



Unified Data Cloud for Simplicity and Intelligence to Drive Better Business Outcomes

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IDC Opinion

According to IDC market research, in the fourth quarter of 2021, 46% of data was already being processed in a public cloud and the percentage of companies with at least 80% of their data on the public cloud is expected to double by 2024. This trend is forecast in an environment where, based on IDC's annual Global DataSphere study, in 2020, 64ZB of data was created or replicated, with much of it remaining in the shadows—unused or underutilized.

Today's data landscape is littered with siloed data sets, siloed technology deployments, siloed decision making, and siloed funding. Latest IDC research with over 800 data leaders globally shows that 44% of organizations have data collection, data processing, and big data technologies running both on the cloud and on premises and 49% of these organizations have a multicloud environment. The datascape is more complex than ever, and for many, its complexity was exacerbated by the pandemic and its societal and economic consequences.

Suddenly, data silos resulted in the inability to make timely decisions about responding to the crisis. Whether it was making decisions about employees' safety or inventory levels or cash flow or supplier availability, many executives and managers were "flying blind".

Some organizations were unable to:

- ▶ Ingest data fast enough—to enable operational enterprise intelligence
- ▶ Unify data across silos—for new insights on rapidly changing conditions
- ▶ Share data with partners—for fresh perspectives and collaborative problem solving
- ▶ Rapidly change forecasting models—to understand and prepare for potential business developments
- ▶ Iterate through decision-making scenarios—to ensure agile responses to internal and external events

Some organizations have evolved to thrive in this complex environment. As the VP of Enterprise Data Platforms at PayPal, Sri Gopalakrishnan said, *“Our brand is trust. We differentiate ourselves based on how we use data for risk management, fraud prevention, and anti-money laundering and how our data platform across operations and analytics enables these core capabilities in the most secure manner possible.”*

Several data and analytics leaders acknowledged that COVID-19 was an accelerant of their data cloud investments, but it wasn't the trigger. Digital transformation had already thrust PayPal and other leading organizations toward a data cloud. For Australia Post, it was the exponential growth in ecommerce shipping demand, and for Rakuten, it was the need to address both seasonal and unexpected demand surges on its ecommerce platform.



“Our brand is trust. We differentiate ourselves based on how we use data for risk management, fraud prevention, and anti-money laundering and how our data platform across operations and analytics enables these core capabilities in the most secure manner possible.”

— Sri Gopalakrishnan, VP of Enterprise Data Platforms at PayPal

In This White Paper

Many other organizations have recognized the need to start a journey toward greater enterprise intelligence by modernizing their data and analytics architecture and technology and establishing a data culture. Many executives have explicitly stated their goal of becoming a “data company” and have, for the first time, begun to focus on their employees’ data literacy and hiring of chief data officers.

To better understand what differentiates leading organizations and their approach to data, IDC launched a market research study, underwritten by Google, that included interviews with executives charged with leading their companies’ data architecture modernization initiatives and a global survey of 830 data leaders from organizations across industries and regions.

Our research highlighted the benefits of a unified data cloud as a foundational capability in overcoming top enterprise data challenges, such as:

- ▶ Achieving a tangible ROI
- ▶ Data security
- ▶ Flexible cost management
- ▶ Data technology sprawl
- ▶ Shortage of staff with relevant data skills
- ▶ Lack of data platform agility

These challenges have real consequences—negatively affecting employee morale and the ability to innovate and make data-driven decisions. Overcoming these challenges was demonstrated to result in greater agility and resilience in the face of uncertainty and complexity.

Organizations that were able to empower their employees with secure access to trusted data, flexible technology to analyze that data, and a platform to deliver actionable insights at scale to everyone—even while working remotely—have enjoyed better quality strategic, operational, and tactical decisions and business or mission outcomes.

Organizations that deployed and are using a data cloud reported improvements in the rate of innovation, operational efficiency, business resiliency, employee productivity, and profitability—the top 5 benefits. These organizations were able to drive more value from data and achieve the agility necessary to navigate through the tumultuous economic, political, and social events.

Importantly, data clouds deployed at these organizations allowed their data teams to take pride in their work and to overcome objections from colleagues who had been disappointed by failed promises of past data projects. The role and importance of data teams became dramatically elevated at organizations with successful data cloud deployments as they realized value and impact meeting the challenges of the moment. As Daniel Morse, head of Technology for Customer Enablement at Australia Post, said about his team of data engineers working on Google's data cloud, *"They are questioning the status quo—because now they can. They are delivering value to the firm, productivity for themselves and their teammates and colleagues—this sense of achievement is priceless; it drives a cultural change."*

Key differentiators of organizations participating in this IDC study were:

- ▶ Commitment to a data culture from business executives
- ▶ A clearly established data leadership role
- ▶ A clearly defined data strategy
- ▶ The discipline to iterate, experiment, and accept small initial wins on the journey toward a modern data cloud



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—Daniel Morse, head of Technology for Customer Enablement at Australia Post

Situation Overview



Does Investment in a Modern Data Cloud Matter?

One of the challenges facing organizations is the lack of a methodology and a process to quantify the impact of their data investments. After all, what does better decision making mean and how do you measure it? How does making data available to employees in real time impact customers? How does the ability to combine internal data with external data improve planning or forecasting processes? What is the impact of a highly scalable, always available, highly performant, and fully managed data cloud on data scientists, and in turn, how does the ability to update artificial intelligence (AI)/machine learning (ML) and other analytic models more frequently affect the business?

IDC research highlights two types of benefits organizations are reaping from a modern data cloud. The **first-order benefits** include technical and “data work” productivity benefits. The **second-order benefits** are business benefits.



The First-Order Benefits of a Modern Data Cloud

We define first-order benefits as improvements in the data work (such as data engineers, data analysts, data scientists, and database administrator (DBA) productivity), ease of access to relevant data, and efficiency of model development, testing, and deployment. These benefits have a positive impact on data flows and data utilization and are prerequisites for improvements in second-order benefits or business outcomes.

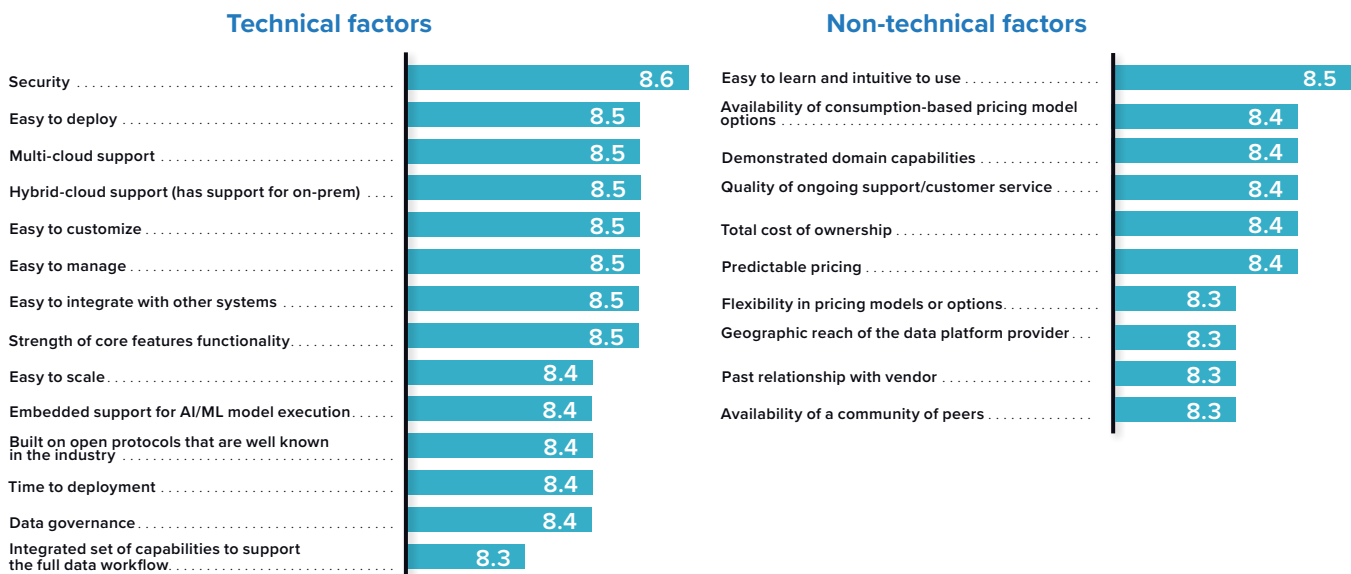
PayPal’s VP of Enterprise Data Platforms gave an example of reports that used to run 15–20 hours in its on-premises data environment while now completing in minutes and another example of requiring 3–5 months to provision new infrastructure on premises to handle a new workload—a process that now, on the cloud, occurs almost instantly.

Figure 1 (next page) highlights the first-order benefits as interpreted from the level of satisfaction reported to IDC by the 830 organizations surveyed across the globe.

FIGURE 1**First-Order Benefits of the Data Cloud: Productivity of Data Work**

(mean scored based on level of satisfaction)

Q. How well does a public cloud data platform meet your expectations?



Note: Mean scores are based on a scale of 1–10, where 1 = does not meet expectations at all and 10 = exceeds expectations.

Source: IDC's Worldwide Google Data Cloud Survey, November 2021

Investment in the data cloud matters because:

- ▶ The data cloud, specifically its fully managed database and analytics, allows the data technologists to hand off day-to-day management of the technology to the cloud services provider, freeing staff to engage in higher value-added activities, such as collaborating with application developers and business colleagues on the development of new data-driven applications and processes.
- ▶ The data cloud enables faster and easier access to trusted data and insights while maintaining governance and security protocols.
- ▶ The data cloud allows data scientists to iterate on their unpredictable and resource-hungry workloads at speeds that are impossible on on-premises data platforms.
- ▶ The data cloud allows engineering teams to shift the mindset from ongoing maintenance to planning, resource portfolio management, and innovation.
- ▶ The data cloud improves the stability and predictability of the technology foundation.
- ▶ The data cloud allows data engineers to rapidly or instantly provision new data management resources to address the needs of developers and business users alike.

- ▶ When relying on open protocols and standard interfaces, a data cloud facilitates integration among different data architecture components and importantly attracts a broader pool of qualified data professionals to the organization.

These benefits were reflected by Kumar Menon, CTO of Data Fabric and Decision Science Technology at Equifax, who described the impact of the data cloud as follows:

- ▶ Our on-prem data technologies had a lot of variables and moving parts. Our move to the Equifax Cloud helped reduce those complexities tremendously. On the cloud we are able to delegate infrastructure administration and scaling activities such as High Availability (HA) and Disaster Recovery (DR) to Google-supported functionality. As a result, we can now focus our engineering capacity towards platform and product engineering.
- ▶ This has elevated the posture of our engineering group and opened up new opportunities for our people. In a cloud environment every engineer needs a broader skill set. In the on-prem environment specific internal roles were responsible for overseeing infrastructure related activities. Now our cross-functional technology teams need a deeper understanding of how to leverage and scale cloud infrastructure and what it enables. The move to the cloud has helped us evolve our workforce strategy, increase our investment in upskilling our employees, and make cutting-edge learning an even stronger part of our value proposition for talent.
- ▶ Our data is now more governed, more secure and even easier to discover on our global data fabric. We can assure availability of authoritative data that elicits trust. We have fine-grained observability of the data that we lacked in the past. It provides better visibility and auditability through ongoing monitoring that also extends to security and governance of the data platform.
- ▶ For predictable analytic workloads we estimate a 25–30% increase in productivity when running in the cloud. For less predictable workloads, like new model development, the benefits are faster time to market. Prior to the cloud migration we needed multiple disconnected tools and processes that spanned from feature engineering to model training, validating to deploying. It often took us three to six months to go through the full lifecycle. Now, all these steps of the process go through standard pipelines on one platform. This has increased our speed to deployment and time to market. Additionally, we can run more projects in parallel, increasing our capacity to support data scientists and business functions they support.

But no organization would invest in a data cloud if the impact was felt only in its DataOps or AnalyticsOps or system admin metrics. Ultimately, the metrics that matter most are those that drive business outcomes.



The Second-Order Benefits of a Modern Data Cloud

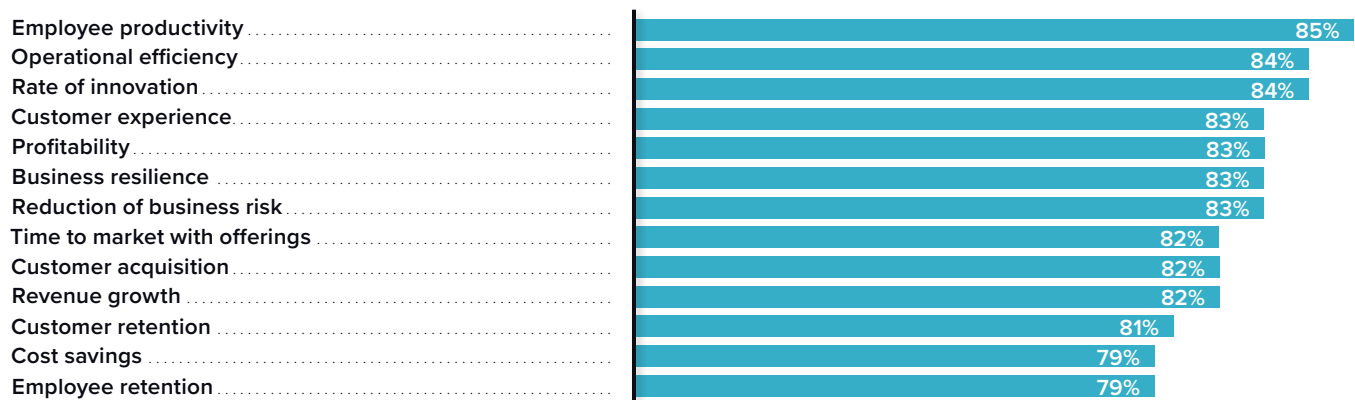
We define second-order benefits as improvements in business outcomes that are enabled by the technology and data work productivity improvements. As shown in **Figure 2**, the business benefits tied to the availability of a data cloud range from common financial KPIs such as improvements in profitability, revenue, and cost savings to internal metrics about the rate of innovation (at the top of the list), business resilience, risk reduction, and customer and employee experiences.

FIGURE 2

Second-Order Benefits of the Data Cloud: Business Outcomes

(% of respondents with improvements)

Q. What impact did your organization's use of Google as a public cloud-based data platform have on the following business outcomes?



Source: IDC's Worldwide Google Data Cloud Survey, November 2021

At Australia Post, one of many areas where the organization relies on Google data cloud is worker safety. As Daniel Morse, head of Technology for Customer Enablement at Australia Post, explained, “We monitor vehicles on the road at all times and report or alert based on that data in real time. For example, we had a case when an employee fell from a motorbike and their supervisor received a message about this incident within 20 seconds. We have expanded our use cases and the internal groups we support from the customer group to employee safety to now having a proof of concept in the parcel sorting facility, where we are using video to monitor for PPE and safety metrics (e.g., an employee getting too close to a machine). We have been able to significantly reduce safety incidents with technology such as ML and edge computing that's built with Google's data cloud.”

At Equifax, the use cases and benefits span multiple functions. In 2017, the company's technology group was faced with two choices — either patch and upgrade the legacy data platform architecture or build out a new modern data stack. Ultimately, we chose the path of building a

new, modern data stack. Since that inflection point, Equifax has been on a journey with Google Cloud—moving a legacy data warehouse to BigQuery, introducing Looker to data analysts, deploying Cloud Spanner for immediate, global consistency workloads and Dataflow for managing data pipelines. *“From the perspective of supporting some of our risk and governance needs, Google Cloud has given us better visibility and auditability. We have very stringent security requirements. We’re also restricted in both how we use data and which data we use. It’s not just role-based, but also policy-based,”* said Kumar Menon, the company’s CTO, Data Fabric and Decision Science Technology. In addition, Google Cloud supports Equifax’s ability to react to customers, such as financial institutions, in real time. For example, Equifax is now able to enable critical decisions for its customers in milliseconds.

This example from Equifax showcases the importance of the data cloud in driving relationships and experiences across organizations. In other words, while first order benefits are all about internal data work, second order or business benefits are increasingly expanding across an ecosystem of stakeholders.



External Data Sharing and Monetization

A growing number of organizations are using the data cloud to monetize data externally. This involves direct monetization by charging for anything from raw data APIs to polished customer-facing dashboards within your product or indirect monetization through sharing of data as a complement to other services or products.

Rakuten—the retailer and a commerce platform leader—provides performance reporting and analysis functionality to merchants selling through its ecommerce platform. Other companies have developed anonymized benchmarks from data shared with them by their B2B customer and, in turn, deliver these benchmarks back to their customer as a unique added value that strengthens intercompany relationships. These examples of what IDC calls data as a service (DaaS) are growing rapidly. They are made possible by a data cloud with its technical capabilities and as a basis for commercial capabilities of pricing, packaging, and IP management.

The fact that there is a growing body of evidence to support investments in a data cloud presents a growing number of organizations with a critical decision point.



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— Kumar Menon, Equifax CTO, Data Fabric and Decision Science Technology



A New Decision Point in Data Architecture

For many IT and business leaders, today's strategic decision about their enterprise's data strategy will be a defining decision of their careers. The new consolidated data cloud architecture and technology will set the stage for overcoming many of the most intransigent challenges of the previous generation of data and analytics technology and practices.

These decision makers are faced with a long list of needs that nudge them to make their data cloud choices (see **Figure 3**). Improved security of the cloud versus the on-premises technologies tops this list. Ironically, it was the perceived risk of cloud platforms' security features that many claimed as their reason for not migrating technology to the cloud just a few short years ago.

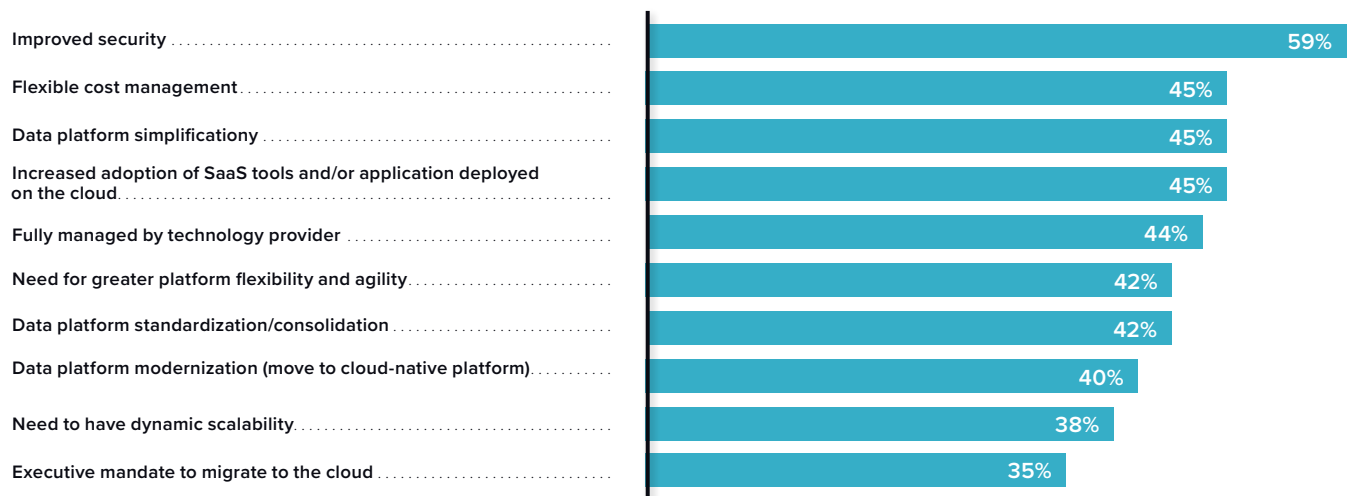
The VP of Enterprise Data Platforms at PayPal, Sri Gopalakrishnan said, *"Within our two-sided network, we have over 400 million users and over 30 million merchants and we want all of them to know that they have a trusted space for transactions and money movement. That trust is built on our ability to effectively manage data."*

FIGURE 3

Reason for Deploying Public Cloud Data

(% of respondents with improvements)

Q. Which of the following needs resulted in your organization deploying a public cloud-based data platform?



Source: IDC's Worldwide Google Data Cloud Survey, November 2021

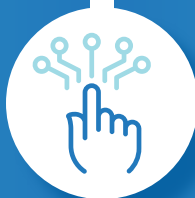
Data leaders who spoke with IDC mentioned repeatedly that their organization's data is more secure in Google's data cloud because there is now a unified access point to the data, which, for some organizations, replaced previous reliance on distributing files or reports via email. These data leaders also appreciate the fact that their teams no longer have to patch security holes or worry about system upgrades or software updates — it's all done for them as part of the ongoing service from Google.

However, security is only one factor among a range of technical and business considerations driving organizations toward the data cloud. As shown in **Figure 4** (next page), there is not much variability in the importance of factors selected by our study participants—a unified data cloud should be addressing all these requirements

Sandipan Chakraborty, Rakuten's Data Platform architect, explained, *"Our marketing group, which has seen growth in data volumes for some time, deployed a data warehouse on-premises and traditional ETL software. This deployment grew organically until it ran into scalability issues. Then Hadoop was deployed, which also grew into a massive cluster as well as a data dumping ground without any governance. Further challenges appeared with the need to synchronize data between the data warehouse and the Hadoop cluster."* Now, the company has adopted a hybrid data architecture that continues to use Hadoop as an on-premises storage layer, but data processing is now happening in Google's data cloud. Rakuten's Chakraborty added, *"Today, no matter where you go, all the data access points, security points, and data flow processes are standardized. Users can search and find what data sets are available, and if something is not immediately available to them, they can apply for access."*

"Within our two-sided network, we have over 400 million users and over 30 million merchants and we want all of them to know that they have a trusted space for transactions and money movement. That trust is built on our ability to effectively manage data."

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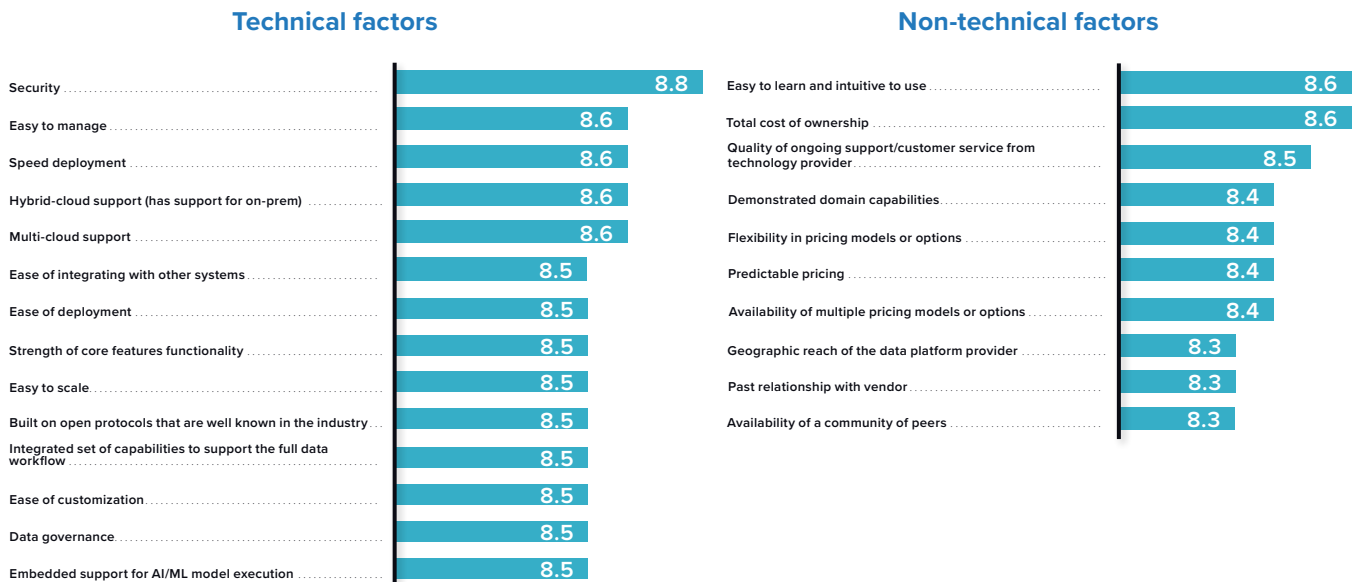
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— Sandipan Chakraborty, Rakuten's Data Platform architect

FIGURE 4**Data Cloud Selection Criteria**

(mean scores)

Q. How important are each of the following factors in selecting a public cloud-based data platform for your organization?



Note: Mean scores are based on a scale of 1–10, where 1 = does not meet expectations at all and 10 = exceeds expectations.

Source: IDC's Worldwide Google Data Cloud Survey, November 2021



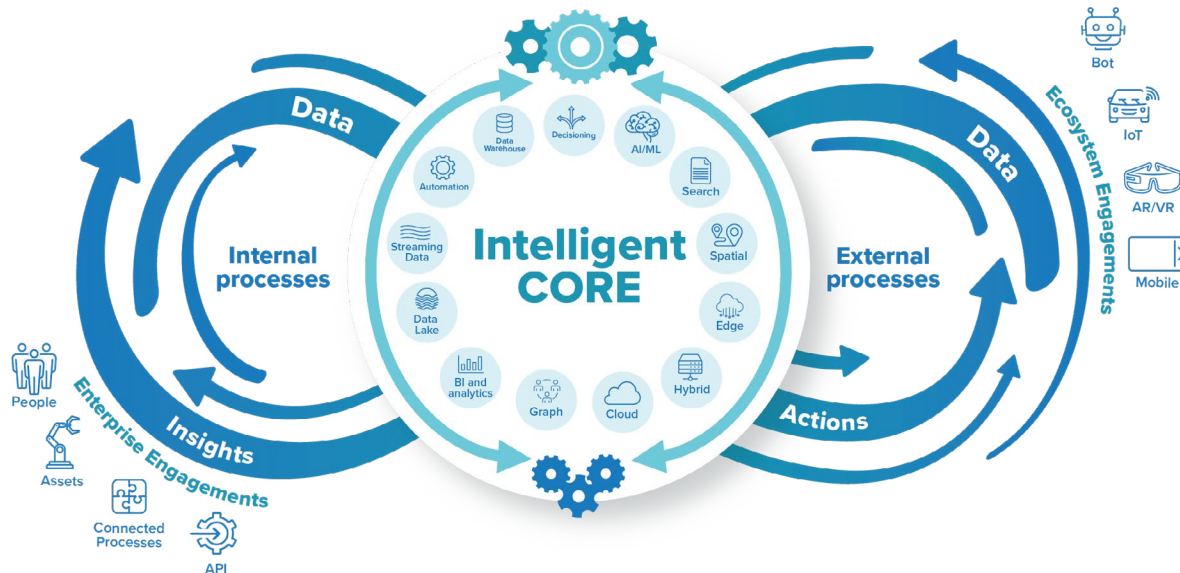
Making the Case for a Data Cloud

Discussion of the benefits of cloud-native technologies for data, analytics, and AI often highlights their impact on data scientists—those few professionals with a unique blend of statistics, machine learning, computer science, and business expertise. The reality is that the data cloud and its technical and business benefits highlighted in this study touch every individual in an organization and, increasingly, customers and partners.

The modern enterprise intelligence platform, which IDC defines as a cloud-based data technology architecture, provides unified, connected, scalable, secure, extensible, and open data, analytics, and AI/ML services. In this platform, everything is connected to everything else, as illustrated in **Figure 5** (next page). Data is brought into your enterprise through connected assets, your employees, and connected processes or as other datastreams through APIs. This data is routed through the intelligent core, which can pull out insights. These insights are injected back into your organization as improved internal decisions, processes, and experiences. Data is also drawn in through your ecosystem engagements through bots, mobile devices, AR/VR, connected vehicles, and so forth. This data is also routed through the intelligent core, which turns the data into actions to be taken when engaging with the ecosystem.

FIGURE 5

IDC's Enterprise Intelligence Platform — Conceptual Framework



Source: IDC, 2022

At the heart of the enterprise intelligence platform is the **intelligent core**. This is where the algorithms, the code, and the models that enable you to glean the insights and actions from the data live. Some of the insights and actions derived from the intelligent core address business-level decisions, but others address decisions about the data movement, governance, and management processes themselves: How should the data be monitored, processed, stored (or not stored), analyzed, visualized, and embedded into other applications? These are all decisions that in the past have been made by engineers, developers, and administrators—in large part because the enterprise has lacked all the necessary data to move from deterministic to probabilistic methods when investing in decision automation within operational and analytic systems.

The intelligent core houses data that has been identified as providing value to the enterprise beyond single systems and processes. Over time, the most valuable and actionable data will experience a type of “data gravity” and will settle in the core to be used by multiple processes. The intelligent core is iteratively dynamic and value seeking and makes use of sophisticated integration and machine intelligence technologies. Its focus is on producing better actions and outcomes in real time as part of the day-to-day operations of the business by improving awareness of available data, augmentation of human decision making, and the automation of tasks and process decisions made by humans.

The enterprise intelligence platform must be:

- ▶ Simple to access and use for all stakeholders
- ▶ Fast, scalable, and reliable to address operational and a full range of analytic and AI workloads
- ▶ Trusted, governed, and secure, addressing internal policies and external regulations
- ▶ Flexible, enabling adaptability and agility in the face of constantly changing variables
- ▶ Open and extensible, enabling the use of a combination of technology vendor-provided functionality and services as well as organization's internally developed assets (e.g., proprietary algorithms) or data to be shared with external parties

Ultimately, such a platform must be value generating, driving better customer and employee experiences, product and service innovation, and faster speed to value.



Who Benefits from a Data Cloud?

At IDC, we have identified and defined Generation Data, or Gen D, which, unlike a chronological generation (Gen X, Y, or Z), is a vocational generation, where career and life activities are infused with data, which changes experiences, decisioning, and outcomes. What is common between chronological generations and Gen D is culture shifts. Each chronological generation has developed its own cultural characteristics; Gen D has a data culture. Everyone in Gen D understands the importance of data to do their jobs effectively.

Gen D encompasses a broad population of data-savvy and data-hungry people. They can be broadly segmented as data engineers, data analysts, data scientists, product managers, business users, and developers—this list also includes external stakeholders, such as customers and partners with roles spanning the same functions (see **Table 1**, next page). Each group of users tends to use specific tools. In the on-premises environment, these tools are in silos, while in the data cloud, they are housed within the same unified solution. Each persona group may interact with the technology and data differently and reap different individual benefits. However, increasingly, the functional lines among these persona groups are blurring, and the whole benefits derived by the organization are greater than the sum of individual benefits.

TABLE 1

Beneficiaries of the Data Cloud

Personas	Responsibility	Benefits	Experiences
Data engineers	Provision, manage, govern data pipelines and data assets	Simplified management (including elimination of security patches and upgrades); focus on innovation and new projects; collaboration with analysts and business teams	At Australia Post, data engineers can now request any service from the Google data cloud — Dataflow, Pub/Sub, Cloud Spanner, and so forth. <i>“The beauty of it is that it’s all accessible,”</i> said Daniel Morse, head of Technology for Customer Enablement at Australia Post
Data and business analysts	Identify trends, anomalies, root causes, and present analysis artifacts to business	Augmented or AI-infused data exploration, decision support, visualization, and storytelling experience	At Australia Post, BigQuery and Looker have become the primary solution for over 500 users for project-based analytics
Database administrators	Provide technical management for the database, including design, tuning, and application developer support	Detailed problems of resource allocation, mapping data to storage, and making other physical implementation decisions no longer part of the DBA’s purview, freeing the DBA to perform the higher-value tasks of making the database more responsive to the needs of developers and data analysts and enabling them to iterate more quickly, which in turn makes the enterprise more agile	As we shift to a cloud-native environment at Equifax, we’re upskilling our people to build the cloud workforce of the future. DBAs can leverage their core domain expertise and expand their skills into next-generation areas, through our cutting-edge cloud learning programs. Natural progressions for these roles include areas like governance, domain model design, data analysis or data pipeline building. By joining data engineering teams, they focus on building functionality that meets the cost and service level objectives of the product, delivering more business value
Data scientists	Develop, test, and help deploy and monitor ML models.	Access to all data, speed of experimentation, and model performance observability	PayPal tested a workload where the ML model takes about a week to refresh. Without changing anything, running the same model in the cloud runs significantly faster and reduces the losses we may have incurred
Product managers	Product development and management	Infusing products or services with value-added data, metrics, and benchmarks to create new offerings	Equifax has several patents in explainable credit decisioning techniques, which are part of its core services. It is now working with Google on plans to evolve these on Google’s environment
Application developers	New, intelligent application development	API-level access to data, analytics, and AI services for embedding into apps	At PayPal, developers have access to new AI/ML services to incorporate into new applications
Business users	Data-driven decision making in operational and customer facing workflows and applications	Instant self-service access to relevant, trusted, and actionable data	At Rakuten, the marketing group now has access to trusted, unified data to run campaigns
Customers and/or partners	On-demand information access and sharing	Personalized and “sticker” relationships based on data sharing	At Rakuten, account managers who work with merchants share relevant data with them to foster closer relationships

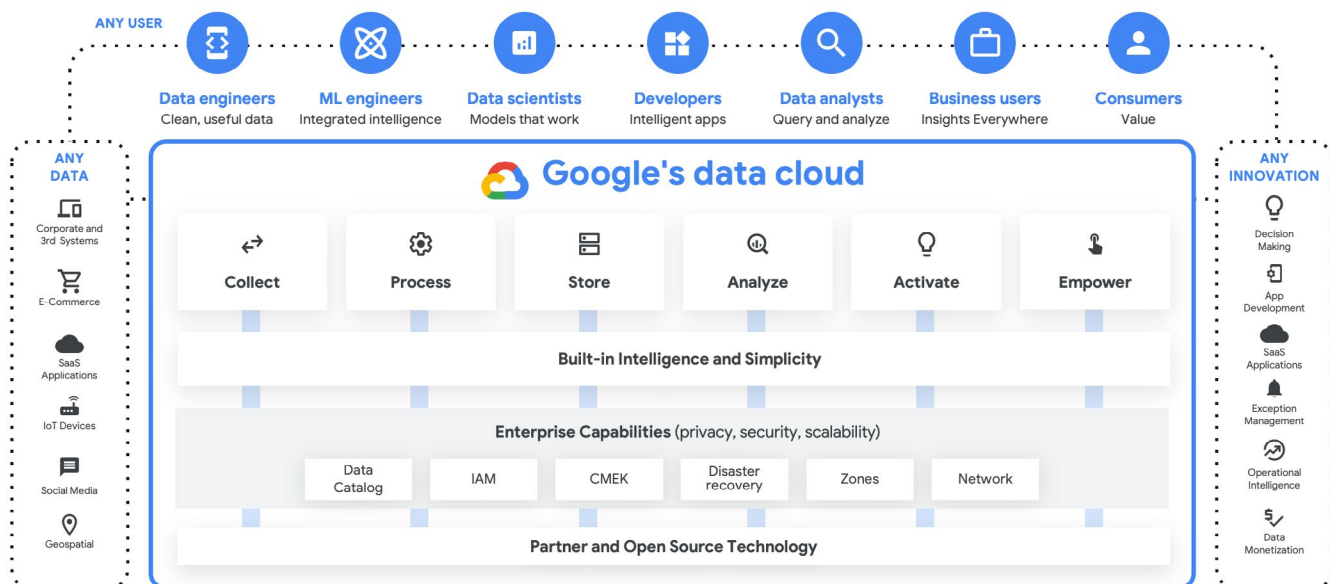
Source: IDC, 2022

Considering Google's Data Cloud

Google's data cloud is a unified data and AI solution that helps organizations manage every stage of the data life cycle, from running operational transactions to managing analytic applications across data warehouses and data lakes to rich data-driven experiences. Google Cloud is open and standards based, offering integration with open source standards and APIs, which ensures portability and extensibility while preventing lock-in. Google's data cloud capabilities help clients accelerate time to value by automatically scaling users, data, and compute on the company's data ecosystem. With built-in ML and AI, developed based on Google's extensive experience in these areas, organizations can speed innovation cycles and generate continuous value for their customers. Google's data cloud provides organizations with cloud services, highlighted in **Figure 6**.

FIGURE 6

Google's Data Cloud



Source: Google, 2022

The functionality and capabilities of Google's data cloud services address the needs of everyone in Gen D. While some organizations consider "data workers" to be those with titles or roles such as data engineers, data analysts, data scientists, and related machine learning and application developers, the impact of Google's data cloud services reaches well beyond these roles to affect every business user and consumer.

Organizations turn to specific parts of Google's data cloud for various reasons. Some are looking for a cloud data warehouse or a data lake, others are in the market for a new operational database, yet others have a need for cloud business intelligence or data visualization functionality or AI services.

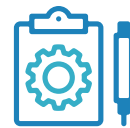
Others, like PayPal, Australia Post, Rakuten, and Equifax engage with Google because of the full portfolio of cloud data services. As Sri Gopalakrishnan, VP, Enterprise Data Platforms at PayPal, said, *"We didn't go to Google only for a specific technology—we are on a journey with them because of their ecosystem of cloud services."* Australia Post also relies on technology from several IT vendors, but Daniel Morse, head of Technology for Customer Enablement, added, *"We are seeing more and more value as we invest in Google-based technologies."*

In addition to these technical capabilities, organizations cited the following as the top 3 differentiating factors between Google's data cloud and other cloud platforms:

- ▶ Google's support
- ▶ The simplicity of Google's fully integrated and highly automated data cloud
- ▶ Partnership with an innovation leader that can help them accelerate their own innovation cycles

Kumar Menon of Equifax was succinct in his views on working with Google's data cloud. *"Originally, we had limited time to get our platform built and deployed. The simplicity of the Google stack helped us."*

In our study, quality of ongoing support and customer service was cited as the third most important factor in selecting a cloud data provider. Yet only 54% of these organizations' expectations about the quality of support are being met. Google's data cloud customers' experience was captured by Sandipan Chakraborty, director of Engineering in Rakuten's Global Data Office, who described the relationship with Google in the following terms: *"Google is more responsive to our needs."* Over three quarters (77%) of respondents cited Google support as the tech provider's key differentiator.



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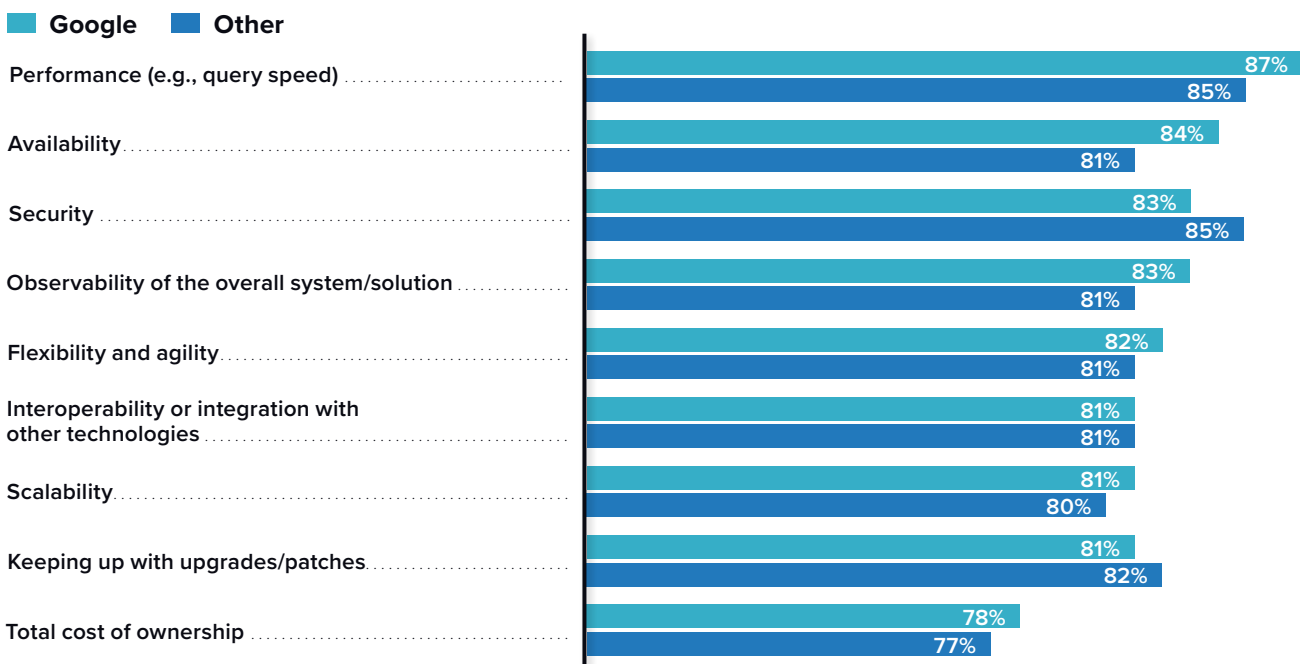
Benefits of Google's Data Cloud

Many organizations are reaping outsized benefits from their use of Google's data cloud. In our study, organizations using Google's data cloud achieved greater improvements than users of other cloud data platforms in performance, availability, observability, agility, interoperability, and total cost of ownership (see **Figure 7**).

FIGURE 7

Impact of Google's Data Cloud and Other Platforms on Technical Outcomes (% of respondents)

Q. What impact did your organization's use of Google and other public cloud-based data platforms have on the following outcomes?



Note: Data shows the percentage of respondents who chose ratings 4 and above on scale of 1–5, where 1 = worsened significantly and 5 = improved significantly.
Source: IDC's Worldwide Google Data Cloud Survey, November 2021

While it's noteworthy that 80%+ of the respondents in our study experienced high or significant improvements in each of these benefits individually, it is the combination of these factors that was highlighted by the data executives we interviewed. Kumar Menon, global platforms lead for Equifax said, *"Leveraging Google Cloud provides a foundation that we no longer have to build from the ground up which allows our engineers to be more application focused. Database Administrators can work with developer teams more closely, from beginning to end. Instead of just when things go wrong."*

Others cited specific productivity benefits, such as decreasing the cost to deduplicate data by hundredfold or developing a bot that updates the data catalog automatically and another one that scans for PII data as data is loaded as part of newly developed data controls and governance processes.

While the fact that Google, as the data cloud provider, “does almost all the work” for its clients may seem obvious in the context of fully managed services, it’s worth noting that the associated trusted reliance on the data cloud has been made possible by Google’s ongoing research and development (R&D) in serverless, networking, cluster management (Borg), file system (Colossus), encryption by default (on transit and at rest), and so forth.

In North America, 91% of our study’s participants saw high or significant improvement in system performance, while in the Asia/Pacific region, 91% of organizations experienced high or significant improvements in observability of the overall solution. Sandipan Chakraborty, director of Engineering in the Global Data Office at Rakuten, said, “*We are able to move faster than when we had our on-prem data platform, where we didn’t even have fixed SLAs. There are a lot of things that can go wrong with a broad data platform; our on-premises system was a significant productivity drain.*”

Google’s customer comments and IDC’s survey results about the benefits of Google’s data cloud are further reinforced by the solution’s broad adoption.

According to Google itself, over 2.6 million developers had been trained and certified on Google’s various data cloud services as of February 2021 and:

- ▶ Google Cloud has hundreds of BigQuery customers with >1PB-scale data warehouses.
- ▶ Google Spanner processes over 1 billion requests per second at peak.
- ▶ Google Bigtable has more than 10EB of data under management.

In addition to technical benefits, organizations also enjoy a range of positive business outcomes because of having a data cloud. Across these business benefits, organizations with Google’s data cloud are seeing the largest positive impact in employee productivity, operational efficiency, rate of innovation, customer experience, and profitability (see **Figure 8**, next page).



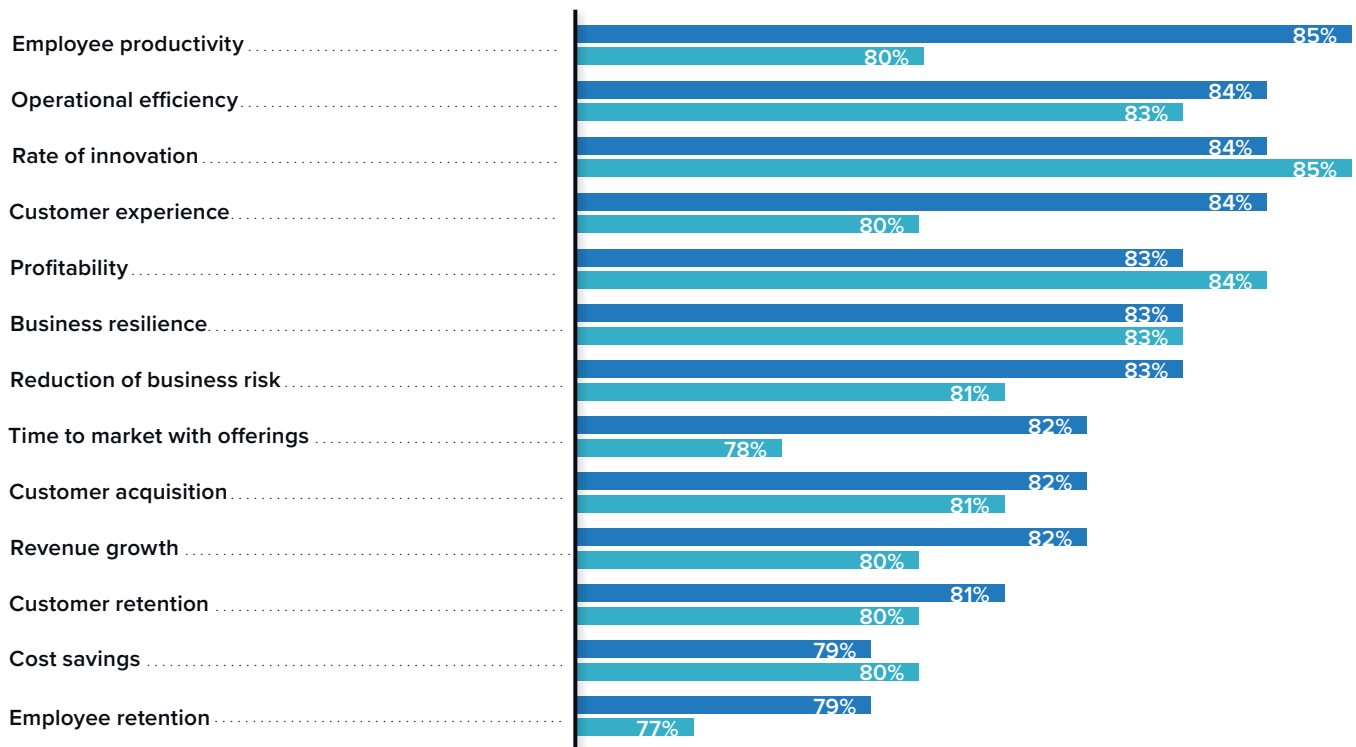
In North America, 91% of our study’s participants saw high or significant improvement in system performance, while in the Asia/Pacific region, 91% of organizations experienced high or significant improvements in observability of the overall solution

FIGURE 8**Impact of Google's Data Cloud and Other Platforms on Expected Business Outcomes**

(% of respondents)

Q. What impact did your organization's use of Google and other public cloud-based data platforms have on the following business outcomes?

■ Google ■ Other



Note: Data shows the percentage of respondents who chose ratings 4 and above on scale of 1–5, where 1 = worsened significantly and 5 = improved significantly.

Source: IDC's Worldwide Google Data Cloud Survey, November 2021

The greatest positive difference among the business benefits between those with Google's data cloud and other data cloud platforms was in employee productivity, customer experience, time to market with new offerings, and revenue growth. In the Asia/Pacific region, over 90% of organizations cited high or significant improvements in employee productivity, profitability, and customer retention.

The latter was highlighted by Daniel Morse, head of Technology for Customer Enablement at Australia Post, who talked about Google's data cloud environment ushering in a new era of innovation, excitement, and engagement among his group.



In the Asia/Pacific region, over 90% of organizations cited high or significant improvements in employee productivity, profitability, and customer retention.

“The thing that I like about cloud technologies is that it allows people to experiment and it’s quite easy to do. In the legacy on-prem world, it’s not much you can do; you’re boxed in; you have to do it their [the vendor’s] way. When you get into the cloud platform, as we did with Google’s data cloud, there are no limits. It’s amazing what comes out of it. The engineers are enjoying their job much more now. We can experiment more. It’s essentially an open system. They are bringing value to the company; they feel good about it.”

Recommendations for Executives

For years, the responsibility for technologies to process, manage, and analyze data fell upon the chief information officer (CIO). Historically, on-premises technology infrastructure decisions inevitably anchored organizations to fixed sets of storage and server configurations. Today, in the era of big data and analytics on the cloud, the technology decisions, data to insights processes, and people involved with data work must be transformed.

This new approach requires everyone to play their part and to rethink past practices:

- ▶ **Develop a cloud data strategy and create plans that don’t require a “big bag” approach to deployment or migration of data and analytics technologies on the cloud.**

Instead, develop a road map that includes frequency, incremental destinations—each an opportunity to showcase value to the organization and its varied stakeholders.

- ▶ **Ensure that the data strategy encompasses operational and analytic workload and increasingly a mix of the two,** whereby analytics and machine learning are infused into operational workflows to deliver insights at scale to all management, customer-facing, and operational employees as well as to intelligently automate bots and machines.

► **Promote a data culture that values data-driven and evidence-based interactions and experiences.**

As part of this effort, develop data literacy improvement initiatives and promote organization-wide collaboration among Gen D workers across IT and business functions. Organizations that have built new capabilities on the data cloud have recognized that data is a team sport—a collective responsibility that underpins the ability to raise enterprise intelligence and in turn to create sustained value for customers, shareholders, and employees and the broader ecosystem of stakeholders. Articulate the roles, responsibilities, and opportunities enabled by the data cloud to the various stakeholders in the organization as follows:

- The chief financial officer (CFO) must recognize the opportunities enabled by consumption-based pricing enabled by the cloud. The CFO must work with the CIO and chief data officer (CDO) to ensure cost predictability and transparency. Data cloud's observability (through ongoing usage monitoring) plays an important part in contributing to cost transparency and control. Employee productivity and labor allocation must be reviewed, because the data cloud doesn't simply improve efficiency of doing existing tasks—it eliminates many of the mundane tasks that were the responsibility of database and systems administrators of on-premises data technology. These employees are now available to tackle higher value-added responsibilities and contribute to innovation. CFOs also have an opportunity to drive new OKRs and KPIs to measure the value of data and to promote a data-driven culture that values ongoing value measurement with a disciplined before-and-after analysis, A/B testing, and other methods.
- The chief product officer (CPO) must recognize the role that data and metrics play in the development of new standalone data products or data-infused products and services. These opportunities can generate direct revenue through the sale of data through one-on-one transactions or via data marketplaces, they can allow for price increases of products and services whose value is enhanced by the infusion of related data (e.g., offer personalization software that is enhanced with the inclusion of location, intent, or weather data), or they can strengthen relationships among two or more parties through a mutually beneficial data sharing without direct monetization.
- The CEO and other business function leaders in marketing, sales, customer service, operations, and other areas must take an active role promoting and, importantly, personally modeling a data culture and the need for greater enterprise intelligence. For example, executive leadership can show understanding of experimentation. Similarly, it can rely on data from the unified data cloud for decision making; business executives can ensure that any and all communication in the organization is expected based on consistent data from such a data cloud.
- The chief information officer should recognize the need for a chief data officer as a distinct leader focused on data rather than all the other IT responsibilities of the CIO. Working with the CDO, the CIO will need to ensure that all data cloud initiatives are executed under appropriate security, governance, risk, and regulatory compliance frameworks.

- The CDO and related senior data technology roles must be responsible for a new data architecture that doesn't simply lift and shift existing data movement, management, and analysis technology off premises. The CDO should promote the new data cloud as a foundation for launching the organization toward a new era of insights, intelligence, and innovation.

► **Recognize that it's not too late to start a data transformation journey.**

As IDC research shows, organizations across industries, size segments, and regions didn't all start together on this journey. The state of data cloud adoption is at different stages of maturity and each organization is proceeding at its own pace—given its business needs and resources. Use the findings from this IDC study to help make a case for your organization's data cloud adoption.

► **When selecting a data cloud technology provider, evaluate a mix of technology capabilities as well as alignment on the vision with your data cloud services provider.**

You want to identify and select a partner that will enable your organization's sustained innovation for years.

About the Analysts



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Dan Vasset is group vice president of IDC's Analytics and Information Management market research and advisory practice, where he leads a group of analysts covering all aspects of structured data and unstructured content processing, integration, management, governance, analysis, visualization, and monetization. Dan also leads IDC's global Big Data and Analytics research pillar.

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