Deloitte.

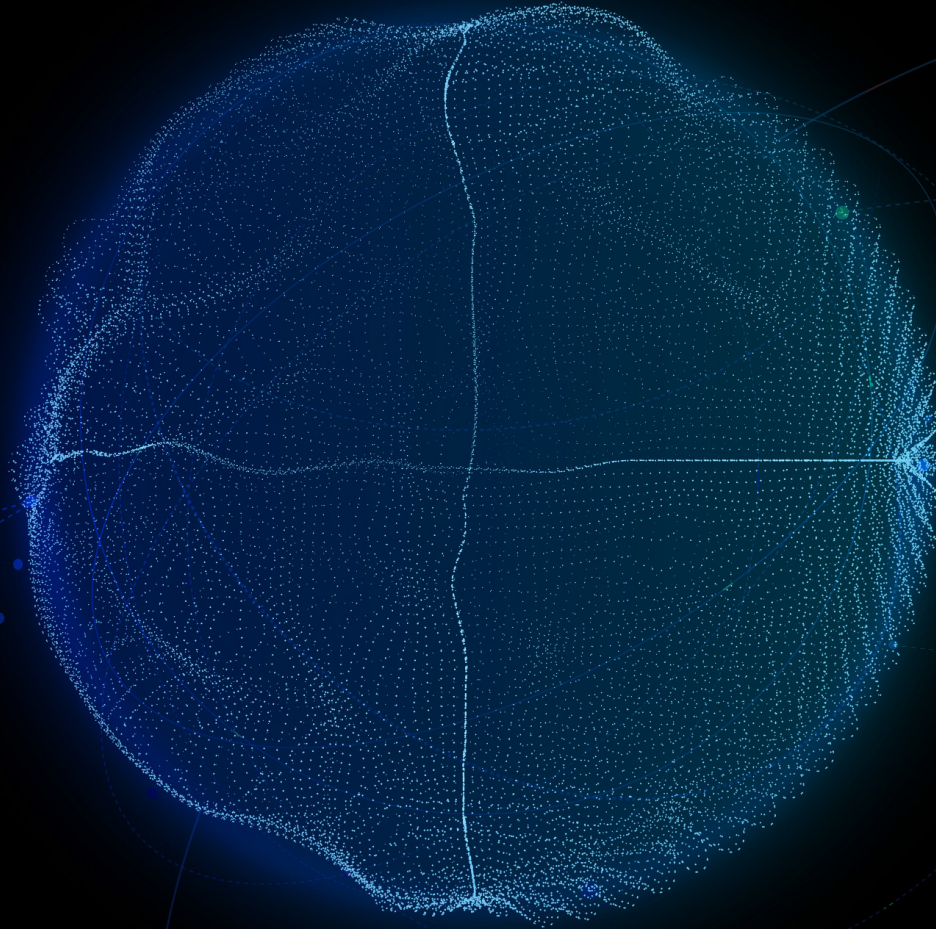## Unlock your potential with an innovative data and analytics platform

Intelligence and insights at scale

MAKING AN
IMPACT THAT
MATTERS
since 1845

Making the complex simple

Unlocking the power of data-driven insights

Unprecedented levels of data and an increasing need for businesses to quickly identify meaningful trends have propelled the demand for **more effective, flexible, and amplified data and analytics platform (DAP)** capabilities. Today's DAP requires unified and cloud-native platforms capable of handling massive data growth, advanced analytics, enterprise-scale machine learning, and artificial intelligence workloads as well as the ability to oversee entire data oceans.

To accelerate the digital transformation journey and realize tangible business outcomes, platforms must provide enterprises with an accessible data product to **"do more with less,"** operating seamlessly across their organization's ecosystem of services and technologies, incorporating several tools with various capabilities for actionable insights.

Generative AI

Explore above and beyond: Generative AI

AI-driven text generation models can simulate reality and generate novel, previously unseen data. This can be used to enhance AI-driven decisions or forecast outcomes such as customer sentiment analysis or chatbots, and to improve the performance of applications through the generation of more powerful and efficient programming code. With these capabilities, it is possible to achieve outcomes beyond those achieved with existing technologies.
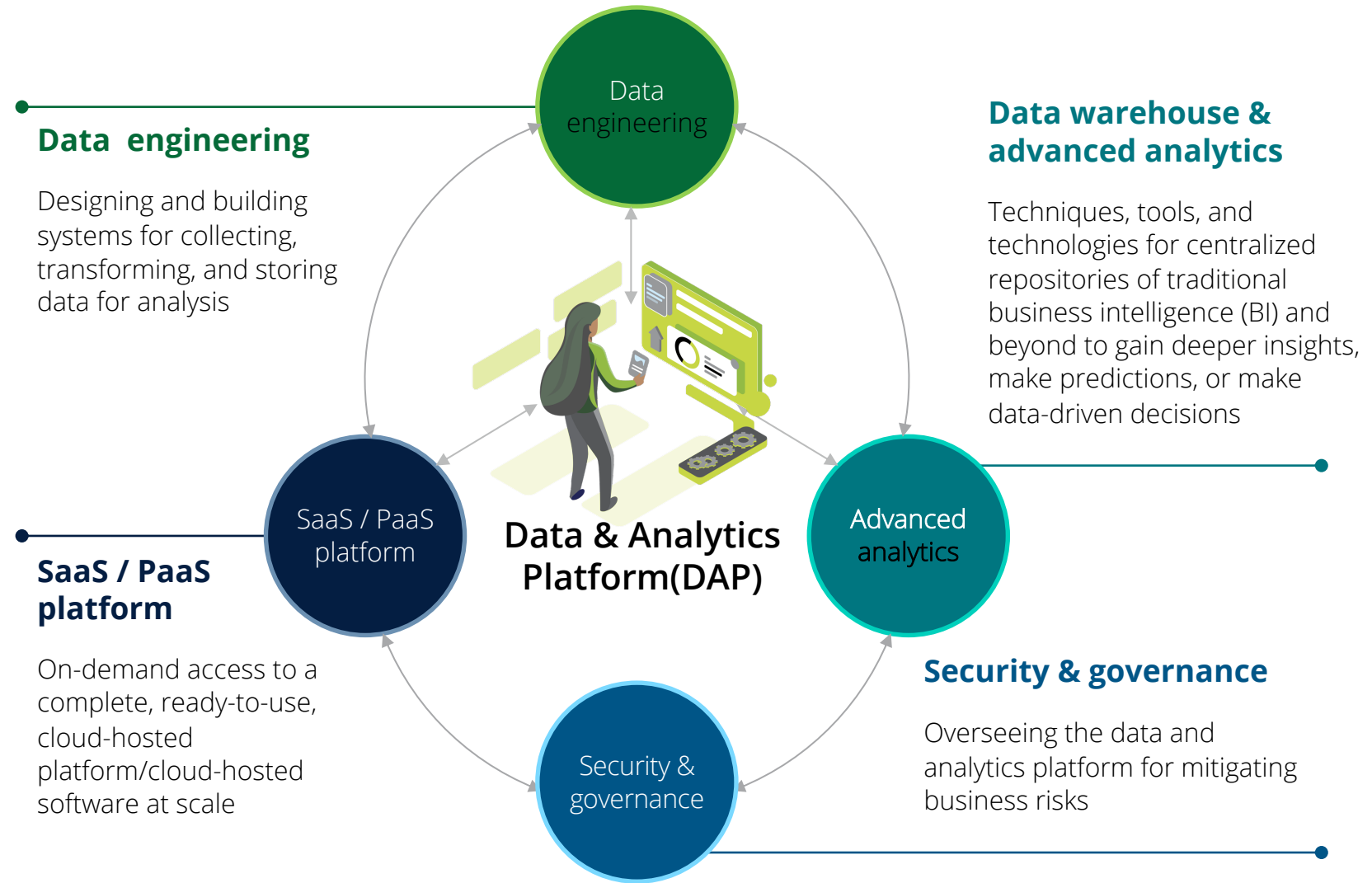
In order to maximize the full power of Generative AI and unlock its limitless potential, it is imperative to establish an unparalleled data platform that serves as the catalyst for accelerated, cost-effective, and superior advancements in all facets of technology and innovation.

3

Key tenets

Harnessing insights to drive impact

At the core of data and analytics platforms is the capacity to transform raw data into actionable insights. **The platform must enable secure, scalable, and cost-effective data analysis in order to maximize the potential of your business**. By having a well-architected DAP, you can unlock real-time insights to make informed decisions and drive better results. To unleash your business's potential with a data and analytics platform, it is important to carefully address the key tenets of data and analytics.

Data engineering

Designing and building systems for collecting, transforming, and storing data for analysis

Data warehouse & advanced analytics

Techniques, tools, and technologies for centralized repositories of traditional business intelligence (BI) and beyond to gain deeper insights, make predictions, or make data-driven decisions

SaaS / PaaS platform

On-demand access to a complete, ready-to-use, cloud-hosted platform/cloud-hosted software at scale

Security & governance

Overseeing the data and analytics platform for mitigating business risks

Data & Analytics Platform(DAP)

- Data engineering
- Advanced analytics
- Security & governance
- SaaS / PaaS platform

SaaS/PaaS platform

Choose a flexible and reliable platform for your business needs

Software as a Service (SaaS)
Platform as a Service (PaaS) &

Enterprises are transitioning to platforms that **reduce or eliminate the need for procuring, installing, upgrading, patching, safeguarding, backing up, restoring, and managing their environment, with minimal upfront costs**. These platforms are designed to provide enterprises with the latest features and functionalities with no hardware constraints, as well as the ability to run multiple versions of the same software.

Implications

Not leveraging PaaS and SaaS can lead to higher costs, decreased scalability, and a lack of access to the latest software updates.

SaaS/PaaS platform
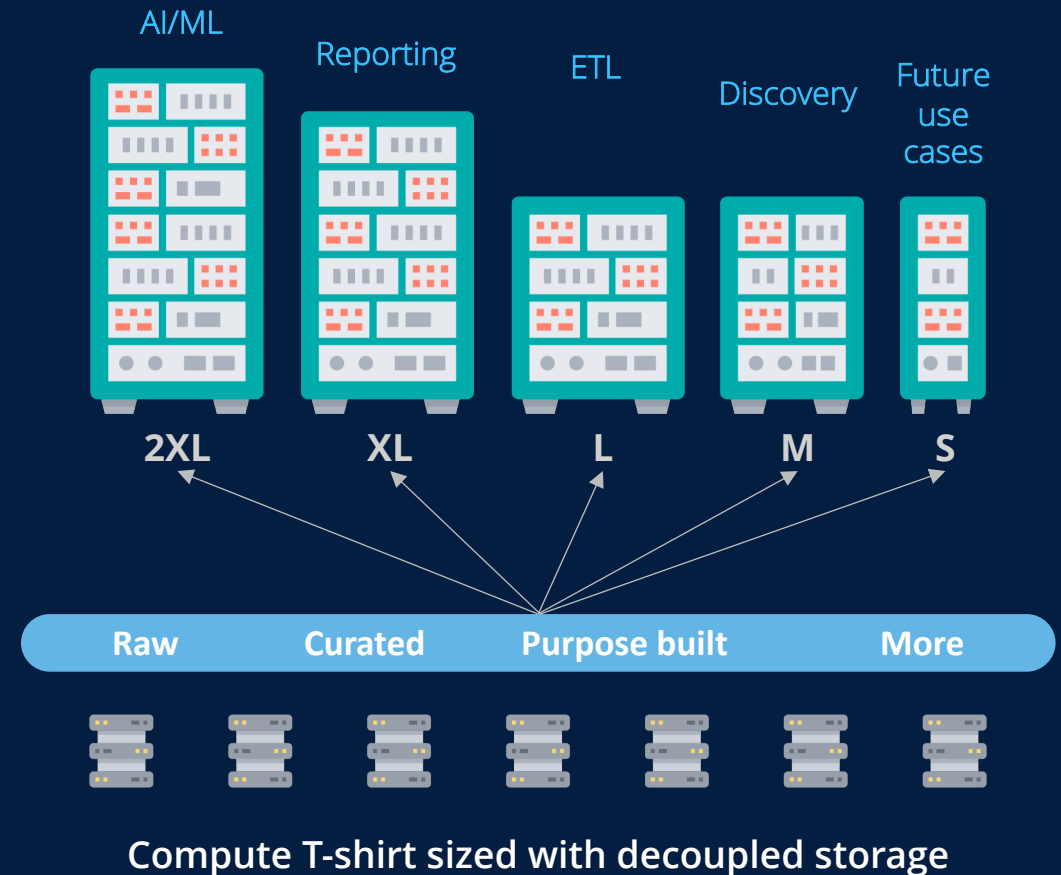## Break free from dependence on compute and storage

The cost of ownership and sunken cost can be drastically reduced when systems are loosely coupled since storage and compute can be expanded independently and on demand. Cloud technologies **enabled through software provide virtually unlimited expansion of storage and compute power**. This allows companies to spend less on these resources, leaving more room for innovation and discovery. The software enables efficient functioning of the system and is optimized to work within and across a multi-cloud environment without sacrificing performance.

Ramifications

By not utilizing the **hyperscale-based data management tools and technologies that provide independent compute and storage capabilities**, organizations may be missing out on the scalability, agility, and flexibility that these solutions offer.

Best-in-class modern data and analytics platform

SHARED STORAGE

Consuming organization has choice of computer power

Compute T-shirt sized with decoupled storage

SaaS/PaaS platform

Maximize elasticity and scalability

DAP that **"automatically" scales (out or in/up or down)** resources to meet analytics demands, from small data sets to large, with no effort is critical for controlling cloud costs. It will also meet service level agreements, even when data volume grows during seasonal demand, outages, or large volumes of inflow of data. While cloud provides the scalability/elasticity, configuring to achieve "economies of scale" is an involved, manual effort. **Modern DAP SaaS software makes it seamless, with minimal or no manual effort, to reduce costs and gain efficiency** when operating at a larger and smaller scale.

Repercussions

Failure to make use of the "enhanced and dynamic" elasticity and scalability of the hyperscale from the **product vendors** can lead to higher costs from insufficient resource utilization.

SaaS/PaaS platform

Be prepared and plan ahead for disaster recovery

Enabling cloud-based **"managed disaster recovery"** service(s) helps to quickly recover an organization's critical systems after a disaster and provides remote access to the systems in a secure environment. Leveraging native sync across DR environments/regions is critical to reducing downtime. SaaS- and PaaS-based DAP software services reduce complex IaaS-based cloud DR setup, provides **faster spin-ups and failovers of a particular service, significantly reduces downtime, and provides faster recovery times, all at reduced cost**. However, due to the number of services used in a DAP platform, setup is still complex.

Implications

Manual DR is inefficient and can lead to mistakes due to the amount of time and labor required. Utilizing a vendor-provided, **region-based DR** setup is a faster and more reliable way to ensure business continuity and data protection.

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SaaS/PaaS platform
Get the most value for your money

Despite the cloud's benefits, many organizations tend to make cloud product decisions based solely on the costs associated with performance benchmarking results. However, organizations that make product decisions based on the actual **cost of the "overall" services and whether they can deliver realize the best economic value and returns on their investment**.

Consequences

A blind-sided "price-performance" ratio may lead to an **unbalanced cost-benefit analysis** and may lead to an inefficient use of resources.

SaaS/PaaS platform
Powering the open-source revolution, vendor-supported

Vendor-backed *open-source* enables a more long-term approach to product development, making it easier to integrate with other services and **solve bugs and performance issues faster**. It also promotes healthy competition between vendors to continue to develop best-in-class products for consumers, without a vendor lock-in.

Ramifications

Without enterprise-ready open-source software, businesses may not be able to access the full range of features, including system security, scalability, and update/support capabilities.

Data engineering

Engineering data for enhanced analysis and decision-making

Unify streaming and batch processing

Streaming and batch processing use case demands are increasing and edge analytics are gaining momentum due to high-powered, modern edge hardware (sensor, phone, etc.) capable of collecting, analyzing, and creating actionable insights in real time, directly from the IoT devices generating the data. While batch processing is still utilized, more and more consumers are eager to get their data in real time and in combination with batch data to explore, analyze, and discover insights. **Maintaining separate platforms reduces operational efficiency, requires different skill sets and a lengthier process to fix failures, and increases costs.**

Repercussions

In the absence of unified streaming and batch processing tools and technologies, businesses would be forced to maintain two distinct data pipelines for their streaming and batch data. This could lead to **increased complexity, cost, and operational overhead**.

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Data engineering
Embrace automation with CI/CD & DevOps

Manual or semi-automated release management leads to lack of scalability and automation, slower dev cycles, and lower software quality. The integration of CI/CD and DevOps best practices throughout the software development life cycle helps organizations develop **higher-quality applications, reduce human error, and facilitate faster release management processes**. By automating testing, production isolation, and monitoring, manual release management is replaced with a streamlined, consistent process that requires fewer human resources and reduces the potential for errors and delays.

Implications

Without DevOps and CI/CD, manual deployment and testing of software can be **time-consuming and error-prone**.
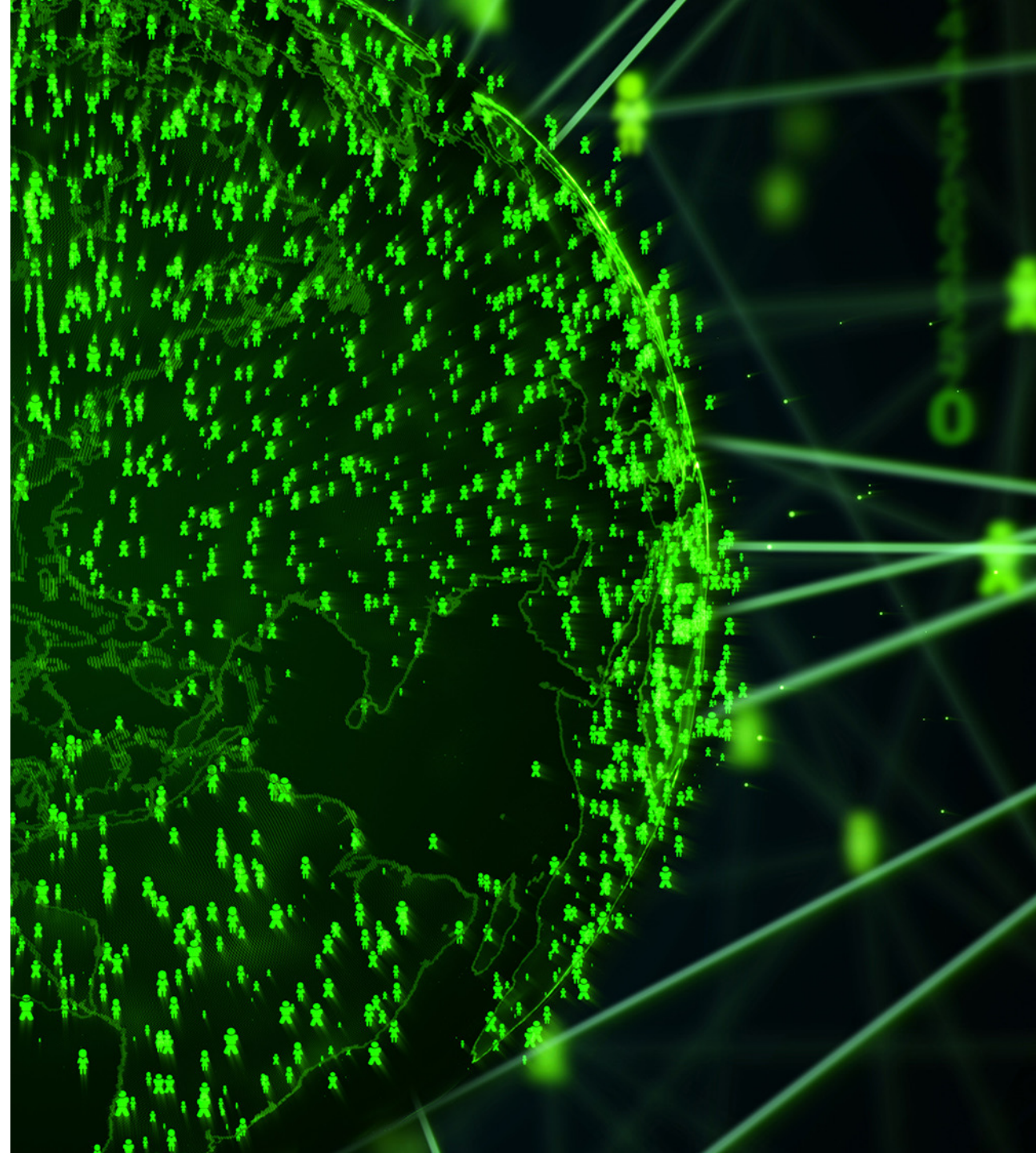
Data engineering
Unlock cloud freedom with cloud-agnostic software

Cloud-agnostic software is constantly evolving. Enterprises are encouraged in leveraging tools and technologies that are compatible with any cloud infrastructure and can be moved to and from different cloud environments without any operational issues. It is not mandated to select a cloud-agnostic platform but **very effective when organizations embark on a multi-cloud strategy, given enterprises are moving into multi-cloud.**

Consequences

Not embracing cloud-agnostic software can lead to a reliance on cloud service providers that can cause **inflexibility and vendor lock-in**.

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Data engineering
Copy data without copying any data!

As data continues to grow into the hundreds of terabytes and petabytes, duplicating it to lower environments and sharing it with consumers becomes increasingly time consuming and costly. Furthermore, there are significant overhead costs associated with verifying the integrity, accuracy, and consistency of the data.

Cloning helps resolve several use cases when organizations struggle to configure multiple environments (Dev, test, UAT and Prod) and manage H/W and S/W, **refreshing the data from production "without duplicating the data," which was taking days to weeks,** and "securely" sharing point-in-time data to another department or external users and have them to **use their own compute power**.

Repercussions

Copying large amounts of data can be a **lengthy process, error prone, expensive, and require considerable resources** when zero copy cloning of data is not employed.

Data engineering
Automate, streamline and schedule

Workflows define the sequence of steps that must be taken to complete a data process, and scheduling ensures that those processes take place at the appropriate times. Hyperscalers are investing and innovating in order to manage the workflows and scheduling software, ensuring that data is transformed efficiently and is available when needed. For this to be successful, these tasks must be repeatable and carried out in the correct order at the right time and with the right resources, as well as providing observability and the ability to identify and correct errors.

Implications

Not automating and leveraging workflow and scheduling jobs can lead to the **inefficient use of resources**, **increased time** spent on manual tasks, and increased **risk of errors**. Furthermore, it can **cause delays** in data analysis and decision-making.

Data engineering

Lead the way with data sharing and clean rooms

Data sharing and clean rooms, the new era of data monetization, is a change in how data is securely exchanged both internally and externally with customers, partners, and producers or applications while maintaining data fidelity across all entities consuming the data. Recent innovations in secure data sharing and clean rooms, without data copy, enable organizations to share data not only with high confidence but to monetize the data as well. Data monetization is expected to grow exponentially. In a recent survey, Forrester Research found that **more than 70% of global data and analytics decision-makers are expanding their ability to use external data, and another 17% plan to do so within the next 12 months**.

Ramifications

Enterprises **miss out on opportunities to increase efficiency, reduce costs, and uncover new insights** by not leveraging data sharing and data exchange.

Advanced analytics

Unlock insights to drive business success

By leveraging data and applying advanced analytics techniques, such as predictive analytics, descriptive analytics, and prescriptive analytics, businesses can gain valuable insights to create more efficient processes, improve customer service, and develop new products and services.

Plus, being a first mover allows you to rapidly iterate and learn from mistakes while capitalizing on new opportunities.

Implications

By not undertaking an advanced analytics journey, enterprises **fail to capitalize on the potential to make data-driven decisions and uncover valuable insights**.

Best-in-class modern data and analytics platform

Advanced analytics

Data insights unleashed: data warehouse

In addition to data lakes, a data warehouse is a crucial component of analytics transformation for most organizations. It cleanses, applies business rules, and models data to accurately represent the business while providing efficient access for traditional descriptive business intelligence analytics to enable their users to run their business effectively with reliable data. By unifying data lakes and data warehouses into one platform, numerous advantages can be gained, such as a centralized managed service; increased data security access; and faster, cheaper, and better insights.

Implications

Without data warehousing, organizations have limited visibility into operations, ability to analyze historical trends, and capacity to make data-driven decisions, in general.

Advanced analytics

Explore the possibilities: invest in AI/ML

Advanced analytics, such as predictive, prescriptive, and cognitive analytics, allows organizations to identify patterns, trends, and correlations in their data, enabling them to make more informed decisions and take timely, effective action. Enterprises must evaluate data management software's inherent AI/ML capabilities, **native MLOps (like DevOps), integration with market-leading AI/ML tools, and incorporating multi-compute instances** (GPUs, memory optimized, compute optimized) for the model development and execution. SaaS products can auto-optimize to reduce model training time without specialized skills.

Consequences

Enterprises miss out on opportunities to drive greater efficiency and cost savings by not investing in AI/ML with MLOps and inference recommender systems.

Additionally, organizations fail to **capitalize on the potential to gain an edge over competitors** in their industry by capitalizing on the latest advancements in AI/ML technology.

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Advanced analytics

Explore above and beyond: Generative AI

AI-driven text generation models can simulate reality and generate novel, previously unseen data. This can be used to enhance AI-driven decisions or to forecast outcomes, such as customer sentiment analysis and chatbots, and to improve the performance of applications through the generation of more powerful and efficient programming code. With these capabilities, it is possible to achieve outcomes that would not be achievable with existing technologies.

Ramifications

Organizations could lose their **first mover** advantage if they do not investigate the potential of generative AI.

To ensure a secure and responsible implementation of generative AI, organizations should identify and address data security, privacy, and use cases prior to implementation.

Advanced analytics

Empower your future with self-service

Traditional self-service analytics against well-defined data models, and composite models where end users can bring their own data sets to connect data models, are not meeting the demands of the business community. Businesses would like **to access both raw and transformed data as soon as it is available, connect with other enterprise data sources (data virtualization),** and develop their own dashboards and reports.

Repercussions

Not enabling self-service analytics can lead to inefficiencies in decision-making due to users not being able to access the data they need when they need it. This can lead to **costly delays in the decision-making process, as well as a lack of trust** in the data being used.

Security and governance

Ensure data protection and regulatory compliance

Security

Secure your platform, secure your future

Security of the cloud and on the cloud is getting better and better every day. End-to-end data-security and compliance for the entire enterprise are increasingly important in selecting a data management platform. Key items to be considered are **E2E encryption, role-based access control, single sign-on, audit logs, secure connection for third-party tool integration, no public IP and compliance such as SOC 2 Type 1 & 2 certified, HIPAA-compliant deployment available, ICD-503 INT-A, INT-B, NIST 800-53 rev 4, ARS 3.0 and FedRAMP** (in process), etc.

Consequences

Organizations that lack certified cloud data security standards are **vulnerable to data breaches, unauthorized access, and other security concerns** that may lead to substantial financial and reputational harm.

Best-in-class modern data and analytics platform

Governance
Set the foundation for success

Governance, observability, data quality, logging, and monitoring is crucial for sensitive data, such as protected and personally identifiable information that is subject to privacy regulations. As organizations struggle with consolidating, locating, and analyzing vastly distributed and diverse data sets, modern enterprise data catalog and data quality tools solve the problem through their augmented ML capabilities. These capabilities enable **faster information access, ensure collaboration and trust, and the analytics** everyone can agree on.

Being able to track and catalog the sources and characteristics of the data sets used to build analytics models, data versions, operational metrics, search, and access management helps to ensure that data is used properly by data scientists, data engineers, and businesses.

Harnessing data through governance

Organizations should adopt an integrated and unified approach to data governance, cataloging, monitoring, logging, and data quality in order to **gain visibility, business adoption, and control over their data to reduce inefficiencies and risks**.

So what?
Unlock your potential

Making a difference with every conversation

Insight into the data leads to better decision-making and problem solving. Thus, the platform should be focused on **solving problems, not just asking questions.**

Streaming and batch processing
Improved data processing leads to improved decision-making.

CI/CD & DevOps
Enhances user experience by expediting the deployment of new features and updates.

Cloud-agnostic software
Simplifies the process of switching cloud providers and accessing data and analytics services.

Data cloning
Accelerates testing and development by cloning.

Data sharing and clean rooms
Allows secure collaboration and exchange of information.

AI/ML
Enables users to use machine learning and artificial intelligence to gain deeper insights into data.

Self-service capabilities
Empowers users to quickly access data and analytics without IT dependency.

Data security
Ensures that data is secure and only accessible by authorized users.

Governance
Enables users to easily enforce data governance policies to ensure compliance with regulations.

Data warehousing and BI
Enables rapid analysis and visualization of large-scale data

Generative AI
Exceeding human capabilities and understanding, artificial intelligence advances.

Additional features

Expand your horizons

When designing a data and analytics platform, organizations should take into account the key tenets and capabilities, as well as other sub-capabilities that will make the platform complete. **The requirements and priorities of the enterprise sub-capabilities can differ from one organization to another.** Such capabilities may include support for multiple programming languages, workload management and scheduling, third-party visualization and virtualization integration, and integration with existing data cataloging tools.

Conclusion

Leverage the power of data and analytics platforms for improved decision-making

Organizations should **choose the right data and analytics platform based on their strategic goals, cloud investment, and internally available skills,** rather than just individual tool capabilities, which can be available in every technology sooner or later.

Once a strategy has been finalized, constructing a data and analytics platform necessitates an evaluation of the organization's **data and analytics needs; assessment of the existing infrastructure; identification of any gaps or areas for improvement; and consideration of scalability, security, data governance, and accessibility.** Subsequent to this, businesses should choose technology solutions and vendors that will provide the desired features and capabilities.

Best-in-class modern data and analytics platform

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