Are You a Data Innovator?

Many companies think they know what it takes to capitalize on data. The reality, however, is more complicated than it seems. Here's how to determine your position on the Data Innovator Scale – and how to move the needle to the next stage.

Hewlett Packard Enterprise

It's clear: Capitalizing on data is key to not only staying solvent in turbulent times, but it's also the new business differentiator that can move you ahead of competitors. Simply put, data is at the heart of everything; it has power to grow market share, increase customer satisfaction, improve operations, help companies become more agile, and more.

It's time to ask yourself: Are you a data innovator, and do you know what it takes to turn data into competitive advantage?

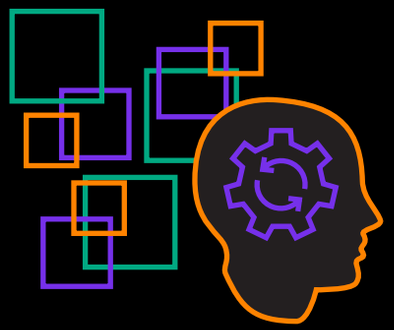
Many companies think they know what it takes to capitalize on data—indeed, 92% of respondents to a recent IDG survey (*see About the Research box, page 9*) say they have a data strategy.

The reality, however, is more complicated than it seems. Most organizations report multiple obstacles standing in the way of delivering on that strategy, including aging or complex infrastructure; lagging adoption of new technologies and platforms; data that may be disconnected from cloud environments and difficult to access; and a shortage of IT resources.

To become data innovators, and truly unlock the value and agility of their data, companies must develop an intelligent data strategy, underpinned with the right platform.

"Data is the lifeblood of every organization," said Sandeep Singh, vice president of storage marketing at HPE. "With an intelligent data strategy, the data fuels your transformation as it is always on and always fast, it's automated, and available on-demand—delivering the freedom for IT to innovate, not administrate. You can unlock hidden insights from data to propel your business forward. And global intelligence enables self-healing and self-optimizing infrastructure to end IT fire fighting and keep everything optimized."

It's a tall order to be a data innovator, and it's complex. But it's not an uncharted path. Based on the IDG survey results, those organizations with a sense of urgency and a focus on delivering data to the business are already unlocking value from their data. What's more, all companies can learn from the actions and priorities of these data innovators.



What is an Intelligent Data Strategy?

Data is always-on, always fast, automated, and available on demand. It delivers agility and a consistent experience everywhere, where data is usable and accessible everywhere, enabling today's hybrid reality. The backbone is global intelligence, which delivers data at speed to proactively and predictively keep everything optimized, edge to cloud.

Figure 1.

Technology Deployments, Expectations, and Plans

Source: IDG

	Currently deployed	Best supports data value generation	Plan to adopt in next 1–3 years
Cloud data protection	65%	9%	16%
Private cloud	64%	10%	12%
Public cloud	58%	12%	15%
Hyperconverged infrastructure (HCI)	54%	29%	17%
High Performance Computing (HPC)	49%	10%	22%
Containers	40%	2%	17%
Data platform with AI-driven operations	40%	10%	27%
Multi-cloud data mobility	38%	7%	28%
Distributed edge and IoT	35%	3%	25%
Scale-out software-defined storage	24%	1%	24%
Composable infrastructure	20%	3%	21%
Disaggregated hyperconverged infrastructure	17%	1%	22%
All flash arrays	16%	2%	17%
None of the above	1%	1%	4%

The IDG research study, sponsored by HPE, was used to create a Data Innovators Scale. This eBook:

- Presents and explores the IDG findings on the state of data today
- Helps organizations determine their position on the Data Innovators Scale
- Identifies three actions to advance on the Data Innovators Scale
- Offers actionable insights and recommendations, based on input from the most data-innovative companies

The State of Technology & Infrastructure Deployments

To better understand where companies sit with an intelligent data strategy, IDG established a baseline across all respondents. This included reviewing solution deployments and plans, then examining associated challenges and successes.

Unsurprisingly, **hybrid cloud** is prevalent among all enterprises surveyed. And although private and public clouds are delivering benefits, IT leaders say their **hyperconverged infrastructure (HCI)** is best supporting their ability to unlock data value *(see Figure 1)*. HCI leverages software-defined intelligence to reduce storage and compute siloes, allowing for easier management while accelerating data performance. And disaggregated HCI is clearly on the horizon.

The research also explored respondents' investment plans over the next three years.

The top priorities include **multi-cloud data mobility** and a **data platform with artificial intelligence-driven operations (AIOps)**. As organizations increasingly adopt a mixed infrastructure—one that spans on-premises and multiple clouds—they recognize the need to intelligently speed and protect data across these environments.

Also, to maximize the value of data across on-premises and clouds, organizations are looking toward AI-driven data platforms that can help them efficiently store, quickly access, and move this data without being constrained. In addition, companies are moving toward as-a-service delivery models to optimize investments, as well as achieve data value benefits.

Figure 2.

Expected Infrastructure Changes in the Next 3 Years

Source: IDG

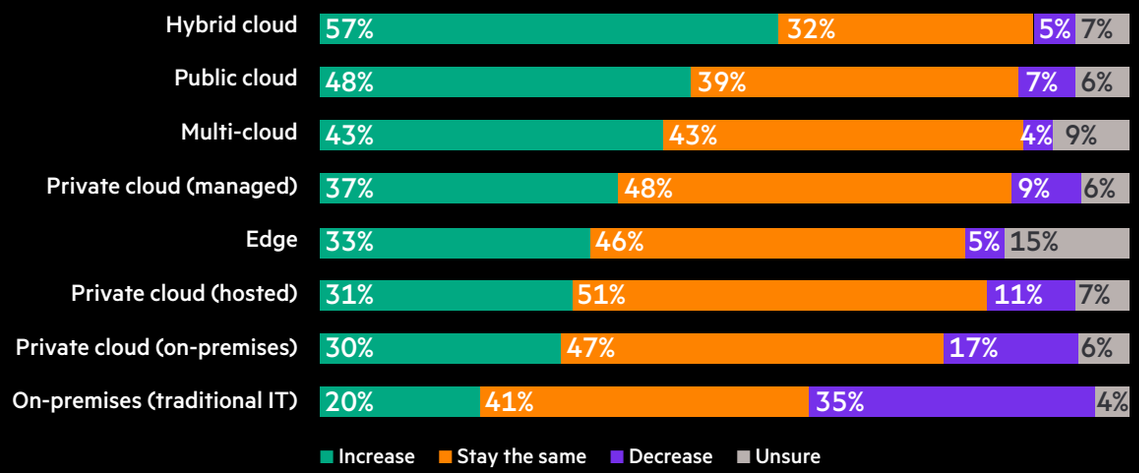
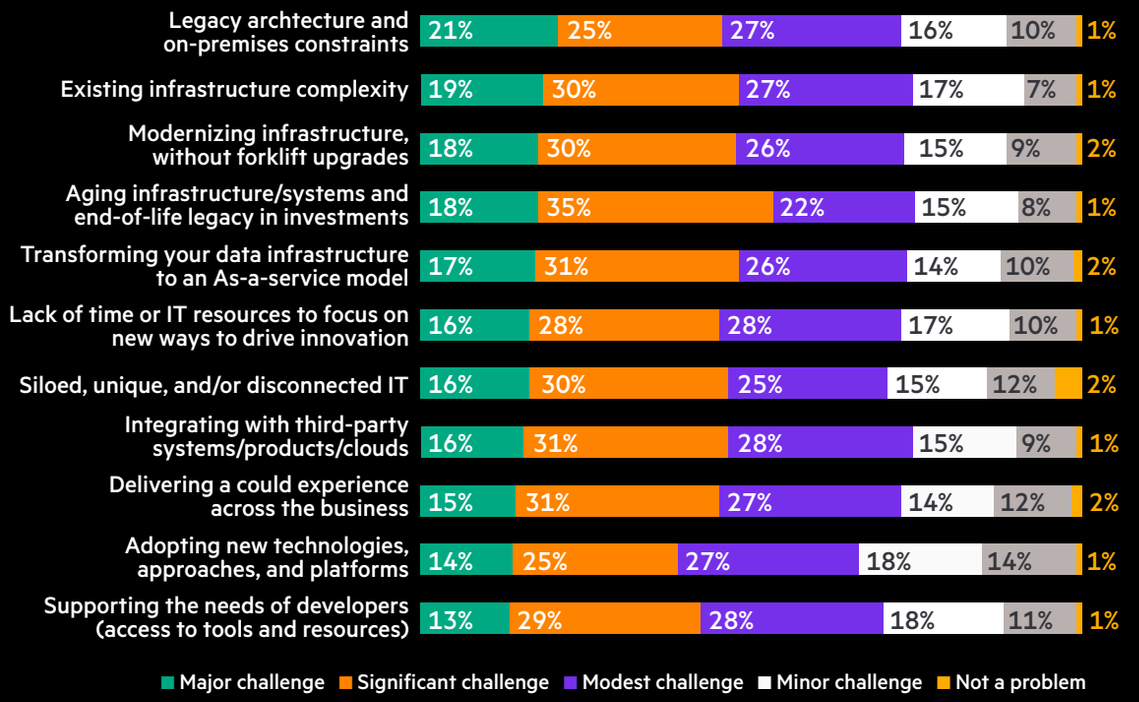


Figure 3.

Technological Challenges Run the Gamut

Source: IDG



Today's hybrid reality: On the application front, enterprises are relying on a variety of apps—modern/scale out (44%), blended (37%), and traditional (19%)—to derive strategic value. Here again, moving data is seen as a priority: Because most companies are running these workloads across multiple distributed sites or locations, they overwhelmingly (96%) cite data mobility as essential. Their critical workloads are everywhere:

- On-premises: 42%
- Hybrid cloud: 41%
- Public cloud: 39%
- Private cloud on-premises: 32%
- Private cloud hosted: 31%

Although enterprises will shift toward clouds and edge over the next three years *(see Figure 2)*, a mixed infrastructure will remain.

The Challenges That Inhibit Innovation

All companies are facing challenges related to three key areas: technology, their data, and the business.

Unsurprisingly, the greatest obstacle is IT complexity. That pain is most evident with aging, legacy architecture, which limits the ability to adopt new technologies *(see Figure 3)*. Related to this, enterprises are struggling to modernize, while being held back by siloed infrastructure.

"We definitely have trouble moving things," said the enterprise IT architect for a healthcare organization, attributing that to siloed data. "It's not that it can't be done, but it's slow and painful. We probably don't do it as often as would be beneficial because it's hard."

Ultimately, respondents recognize that these technology challenges, which they rank as major or significant, impede their ability to capitalize on data and advance business objectives. That's where the AaS delivery model is a game changer. It allows companies to pay only for the consumption of infrastructure actually used, thus enabling true modernization of IT infrastructure without forklift upgrades.

Figure 4.

Source: IDG

Data Challenges Abound

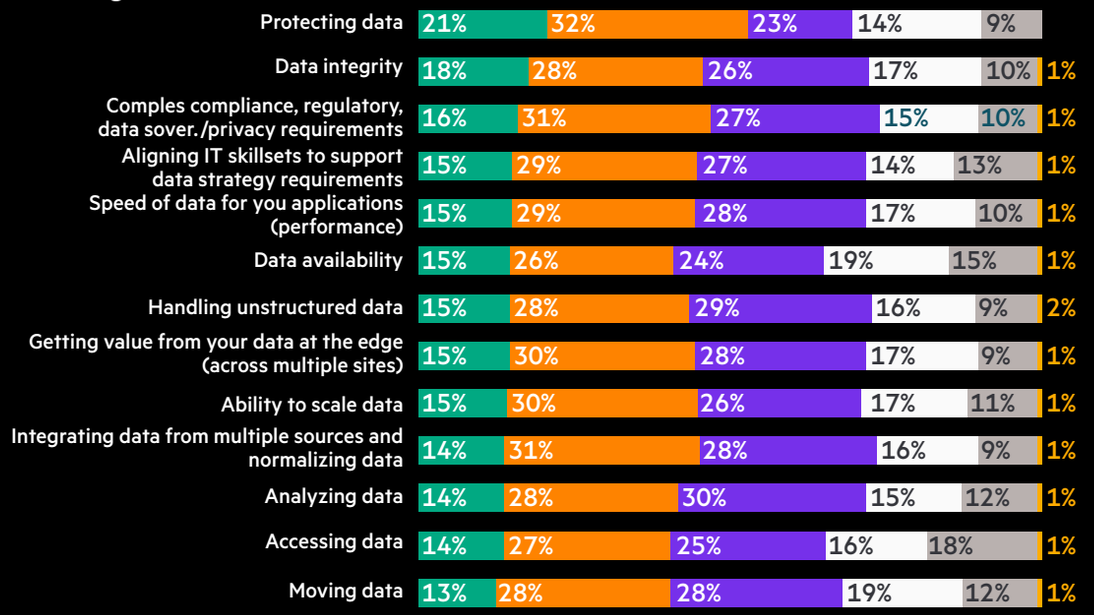
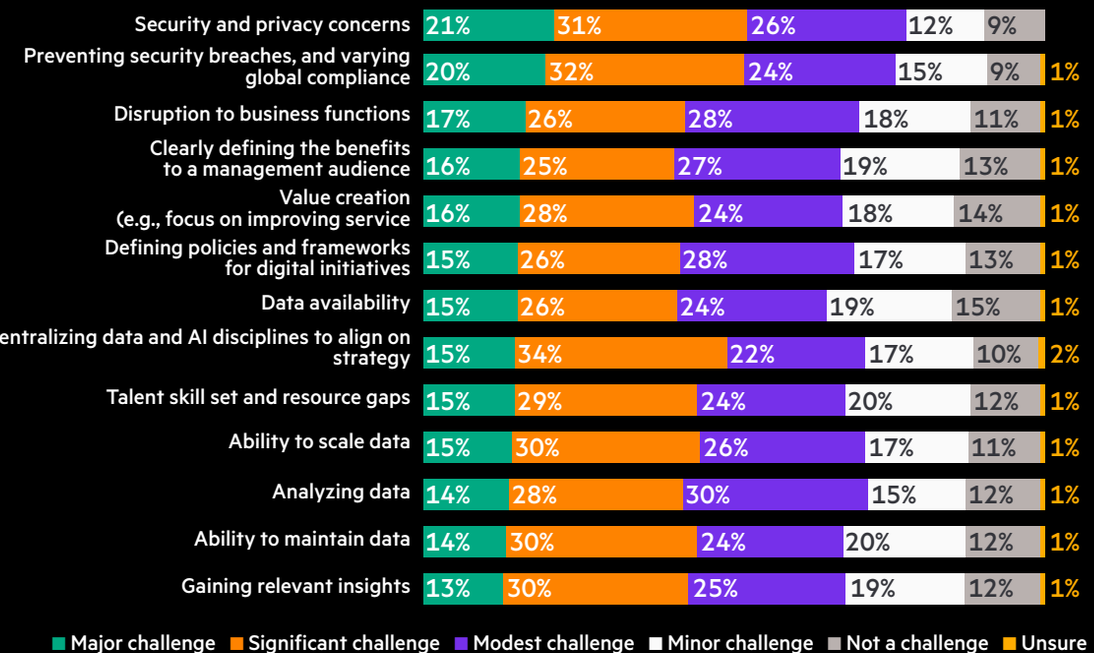


Figure 5.

Top Business Challenges

Source: IDG



Just as troublesome, organizations are grappling with their data. Across the board, respondents cite significant problems protecting it, ensuring its integrity, and addressing compliance/regulatory/privacy requirements, in addition to a host of other challenges *(see Figure 4)*.

These problems are further complicated by complex infrastructures and the inability to stitch together data. Everything slows down, including the ability to generate value.

"Some of our databases are in legacy environments," said the solution architect of a telecom company. "The problem is there is no easy way to export the data or migrate it. Having legacy data sources is a big problem."

"Moving massive data sets is difficult," says the senior vice president of a financial services company. "We are a global firm and sometimes regulations in different countries regulate that data cannot be moved away from that geography, so by design it is siloed."

In terms of business challenges, security and privacy concerns are always top of mind. Equally challenging: trying to avoid disruption to business functions; creating data value; and ensuring always-on, always available data *(see Figure 5)*.

Respondents recognize they're lacking an intelligent way to meet the business's demand for accessible, usable data. Developers and data scientists, for example, require fast access to both data and machine-learning (ML) infrastructure to speed insight discovery for the business. Any waste of their time also slows the ability to achieve business outcomes.

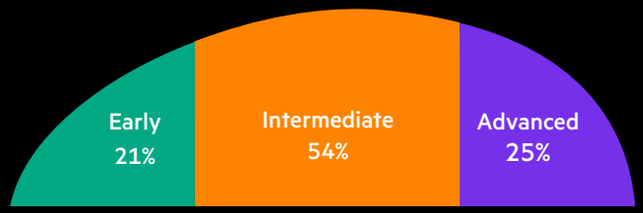
"Our goal is actionable data that's delivered quickly and reliably," said the data architect for a hospitality organization. "[The business] doesn't want to hear about the plumbing; they just care that what you're telling them will work and that it's the best way to do it."

Overall, the challenges and frustration run deep. Some executives admit their IT environments don't support current or future data strategy needs.

Figure 6.

The Data Innovators Scale: Is Your Company an Early, Intermediate, or Advanced Data Innovator?

Source: IDG



Note: Company sizes and industries are equal across all stages.

	Early	Intermediate	Advanced
Move data very well between locations	7%	29%	63%
Have adopted hybrid cloud	25%	41%	54%
Leverage a data platform driven by AIOps	26%	40%	50%
Use HPC to generate value from data	27%	52%	60%
Use HCI to generate value from data	44%	56%	60%
Believe current IT infrastructure will meet future needs	46%	76%	94%

"For our fastest growing thing, we have to create a file share, and it's growing by terabytes per month. We can't scale that on-prem," said the IT director of a manufacturing company. He's struggling to find a comprehensive, efficient solution. "I can't believe no one else in the world is having the problem I'm having and that I have to work so hard to do it. That's one example of how our infrastructure is not supporting our strategy."

Yet, even those respondents who think their data strategies are relatively mature recognize there is room to improve.

"We're already doing things with machine learning and AI-driven operations," said the CIO of a technology services company. "However, I think that even now, two years in, we're just starting to scratch the surface."

The Data Innovators Scale

The ways in which companies adopt certain technologies to support their strategy and plan to put their data to work determine where they land on the Data Innovators Scale *(see Figure 6)*.

For example, innovators are more likely to correlate their data initiatives with enterprise success. That means, for example, the ability to unlock the value and agility of their data, deliver on data's potential to grow the business, increase customer satisfaction, improve operations, and adapt to changing market conditions.

To that end, 64% of companies that are on the "advanced" end of the scale say data is critical to overall business success—compared to 42% of organizations on the early side. Furthermore, 74% of innovators say their data strategy plays a major role in achieving strategic priorities. Only 24% of laggards make this association.

Here are examples of how respondents describe and self-identify their stage on the Data Innovators Scale:

■ EARLY

"There's infrastructure age, talent/skillset, and resource gaps in my organization, then data quality issues all over the place. For us, the challenge is having the right data at the right time to make decisions.
— CIO at a financial services company

"We are just at the very beginning stages of optimizing our IT infrastructure. That's largely because we have grown through acquisition. The majority of those companies we've purchased have had aging and antiquated IT systems."
— Senior vice president of supply chain, human resources, IT services, and business for a manufacturing company

"We've got a lot of discrete data around research projects that is truly siloed and might only have one person who has access to some very important data."
— Enterprise IT architect for a healthcare organization

■ INTERMEDIATE

"We recognize the need to capitalize on data and we've done something about it. We're paying for it, we're getting value from it, but I don't think it has permeated. It hasn't permeated down into all the areas where it could be having a much bigger bang for the buck."
— Senior scientist for analytics at a manufacturing firm

"We're still going through the building process. Cloud is always going to be a factor. We are also looking into how AI and IoT can play into our data strategy. It's still in the early stages, but it's part of the roadmap."
— Senior IT director, transportation company

■ **ADVANCED (aka Innovators)**:

"Technologies like cloud, AI, and edge have a very positive role; they enable our data strategy. In terms of AI, when it comes to operational functionality, we are at the highest level. The concept of data-empowered intelligence is that you have tons of data from tons of sources and you build intelligent models on it. It makes sense to centralize it."
— *Director, privacy and security, transportation company*

"There is a lot of intelligence, which creates new opportunities for the business and allows us to provide better service and better products for customers."
— *Director of trading for a financial services company*

Actions for Advancing on the Data Innovator Scale

Even the leading data innovators are struggling with data, technology, and business challenges.

So, how can you move the needle? First, recognize that unlocking data value and agility is a journey that will take time and that you need to set a clear data strategy. A holistic approach helps. Its foundation starts with an intelligent data platform so business and IT can:

Become AI-driven. An intelligent data platform reduces IT complexity, freeing IT from the constant fire fighting so they can focus more on the areas that drive business innovation. Using AI-driven intelligence, it stitches together infrastructure from end to end to become self-healing, self-managing, and self-optimizing with autonomous operations. The platform helps to predict and prevent issues before they occur so data is always-on and always available.

Achieve "cloud everywhere." An intelligent data platform enables cloud agility on-premises. It also offers seamless data mobility that bridges on-premises and all cloud environments, enabling organizations to leverage the true power of hybrid cloud and provide always-on, always available data no matter where it exists.

Put data to work. The volume and variety of data is exploding. Data scientists, developers, and line-of-business stakeholders must be empowered by the right experience that enables them to drive innovation, no matter where your organization is on its transformational journey.

Actionable Recommendations and Best Practices to Advance Your Position on the Data Innovator Scale

Recommendation #1: Prioritize an AIOps-Driven Platform

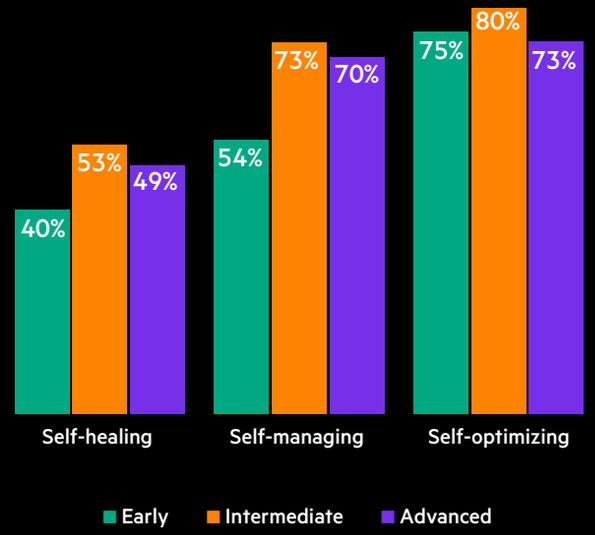
Early- and intermediate-stage companies report more significant challenges with their infrastructure, data, and business. In fact, advanced data innovators are more likely to say "not at all a challenge" to many of the obstacles in Figures 3, 4, and 5. By not having to constantly fight fires, they're able to focus on IT initiatives that deliver business value.

The reason: Innovators on the Data Innovator Scale understand the importance of AIOps to resolve issues and drive intelligent insights. Compared with early-stage companies, innovators are:

- Prioritizing AIOps investments this year
- More likely to have implemented a data platform driven by AIOps
- More confident that AIOps will help achieve business outcomes, including improved quality of experiences, a holistic infrastructure view, better capacity planning, and the ability to manage rapid data growth

Figure 7.
Innovators Have Proactive, Predictive Infrastructure

Source: IDG



Innovators on the Data Innovator Scale understand the importance of AIOps to resolve issues and drive intelligent insights.

"Ninety percent of problems happen above the storage layer," Singh said. "There are issues across the infrastructure stack, and to correlate them requires thousands or even millions of calculations. It's just too complex for humans to solve. Global intelligence can proactively and predictively resolve these issues, while ensuring that data is available and fast."

An AIOps-driven data platform, embedded with automation and built for the cloud, escalates the ability to optimize workloads, increase IT flexibility, and deliver data value. More granularly, innovators say it improves the protection, consistency, and scaling of data.

Importantly, innovators are seeing results. They're more confident that their infrastructures are self-healing, self-optimizing, and self-managing *(see Figure 7, page 6)*. And they're generating data value from all their workloads—from general purpose and secondary apps to mission-critical workloads—no matter where they're located.

Best Practices to Become AIOps-Driven

An AIOps platform delivers fast insights and proactive management capabilities. It uses AI, ML, and automation to modernize and optimize IT environments.

This is why the most data-savvy among the IDG respondents are:

- More likely to have deployed a data platform with AI-driven operations (50% compared to 24% of early-stage companies)
- More likely to recognize that a self-healing, self-managing, self-optimizing infrastructure supports their intelligent data strategy
- More likely to cite AIOps as a critical element of their intelligent data strategy (35% compared to 14% of early-stage companies)

"Global intelligence, that powers the Intelligent Data Platform from HPE, stitches together the full stack of the infrastructure," Singh said. "It's correlating sensors from up in the hypervisor all the way down, and detecting, predicting, and preventing issues. It also gives you the prescriptive insights to keep everything essentially optimized. This – combined with a decade worth of experience with AI-driven intelligence, where we've analyzed over 1,250 trillion data points and helped customers save 1.5 million hours on what would have otherwise been lost productivity—is why we're able to help at any stage of transformation."

Recommendation #2: Enable "Cloud Everywhere"

Although the IDG survey found that cloud use is pervasive, data innovators are doing more to bridge into the "cloud everywhere" reality.

"CIOs initially went to a cloud-first strategy, but then discovered cloud wasn't necessarily the panacea for everything," said Singh. "They will continue to have mission-critical workloads on-premises and are now shifting from a cloud-first to a cloud-everywhere strategy to enable a cloud experience even for on-premises apps."

"Cloud everywhere" means reducing complexity with an intelligent data strategy that supports a hybrid infrastructure across multiple clouds and on-premises data centers. Speed, flexibility, and on-demand scalability are key characteristics of this concept. For the business to achieve data value, IT must ensure that data is always-on and always fast, automated, and available on-demand. Data has to be accessible and usable across environments—from on-premises to edge, and public and private clouds.

The "cloud-everywhere" experience can be achieved by prioritizing investments in intelligent data platform solutions including:

- HCI and Disaggregated HCI (dHCI)
- Containers
- As-a-Service
- Enterprise cloud data services

These solutions provide IT flexibility, while providing the business with agility to quickly respond to market changes. For example, enterprise cloud data services bring consistency and reliability to mission-critical workloads to unify the data experience. Here, dHCI offers the simplicity of HCI together with the reliability, speed, and efficiency that workloads require at scale. When combined with AaS delivery models, mission-critical on-premises applications can achieve the cloud experience everywhere.

In addition, the right data platform allows for easier data mobility across clouds, edges, and core systems: 63% of innovators say they can move data "very well," compared with 34% of intermediate and just 7% of early-stage organizations.

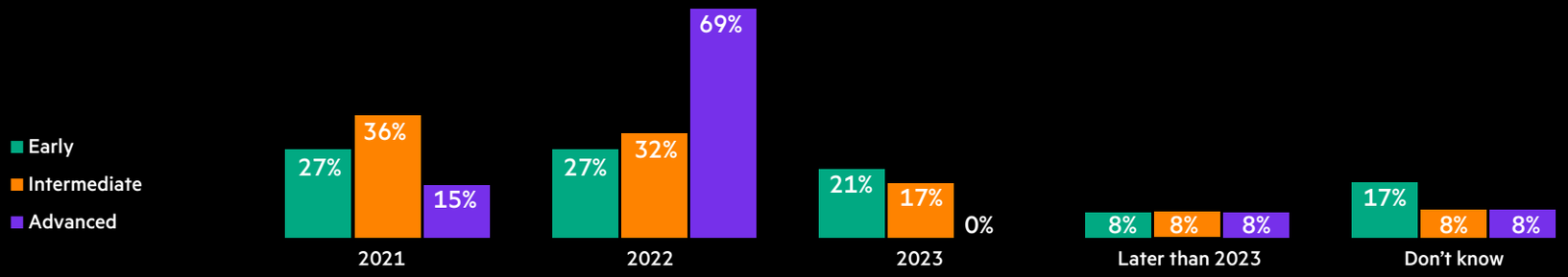
"The whole premise behind our data strategy is to make data available on-demand," said the director of privacy and security for a large transportation company. "That's why we moved from an exclusive public cloud to more of a multi/hybrid cloud environment."

"Cloud Everywhere" Best Practices

An intelligent data strategy enables the business to access always-on, always available data. Doing so speeds results for customer satisfaction, improves user productivity, and allows for sustainable growth.

Figure 8.
Majority of Innovators to Invest in AL/ML by 2022

Source: IDG



The most data-savvy among the IDG respondents are:

- Increasing investments in intelligent, flexible infrastructure solutions in the next 3 years
- Increasing workloads across every type of infrastructure, but especially edge and cloud
- More likely to recognize that a modern, responsive architecture best supports the ability to generate value from data
- Investing in capabilities that enable data mobility between sites

"An intelligent data platform enables a cloud-like experience on-premises," said Singh. "It also offers seamless data mobility to bridge different clouds, and enables enterprise cloud data services to bring consistency, reliability, and a unified data experience."

Recommendation #3: Put Your Data to Work

Developers must advance application development and delivery pipelines; data scientists need to extract insights at speed; and lines of business must generate new revenue streams and improve customer experiences.

Each of these cases demonstrate the hyper-accelerated reality of business today and the criticality of data. Simply put, companies must quickly unlock data value everywhere. The volume and variety of unstructured data, for example, is already immense and still growing. Yet, there are valuable insights within this data that must be leveraged to achieve business outcomes. That's why a workload-optimized approach is critical to put data to work across its entire lifecycle.

"Two things matter the most to me," said the director of privacy and security at a transportation company. "First is performance, which is making sure that I can actually keep my business functioning in a way that the customers expect. Then the second thing is the ability to deliver a seamless experience to the business in the sense that: I have good data, I'm looking at it correctly, deriving the right conclusions, there's no noise, and information is flowing back to the business correctly as well."

It's a fluid cycle that affects all business areas. For example, AI and ML solutions can quickly sift through mountains of data — faster than humans can — to detect anomalies and patterns worth further investigation by data scientists, who in turn can deliver insights to the business. At the same time, data can be sorted and stored more effectively according to its needs.

That's why innovators are significantly more bullish in their AI and ML investments *(see Figure 8)*. Along with solutions such as containers, HCI, and AIOps-based data platforms, these technologies have helped to evolve their understanding of what kinds of data exists, and how to use it.

"The whole concept of AI-, ML-, and data-empowered intelligence is that you have tons of data from tons of sources and you build intelligent models on it," said the director of privacy and security for a transportation company. "We know what (data) we want to collect and what we need at the back end. We are able to make sure that whatever learnings we derive at the back end are out to the front end pretty quickly."

Innovators are facing challenges with their data, yet they're implementing a clear strategy matched with the right data platform to overcome these hurdles and to advance their business. They're focused on unlocking the value and agility of their data by:

- Seeking data-driven insights to fuel business growth
- Working to improve experiences for customers and users
- Proactively using data to accelerate innovation

Best Practices to Put Your Data to Work

In practice, putting your data to work means keeping your data always fast and always available. Additionally, be able and ready to optimize existing applications and workloads, while taking advantage of the new approaches and technologies (like containers) that will help you deliver the data insights used to drive your business forward. Whether the data lives on-premises, at the edge, or in the cloud, best practices gleaned from the data innovators include:

- Adopting AI and ML technologies underpinned by an AI-Ops driven platform
- Prioritizing flexible, scalable infrastructure — such as containers and dHCI — to optimize and speed workloads
- Leveraging As-a-Service models for infrastructure to enable IT teams to focus on business innovation

When skills and resources are limited, or when you're bogged down by constant IT firefighting, having everything operated and managed for you makes a big difference. "The intelligent data platform from HPE can be delivered as-a-service to reduce infrastructure complexity, scale elastically, and unlock agility," says Singh. "This is where storage and data management as-a-service, and more broadly containers and applications as-a-service can help you unlock greater levels of agility for all application workloads."

Start Moving the Needle: The Next Steps

No matter where your organization lands on the Data Innovators Scale, it's time for change.

Clearly, innovators have a head start: 96% say their business is an intelligent enterprise with a clear data strategy—compared to just 41% of early- and 75% of intermediate-stage companies.

For those on the lagging side of the scale, the first step is recognizing the critical role data plays in achieving business outcomes. For example, 93% of innovators say they're proactively using data to accelerate innovation to better compete.

"Data is a big business driver for us; it's a competitive advantage" said the director of trading for a financial services firm. He added that seamless access to data supports business objectives such as "better investment decisions, improved customer service, and guaranteed compliance with different regulations."

Next, develop an *intelligent* data strategy, underpinned with the right intelligent data platform to:

- Become AIOps-driven
- Enable "cloud everywhere"
- Put data to work

Finally, understand that it's a journey, one that involves thinking creatively and holistically.

"Realize that you have to think about data in three dimensions: What is it? How is it? Where is it?," advised the CIO of a technology services company. "You might think you've solved the problem only to find it's not extendable because you only thought about things in two dimensions. We did this. Boy, were we wrong! So you have to realize that there's a box and you're standing in the middle of it. Step outside of the box!"

Learn how HPE can help you unlock the value and agility of your data with an Intelligent Data Platform. Visit http://www.hpe.com/intelligentdata

About the Research

IDG conducted an online quantitative survey among 500 U.S.-based senior IT leaders across all industries, working at companies with 1,000 employees or more. Researchers also conducted 12 one-on-one interviews with IT executives, representing all three stages of the Data Innovators Scale. The research was sponsored by HPE.

Unlock the Value and Agility of Your Data with an Intelligent Data Platform from HPE

Data must be always-on and always available everywhere. It must move with speed and agility to help optimize existing workloads, while supporting new ones both on- and off-premises. It must deliver insights to power the business and unlock value.

The Intelligent Data Platform from HPE delivers on these requirements with:

- **AI-driven operations to enable your infrastructure to predict and prevent issues before they occur, so apps that unlock the value of data are always-on and always fast.**
- **Built-for-cloud capabilities to help you achieve a "cloud-everywhere" experience and deliver seamless data and workload mobility across hybrid environments—all in a workload-optimized, edge-to-cloud approach.**
- **As-a-Service functionality for increased IT flexibility, elastic scalability on-demand in a pay-as-you-go consumption model, with the choice of having the platform operated and managed for you by HPE.**

For more information, visit https://www.hpe.com/us/power-your-data