks and provides intelligent assistance in programming, testing, and deployment stages**. This automation accelerates the entire development cycle, enhances team productivity, reduces errors from early stages, and significantly elevates the final software quality.

Insight

The strategic implementation of Augmented Development allows companies to **significantly speed up their technological innovation processes, increase the productivity of technical talent, and reduce operational costs associated with human errors.** However, it is crucial to address key aspects such as the appropriate selection of tools according to the technology stack, ensuring the quality of the generated code, properly managing intellectual property, and maintaining a balance between automation and human control, aligning with the specific business objectives.

Prioritization matrix



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Challenges of Augmented Development: Ethical, technical, and social implications.

Key aspects to consider for responsible AI adoption

Security and Privacy Risks:

Sensitive data shared with AI models may be at risk.

Bias in Models

AI models can introduce biases, affecting accuracy.

High Costs

AI tools require significant investment..

Job Displacement

AI could replace jobs, especially in programming and IT roles.

Transparency and Ethics

Transparency must be maintained, and XAI should be prioritized, especially in critical sectors.

Use cases

Analysis: Documentation of requirements and specifications.

Testing: Creation and execution of automated tests.

Design: Diagrams, architecture, and UI/UX models.

Deployment: CI/CD and Infrastructure as Code (IaC).

Development: Code generation, debugging, and translation.

Maintenance: Monitoring, fixes, and optimization.

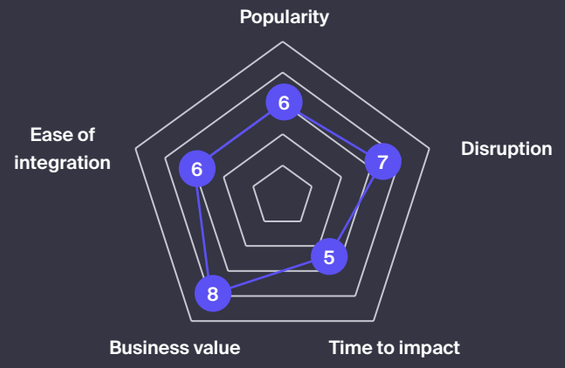
08 Self-Healing App Layers strengthen technological resilience by detecting and repairing systems autonomously

Self-Healing App Layers are intelligent software layers capable of **automatically identifying errors, interruptions, or performance issues** in digital applications and services, resolving them in real time through predictive algorithms and automated systems. These layers ensure that the system adapts and continues to function even in the face of problems, reducing downtime and improving the overall user experience.

Insight

By implementing Self-Healing App Layers, companies proactively plan and develop strategies that significantly minimize downtime, enhance operational stability, and optimize the user experience, **building more resilient and reliable systems.** From a strategic perspective, organizations must carefully evaluate aspects such as the platform's predictive performance, its effectiveness in automatically resolving incidents, and its integration with existing systems.

Prioritization matrix



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Self-Healing Systems: Pillars for a Resilient Infrastructure.

Automatic Fault Detection, Isolation, and Recovery.

Fault Detection:
- Continuous system monitoring.
- Identifies anomalies and triggers automatic actions.

Fault Isolation:
- Diagnoses the root cause of the fault.
- Determines the affected components

Fault Recovery:
- Executes automated corrective actions.
- Restores normal functionality.

Self-Healing Architecture: Two Layers for Resilient Systems.

Collaboration Between Monitoring and Healing to Maintain Operational Stability.

Component 1
Service Layer

Healing Layer

Service Layer:
- Provides common services and monitors system health.
- Communicates with other components to detect and report anomalies.

Healing Layer:
- Repairs or discards problematic elements.
- Adjusts configurations, issues notifications, and maintains system stability.

Key points

Automatic Error Detection and Correction: Detecting and Resolving Issues Autonomously (e.g., Restarting Services).

Containerization and Orchestration: Efficient application management by isolating components in containers and ensuring their automatic restart in case of failures.

Fault Tolerance and Failover: Using redundancy and backups to minimize downtime.

Machine Learning and Predictive Analytics: ML monitors irregularities, predicting and preventing potential issues before they occur.

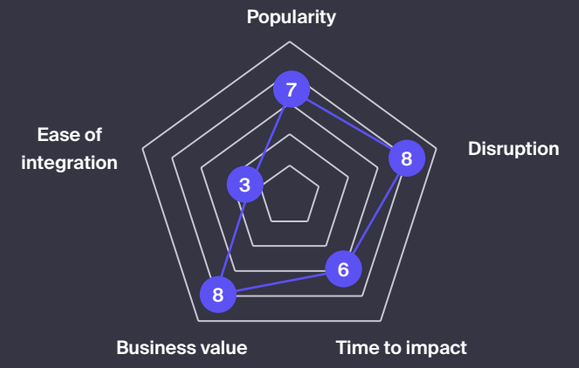
09 Autonomous, Distributed, and Low-Latency Cloud: The next step in creating fast, intelligent, and legally compliant cloud environments

The Autonomous, Distributed, and Low-Latency Cloud is an intelligent cloud infrastructure that uses **advanced automation and AI to deliver immediate response times, high availability, and automatic cloud performance optimization.** It combines various trends such as Zero-Latency Cloud Fabrics, Neural Cloud, and Sovereign & Distributed Clouds, and is designed to support applications like autonomous vehicles or advanced financial services.

Insight

As cloud services continue to evolve, particularly with the rise of **edge computing**, companies are implementing holistic cloud solutions that **provide instant responses**, ensuring superior user experience, maximum availability, and regulatory compliance in terms of data sovereignty and security. Leading companies are already moving in this direction, but a fully integrated and comprehensive solution may take time to materialize.

Prioritization matrix



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Towards an Autonomous, Distributed, and Low-Latency Cloud.
The convergence of technologies for an intelligent and real-time cloud infrastructure.

Zero-Latency Cloud Fabrics + **Neural Cloud** + **Sovereign & Distributed Clouds** > **Autonomous, Distributed, y Low-Latency Cloud**

Connect clouds, data centers, and edge computing to minimize latency.

Optimize with AI to manage resources efficiently.

Comply with local regulations and reduce latency through distributed deployment.

A fast, intelligent, and compliant cloud infrastructure. Ideal for real-time and mission-critical applications.

Use cases

Autonomous Vehicles: Real-time processing for immediate decision-making.

Advanced Financial Services: High-frequency trading, fraud detection, and real-time insurance management.

Cloud Gaming: Optimizes server load and reduces latency.

Healthcare: Remote robotic surgeries, real-time diagnostics, and continuous monitoring.

Industrial Automation: Processing close to manufacturing sites, complying with regional laws.

10

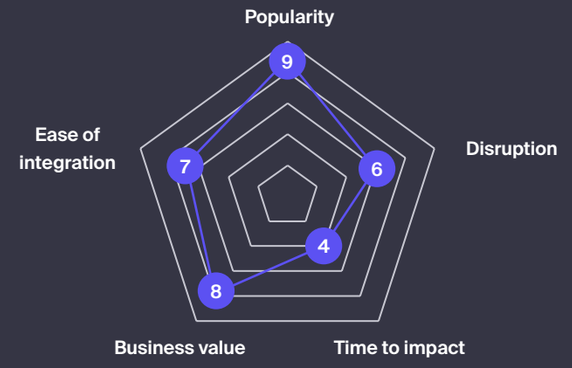
Hybrid and multi-cloud strategies offer flexibility, cost optimization, and performance, adapting to diverse needs

A multi-cloud strategy leverages services from multiple cloud providers to achieve flexibility and reduce dependency on a single provider, while a hybrid cloud strategy **combines public and private clouds to balance control and scalability.** Both provide a secure and scalable infrastructure but face challenges such as management complexity and integration issues.

Insight

Adopting a hybrid and multi-cloud strategy offers significant strategic benefits, such as **greater operational flexibility, performance optimization, business continuity, and reduced technological risk.** Companies with strict regulatory standards may prefer a hybrid cloud for better security and control, while a multi-cloud strategy can save overhead costs for companies with tight budgets. Businesses must evaluate aspects such as cost, security, migration efforts, and performance to determine the most suitable cloud model and ensure smooth integration.

Prioritization matrix



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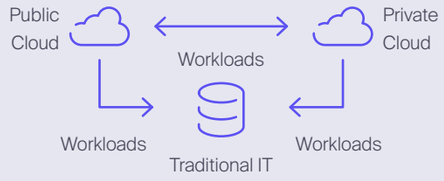
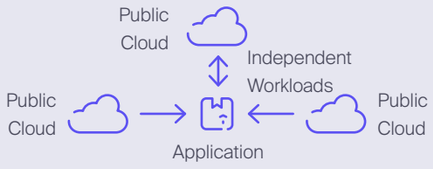
Hybrid and Multi-Cloud Strategies: Comparative approaches in cloud management.
Key points, advantages, and challenges for a flexible and secure cloud architecture.

Multi-cloud strategy



Hybrid strategy



	Multi-cloud strategy	Hybrid strategy
Main Advantages	• Flexibility and adaptability • Reduced dependency on a single provider • Cost and performance optimization • Workload distribution according to the strengths of each cloud	• Greater Security and Control • Scalability and cost efficiency • Access to resources on demand • Optimizes infrastructure investment
Main Disadvantages	• Complex management and monitoring • Integration difficulties between different platforms	• Complex Integration of Different Clouds • Management of legacy dependencies • Ensuring security and minimizing downtime across multiple environments

Use cases

Resilience and Backup Protection: Data replication across multiple clouds to minimize losses and ensure quick recovery.

Cloud Bursting: Using the public cloud for traffic spikes while maintaining private infrastructure.

Cost and Performance Optimization: Selecting specific clouds for each workload to improve efficiency.

Sensitive Data Security: Storing data in the private cloud and using the public cloud for less critical applications

11

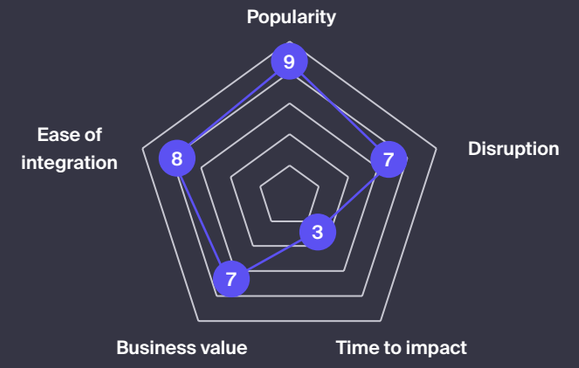
Conversational AI and voice interfaces transform interaction, making technology faster, more intuitive, and personalized

Voice interfaces and conversational AI use technologies such as natural language processing (NLP), voice recognition, and machine learning to maintain natural interactions through chatbots or voice assistants. Unlike traditional chatbots, **conversational AI enables dynamic and natural interactions**, whether through text or voice, and can understand intent, sentiment, and context to offer a more personalized experience.

Insight

The adoption of conversational interfaces and voice assistants significantly enhances customer experience, increases operational efficiency by automating service and support, and reduces operational costs. These technologies offer great opportunities for companies, such as **creating new customer service channels, effectively automating repetitive processes, and providing a more natural and engaging interaction with users.** Additionally, they enhance customer acquisition and retention and significantly improve competitive positioning by offering innovative and differentiated experiences.

Prioritization matrix



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Conversational AI in the Customer Journey.

How Voice and Smart Assistants Transform Every Stage of the Experience.

Awareness and Acquisition

- Voice assistants for discovering products/ services.
- Voice searches on the web and social media.
- Lead scoring and tracking with AI.

Consideration and Onboarding

- iChatbots/Voice assistants to guide and personalize the experience.
- Assisted onboarding for new users.
- Automated content and recommendations.

Purchase

- Voice commands for online shopping.
- Payment and shipping guides.
- Real-time product recommendations.

Post-Purchase Support and Loyalty

- Automated support (exchanges, returns, tracking).
- Loyalty programs with AI.
- Quick issue resolution and continuous improvements.

Advocacy and Repurchase

- Feedback through voice interfaces.
- Personalized offers and rewards.
- Encouraging referrals and social promotion

Use cases

Customer Service in Retail: 24/7 support, language translation, and feedback collection.

Sales and Marketing: Cold calls, follow-ups, and AI-driven transactions.

Supply Chain: Voice-guided tasks to improve accuracy and safety.

In-Car Assistants: Control of navigation, climate, and entertainment through voice commands.

Healthcare: Quick appointment scheduling and patient information collection.

12

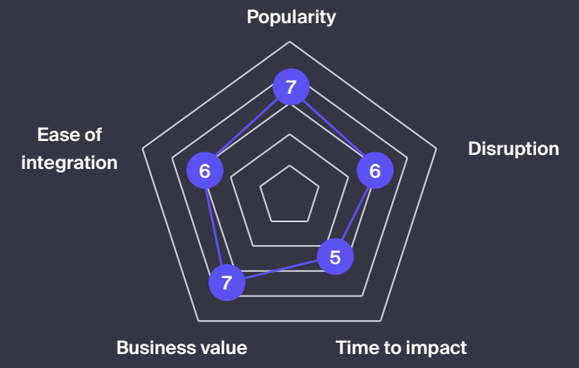
Emotional AI enhances relationships and strengthens loyalty, but managing ethical and privacy challenges is crucial

Emotional AI refers to AI systems capable of **recognizing, interpreting, and responding in real time to human emotions** by examining indicators such as body language, voice intonation, and facial expressions. It enhances human-computer interactions by making machines more empathetic and responsive to emotional states, improving user experiences, and personalizing interactions.

Insight

The integration of Emotional AI creates opportunities to **humanize the digital customer experience**, strengthening the emotional connection with the brand. Companies can use this technology to offer highly personalized services, significantly improve customer satisfaction, and increase loyalty, thus driving clear differentiation from the competition. Additionally, it opens new possibilities for optimizing marketing campaigns, customer service, and user-centered product design.

Prioritization matrix



6,2

Emotional AI: How Machines Learn to Understand and Respond to Our Feelings.

From facial recognition to adaptive feedback in five key steps

1. **Data Capture** — Sensors collect emotional signals (facial expressions, voice tone, body language).
2. **Signal Processing** — AI analyzes the data using machine learning and computer vision.
3. **Pattern Recognition** — Emotions (happiness, anger, sadness) are identified and classified.
4. **Response Generation** — AI generates an appropriate response based on the detected emotion.
5. **Learning and Optimization** — Continuous feedback improves emotional accuracy and response.

Use cases

Improvement of Patient Care: Detects emotional issues (stress, anxiety) for personalized care.

Mental Health Monitoring: Wearables track emotional state and alert for timely interventions.

Customer Service Enhancement: Empathetic and personalized chatbots improve customer satisfaction and loyalty.

Marketing and Advertising: Creates targeted and engaging campaigns by analyzing consumer emotions.

Automotive Industry: Detects driver stress or fatigue and adjusts settings or issues alerts to enhance safety and comfort.

13

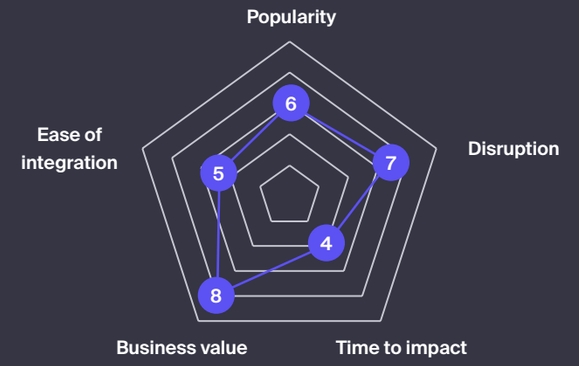
Adaptive interfaces add value by personalizing experiences and making interactions more intuitive and efficient

Adaptive User Interfaces (AUI) use artificial intelligence and machine learning to dynamically **modify or adjust the functionality, design, and content of a digital platform** according to the needs, preferences, and behaviors of each user. These interfaces improve accessibility, engagement, and overall satisfaction by offering personalized and intuitive interactions that evolve in real-time.

Insight

The adoption of AUI creates significant strategic opportunities for companies by greatly enhancing the personalization of the digital experience. These interfaces **increase user engagement, boost satisfaction, and promote long-term loyalty.** Additionally, they allow for clear differentiation in highly competitive markets by proactively responding to individual customer needs and expectations, driving business growth, and reinforcing a positive brand perception.

Prioritization matrix



6

Adaptive User Interfaces (AUI): Intelligent Personalization in Action.

Four key-ways interfaces adjust to user behavior

Generation of New Knowledge
Personalized recommendations that highlight related content, yet unknown to the user.

Product suggestions or content recommendations (e.g., Netflix's "You Might Also Like" feature).

Data or Information Entry
Optimizing data entry by users and reducing the effort in providing data.

Programs like NewsWeeder that filter news based on user feedback.

Filtering Information
Selecting and prioritizing content based on user preferences and behavior.

Predictive text and intelligent search engines that learn patterns for personalized experiences.

Optimization
Improving user experience by dynamically adapting interface elements.

Route optimization and interfaces that adapt through visual tracking or user interactions.

Use cases

Healthcare: Patient-centered dashboards that adapt based on frequently accessed data, medical history, and other needs.

Smart Home: Interfaces that learn routines and automatically adjust lighting, temperature, and security.

Content Management Systems: Dynamic web designs and content suggestions based on user behavior and interests.

Accessibility Improvements: Interfaces that adjust text size, voice commands, contrast, or navigation for users.

Finance and Banking: Dashboards with tailored financial information, spending habits, and recommended investment options.

14

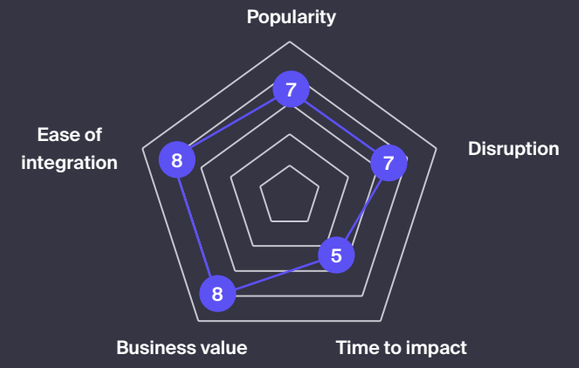
Privacy by Design increases trust, ensures compliance, and minimizes risks by integrating privacy from the start

Privacy by Design involves designing and developing **digital products, services, and processes by incorporating fundamental privacy principles** from the outset, ensuring user protection as a default standard. Compared to traditional approaches, it ensures that personal data is managed with the utmost care, minimizing risks and complying with privacy laws, while fostering user security and trust.

Insight

Implementing Privacy by Design strengthens user trust and loyalty, offering companies a **competitive advantage through ethical and responsible information management.** This not only facilitates compliance with strict privacy regulations but also opens strategic opportunities to access new markets and customers who particularly value transparency and effective protection of their personal data. Emerging technologies such as AI, IoT, and Blockchain can offer more opportunities to enhance privacy responsibly.

Prioritization matrix



Privacy Embedded in Design.
Incorporate privacy into system architecture

7 Privacy by design principles

Privacy Embedded in Design
Incorporate privacy into system architecture

Privacy as Default Setting
Protect privacy by default without user intervention

Proactive, Not Reactive
Prevent privacy issues before they occur

Full Functionality
Achieve both privacy and business objectives together

End-to-End Security
Ensure protection throughout the entire lifecycle of personal data

Visibility and Transparency
Be transparent about data practices and policies

Respect for User Privacy
Prioritize user control and privacy preferences

Privacy as Default Setting.
Protect privacy by default without user intervention

Integrate privacy considerations from the beginning of the design	Prioritize privacy as a core requirement in all activities
Appoint privacy leaders to drive efforts	Provide tools for users to easily exercise their privacy rights
Identify and address privacy risks through impact assessments	Continuously monitor and audit privacy practices to ensure compliance

Why privacy by design is important?

Data Protection: Enhances security and reduces privacy risks.

Ethical Considerations: Promotes responsible data handling practices.

Trust and Security: Builds trust and fosters user engagement.

Cost Efficiency: More cost-effective to integrate privacy from the start.

Legal Compliance: Meets privacy laws (e.g., GDPR) and avoids penalties.

15

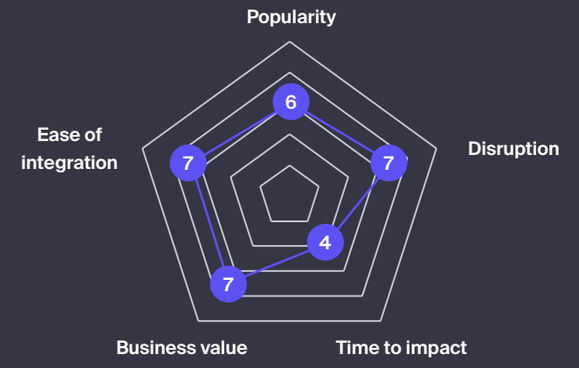
Generative Interaction Blueprints accelerate innovation and enable adaptive, data-driven design to lead the competitive market

Generative Interaction Blueprints are advanced tools and frameworks based on generative artificial intelligence, capable of **designing and adjusting interactive prototypes of digital products in real time.** These systems dynamically generate flows, interfaces, and experiences according to user behavior and immediate feedback, making the process more adaptable and data-driven.

Insight

The adoption of Generative Interaction Blueprints allows companies to transform product development, accelerating their innovation and prototyping processes, and reducing time and costs in development cycles. By leveraging the power of AI and real-time feedback, companies can not only optimize user experiences but **also lead the market with adaptive, data-driven designs that anticipate customer needs** and set new industry standards.

Prioritization matrix



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Generative Interaction Design: Key Benefits and Challenges.

Agility, personalization, and data at the service of user experience.

Benefits

- **Rapid iteration:** Agile testing and adjustments without manual updates.
- **Personalization:** Experiences tailored according to real-time feedback.
- **Efficiency:** Reduces time and costs in the prototyping process.
- **Data-driven decisions:** Enhances design with behavioral analysis.

Challenges

- **Complexity:** Requires advanced knowledge of AI and generative design.
- **Data dependency:** Needs high-quality user data.
- **Cost:** High implementation and maintenance costs.
- **Privacy:** Risks to data security and privacy.

Use cases

UI/UX Design: Quickly refine digital interfaces based on user feedback.

E-commerce: Personalize the shopping experience based on user interaction.

Web and App Development: Create interactive prototypes that evolve in real-time.

Healthcare: Develop adaptive monitoring dashboards based on patient data.

Video Games: Design adaptive NPC behaviors and dynamic environments.

16

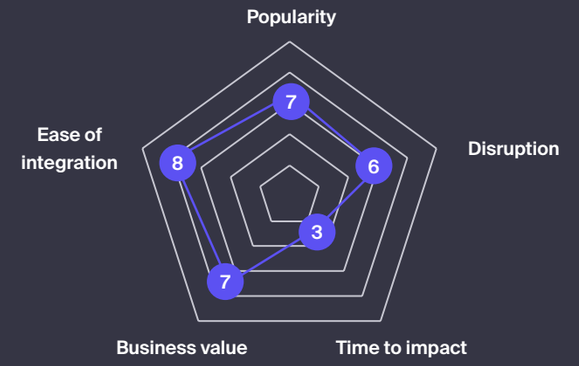
With the integration of AI, micro-interactions are becoming smarter and more adaptive, creating more relevant experiences

Micro-interaction design focuses on integrating small **interactive details within digital products**, such as subtle animations, smooth transitions, or immediate responses to user actions. These seemingly minor interactions enhance usability and user satisfaction by making them feel more intuitive, engaging, and responsive. As technology advances, they become increasingly sophisticated and intelligent, improving the overall experience.

Insight

As micro-interactions become more sophisticated and incorporate AI and predictive functions to anticipate user needs, companies **create more intuitive, engaging, and memorable digital experiences.** This increases user satisfaction, strengthens brand loyalty, and enhances competitive differentiation by offering digital products that feel more personal, human, and user-centered. However, to ensure interactions are not invasive or manipulative, it is crucial to balance user engagement with ethical considerations.

Prioritization matrix



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Micro-interactions: The four elements that define a seamless digital experience.
From trigger to loop: how to build an effective interaction.

1	**Trigger**	Action that initiates the interaction (e.g., user click, system notification).
2	**Rules**	Defines how the system responds after the trigger.
3	**Feedback**	Communicates to the user what is happening (visual, auditory, etc.).
4	**Loops & Modes**	Determines the duration of the interaction and possible changes or updates.

Use cases

Notifications and alerts: When receiving a message or notification, a small animation or vibration appears.

AI or data-driven micro-interactions: Applications that anticipate what the user might need.

Form feedback: When entering data into a form, it instantly confirms whether the data is correct or not.

Haptic feedback: A slight vibration when pressing a button or performing a gesture (e.g., swipe to unlock).

State change animations: When pressing a button or activating a switch, a brief animation indicates the active or inactive state.

17

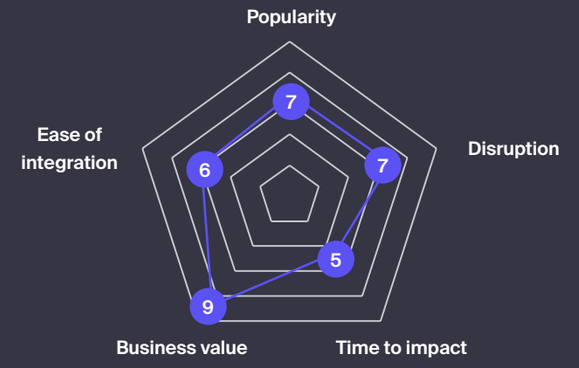
Digital Business Twins enable informed decision-making and predict outcomes, adding value to every business operation

Digital Business Twins are precise **digital replicas of real processes, systems, or business models**, continuously updated with real-time operational data. These simulations allow for analysis, optimization, and scenario simulation, enabling the anticipation of behaviors without affecting the organization's actual operations.

Insight

Digital Business Twins offer a strategic opportunity to **optimize decision-making, streamline processes, and drive innovation** through real-time simulations and predictive information. The integration of AI, RPA, and BPMS can further maximize the potential of digital twins. Despite challenges such as data integration complexity, high initial investment, and concerns about data privacy and security, companies that adopt this technology will lead in operational excellence and agility.

Prioritization matrix



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Architecture of a Process Digital Twin: The 4 Fundamental Layers.

From requirements to real-time connectivity.

Requirements Layer
Defines system constraints and performance parameters.

Simulation Layer
Tests and predicts the impact of changes in processes.

Visualization Layer
Creates clear models of current and future processes.

Connectivity Layer
Links the digital twin to the original live system.

How to build an organizational digital twin (DTO) in 3 steps.

Discover, design, and optimize for continuous data-driven transformation.

Discover: Map real processes, capture real-time data, and identify inefficiencies.

Design: Collaborate on future processes, simulate changes, and evaluate options.

Optimize: Implement improvements, manage change, and monitor performance for continuous improvement.

Use cases

Manufacturing: Predictive maintenance and production optimization increase productivity and reduce downtime.

Construction: Virtual modeling of infrastructure projects reduces costs and improves project management.

Healthcare: Patient monitoring and surgical simulations improve outcomes and efficiency.

Energy: Network optimization and equipment monitoring increase efficiency and reduce costs.

Retail: Inventory management and experience simulation enhance forecasting and personalization.

18

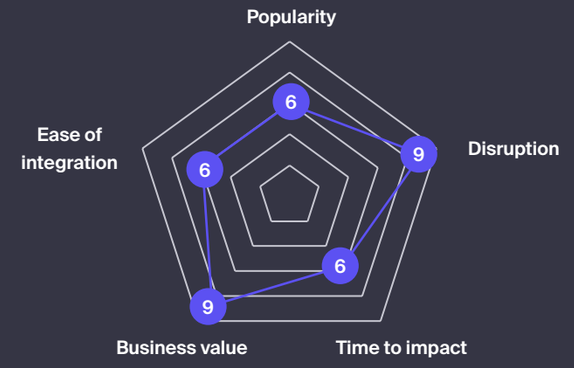
Corporate Venture Building unlocks growth by combining corporate strength with startup agility

Corporate Venture Building is the process through which **large companies create internal startups or spin-offs** to explore new market opportunities and develop disruptive solutions. This strategy accelerates innovation without bureaucratic hurdles, allowing companies to move faster, experiment, adapt, and adjust to changing market demands.

Insight

Corporate Venture Building is becoming **a key priority for CEOs, driving growth and innovation.** Additionally, companies that have invested 20% of their growth capital in new ventures have shown significantly higher revenue growth compared to those that do not invest in creating new ventures. To succeed, CEOs must ensure continuous commitment and collaboration, maintaining consistent investment in venture capital for sustained expansion.

Prioritization matrix



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Models to Boost Startups From Within The Company: Venture Building, VC, Incubators, and Accelerators.

Comparison of approaches to create, finance, or scale corporate innovation.

Aspect	Corporate Venture Builder	Corporate Venture Capital	Incubator	Accelerator
Role in company development	Creates, develops, and scales startups actively	Provides funding with little involvement	Support startups in early stages	Mentorship and resources for growth
Level of involvement	High (all stages)	Low (mainly financial)	High (early stages)	Medium (growth phase)
Focus	Create and scale new businesses	Invest in high-return startups	Foster early-stage ideas	Accelerate the growth of operational startups
Time	Long-Term	Ongoing investment	Vares (months to years)	Short-term (3-6 months)
Financing/ Resources	Full operational and financial support	Capital in exchange for equity	Office space, mentorship, initial funding	Mentorship, resources, initial funding
Control	High	Low	Low	Low
Strategic Alignment	High	Medium	Low	Low
Asset Utilization	High	Medium	Medium	Medium

Puntos clave

Accelerated innovation: Innovation progresses rapidly; companies that do not adapt risk losing customers.

Dilemma: Corporations want to innovate, but they lack flexibility in their traditional structures.

Cost of change: Innovation is costly and challenging, especially in times of uncertainty.

Solution: Venture Building allows for faster innovation with fewer risks, creating new businesses outside the core enterprise.

19

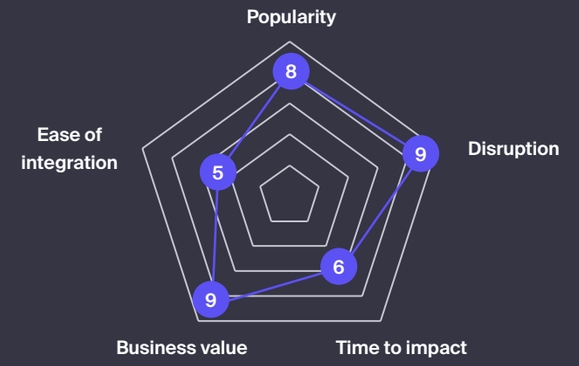
Next-Generation Robotics and cobots with RPO create collaborative and adaptable environments, improving productivity

Next-generation robotics and cobots with RPO **combine physical robots and advanced digital systems to optimize workflows.** They facilitate safe collaboration between humans and robots, where robots autonomously coordinate and manage repetitive or strenuous tasks, while digital systems handle complex processes. This integration creates an intelligent and adaptable ecosystem that drives efficiency, productivity, and safety.

Insight

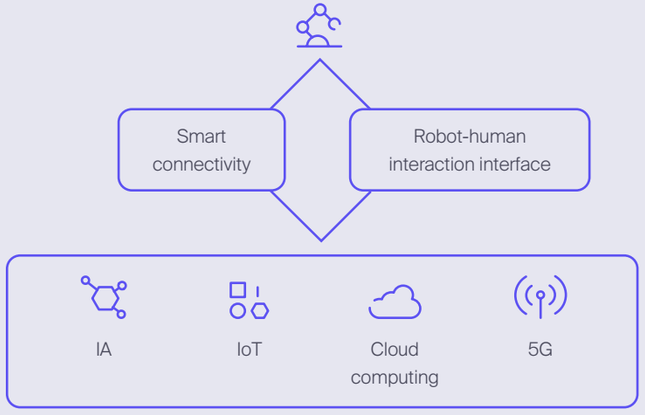
Next-generation robotics and cobots with RPO offer strategic opportunities to **boost efficiency and productivity**, while also presenting challenges related to costs, workforce training, and human-robot interaction. This trend enables more agile, flexible, and scalable processes, offering competitive advantages, particularly in manufacturing, logistics, retail, and healthcare, where operational optimization is critical. Additionally, it is essential to balance technological progress, workforce well-being, and long-term economic impact.

Prioritization matrix



Cobotic Systems: Integration of AI, 5G, and human-robot interfaces.

Converging technologies for intelligent and real-time collaboration.



Best practices for safe and efficient collaboration with cobots.

Safety, communication, and adaptability as pillars of human-machine work.

Safety protocols: Implement advanced safety features to prevent accidents.

Task sharing: Delegate repetitive tasks to cobots and leave complex tasks to humans.

Real-time communication: Facilitate feedback and quick interventions.

User-friendly interfaces: Use intuitive interfaces to simplify programming.

Adaptability: Design cobots to quickly adapt to task and condition changes.

Training: Provide adequate training programs for the safe and effective use of cobots.

Use cases

Manufacturing and assembly: Precision assembly, quality inspection, material handling.

Retail: In-store inventory control, supply chain optimization, customer data management.

Warehouse and logistics: Automated inventory management, order fulfillment, packaging.

Construction: Support in bricklaying, welding, and heavy lifting with digital coordination.

Healthcare: Robotic surgeries, patient care, laboratory automation, digital record management.

20

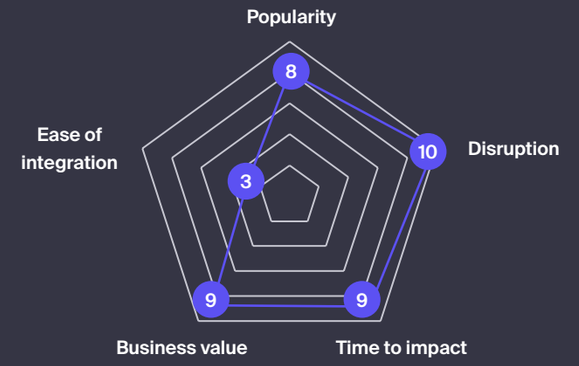
Post-Quantum Cryptography is key for the future, with strategic planning, early adoption, or enhancement of current methods

Post-Quantum Cryptography (PQC) refers **to cryptographic algorithms and protocols specifically designed to withstand attacks from future quantum computers**, which, once sufficiently advanced, could decrypt current encryption systems. PQC aims to create cryptographic methods that offer robust protection against quantum advancements and safeguard the confidential data of companies and their clients.

Insight

Early incorporation of post-quantum cryptography allows companies to strategically protect critical information in the long term, especially in sensitive sectors such as finance, healthcare, and defense. This technology anticipates future security risks from quantum computing, **enabling the maintenance of customer and investor trust and ensuring regulatory compliance against emerging digital threats**. The best strategy depends on security needs, risk tolerance, and resources.

Prioritization matrix



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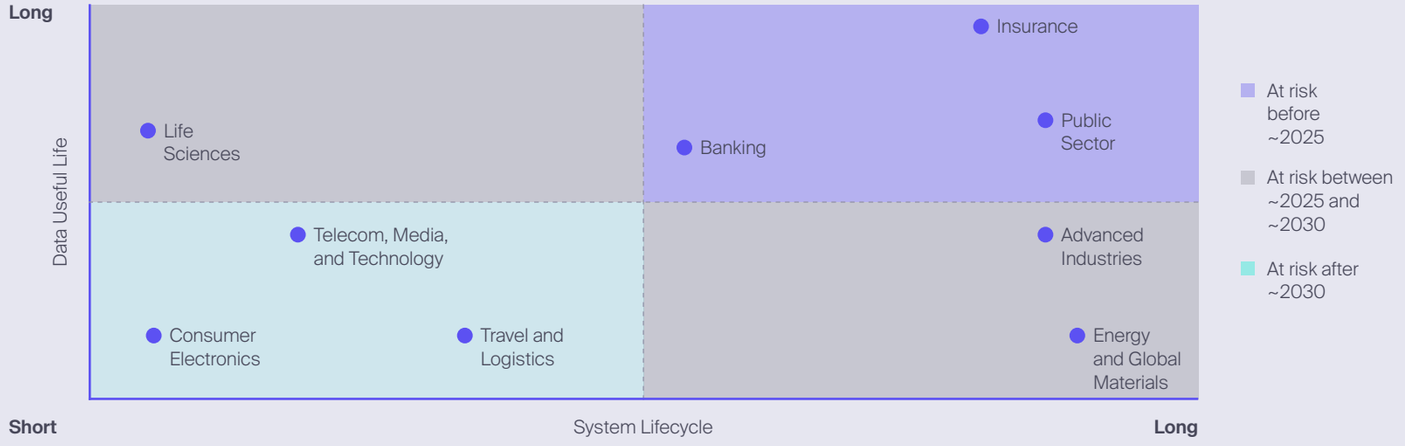
Post-Quantum Cryptography: sectors at risk from future quantum attacks.
Impact assessment based on the lifespan of data and systems.



Key points

Long-term protection: PQC is essential for safeguarding sensitive data against future "harvest now, decrypt later" attacks.

Avoiding vulnerabilities: It addresses the risk that current algorithms may become insecure against quantum attacks.

Algorithm development: Focus on lattice-based, hash-based, code-based, and other methods resistant to quantum computing.

Standardization: NIST is working on standardizing PQC algorithms for widespread use.

Preparation for PQC: Companies should evaluate encrypted systems, plan updates, and inform teams and suppliers.

21

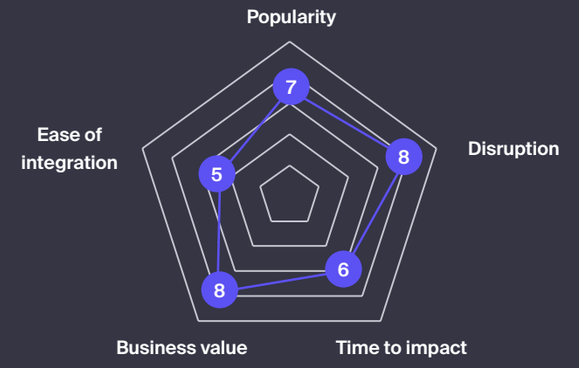
Privacy-Enhancing Technologies (PET) enable the secure use of data, ensuring privacy, regulatory compliance, and innovation

Privacy-Enhancing Technologies (PET) are techniques that **allow valuable information to be extracted from sensitive data without compromising privacy.** These include methods such as advanced anonymization, homomorphic encryption, and secure multiparty computation, which protect data during processing and thus enable its use for analysis or collaboration.

Insight

Insight. Companies can gain a competitive advantage by using Privacy-Enhancing Technologies (PET) to extract value from sensitive data, ensuring privacy and reducing regulatory risks. Adopting PET not only mitigates privacy risks but also **opens opportunities for data-driven innovation and allows innovation in highly regulated sectors** such as banking, healthcare, and insurance.

Prioritization matrix



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Privacy-Enhancing Technologies (PET): Strategies to Protect Sensitive Data.

Cryptography, masking, and artificial intelligence at the service of privacy.

Privacy-Enhancing Technologies (PET)

Cryptographic Algorithms

- Homomorphic Encryption: Allows computations to be performed on encrypted data.
- Secure Multiparty Computation (SMPC): Collaborative computations with encrypted data.
- Differential Privacy: Adds statistical noise to protect privacy.
- Trusted Execution Environment (TEE): Isolates sensitive operations from the main system.

Data Masking Techniques

- Obfuscation: Replaces sensitive data with distracting information.
- Pseudonymization: Substitutes identifiable data with fictitious data.
- Communication Anonymizers: Replaces identities with disposable data.

AI-Based Privacy Methods

- Synthetic Data Generation: Creates artificial data with real characteristics.
- Federated Learning: Trains AI without centralizing data.

Use cases

Test Data Management: Protects customer data during testing, minimizing internal access.

Healthcare Services: Protects patient data during research and sharing.

Personalized Marketing and Advertising: Enables targeted campaigns without exposing users' personal data.

Data Transfer Between Parties: Ensures secure data exchange in intermediary businesses.

22

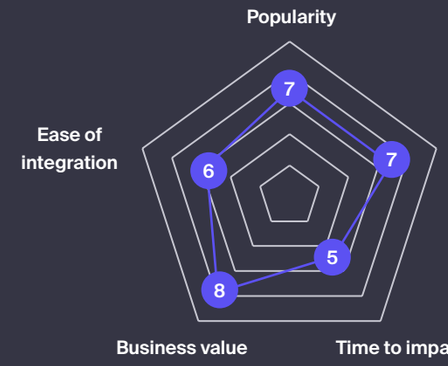
Data Clean Rooms unlock opportunities for secure collaboration, valuable insights, and strategy optimization

Data Clean Rooms are secure, encrypted digital environments that allow multiple organizations to share and analyze confidential data under strict privacy, encryption, and traceability protocols. These spaces enable multiple parties **to collaborate on data analysis without compromising privacy** or disclosing important information while obtaining strategic insights collaboratively.

Insight

Implementing Data Clean Rooms allows companies to safely leverage strategic external data, facilitating business alliances, mergers, acquisitions, advertising collaborations, or joint research without the risk of exposing sensitive data. This **drives data-based innovation, improves segmentation and personalization of commercial offers, optimizes strategic decision-making, and reduces operational, legal, and reputational risks** related to the management of confidential data.

Prioritization matrix



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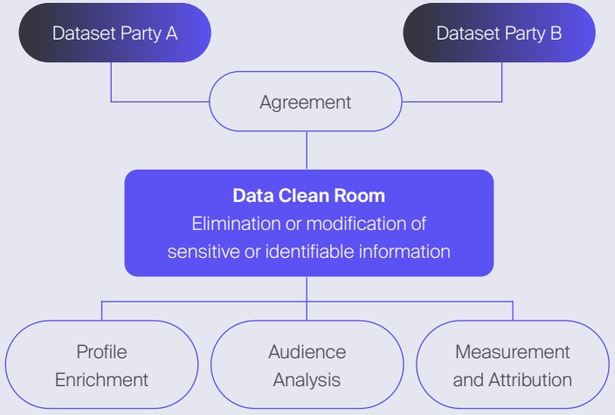
Data Clean Room: Secure environment for collaborative analysis without compromising privacy.

Anonymized data exchange for profiles, audiences, and effective measurement.



Key Features of a Data Clean Room.

Privacy, access control, and regulatory compliance as keys to collaborative processing.

Data Segregation and Isolation	Isolated environment to prevent unauthorized access and data leaks.
Secure Data Collaboration	Robust encryption protocols, secure file transfers, and APIs.
Access Controls and Traceability	Restricted Access with User Activities Tracked to Ensure Accountability.
Anonymization and De-identification	Protects privacy by removing personally identifiable information.
Compliance	Meets regulations such as GDPR, HIPAA, and CCPA for the secure handling of data.

Use cases

Multichannel Marketing Attribution: Analyze the effectiveness of campaigns securely.

Financial Risk Assessment: Share and analyze financial data to evaluate risks.

Customer Insights and Segmentation: Explore customer behavior and create audience segments.

Supply Chain Optimization: Share and analyze supply chain data without exposing confidential information.

Fraud Prevention: Detect and analyze fraud patterns through secure integration of data from various sources.

23

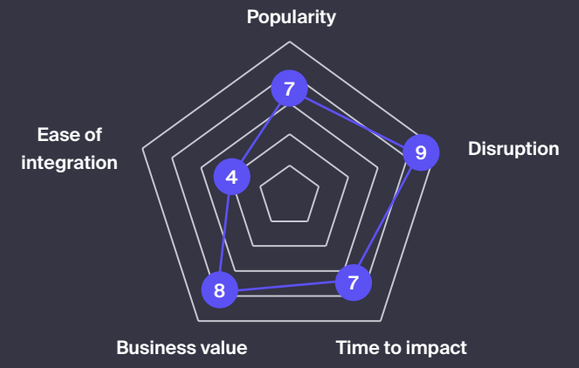
Self-Sovereign Identity (SSI) provides secure and decentralized control over identity and data, enhancing privacy

Self-Sovereign Identity (SSI) is a decentralized model of digital identity management, where **individuals and organizations have full control over their personal data**, sharing it selectively without the need for centralized intermediaries. Through various technologies, users store their personal or business information in secure digital wallets, sharing it according to specific needs. In SSI, the individual is at the center of their data ecosystem, controlling with whom, for what purpose, and for how long they share their information.

Insight

Implementing SSI offers significant strategic advantages for companies, **facilitating critical business processes** such as the digital onboarding of customers and suppliers, rapid and secure authentication on digital platforms, and instant validation of business or regulatory credentials. Organizations can significantly simplify their compliance and KYC (Know Your Customer) processes, reduce operational costs associated with traditional intermediaries, and greatly improve security and privacy.

Prioritization matrix



Self-Sovereign Identity: los tres pilares que conforman la identidad digital.
Atributos asignados, inherentes y acumulados al servicio de una identidad descentralizada y segura.

Use cases

Travel and SSI: Digital passports for streamlined airport control.

Digital Banking: Simplification of KYC with secure identity.

Age Verification: Proof of age without revealing complete personal data.

Healthcare: Secure control and sharing of medical records.

Job Applications: Share verified credentials without additional checks.

24

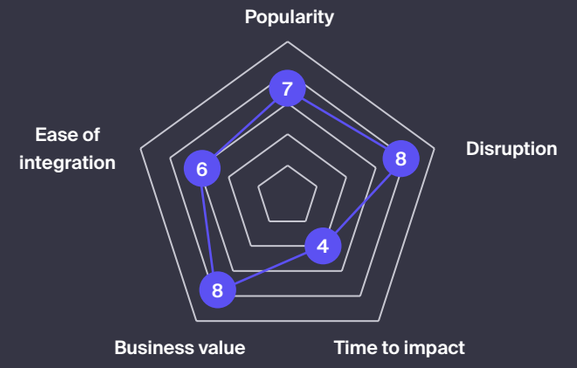
Energy automation enables real-time monitoring, optimizing efficiency, and promoting sustainable growth

Energy management automation involves integrating advanced IoT sensors, smart platforms, and AI-powered algorithms to **monitor, analyze, and dynamically regulate energy consumption** in buildings, industrial plants, and electrical grids in real-time. The goal is to develop more efficient structures that can dynamically adjust and adapt to both energy demand and resource availability.

Insight

The adoption of automated energy management systems **facilitates a significant reduction in operational costs related to energy consumption**, helps achieve environmental and regulatory sustainability goals, and improves operational efficiency. Additionally, it favorably positions organizations in markets increasingly sensitive to ESG (environmental, social, and governance) criteria, enhancing their competitiveness, corporate reputation, and ability to adapt to future energy and environmental regulations.

Prioritization matrix



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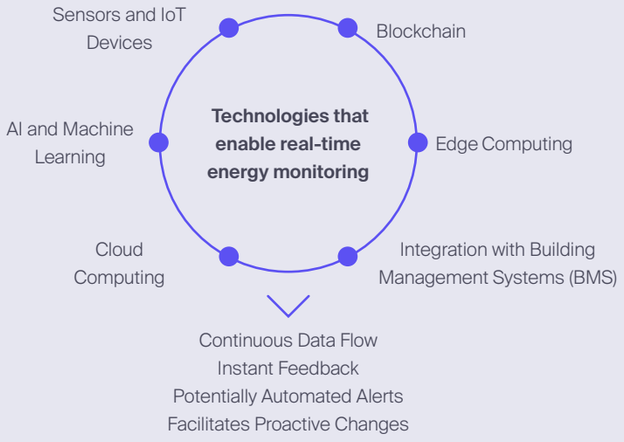
Key Technologies for Real-Time Energy Monitoring.

Sensors, AI, and edge computing at the service of energy efficiency.



Benefits of Energy Management Automation.

From sustainability to predictive maintenance with real-time data.

- Minimizes energy waste
- Improves cost efficiency
- Increases operational efficiency
- Promotes sustainability
- Enables predictive maintenance

Use cases

Smart Buildings: Optimization of energy use in lighting, HVAC, and maintenance systems.

Integration of Renewable Energies: Optimization of solar, wind, and energy storage systems.

Industrial Energy Management: Improvement of energy efficiency in manufacturing processes and equipment.

Data Centers: Enhancement of cooling and server load distribution to reduce energy consumption.

Smart Grids: Real-time management of energy demand and supply.

25

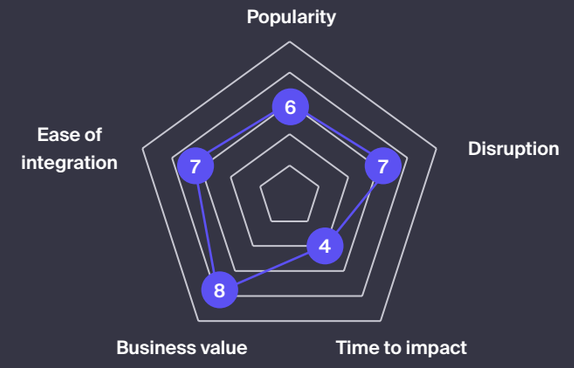
Green Code drives innovation in sustainable software development, reducing costs and improving efficiency

The concept of Green Code involves **designing, developing, and deploying software under the criteria of energy efficiency and environmental sustainability.** It focuses on creating optimized code that minimizes the consumption of computing resources, reduces the environmental impact of energy use, and promotes responsible practices throughout the software lifecycle.

Insight

Green Code offers significant opportunities for companies **to reduce operational costs, be more socially responsible, and build trust** with stakeholders. This practice also enhances corporate reputation, facilitates environmental regulatory compliance, and allows differentiation in markets where consumers and investors increasingly value technological sustainability. Additionally, it anticipates future environmental regulations and strategically positions the company in front of clients and markets that are increasingly sensitive to ESG criteria.

Prioritization matrix



Three Pillars to Reduce the Carbon Footprint of Software.

Energy Efficiency, Optimized Hardware, and Conscious Resource Use

Energy Efficiency

Minimize electricity consumption

Hardware Efficiency

Reduce the embedded carbon footprint.

Carbon Awareness

Optimize usage when electricity is clean and reduce it when it is not.

Best Practices for More Sustainable Software Development.

Technical Strategies to Minimize the Environmental Impact of Code

Code Optimization: Improve algorithms, manage memory, and eliminate redundant calculations.

Reduce Cloud Energy Consumption: Choose efficient providers, scale appropriately, and reduce unnecessary storage.

Minimize Network Traffic: Compress data, use caching mechanisms, and optimize API calls.

Efficient Software Design: Include energy-saving modes, efficient hardware use, and optimization for low-power devices.

Green Software Development Tools: Use sustainable development environments and optimize the CI/CD pipeline.

Sustainability Testing: Integrate energy consumption tests into the quality control process.

Key points

Energy Efficiency: Efficient code requires less processing power, reducing overall energy consumption.

Reduces Network Traffic: Decreases data transfer demand, saving energy at the infrastructure level.

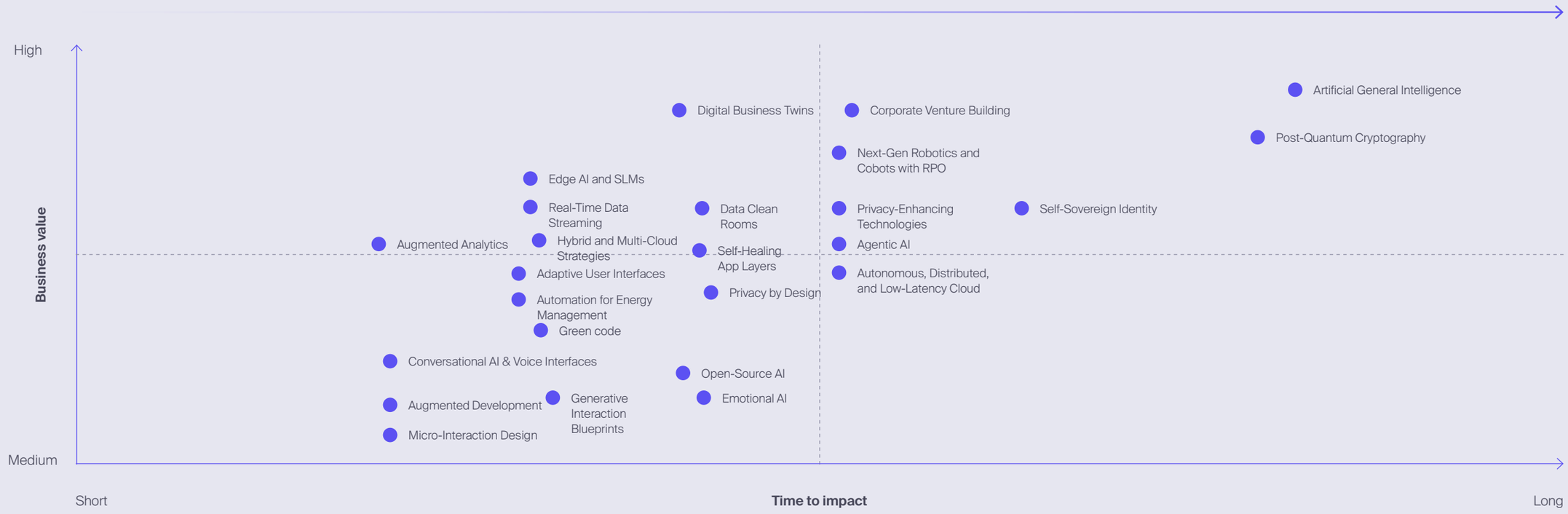
Prevents “Code Bloat”: “Lean coding” practices avoid unnecessary code that wastes resources.

Promotes Sustainable Software: Aligns software operations with global efforts against climate change.

Prepares the Business for the Future: Complies with evolving environmental regulations and customer expectations.

In general, the landscape shows a balance between quick-to-market solutions and transformative technologies that will develop over time.

The impact matrix illustrates the relationship between commercial value and impact time for various emerging technologies. While technologies with high commercial value and low impact time offer immediate opportunities for Quick Wins, those with high commercial value and longer impact time represent significant long-term potential but require patience and sustained investment.



Global ranking

Post-Quantum Cryptography	7,8
Artificial General Intelligence	7,4
Next-Gen Robotics and Cobots with RPO	7,4
Open-Source AI	7,2
Corporate Venture Building	7,2
Privacy by Design	7
Self-Sovereign Identity	7
Agentic AI	6,8
Hybrid and Multi-Cloud Strategies	6,8
Conversational AI & Voice Interfaces	6,8
Digital Business Twins	6,8
Privacy-Enhancing Technologies	6,8
Edge AI and SLMs	6,6
Data Clean Rooms	6,6
Automation for Energy Management	6,6
Augmented Analytics	6,4
Augmented Development	6,4
Self-Healing App Layers	6,4
Autonomous, Distributed, y Low-Latency Cloud	6,4
Green Code	6,4
Real-Time Data Streaming	6,2
Emotional AI	6,2
Generative Interaction Blueprints	6,2
Micro-interaction Design	6,2
Adaptive User Interfaces	6

Artificial Intelligence

Design

Data and Software

Business Innovation

IT Infrastructure and Cloud

Cybersecurity

Customer Experience

Sustainability

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