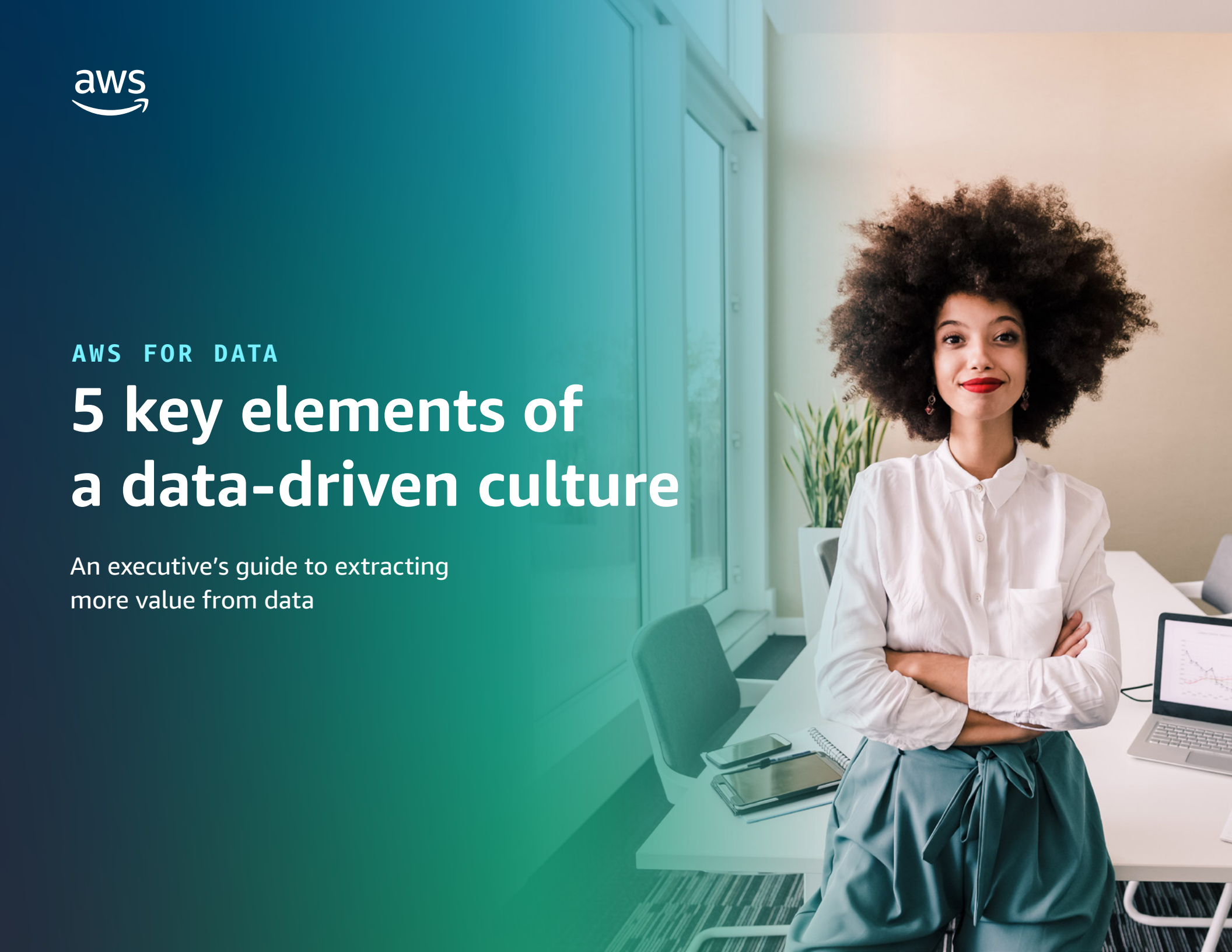
AWS FOR DATA

5 key elements of a data-driven culture

An executive's guide to extracting more value from data



INTRODUCTION

Laying the foundation for data-driven transformation

Data is at the center of every application, process, and business decision. Nearly every organization is on a quest to become more data-driven to quickly discover and act on insights.

But today's enterprises face a major barrier to data-driven transformation: creating a data-driven culture. **A recent survey of chief data officers** (CDOs) revealed that 69 percent of CDOs spend the majority of their time on data-driven culture initiatives, and 55 percent view the lack of a data-driven culture as a top challenge to meeting business objectives.[1]

Without the right culture changes to serve as a foundation and an enabler of transformation, the effort to become more data-driven is destined to fall flat. Any success that is achieved will be unlikely to scale across the organization or deliver lasting, meaningful business results.

By fostering a data-driven culture of transparency, decentralization, and empowerment, however, you can ensure that the changes you make will become permanently integrated with your business processes. This will enable every worker and every team at your company to harness the power of data in ways that drive critical business outcomes.

This eBook outlines the five critical steps you can take to create, cultivate and scale a data-driven culture, shifting your organization's collective mindset to treat data as an asset that can improve operations and drive growth.

By transforming into a data-driven enterprise, you can:

Make better decisions faster

Respond better to the unexpected

Enhance customer experience and engagement

Uncover new opportunities

Improve efficiency

[1] Davenport, T., "CDO Agenda 2023: Prioritizing Business Value Creation," AWS (in partnership with MIT CDOIQ), 2022

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According to a 2022 survey of CDOs:[1]

62%

cited "difficulty in changing organizational behaviors and attitudes" as a challenge

42%

said "lack of data literacy or understanding" was a challenge

[1] Davenport, T., "CDO Agenda 2023: Prioritizing Business Value Creation," AWS (in partnership with MIT CDOIQ), 2022

Identifying the challenges and goals

If you're wondering why fostering a data-driven culture is proving so difficult for today's enterprises, you're not alone. Among the biggest obstacles to creating a data-driven culture are:

- Lack of shared knowledge or definition of data culture
- Siloed data that hinders making better, faster decisions
- Restrictive and outdated governance
- Lack of data literacy and proficiency

To overcome these challenges, it's important to identify your organization's specific goals in fostering a data-driven culture. These include:

- Ensuring the right people have the right access to data when needed
- Fostering transparency across the organization by breaking down data and organizational silos
- Offering employees the right tools to explore data and insights to take advantage of advances in databases, analytics, and machine learning (ML)
- Gaining the expertise to get actionable insights

Many organizations are making notable progress toward overcoming these challenges and achieving their goals. While there is no one-size-fits-all playbook that guarantees you will move the needle on culture change, focusing on the five steps in this eBook can get you headed down the right path.

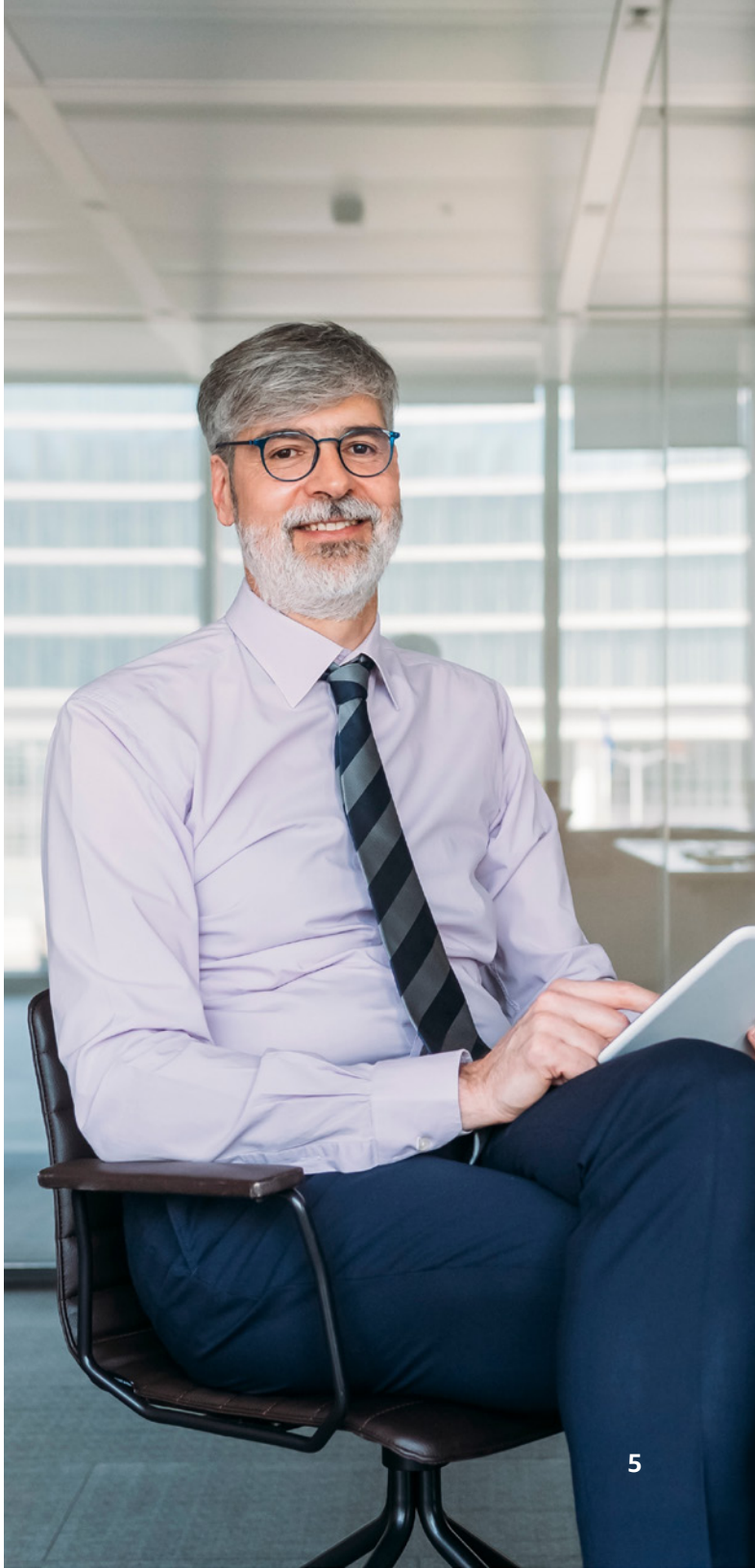
STEP 1

Promote organization-wide change from the top down

To foster a data-driven culture that can successfully scale across every business user and team, you must start at the top. From the C-level down, leaders and executives must act as champions of data, promoting culture change not only through changes in policy, processes, and technology but also with their own actions.

To set the right example from the top down, your leaders should demonstrate a clear vision. They must make highly visible efforts to marry data with core business objectives and showcase the resulting benefits. Further, top executives need to demonstrate a commitment and ongoing investment in advancing your data literacy, democratizing access to your data, and championing the use of data-driven decision making.

One way to help executives take the lead in data-driven culture change is to adopt business intelligence (BI) dashboards. If implemented properly, these dashboards can enable executives at every level of technical sophistication to inform and support decisions and strategic initiatives with data.



Identify a culture-change champion

Appointing a "single-threaded" executive to lead the charge and carry the messaging is a great way to advance top-down culture change. Many organizations—nearly 74 percent, according to one study[2]—employ a CDO or CDAO (chief data and analytics officer), and the people who hold these positions are often a natural fit to take the lead on culture change.

Whether it's a CDO, CDAO, or other executive leader who fills this role, clearly defining the responsibilities, goals, and desired attributes for this person will be critical to their success. Whoever assumes this role should be:

- Guided by a single vision and end-to-end data strategy
- Able to communicate and evangelize the importance of data
- Adept at working across different functions and departments
- Focused on relationship building and change management
- And most importantly: Empowered to make decisions that propel organizational change

Ultimately, this data-driven culture champion will become the bridge that connects your business strategy goals with your IT implementation. This will help ensure not only that the technology is implemented in ways that fit with your strategy but that your IT team understands your strategy and is committed to its execution.

"Value creation and execution with data and analytics depends upon the culture that exists in any given part of the company. We recently created the Lilly Data & Analytics Institute with the goal of upskilling everybody in the company in relevant data analytics areas."

Vipin Gopal, CDAO at Eli Lilly and Company

[2] "NewVantage Partners Releases 2022 Data and AI Executive Survey," Business Wire, January 3, 2022

STEP 2

Implement an end-to-end data strategy

An **end-to-end data strategy** works to create a culture that treats data as a strategic resource and invests in the right data infrastructure, solutions, people, processes, and tools. It engages everyone in a data-driven vision by educating teams to boost data proficiency and enabling data-driven decision making from the top down. To create an end-to-end data strategy, leverage the three-pillar approach—Comprehensive, Integrated, and Governed. Learn more about the three-pillar approach in **The Ultimate Guide to Developing an End-to-End Data Strategy**.

The strategy frees organizations from monolithic, one-size-fits-all data structures, instead opting for data lakes and purpose-built databases and analytics engines. This enables organizations to increase agility, to connect all data regardless of where it lives, move data, and expand the use of analytics and ML throughout the organization. By eliminating structural and department silos, an end-to-end data strategy ensures that all the right people can access data at the right time with the right controls.

> **"From security and databases to configuration, deployment, and caching, AWS is critical to developing our biometrics technology. Our solution relies on it."**
>
> Łukasz Łyczba, CTO at PayEye

Comprehensive

Integrated

Governed

An end-to-end data strategy on AWS:

- **Comprehensive:** Equipped with the right tools, with the optimal price performance for any user, type of data, and use case
- **Integrated:** The ability to integrate data that is stored and analyzed in different tools and systems to gain a better understanding of your business and predict what will happen
- **Governed:** Governance of all your data to securely give data access when and where your users need it to speed innovation

The components of an end-to-end data strategy include:

Data lakes/data warehouses

For customers to unlock the full value of their data, fuel growth, and successfully achieve business outcomes, they need the ability to analyze siloed data from a diverse range of sources in real time. The right combination of a data lake and data warehouse can help organizations unify their data and store unstructured data, setting the foundation for an end-to-end data strategy.

Purpose-built databases

The diversity of today's data stores necessitates a multi-database strategy that includes structured relational, nonrelational, and large-scale data stores, as well as purpose-built databases that are optimized for specific workloads, such as key-value databases for high-traffic web applications, time-series databases for Internet of Things (IoT) applications, or graph databases for recommendation engines. Ensure your culture encourages using the right database for the right job—while properly educating your people on how and when to use each database type or service.

Analytics for every use case

Enable your teams to transform data into insights through broad analytics capabilities that function across as many use cases as is feasible. Lead from the top by demonstrating the value of data to drive better decision making, then adopt and train your people to use the tools needed to make analytics a part of their daily lives.

Artificial intelligence and machine learning services

Invest in artificial intelligence (AI) and ML services that drive automation and enable accurate predictions that lead to better decisions. Consider low-code, no-code, and fully managed options that allow people with limited or no development experience to leverage these powerful technologies. Support your efforts with an encouraging culture that provides proper training and emphasizes the ability of everyone to use AI and ML.

BI tools

Adopt intuitive BI tools that allow your people to understand data by asking questions in natural language, exploring through interactive dashboards, or automatically looking for patterns and outliers powered by ML.

Data governance

Culturally, data governance should be viewed as an enabler of data access rather than an inhibitor. Effective data governance allows you to control access to the right data to the right user at the right time. Moving to a data lake architecture with a data catalog is a great way to help achieve this. This allows you to automatically discover, tag, and catalog data, providing an easy way to centrally define and manage security, governance, and auditing policies—all in one place.

STEP 3

Integrate your data

To create and maintain a data-driven culture, you must break down data silos and unify your data—ensuring the right people can access the right data at the right time.

This starts with crafting policies anchored in the belief that, by default, data should be openly shared and freely accessible to everyone.

Without this cultural underpinning, the success of your transformation may be limited. Users will be less likely to adopt data-driven approaches, preferring old processes and workarounds to long waits and red tape that prevent them from accessing the data they need.

Instead, an open approach encourages users to seek out and use data to drive their decisions, confident that they can easily find what they need, right when they need it.

Breaking down silos

Departmental silos can prevent your organization from uncovering the rich insights needed to better serve customers, increase collaboration across functions, and advance strategic goals.

To eliminate cultural and departmental silos, move from viewing data as a departmental property to treating it as an organizational asset. A high-performing, data-driven organization shares ideas, best practices, and learnings across departments. Build a culture that drives accountability—but also empowers teams to eliminate roadblocks, break down silos, and freely obtain the data they need.

Furthermore, the cultural shift from data silos to an open approach must be empowered and enabled by an effort to unify your data through technology. With modern data architectures—such as data warehouses and data lakes—you can connect to all of your data across ingestion, analytics, ML, and BI, as well as third-party data. This enables your workers and teams to connect the dots between different data sources quickly and easily.

From silos to stewards

Instead of data silos, your organization needs data stewards, empowered by a governance structure that identifies why someone requires access to data and then creates the proper permissions (with the proper controls) to use the data for that purpose.

Creating data stewards involves encouraging the people who control data access and quality to become educators and data champions. They still have input into how datasets are validated and published, but liberal use of automation can free them up for a broader role.

CIOs and CDOs can play an active role in creating data stewards by building trust among business stakeholders and demonstrating how the willingness to share access to departmental data benefits everyone. Additionally, IT-driven automation can help streamline manual data-sharing processes, freeing stakeholders to focus on the strategic use of data rather than tactics for accessing it.

"AWS enables us to source, store, enrich, and deliver data in a centralized way, which we couldn't do previously…[now] we can leverage our talent pool much more efficiently across our entire organization."

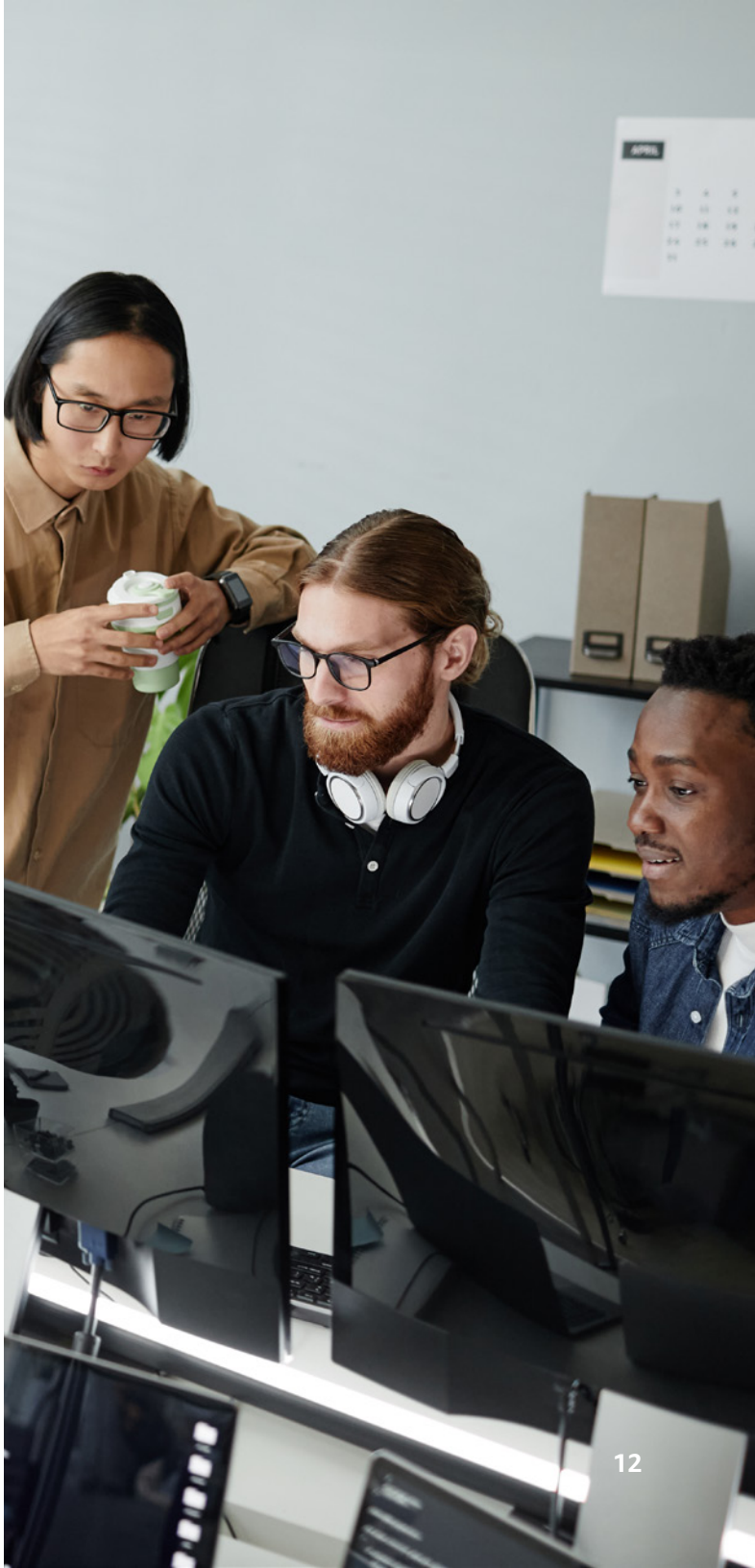
Steve Bakalar, VP of IT/Digital Transformation at Georgia-Pacific

STEP 4

Empower everyone to put their data to work

Adopting an end-to-end data strategy that includes unifying your data will take you a long way toward fostering a data-driven culture. The next step is to empower every user with the ability to understand data and use the resulting insights in their daily roles. This requires changes across both technology and culture.

A data-driven culture meets people where they are in their journey and provides tools to run analytics, BI, and ML that match their different skill levels. Adopt modern analytics tools that can look across multiple data stores and allow the right people to access the right data holistically to meet specific use cases. Moreover, purpose-built analytics services can discover, access, interpret, and visualize data in a manner that serves a specific business need.



Modernizing analytics

Modern analytics is about scaling analytics capabilities with the aid of ML to take advantage of large amounts of data and deliver real-time information and insights to the people across the organization who need it.

The consumerization of data and the broad applicability of ML have led to the emergence of low-code/no-code tools that make advanced analytics accessible to non-technical users. The simplification of tools is a crucial aspect of changing how users prepare their data, pick the best model, and perform predictions without writing a single line of code.

Modern analytics also embed the power of data directly into customer experiences and workflows by making relevant data available as it's needed. Consider the example of Best Western, which uses real-time analytics to give its revenue management team the capability to set room rates at any given moment. The result: improved revenue gains and the ability to be more responsive to customers.[3]

With a modern analytics, BI, and ML approach, your entire organization will have access to a common view of data. This helps empower your teams to, for example, visualize real-time data with information modeling tools, construct scenarios and ascertain their consequences, and create, publish, and embed interactive data visualizations and dashboards.

[3] Landucci, J., "Best Western Slashes Analytics Costs, Improves Operations Worldwide Using Amazon QuickSight," AWS Big Data Blog, March 16, 2021

Promoting a culture of data-driven insights and decisions

To achieve the underpinning culture changes that drive and scale the use of modern analytics, BI, and ML across the organization, you will want to start by cultivating a work environment in which everyone can effectively use data for their daily tasks. At Amazon, one of the most data-driven organizations in the world, workstreams have built-in processes to access and leverage data, helping inform better decision making whenever possible.

This could mean creating smaller "two-pizza" teams with more autonomy to utilize data—allowing them to experiment and innovate swiftly without having to run every decision back up the hierarchy.

It can also mean starting small, planting the seeds for culture change with one or two high-impact use cases. From there, you can continue to work backward and incrementally build data capabilities and the data platform while leveraging any quick wins to create excitement. Then, continue building momentum by communicating the results to frontline users as part of a broader change management campaign.

Another tool to assist in making high-quality, high-velocity decisions is an Amazon mental model called one-way and two-way doors. A one-way door decision is one that has significant and often irrevocable consequences—building a fulfillment or data center, for example. A two-way door decision is one that has limited and reversible consequences, such as A/B testing a feature on a site detail page or a mobile app.

Encourage your leaders and employees to look for two-way door decisions—and, when they have enough evidence and reason to believe the decision could benefit customers, simply walk through the door. With the ability to easily reverse two-way door decisions, you lower the cost of failure and are able to learn valuable lessons that you can apply in your next innovation.

"By tapping into the breadth and depth of AWS and its innovative cloud technologies, we've been able to bring fans closer to the split-second decisions on the track, redesign our future F1 cars, help us better understand the wealth of F1 data, and run analytics and machine learning to harness the power of that data, and so much more."

Ross Brawn, Managing Director of Motor Sports at Formula One

STEP 5

Cultivate continuous learning and knowledge sharing

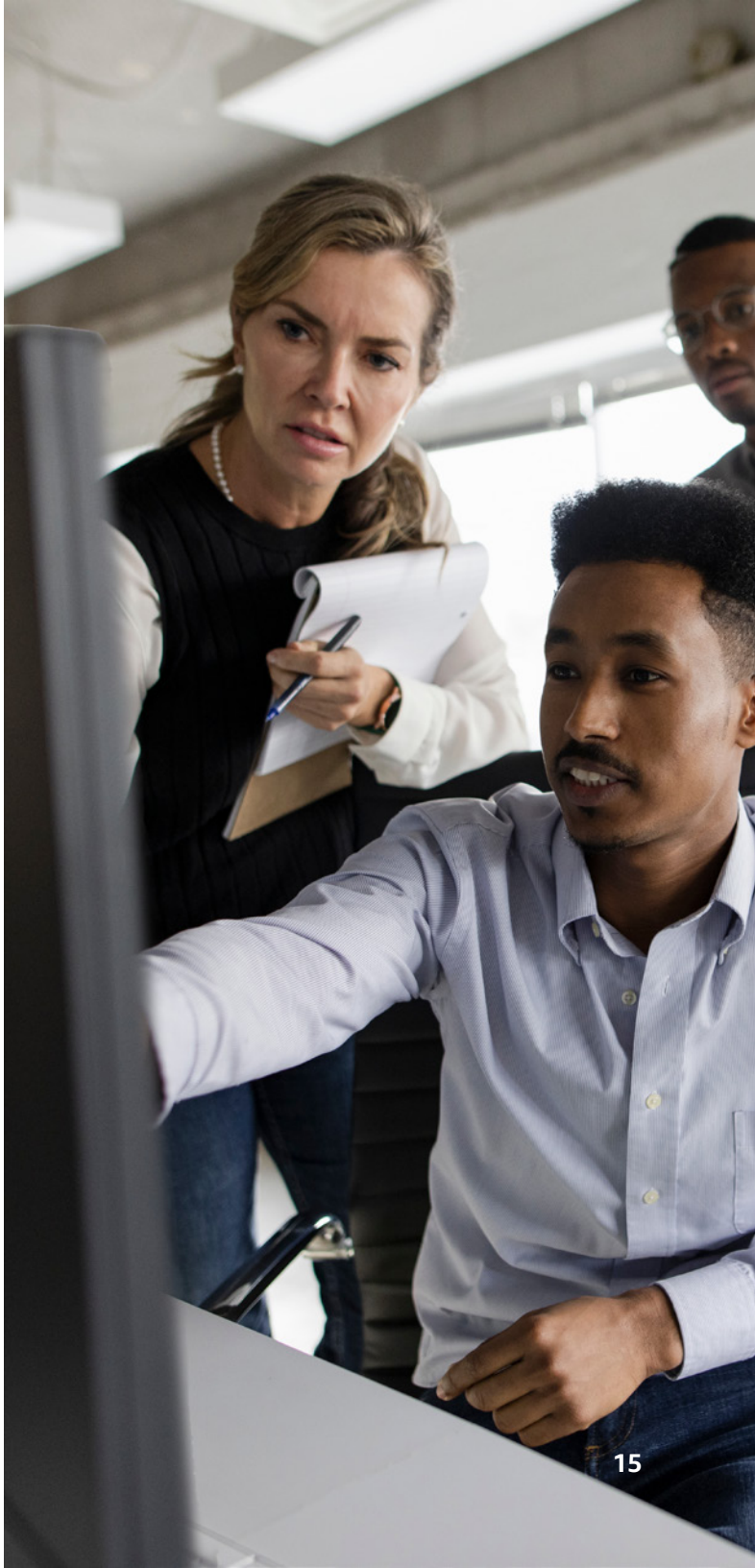
By fostering a culture of learning, training, and sharing of knowledge, you can create data-driven transformation that successfully scales across all levels and teams within your organization.

In recent years, many companies have focused on outsourcing to third-party data experts to expand their capabilities. But others are discovering they already have the people they need—and are finding it less expensive and more effective to invest in empowering their existing workforces.

To start, your organization can promote data literacy and proficiency by cultivating a higher understanding of data as a strategic asset while implementing processes for putting data to use.

Robust training programs and more informal creative activities can spark interest across the organization to find new ways to leverage data for day-to-day activities. Sponsoring competitions, hackathons, and real-world exercises will engage technical and non-technical business users alike, helping them to understand the power of data-driven decision making through familiar scenarios.

Principal Financial Group, for example, recently worked with **AWS Training and Certification** to provide centralized training for organizational cloud fluency and data literacy—successfully upskilling 1,650 employees in less than eight months. Principal Financial exceeded its participation goals by 200 percent, ultimately achieving greater internal collaboration and faster innovation while supporting its employees' professional growth.[4]



[4] "Principal Financial Group Accelerates Innovation on AWS by Upskilling 1,650 Employees in Less than Eight Months," AWS, 2022

Sharing the wealth with cross-functional teams

To help every person and team use data to solve everyday business problems, ensure your teams are truly cross-functional, openly sharing knowledge and skills with one another. Eventually, these teams will grow comfortable with using different inputs and datasets, building models, and correlating the resulting insights to answer questions and drive smarter decisions.

Treat data proficiency as a core skill for the whole organization and invest as such. This means that data literacy programs are not just meant for people with "data" in their titles. Show your commitment and the value you place on these changes by supporting the career growth and development of your staff in data literacy and proficiency.

It's also important to invest in a variety of functional skills to support the broader use of data. In addition to data scientists and analysts, look to bring on engineering specialists, data visualization experts, and storytellers. These are people who can close the gap between analytics and business expertise, helping to build a common vocabulary that enables effective communication between all executives and users, regardless of their technical sophistication.

Finally, integrate your mechanisms for learning, training, and knowledge sharing throughout your ongoing business processes. Instead of training only when you need to—which ensures you will always be behind—embrace continuous training as a core component of your data strategy—ensuring you're always a step ahead. This allows your organization to remain data-driven even as technology evolves, customer demands change, and your business expands.

"Data proficiency is about building a bridge between the science of data and the people at the front line who are acting on it. Not just making them data-aware and teaching them to use these great tools, but also changing your business processes to incorporate the data into action at all levels."

Ishit Vachhrajani, Enterprise Strategist at AWS

Next steps

Too often, leaders are unable to scale data-driven decision making, but implementing an end-to-end strategy is the most efficient and cost-effective way to unlock the value of your data for your entire organization.

The five steps we've outlined in this eBook will help you lay a strong cultural foundation for data-driven transformation. Another way to view culture change, however, is through the scope of evolving people, processes, and technology. Following the guidance in this eBook will help you achieve success across all three of these components. But, you will ultimately need a partner to help you implement the technology infrastructure that makes lasting culture change possible.

For many organizations, the first and most critical step toward adopting data-driven infrastructure is to move away from on-premises and self-managed data solutions—and embrace the flexibility, scalability, and on-demand performance of the cloud.

As the world's most comprehensive and broadly adopted cloud platform, Amazon Web Services (AWS) delivers quick, easy, and effective ways to drive the culture and technology changes needed to unlock data-driven transformation.

AWS services and solutions help empower your leadership to drive culture change from the top down. On AWS, you can build an end-to-end data strategy that integrates your data while establishing the right governance, guardrails, and controls. And you can empower every user to transform data into insights that drive smarter decisions with powerful infrastructure, fully managed services, and innovative training programs. **Read the Ultimate Guide to Developing an End-to-End Data Strategy** to learn how your organization can unlock more value from data.

Learn more about AWS for Data ›