



Data, Analytics & AI **TRENDS**

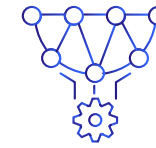
for 2024

OVERVIEW OF TRENDS

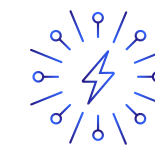
The realm of Data, Analytics & AI is undergoing swift transformation, driven by ongoing advancements in technology, science, engineering, and evolving regulatory landscapes. To ensure your organization stays ahead in an increasingly competitive market and maintains agility, SDG Group's data experts have pinpointed nine influential Data, Analytics & AI trends for 2024.

These trends can help your organization succeed by empowering you to proactively foresee changes, fine-tune your strategic objectives, effectively handle uncertainty and risks, and capitalize on emerging technologies to expand your enterprise.

Here are the nine Data, Analytics & AI trends that are expected to have the most significant impact in 2024...



1
**Hyper Automation
of Data Fabrics**



2
**The Gen
AI Catalyst**



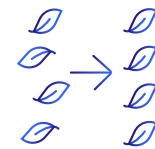
3
**The New
Transactional Analytics**



4
**Trustworthy &
Admissible AI**



5
**Intelligence-Enriched
Business Applications**



6
**AI-Enhanced
ESG**



7
**A New Dawn for
Business Intelligence**



8
**Modern
Data Platforms**



9
**The Next Leap in
Artificial Intelligence**

HYPER AUTOMATION OF THE CONSTRUCTION OF DATA FABRICS

1

Data fabrics represent an advanced framework for managing and accessing data across disparate sources and locations, providing a cohesive and seamless environment for data utilization. The hyper automation of data fabric construction addresses the growing complexity and scale of data environments, especially in organizations that are increasingly reliant on diverse data sources spread across on-premises, cloud, and edge computing platforms.

This trend is primarily driven by advancements in AI and machine learning technologies. These technologies enable intelligent and dynamic data integration, harmonizing data from multiple, varied sources without the need for extensive manual setup and maintenance. By automating tasks such as data discovery, categorization, and integration, organizations can rapidly deploy and scale their data architectures, adapting to new data sources and types with unprecedented agility.

Another aspect of this trend is the hyper automation of governance and compliance within data fabrics. As data privacy and security continue to be paramount, automated governance tools will play a critical role in ensuring data across the fabric adheres to regulatory standards and organizational policies. This automation not only reduces the risk of data breaches and non-compliance, but also alleviates the administrative burden on data teams, allowing them to focus instead on strategic initiatives.

Furthermore, the evolution of data fabrics through hyper automation is expected to democratize data access within organizations. Automated data fabrics can provide more user-friendly interfaces and self-service capabilities, enabling a broader range of users, regardless of their technical expertise, to access and analyze data. This democratization is crucial for fostering a data-driven culture where insights and decision-making are not confined to data specialists, but are accessible across the organization.

BUSINESS IMPACT

Greater Collaboration

Shared unified data access through fabrics unlocks cross-team and cross-departmental collaboration opportunities.

Increased Agility

Business teams can get access to diverse and complex sets of data faster. IT teams can more quickly adjust data infrastructure across clouds without extensive re-engineering. This enables faster adaptation to changing analytics and workload needs.

Improved Productivity

Organizations can spend less time on manual coding and maintenance of complex data integrations across clouds. Users can focus on value-add analytics against a growing number of data repositories.



The explosion of generative AI in 2022, driven by models like DALL-E 2, GPT-3, and Stable Diffusion, is providing a catalyst that will drive new breakthroughs in more established legacy AI approaches in 2024 and beyond. Generative models produce novel content like images, text, video, and audio. This ability to synthesize original artifacts has a diversity of downstream applications.

One application of note is the use of generative AI to rapidly create high-quality, labeled training data. This solves a key bottleneck for supervised learning algorithms that require massive labeled datasets. By unleashing legacy computer vision, NLP, and speech recognition models on abundantly available synthesized data, their accuracy can rapidly improve. Data augmentation via generative adversarial networks (GANs) will also boost legacy AI model performance.

Another catalyst is using generative models like GPT-3 themselves as trainable feature extractors. By combining their representations with legacy ML algorithms like logistic regression or SVMs, powerful hybrid AI solutions emerge. Additionally, generative AI can synthesize missing data, simulate counterfactuals, create candidate explanations, and optimize solutions as inputs to legacy AI and expert systems.

In summary, the adaptable semi-supervised creativity of leading-edge generative AI will profoundly enhance both the quality and quantity of training data. This will drive step-function improvements in established supervised, unsupervised, and reinforcement learning algorithms across industries.

BUSINESS IMPACT

Enhanced Insights

By generating missing data, simulating scenarios, and detecting patterns, generative AI can unlock deeper insights from data, ultimately improving decision making.

New Revenue Streams

Generative content creation like synthetic media, video, images, and text can be monetized or enhance products to drive revenue.

Improved Customer Experience

Conversational agents powered by large generative language models provide customized, natural interactions to enhance CX.

THE NEW TRANSACTIONAL ANALYTICS

3

As real-time analytics becomes increasingly critical across industries, hybrid transactional/analytical processing (HTAP) will see accelerated adoption. HTAP enables analytical queries to run against live transactional data stored in the same database. This eliminates tedious data movement and out-of-date batch reporting. By 2024, HTAP capabilities will expand beyond financial services and telecom into wider enterprise adoption.

Database vendors are enhancing offerings to support HTAP workloads. For example, Snowflake's Unistore streamlines transactional app development, allowing developers to build enterprise transactional apps with simplicity, performance, ease, and scale. Purpose-built HTAP databases like Google Spanner are also gaining traction. Cloud infrastructure makes it easier to implement HTAP at scale. Combining OLTP and OLAP in the cloud provides flexibility and scalability that would otherwise be impossible with on-premises systems.

Additionally, live data systems streamline processes by automating data collection and reporting, reducing the need for manual input and minimizing errors. Real-time visibility into operations will also allow organizations to identify and address inefficiencies promptly, as teams across different geographical locations can collaborate seamlessly when working with live data.

As technologies like 5G, edge computing and IoT mature, HTAP will enable real-time analytics by processing transactions at the edge before sending data to the cloud. Overall, by eliminating analytic latency, HTAP unlocks immediate value from live data, which provides benefits both internally (optimization of operations and costs) and externally (enabling new use cases).

BUSINESS IMPACT

Faster Insights for Rapid Decision Making

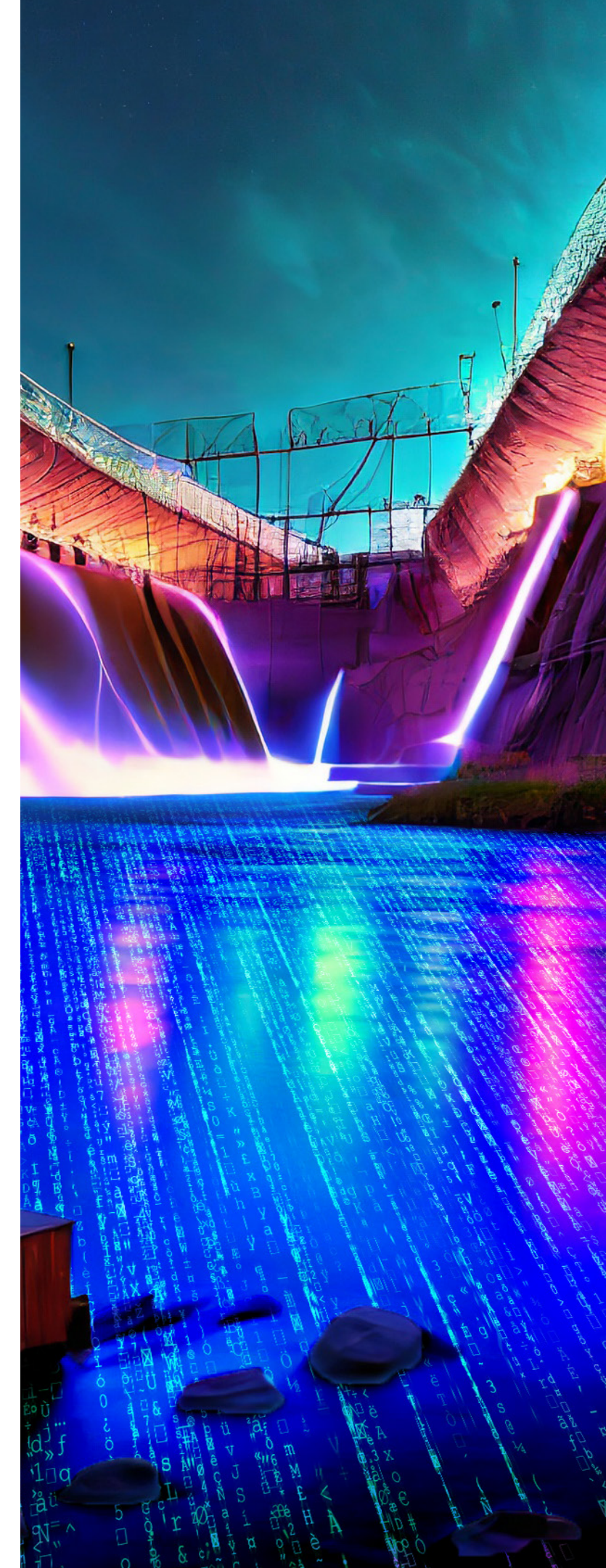
Real-time analytics on live data enables quicker response times.

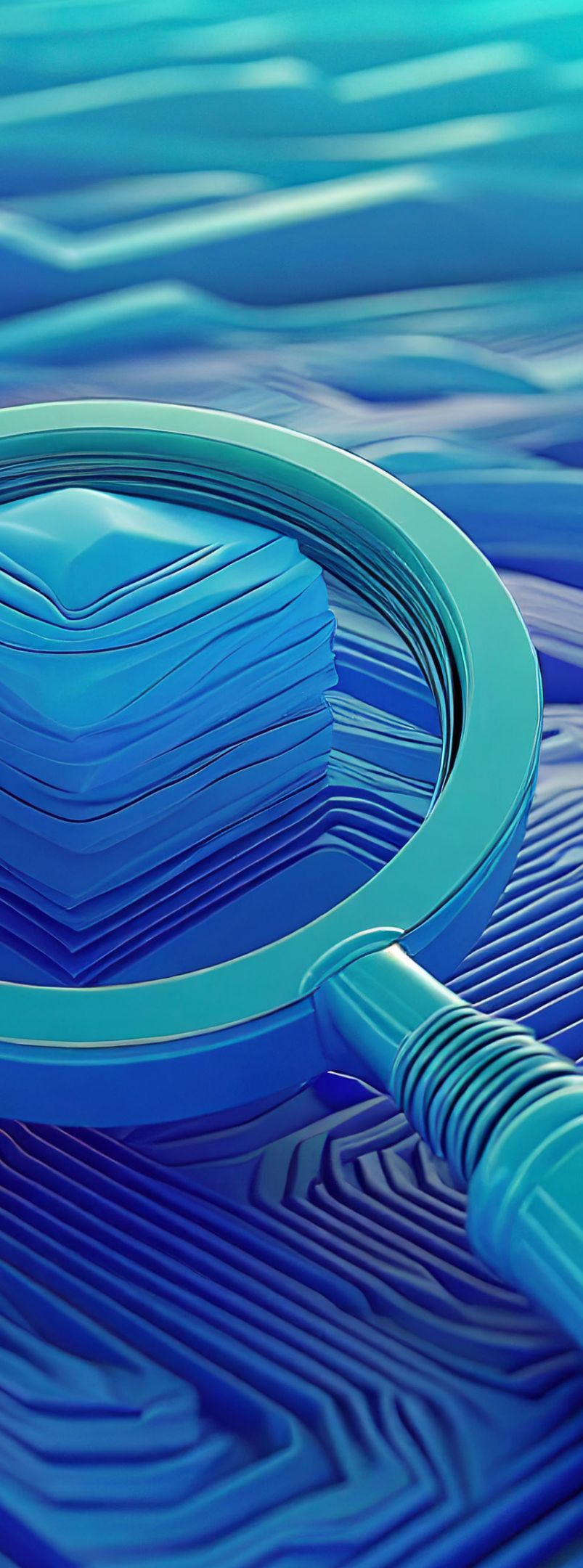
Increased Operational Efficiency

Automate and optimize processes informed by analytics on transactions while reducing the tedious efforts of ETL/ELT.

Lower Infrastructure Costs

Consolidate transactional and analytical systems into unified systems.





As AI increasingly makes impactful decisions, expectations will rise around trustworthy and admissible AI. Regulatory bodies in 2024 will demand more algorithmic transparency and bias detection. To build confidence, organizations must implement robust AI governance policies, ethics frameworks, and technical tooling.

Trustworthy AI exhibits qualities like explainability, fairness, accountability, and accuracy. Explainable AI will become essential using methods like LIME and SHAP that produce human-interpretable reasons behind AI behavior. Meanwhile, bias detection platforms will analyze model training data and predictions for discrimination.

For reliability, MLOps processes will be widely adopted. MLOps enables rigorous testing, version control, model monitoring, and automated deployment of AI systems. With MLOps, models can

be rapidly rebuilt, thus improving maintainability. AI management platforms will also automate complex model development pipelines from prototyping to production

Overall, trust and admissibility will be competitive differentiators for AI solutions. Organizations must be committed to mitigating risks and operating AI responsibly. Independent audits, ethics boards, and internal/external watchdog groups will emerge to instill public confidence. The goal is developing AI that augments human capabilities objectively and equitably, while also protecting privacy and transparency.

BUSINESS IMPACT

Compliance

Meeting regulatory requirements around transparency, fairness, and accountability.

Customer & Employee Retention

Responsible use of customer data preserves loyalty and satisfaction. Employees want to work at companies with ethical standards for AI use.

New Opportunities

Trust enables exploration of innovative AI applications that would otherwise carry too much risk.

INTELLIGENCE- ENRICHED BUSINESS APPLICATIONS

5

By 2024, integrating predictive analytics and AI into business software will become standard across industries. Rather than deploying machine learning models separately, intelligence will be embedded into the core transactional applications powering operations.

From CRM and ERP, to supply chain management and HR systems, software will include capabilities like personalized recommendations, prescriptive actions, predictive maintenance, and conversational interfaces. This enables employees to leverage data science without leaving their workflows.

Vendors like Salesforce, SAP, and Microsoft are rapidly enhancing business application platforms to consume and operationalize AI services. Low-code ML tools empower subject matter experts to build models tailored to high-value domains like customer churn, project risk, and inventory optimization. MLOps practices will also gain traction to manage models post-deployment.

In summary, melding transactional business data, analytics, and customizable AI unlocks major efficiency and automation gains. Rather than toggling between separate apps, employees can execute intelligent workflows from a single interface. As analytics seamlessly guides workflows, every decision point becomes more data-driven. This intelligence enrichment of business applications will drive widespread productivity improvements.

BUSINESS IMPACT

Improved Automation

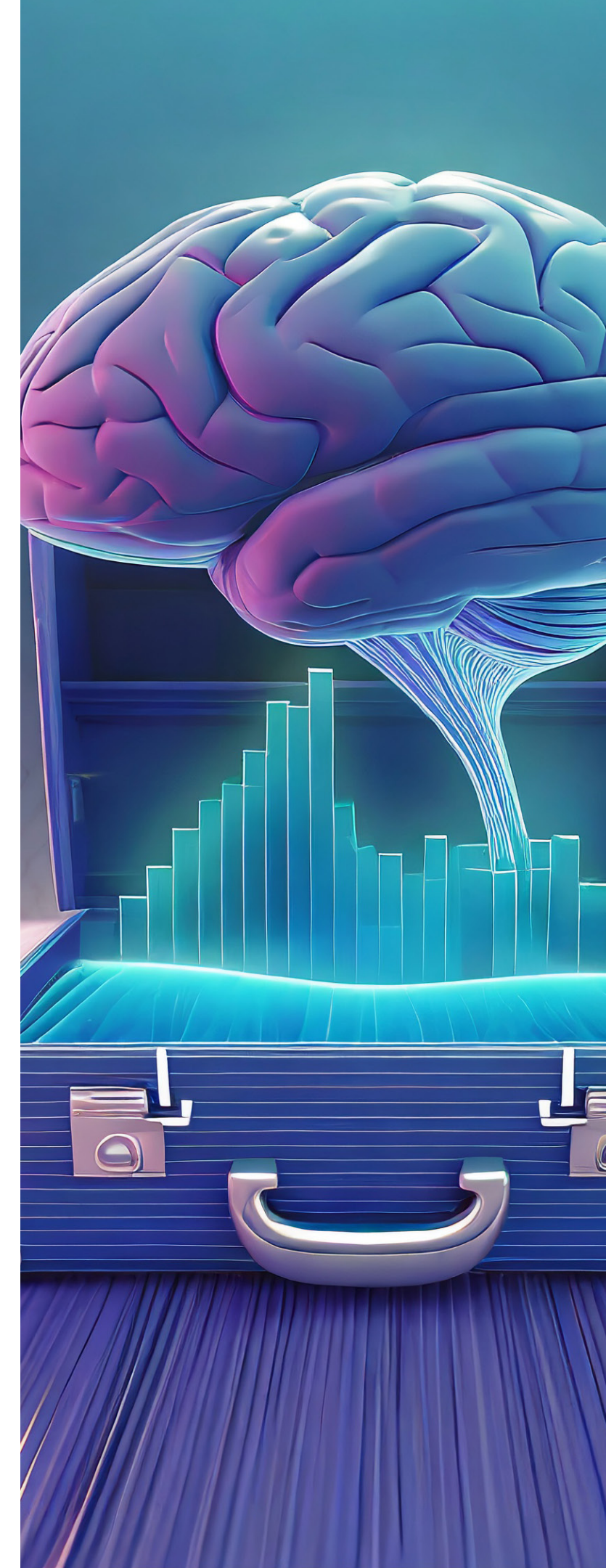
Smart applications can take routine actions like approvals, alerts, and service requests automatically based on intelligence.

Hyper Personalization

Leverage AI to tailor interactions and experiences uniquely for each customer.

Improved Resource Allocation

Optimize planning and forecasting by applying intelligence to demand signals.





Environmental, social, and governance (ESG) metrics are becoming essential for organizations to measure their progress and impact. By 2024, leveraging AI to gather insights from ESG data will become a standard practice.

Complex unstructured data like sensor feeds, satellite imagery, and sustainability reports can be analyzed using natural language processing to track ESG KPIs. Computer vision algorithms will monitor facilities and operations to detect compliance issues or unsafe practices. Meanwhile, predictive models will forecast environmental risks and simulate decarbonization scenarios.

ESG data integration remains challenging with inputs spread across various operational systems. MLOps will facilitate data pipelines into cloud analytics hubs to enable holistic analysis. AI

will also drive personalized real-time ESG performance feedback for employees to promote sustainable behaviors.

To demonstrate authentic sustainable transformation to investors and regulators, AI-verified ESG data will be a necessity by 2024. AI can provide consistent auditable measurements and identify areas needing improvement. Overall, organizations failing to utilize AI to measure, manage, and improve their ESG footprint will find themselves at a growing disadvantage.

In summary, AI and Advanced Analytics will become integral in quantifying, tracking, and ultimately enhancing ESG initiatives. This will enable reliable sustainability reporting and help confirm organizations “walk the talk”.

BUSINESS IMPACT

Improved Regulatory Compliance

AI helps monitor operations and ensure adherence to ESG-related regulations.

Enhanced Brand Reputation, Inside and Out

Demonstrating authentic ESG commitment builds customer and public trust. Employees increasingly favor ethical employers with positive ESG profiles.

Cost Savings

AI identifies most impactful areas to target for efficiency gains and waste reduction.

A NEW DAWN FOR BUSINESS INTELLIGENCE

7

In an era defined by the exponential growth of digital assets, the conventional understanding of business intelligence (BI) is evolving rapidly. Historically, BI was tethered to structured data and limited by the constraints of enterprise search, but the dawn of this new age in BI promises to expand its horizons, allowing organizations to harness the full spectrum of available “digital” assets.

The shift is driven by a fundamental realization that decisions can be made not just by data, but by the comprehensive amalgamation of all available information, both within the enterprise and from the broader digital universe. For example, the concept of an “AI Data Analyst” involves the integration of AI into data analysis, revolutionizing how data is handled and interpreted in various industries. This transformation is not about replacing human analysts, but rather enhancing their capabilities. AI automates mundane tasks like data collection, cleaning, and categorizing, freeing analysts to focus on more complex and strategic tasks.

This emerging trend envisions BI as more than just a tool for generating insights from structured data. It sees BI as the pivotal decision support system that can seamlessly navigate and contextualize vast and disparate sources of information, leading to true informed decisions. The concept of “all available information ever” comes into play, where businesses can tap into external and internal data, social media trends, historical records, real-time feeds, and more, to paint a complete and dynamic picture of the landscape in which they operate. Hybrid and contextual capabilities are at the heart of this new dawn for BI, allowing organizations to blend these diverse datasets to gain deeper insights, anticipate market shifts, and adapt strategies with agility.

The dawn of this new BI era represents a bold step forward, fundamentally altering the way organizations perceive, process, and act upon information, thereby shaping a more data-driven and prosperous future for businesses across the globe.

BUSINESS IMPACT

Predictive Analytics

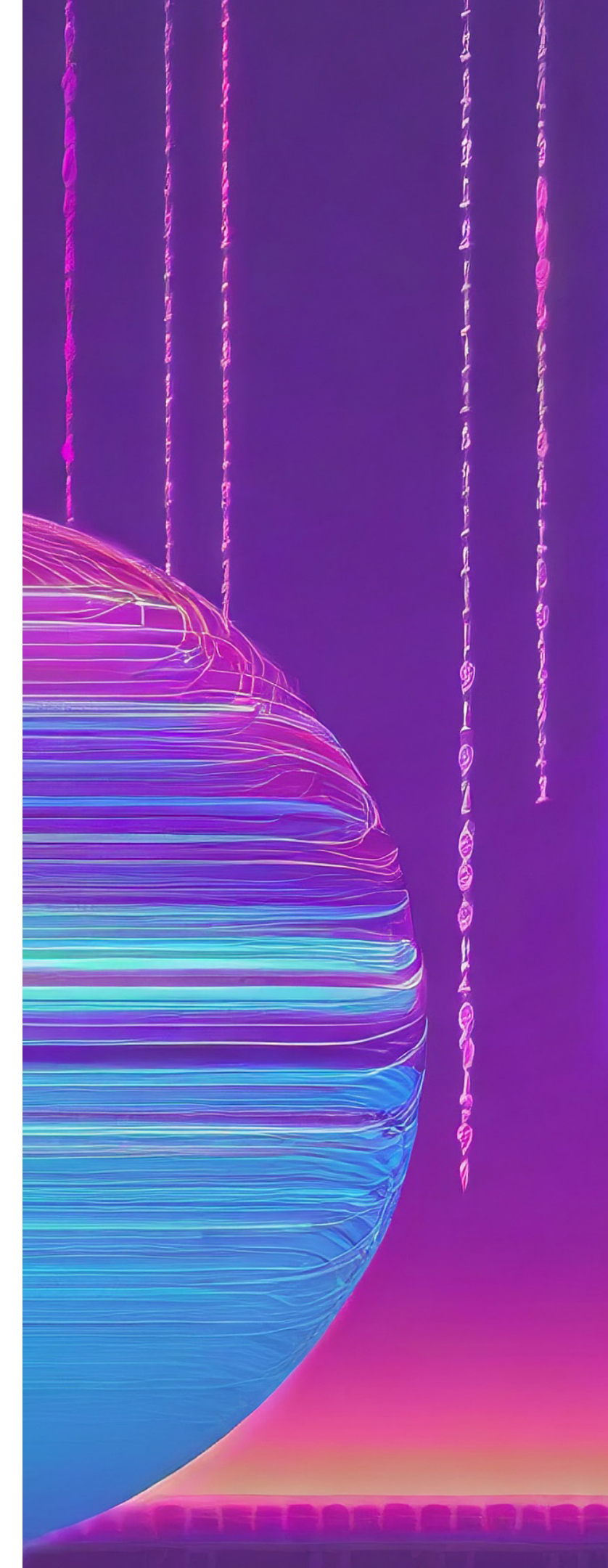
Evolving BI enables predictive analytics, which helps businesses forecast future trends, demand, and customer behavior, improving planning and strategy.

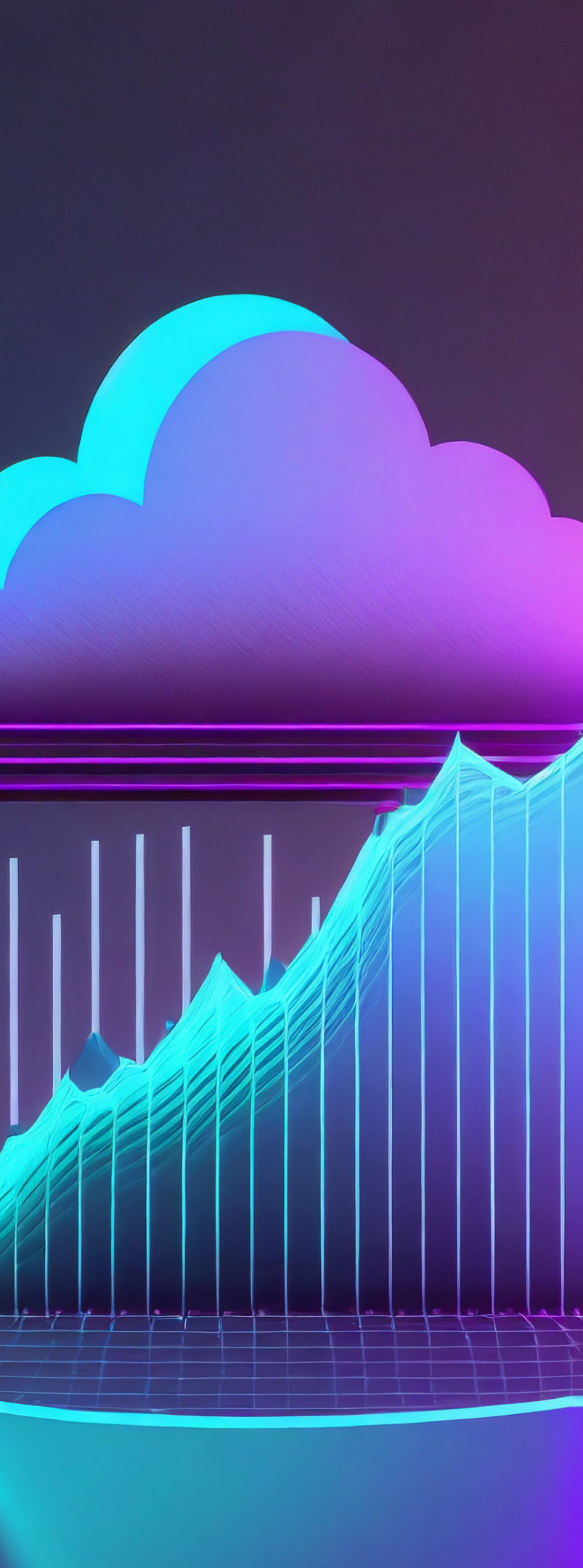
Real-Time Monitoring

Evolving BI applications enable real-time monitoring of KPIs and business performance, allowing for proactive interventions.

Compliance and Governance

Improved data governance and compliance management is facilitated by advanced BI, reducing legal and reputational risks.





This trend represents a groundbreaking shift in how organizations manage and utilize their data, reshaping the very foundations of data processing and analytics. Several key elements define this trend:

- 1. Declarative Data Transformations:** Modern Data Platforms are reimagining data transformation by introducing declarative processes. This approach allows organizations to express what they want to achieve with their data, enabling more intuitive, efficient, and adaptable data manipulation.
 - **Business Impact:** User-Friendly Data Manipulation: This approach allows business users to express their data transformation needs in a more intuitive and user-friendly manner, reducing reliance on technical experts.
- 2. Modern Approach to Change Data Feeds:** Live Pipelines embrace a modern approach to ChangeData Feeds, enabling real-time updates and the integration of changing data streams into analytical processes.
 - **Business Impact:** Improved Customer Engagement: Businesses can respond swiftly to customer behaviors and market trends, leading to enhanced customer engagement and satisfaction.
- 3. Data Defragmentation:** Fragmented data across various sources is a common challenge. Modern Data Platforms address this by defragmenting data silos, bringing together disparate datasets to provide a unified view of the organization's information landscape.
 - **Business Impact:** Improved Performance: Defragmenting data can significantly improve input/output speeds and access times for files and databases. This leads to faster data processing, analytics, and overall workflow.
- 4. Data "Cloudtainers":** These platforms introduce the concept of "Cloudtainers," which are agile, containerized data environments that can seamlessly move data between on-premises and cloud-based infrastructure, ensuring flexibility and scalability.
 - **Business Impact:** Portability Cloudtainers provide a standardized way to package and deploy applications in the cloud. This makes it easy to migrate applications across cloud providers or hybrid cloud environments.
- 5. Unique Data Layer:** Modern Data Platforms emphasize the creation of a Unique Data Layer, similar to Microsoft's OneLake or Tabular models. This unified layer simplifies data access, management, and analysis, reducing complexity and improving overall data quality.
 - **Business Impact:** Simplified Data Governance: Managing data as code within this layer simplifies data governance, making it easier to track, document, and maintain data assets.
- 6. Care for Data As Code:** Treating data as code is a fundamental principle within this trend. Data is versioned, documented, and tracked like software, ensuring data quality, reproducibility, and compliance with regulatory standards.
 - **Business Impact:** Auditability: Data pipeline and transform logics are transparent when handled as code. This aids auditability and governance.
- 7. Convergence of OLAP & Stream Processing:** Live Pipelines herald the convergence of Online Analytical Processing (OLAP) and stream processing. This fusion enables organizations to combine historical and real-time data for comprehensive insights, improving decision-making.
 - **Business Impact:** Reduced Latency: Stream processing reduces delays between data creation and analysis. OLAP enhances this by pre-aggregating data for faster querying. Together they drive near real-time analytics.

THE NEXT LEAP IN ARTIFICIAL INTELLIGENCE

9

This trend encompasses several pivotal advancements that will be reshaping the AI and machine learning landscape, creating a wave of innovation and transformative potential.

One of the key aspects of this trend is the emergence of ML/AI in cloud and the unification of cloud computing resources and AI capabilities. This fusion leverages the cloud's computational resources, facilitating extensive AI model training and deployment, bringing forth a new era of accessibility and affordability.

Furthermore, Large Language Models (LLMs) are powering cloud lake houses, making data accessible and actionable in ways previously unimaginable. The integration of LLMs into Data & Analytics platforms revolutionizes natural language processing and understanding, making it easier to extract valuable insights from vast data lakes. Advances in automated machine learning are making it easier for organizations to leverage AI even without extensive technical expertise, democratizing AI in various industries.

Semantic Augmentation in Data & Analytics Platforms (DAPs) is another vital component of this trend, enabling organizations to enhance their data understanding and interpretation through context-aware AI. This augmentation adds a layer of intelligence to data, making it more relevant and valuable for decision-makers.

Finally, the Multiagent generative system (MAGS) represents a breakthrough in AI cooperation, enabling multiple AI agents to work collaboratively in generating complex solutions, opening up new frontiers in problem-solving and innovation.

The future of AI in the Data & Analytics landscape holds exciting possibilities. AI systems are poised to play a pivotal role in driving efficiency, innovation, and informed decision-making in various industries, further cementing their status as a transformative force in the Data & Analytics ecosystem.

BUSINESS IMPACT

Cost Reduction

AI-driven automation and predictive maintenance in sectors like manufacturing and logistics reduce downtime and maintenance costs.

Risk Mitigation

AI models are used to identify and manage risks, enhancing compliance, cybersecurity, and fraud detection.

Innovation Catalyst

AI fosters innovation through data-driven insights, enabling the development of new products, services, and business models.





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