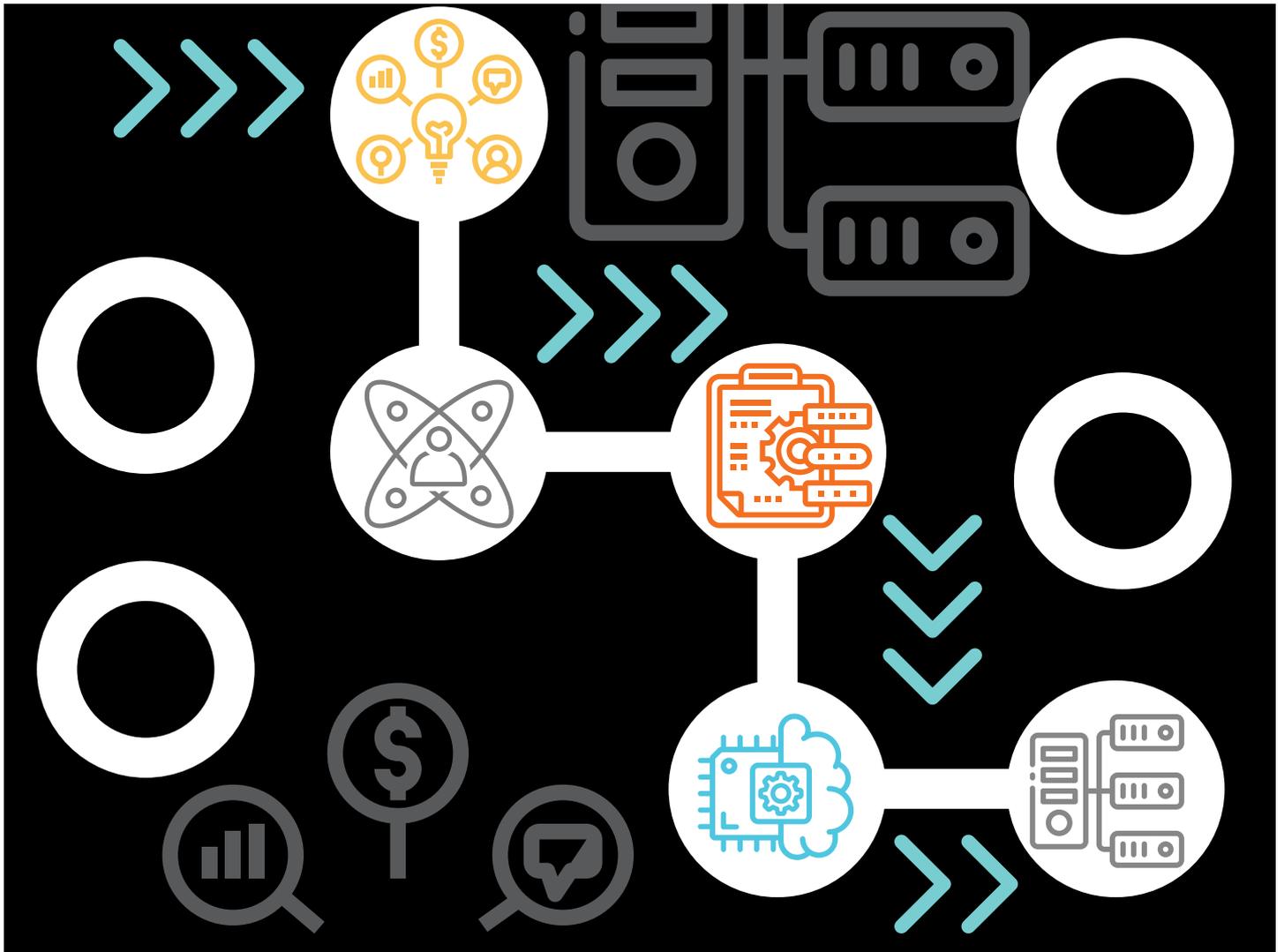




Processes to store, organize, access, and act on vast troves of data can be frustratingly complex, but they're crucial to guide decisions that drive business growth.

In unpredictable times, a data strategy is key



More than 18 months after the 2020 coronavirus pandemic struck, it's clear that the ability to make quick decisions based on high-quality data has become essential for business success. In an increasingly competitive and constantly shifting landscape, companies must be agile enough to tackle persistent challenges, ranging from cost-cutting and supply chain issues to product development and market shifts. Critical to thriving post-pandemic, say technology leaders and experts, is developing a long-term data strategy. That provides a strong foundation and clear vision which supports the organization's ability to manage, access, analyze, and act on its data at scale to guide strategic business decisions.

"It's an ongoing journey to get trustworthy data into the right people's hands in a low-friction way," says Jonathan Lutz, director of technology at Aquiline Capital Partners, a New York private equity company. The right data strategy is essential, he explains, particularly as an organization begins to scale its efforts. "There is an inflection point where manual processes are no longer tenable or sustainable," he says.

Key takeaways

- 1 Organizations of all sizes and across industries know they need to be data-driven to thrive in the competitive digital economy that's emerging from the 2020 coronavirus pandemic, a new business-leader survey shows.
- 2 Technologies such as cloud computing, analytics, and artificial intelligence are fueling efforts to get more value from data, with smarter decision-making the highest-ranking expected benefit.
- 3 Despite their acknowledgment of the power of data to transform business, most organizations are lagging when it comes to enacting a data strategy – a comprehensive plan to manage, access, analyze, and act on data.

A worldwide survey of 357 business executives, conducted by MIT Technology Review Insights and Amazon Web Services, shows that organizations of all sizes and across industries understand how crucial it is to become data-driven. Most important, they've learned that a supportive and successful data strategy cannot be left to chance.

About this report

Based on a combination of survey research and in-depth executive interviews, this report explores how organizations today are using data to drive business value. It's sponsored by Amazon Web Services, and the views expressed within are those of MIT Technology Review Insights, which is editorially independent.

- In June and July 2021, MIT Technology Review Insights surveyed 357 senior business leaders and academics – 54% of whom are C-level executives or directors.
- Executives who responded to this survey are from Asia-Pacific (29%), Europe (30%), and North America (36%).
- Respondents work in more than a dozen industries; IT and telecommunications, at 23%, represents the largest response group, followed by financial services, at 10%; pharmaceuticals/health care and education, each at roughly 9%; and professional services, at 8%.
- Respondents were asked about the maturity of their companies' data strategies, their priorities, and what business value they expected from data.

Data value is front and center

The past year and a half were disruptive to businesses across industries, due in large part to the pandemic. The initial shutdowns in March 2020 meant that many companies had to turn on a dime to arrange for an all-remote workforce while also keeping up with wild shifts in consumer behavior and market demand.

The good news is, even during an unprecedented crisis, a large number of organizations continued to grow. In fact, nearly half of the survey respondents (45%) characterize their companies as "thrivers," saying they boosted business growth over the past 18 months (see Figure 1).

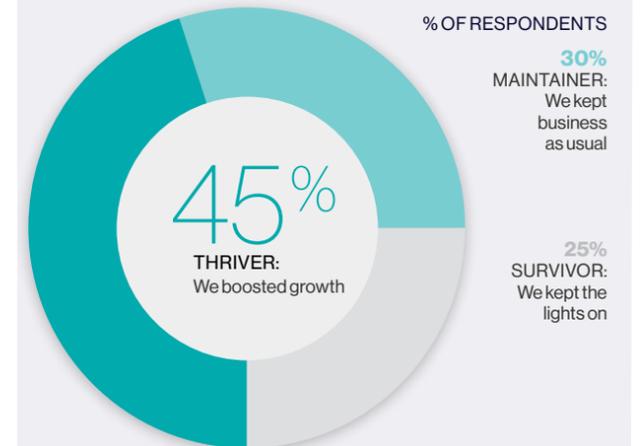
But, not surprisingly after such a challenging period, many other organizations could do little more than hold steady or try to hang on: the remaining 55% of those surveyed managed to maintain their efforts, conducting their usual level of business, or simply didn't shut down.

Yet, whether organizations are thriving, maintaining, or just surviving, there's no doubt that the power of data is top-of-mind for all businesses looking to succeed. In today's digital world, companies gather or have access to vast amounts of data. Thanks to technologies such as cloud computing, analytics, and artificial intelligence (AI), they can also store, process, analyze, and put this treasure trove of data to use, in a meaningful way, to boost business outcomes.

The initial shutdowns amid the 2020 coronavirus pandemic meant that many companies had to turn on a dime to arrange for an all-remote workforce.

Figure 1
Thriving and surviving

Nearly half of organizations prospered over a tumultuous 18 months, while 55% kept business going or kept it from closing.



Source: MIT Technology Review Insights survey of 357 business leaders and decision-makers, July 2021

Figure 2
Value expected from data

Most respondents want to use data to make better decisions; they also hope to better know their customers and deliver improved products.



Source: MIT Technology Review Insights survey of 357 business leaders and decision-makers, July 2021

As a result, there are many possibilities to gain business value from large data sets. According to the survey, the most common value companies are hoping to take advantage of is smarter decision-making (79%) (see Figure 2). They also want to more deeply understand their customers and industry trends (61%), provide better services and products (42%), and implement more efficient internal operations (33%).

Companies also learned valuable lessons about the importance of data as they struggled to stay competitive during the pandemic. Roughly four out of 10 survey respondents, for example, report that they need to look at more sources of data, including demographic, geospatial, and competitor information. More than a third (37%) are evaluating machine learning and analytics – technologies essential to extract critical insights from their data. And 34% need help acting on the vast sums of data they gather and process.

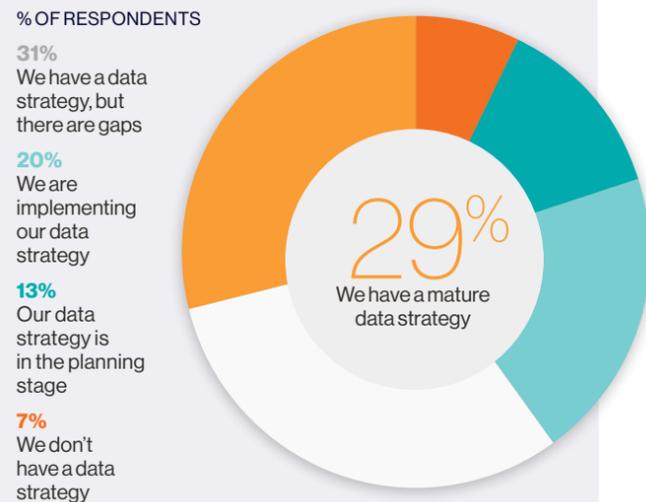
For Thermo Fisher Scientific, a US biotechnology company with more than 80,000 employees in 50 countries, thriving in today's competitive life-sciences landscape is all about helping customers accelerate research, solve complex analytical challenges, improve patient diagnostics, and increase laboratory productivity. Through a scalable and secure platform on which researchers and scientists can collaborate, conduct research, and improve medical treatments, "we help our customers make the world healthier, cleaner, and safer," says Mikael Graindorge, senior manager of commercial

"You can see the distance between companies that are moving fast and driving change on the journey towards a successful data strategy versus the companies that are lagging behind."

Ishit Vachhrajani, Enterprise Strategist, Amazon Web Services

Figure 3
How mature is your data strategy?

Less than one third of respondents report they have solid processes for collecting, accessing, and using data.



Source: MIT Technology Review Insights survey of 357 business leaders and decision-makers, July 2021

analytics and insight at Thermo Fisher. The company wants to provide the best service and products as well as the best ways for customers to efficiently complete their scientific research, he explains. "But to do that, we need more and more data, which means more complexity, so we need to expand our data science investment to continuously innovate for our customers."

Data strategy is fundamental

These days, becoming data-driven is within the reach of every organization, says Ishit Vachhrajani, enterprise strategist at cloud provider Amazon Web Services. But it doesn't happen overnight: having a sound data strategy, he says, is fundamental to support better decision-making and drive growth.

"Data strategy is table stakes in today's world," Vachhrajani says. "You can see the distance between companies that are moving fast and driving change on the journey towards a successful data strategy versus the companies that are lagging behind."



That said, Vachhrajani admits that while companies realize they need a data strategy and have embarked on an ongoing effort to create the right data-driven foundation, most can't yet boast a mature data strategy effort. They may find success in realizing the power of data for a few lines of businesses and products, but some larger changes are difficult, especially cultural efforts such as getting leadership buy-in and investing in modernizing technology infrastructure. "It requires a great deal of commitment from the leadership to drive those changes," Vachhrajani says.

That complex picture reflects the survey results. Only 29% of respondents say they have a mature data strategy – solid processes for collecting and accessing data and using data, analytics, and machine learning to make smarter decisions and improve internal processes (see Figure 3). Nearly one third of respondents (31%) say they have a data strategy, but execution gaps prevent them from getting the most value out of data.

Challenges of data strategy at scale

The journey to becoming a data-driven organization is often long and winding. Most survey respondents report facing a variety of obstacles over the past year and a half when it comes to implementing a successful data strategy at scale. They also learned several lessons about what's required to make the most of their data.

43%

of "thrivers" organizations say they already have a full-fledged data strategy – processes for managing, accessing, analyzing, and acting on data.

Figure 4
Data lessons learned

The past year and a half taught organizations much about their data. A plurality of respondents needs wider diversity of data sources.



Source: MIT Technology Review Insights survey of 357 business leaders and decision-makers, July 2021

“We spent a lot of the last 18 months either ripping out and replacing legacy systems or putting systems in place where they didn’t previously exist.”

Jonathan Lutz, Director of Technology,
Aquiline Capital Partners



The most common challenge is figuring out how to develop a more holistic perspective of the business. For 42% of respondents, more sources of data, including demographics, competitor, and geospatial information, are needed to gain a better, wider understanding of all aspects of their organizations (see Figure 4).

Acting on massive data sets is also a growing challenge. More than a third (34%) of respondents share that they already collect and process lots of data but need help acting on it to glean useful insights. And more than a quarter of respondents say they need better tools and infrastructure for data storage and analytics.

According to Vachhrajani, many of these challenges stem from cultural obstacles within an organization. “We talk a lot about technology, but one problem we hear from leaders is overly centralized, HIPPO-based decision-making that stands in the way,” he says, using the acronym for “highest-paid-person’s opinion.” Organizational silos, he explains, are often designed to protect data rather than make more of it accessible. And outdated governance structures may increase the distance between teams that understand and process data and frontline workers who make everyday decisions and interact with customers.

But in general, companies that are agile and were already modernizing their technology stacks before the pandemic are in a much better position to respond to the unexpected in an age when organizations are required to quickly pivot.

For example, survey respondents who identify as “thrivers” are more likely to be farther along on the modernization path: 43% say they already have a modern data strategy.

Thermo Fisher is well on its way to using machine learning and AI to quickly interpret data and help predict customer needs. “Over the past five years, since we moved beyond traditional analytical methods, we’ve grown by 500% and seen a massive acceleration around our data science capabilities,” says Thermo Fisher’s Graindorge. “We did this by providing scalable, flexible, infrastructure that offers better predictions to our business and our customers about their scientific needs.”

Figure 5

Data to-do lists

Boosting tech investment is the top objective for nearly half of respondents.

% OF RESPONDENTS

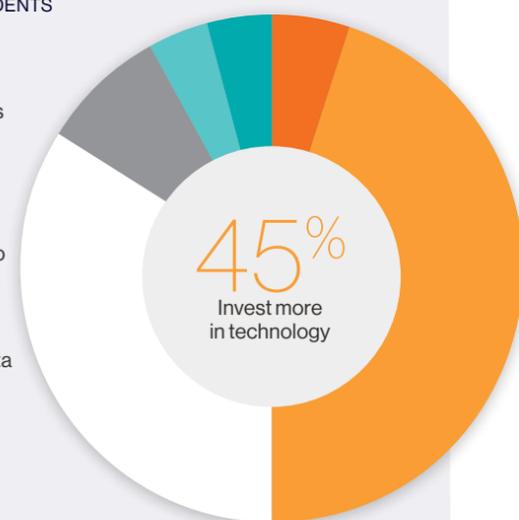
34%
Hire or train employees in needed skills

8%
Figure out where to start

4%
Hire a vendor to help lead data strategy

4%
Outsource data management and analytics

5%
We don’t have plans



Source: MIT Technology Review Insights survey of 357 business leaders and decision-makers, July 2021

On the other hand, according to the survey, most “maintainer” and “survivor” organizations remain farther behind when it comes to data strategy goals: they’re more likely to have a data strategy with gaps in execution that prevent them from getting the most value out of their data, are in earlier stages of data strategy implementation, or don’t yet have a data strategy at all.

The pandemic, says Vachhrajani, has highlighted those gaps and brought data-driven challenges to the forefront. “Many companies still have mountains of technical debt, with old-guard databases and technology that they have failed to modernize,” he explains.

Data strategy priorities

As organizations plan for the year ahead, most recognize that implementing a strong data strategy, supported by the right cloud, analytics, and AI-driven technology is key. By far, the biggest priority for survey respondents is to boost technology investments, including in machine learning and AI. In fact, 45% of all respondents say investing in technology is their number-one priority (see Figure 5).

For respondents in the “thrivers” group, that number soared even higher: more than half (57%) say technology investment is their top priority as they continue to mature their data strategies.

That’s true for Aquiline, which has made technology investment and implementation a core exercise. “We spent a lot of the last 18 months either ripping out and replacing legacy systems or putting systems in place where they didn’t previously exist,” says Lutz. “Then we worked to make sure the data from those systems was of

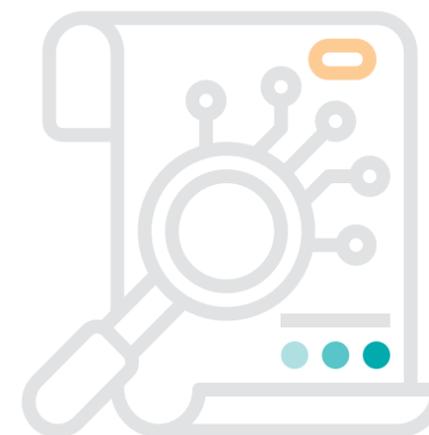
high quality and certified.” The company worked diligently to make data output a “golden source of trustworthy data, readily available to the people who need it,” he explains.

Another top priority for companies at every stage of the data strategy journey is hiring and training employees in necessary data-focused skills. A full third of thriver respondents consider finding and retaining the right talent to be a top priority.

Some companies are ready to train those with the right soft skills: “We’re looking for curious people who are able to learn independently in order to solve issues and deeply understand business needs,” says Graindorge. “But it’s also about training. You need people who can adapt to their environment, who you can train and give the right tools, and then offer them space to practice, fall, and succeed.”

Overall, companies that have thrived over the past year have leadership backing significant investments in people and technology to build a data strategy that succeeds, says Vachhrajani. “They invest in building skills across the whole company, not just in technology or data functions, and they also invest in adopting technology like cloud at scale across the entire company.”

Successful, tech-forward organizations also realize that every product and application will soon be infused with machine learning, Vachhrajani explains, so they’re not only investing in machine learning and AI but reskilling and hiring employees who can help deploy the technology at scale. “It’s all about working to identify how machine learning can help them solve problems better in every area of their business,” he says.



“People forget that data inputs are often messy and require time to clean and maintain.”

Mikael Graindorge, Senior Manager, Commercial Analytics and Insight, Thermo Fisher

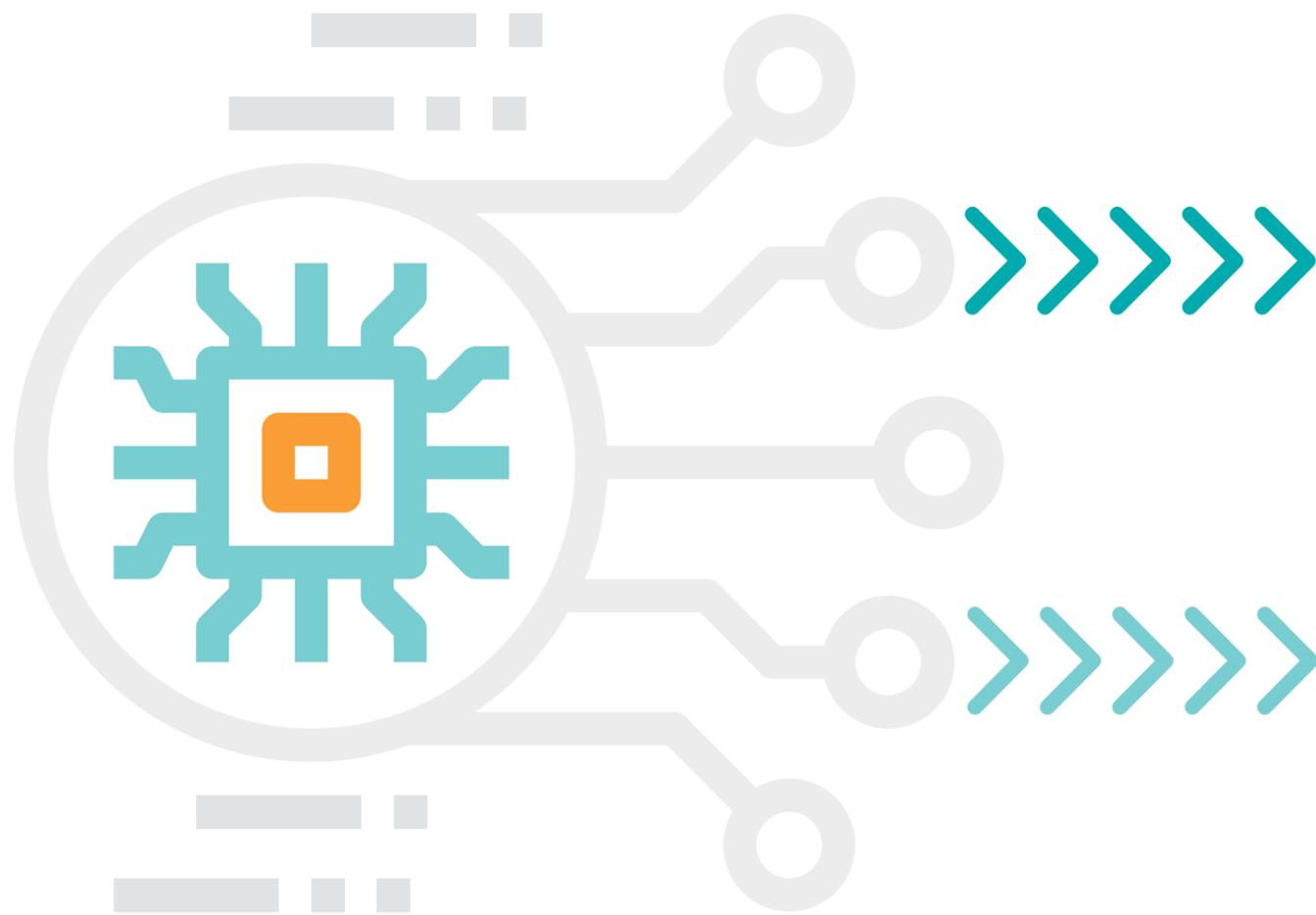
Steps to data strategy success

Overall, implementing a successful data strategy is an all-hands effort, says Lutz, who adds that strong sponsorship from the top and buy-in across the organization are paramount. Then, challenges as basic as defining data sets and building and maintaining data processes are ongoing.

Graindorge points out that it's easier to choose vendors that help gather data than it is to figure out how you will analyze and glean insights from that data. "People forget that data inputs are often messy and require time to clean and maintain," he says. "That ends up exposing a gap, so organizations need to take their time and understand the consequences of their decisions."

Overall, building a strategy to make better decisions and get more value from data is all about getting started. "The good news is that you can literally get started on the change tomorrow," says Vachhrajani. "It's never too late to turn the ship in the right direction, create a foundation, and actually begin to drive the change."

The consequences of not getting started are significant. Without a strong data strategy, organizations lack agility, losing the ability to respond to unexpected events such as a pandemic. "There are so many unknowns, so many opportunities that could be lost," Vachhrajani says. "A sound data strategy allows everyone in the company to use data in an effective manner, not just for very important big decisions, but everyday decisions on the frontline."



"In unpredictable times, a data strategy is key" is an executive briefing paper by MIT Technology Review Insights. We would like to thank all participants as well as the sponsor, Amazon Web Services. MIT Technology Review Insights has collected and reported on all findings contained in this paper independently, regardless of participation or sponsorship. Jason Sparapani, Sonia Rubbeck, and Laurel Ruma were the editors of this report, and Nicola Crepaldi was the publisher.

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From the sponsor

The introduction of the cloud set off a generation of reinvention, and now, the next wave of reinvention will be driven by data. Leaders need to be able to rely on data to make informed decisions, look around corners, and take meaningful action. So building a data strategy is an imperative for organizations that want to stay relevant now, and in the future.

AWS provides the most comprehensive and most cost-effective services for data, analytics, and machine learning. With AWS, organizations can modernize their data infrastructure with the most scalable, trusted, and secure cloud provider, unify their data silos with secure and well-governed access to data across data lakes and purpose-built data stores, and build new experiences and reimagine old processes with AI and machine learning. AWS has helped more customers modernize their data strategy with tens of thousands of data lakes on AWS, more than 450,000 databases migrated from on-premises to AWS, and more than one hundred thousand customers using AWS for AI and machine learning.

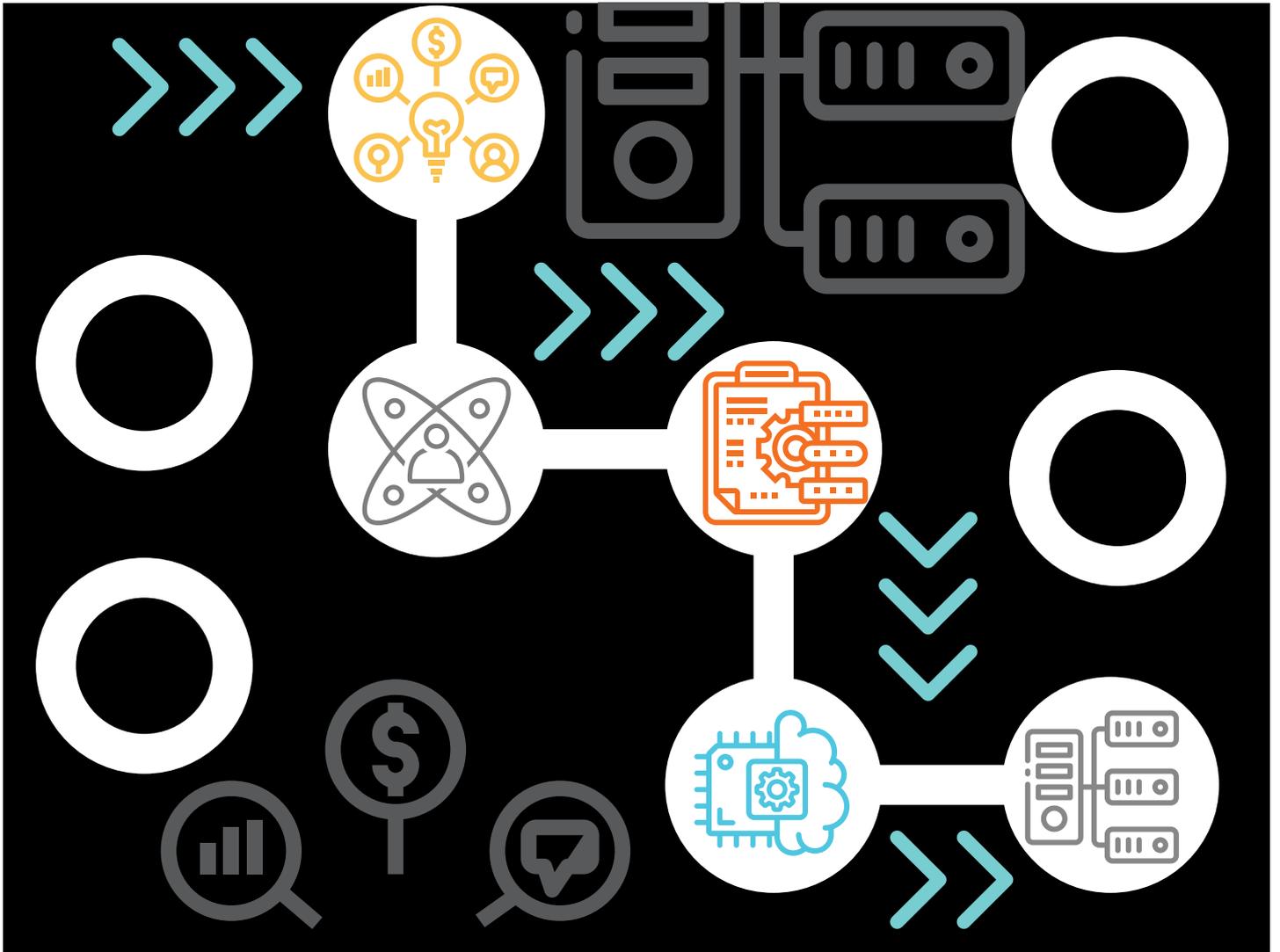


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