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Creating a Data Advantage

Data-driven decision-making leads to better performance, greater organizational growth, and a larger return on investment. The right data strategy is critical to securing an organization's data advantage.

Leaders in both the public and private sectors understand that data is a strategic asset. As digital transformation increases the datafication of operational and other business resources, the information available for applications like AI, automation, and machine learning is growing exponentially. But this data revolution is also transforming the governance landscape with crucial opportunities to improve strategy and decision-making. A comprehensive data strategy has never been more necessary in developing and sustaining a competitive advantage.

In 2021, the deputy of the secretary of defense released a memorandum identifying data as a strategic asset and commanding leaders to ensure that data across the DOD is visible, accessible, understandable, linked, trustworthy, and secure. With a goal of improving performance and creating a data advantage, these principles are key to generating transformative gains in efficiency and effectiveness to better enable mission and operational needs. A comprehensive data framework has never been more crucial in developing and sustaining a tactical advantage.

At Guidehouse, our data philosophy is informed by our united framework for data, cloud, and AI strategies, rigorous engineering processes, agile collaboration, and continuous delivery (CD) practices. When designing data strategies, we focus on promoting natural scalability, ensuring flexibility, improving ingestion speeds, and following best practices in data preparation. We leverage these processes to shorten time to customer value (TTCV), support large-scale solutions, secure sensitive assets and information, and help organizations build the data advantage essential in today's increasingly digitized world.

This white paper explores some of the key considerations that arise at all stages of the data lifecycle when organizations deploy solutions designed to generate high-performance and data-driven processes. Guidehouse's data advantage framework is informed by our data governance, IT strategy, digital transformation, change management, cloud operations, AI, cybersecurity, and risk management expertise. Our technology-agnostic approach unleashes the power of data to transform existing practices and reach new levels of efficiency in all areas of an organization.



Data Sharing

As the organizational impact of data increases, data sharing is becoming an operational necessity. Yet too many organizations continue to maintain deep silos, preventing easy data distribution and integration. That's often due to systems architectures that aren't inter-operable and concerns that linking assets might increase the cyber attack surface or create challenges in managing access to sensitive data.

Sharing data in ways that maintain its integrity and security is crucial for maximizing data usage and leveraging data-driven strategy and outcomes. With the right approach, organizations can create frameworks for data sharing that address cybersecurity threats, and even minimize organizational risk, by allowing greater visualization of networks and better coordination around emerging concerns like operational and supply chain risk.

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Data-sharing frameworks now also equip organizations to better process growth in the volume and sources of organizational data in the future so they can more effectively exploit emerging opportunities. Data sharing tends to have a transformational impact on organizations since it fosters improved collaboration between teams and departments, allows for more transparent decision-making, and eliminates the silos that impair an organization's ability to take the right actions at the right time. Figure 1 below illustrates key principles to consider when enabling data sharing in your organization:



Figure 1. Key Principles for Data Sharing





Data Storage and Ingestion

A typical data management strategy involves choosing the right data storage and ingestion solutions. An informed strategy might also define how legacy storage systems are phased out; create a roadmap for managing migrations, upgrades, and technology deployment; or plan for the costs and risks associated with data storage. By anticipating challenges, organizations can implement proper data storage frameworks through version control safeguards, maintain a secure record of changes made across data platforms, improve disaster recovery, design architectures optimized for compliance, and manage risk around security threats.

Since there are often data irregularities such as inconsistencies in folder paths, naming conventions, and file-types centralized data storage and processhardened ingestion pipelines can promote value creation by developing frameworks that segment data and create things like curated datasets for specific end-user groups. Organizations can optimize the quality of data input by determining required formats, structures, and quality levels. For example, they can create a data maturity model that designates each data source according to its level of quality and processing such as raw, refined, or business-ready data. This works to separate clean data from raw data and thus enables the integration of additional data while still allowing more mature data to be synthesized in ways that optimize it for analytics.

Data Cataloging

Given that data is rapidly becoming the prime asset of enterprise-level organizations with more data being stored and analyzed, creating data management artifacts like data catalogs to keep track of the origins, purpose, value, and maturity of organizational data is absolutely essential. Without the proper cataloging of extracted metadata, there can be significant losses in productivity and opportunity. A wellconstructed data catalog should allow data scientists, engineers, analysts, and others to discover opportunities and connections across datasets.

Dashboards and Reporting

Once data catalogs are in place, it's important to consider how an organization will communicate their data insights. With organizations constantly collecting more data, continuous analysis is also crucial. Data scientists and analysts are better able to navigate incoming data and communicate results through visualizations such as dashboards. These can be updated either routinely or in real time, enabling end-users to better understand their data. The user interface of the dashboard itself is also important, as it facilitates self-service analytics and is paramount to improving adoption by individuals with less technical backgrounds.



Data Security and Best Practices

With data being increasingly moved and accessed, its crucial organizations follow data best practices for data at rest, in transit, and in use, ensuring at all times that data is secure, trustworthy, understandable, and interoperable. All organizations can benefit from incorporating data best practices and, specifically, cybersecurity risk mitigation into their data strategy. Some of these best practices are illustrated in Figure 2 below.



Cybersecurity is becoming more critical to organizations and their sensitive data. Secure authentication provides a layer of security by validating a user's right to access a system containing information. This best practice can even be implemented remotely, which is essential in our world today, considering communication relies heavily on the internet.



Authentication, authorization, and auditing (AAA) are three components that create a secure and accessible environment for data. Secure authentication can help access management within organizations and clients of those organizations by allowing only certain individuals that meet security requirements necessary to access certain data. Access management also encompasses recording the identity of individuals that access sensitive data.



Historically, militaries and governments used encryption methods to protect sensitive information. Today, encryption is often used to protect data at rest and in transit.

Organizations that encrypt their data protect their sensitive information when there is a data breach. Encryption also provides proof of integrity be ensuring the contents of a message or data transfer have not been altered since it was sent by by the original sender. On the flip side, it prevents senders from being able to deny what they have sent.



Data monitoring is a common business practice that consists of routinely reviewing and evaluating data against quality control rules to meet industry standards. As new standards arise, organizations can create additional standards to the routine check. The proactive approach of routinely monitoring data comes with many benefits. Data monitoring enhances the flexibility and stamina of organizations by reducing time spent in the data preparation phase. By diminishing the data preparation phase, organizations can save valuable resources such as time and money.



Organizations that have a data protection strategy in place are creating a data advantage for themselves. There are two components of a data protection strategy—business continuity and disaster recovery (BC/DR). If data is lost, corrupted, or compromised, organizations must have a plan to be able to continue to carry out their business while simultaneously working on disaster recovery. Additionally, organizations benefit by protecting their reputation with a data protection strategy.

Figure 2. Data Best Practices





Case Study

Objective

Guidehouse was engaged to provide an organization's key decision makers with an enterprise view of their program. We integrated data visualization and key performance metrics to provide greater insights into root causes of issues and determine ways to enhance program efficiency. Integrating 20 different sources of information, we established a single source of truth while creating tools that integrated data better between functions, leading to significant operational efficiencies in all areas, from program design to procurement.

An Agnostic Approach

Being tech-agnostic is one of Guidehouse's core strengths. This approach empowers us to select the best tools for the solution that integrate seamlessly with clients' existing systems. There is no need to force the client's environment to work with proprietary tools. Some of the common tools utilized across our teams can be viewed below in Figure 3.

Advanced Analytics & Automation Spotfire Data plotly | Dash Qlik @ Visualization R Studio H₂O.a **S**sas **Advanced** Amazon SageMaker **Analytics &** Robotic blueprism **Process** Automation

Figure 3. Common Guidehouse Tools





Conclusion

Developing a data-driven framework requires an integrated and comprehensive approach to ensure an organization fully realizes its potential and is able to leverage its data assets. Handled properly, this process can act as a force multiplier that drives improvements in decisions and outcomes.

Guidehouse combines unique expertise in data governance, IT strategy, digital transformation, change management, cybersecurity, risk management, cloud operations, and AI to help develop data strategies for our clients. This diverse set of capabilities, combined with our technology-agnostic approach, uniquely positions us to help organizations create a data strategy that will ensure them a data advantage now and in the future

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About Guidehouse

Guidehouse is a leading global provider of consulting services to the public sector and commercial markets, with broad capabilities in management, technology, and risk consulting. By combining our public and private sector expertise, we help clients address their most complex challenges and navigate significant regulatory pressures, focusing on transformational change, business resiliency, and technology-driven innovation. Across a range of advisory, consulting, outsourcing, and digital services, we create scalable, innovative solutions that help our clients outwit complexity and position them for future growth and success. The company has more than 13,000 professionals in over 50 locations globally. Guidehouse is a Veritas Capital portfolio company, led by seasoned professionals with proven and diverse expertise in traditional and emerging technologies, markets, and agenda-setting issues driving national and global economies. For more information, please visit www.guidehouse.com.