Foundations for The Ultimate AI Lab

Introduction

As enterprise and government leaders develop artificial intelligence (AI), data governance, and cloud migration strategies, the need for a unified framework has grown substantially. These strategies naturally overlap, presenting challenges spanning from strategy development through to implementation. High-quality, governed data fuels impactful AI, which is enabled through the proper cloud infrastructure.

All data science, AI, and machine learning (ML) endeavors can be thought of as sets of experiments. Similar to laboratories in the natural sciences, these efforts require the availability of and access to high-quality samples, cutting-edge techniques and equipment, and the space and security of a controlled environment capable of handling the workload. To meet these needs, organizations must align their cloud strategies, data, and AI so that the "science" behind data science can thrive.

Guidehouse brings unique, combined expertise in applied sciences, life sciences, AI, cloud, data governance, IT strategy, and change management. This diverse but tightly coupled set of capabilities positions us to design and build the Ultimate AI Lab, ensuring fertile grounds for ML algorithmic experiments to sprout the most promising models and deliver impactful and reliable predictions. Leveraging these competencies to develop an integrated cloud, data, and AI strategy has a variety of benefits:

- Cloud: Creating an agile, data-driven cloud practice facilitates cost-effective, secure, and observable operations. Insights and applications have reduced time-to-market, are more reliable, and can be governed without sacrificing value.
- Data: Strategic priorities are bolstered by secure cloud infrastructure. The value of the organization's data is realized quickly and efficiently by AI and IT operations.
- AI: Integrated strategy enables AI teams to develop an Ultimate Lab where data is discoverable and computational resources are scalable and secure.

To build a solid foundation for the Ultimate AI Lab, Guidehouse combines cloud, data, and AI strategies into a unified framework that helps deliver success.

"Machine learning changes the way you think about a problem. The focus shifts from a mathematical science to a natural science, running experiments and using statistics, not logic, to analyze its results."

Peter Norvig, Google Research Director

Challenges

When contending with several disparate domains, setting a strategy can be challenging. Technology leaders may encounter some of the following obstacles:

- Stakeholders are distributed throughout the organization.
- Organizations that are beginning to adopt AI may not have a clear entry point or path forward.
- Agility must be balanced with controls.
- Existing competencies are only partially aligned to the desired end state.
- The quality, availability, and reliability of data sources impacts AI development.
- Core functions have not been distinguished from context to understand how to optimize strategy for business value.

Leveraging its proven data and applied science expertise, Guidehouse provides a framework for addressing each of these strategic domains without creating conflict or sacrificing alignment to business goals. Guidehouse combines expertise in IT strategy, cloud operations, AI, and data governance to manage these interdependencies in an integrated approach.

Considerations for Integrating Cloud Strategy

Organizations taking on a cloud strategy can benefit from considering the intrinsic interdependencies between cloud, data, and AI strategy. Every organization is different; consequently, the most important points of integration will differ for each firm. Below, we offer some examples of topics where cloud-enabled organizations should contemplate integration of their cloud strategy with data and AI strategies.

Topic	Description
Data Gravity	"Data Gravity" is the concept that it is easiest to process data on the cloud where it is stored. For many operations teams, data storage is a highly tactical question, especially as the amount of data gathered grows, but technology leaders should be wary about letting tactics drive strategy. We will help find the appropriate solution so that storage and analyses are complementary, and not at odds with each other.
Granular Access Controls	Effective data strategy always leverages role-based access controls so that the right people have the right resources when they need them. When cloud and data strategy are aligned, the data architect is constrained by the operational requirements of the value stream, not the infrastructure that supports the solution.
Authentication, Authorization, and Auditing (AAA)	The capacities to control how identity is proven, how permissions are granted to identities, and how actions are tracked throughout the system are collectively referred to as AAA. One advantage of adopting a cloud strategy is the ability to benefit from the robust AAA capabilities that major cloud service providers build into almost every product. As a result, AAA is a fundamental design element of all well-architected cloud, enterprise data, or AI Laboratory solutions. Promoting AAA as a priority and actively aligning the three strategic domains ensures that the principle can be leveraged effectively without undermining confidence or operations.
AI Cloud Platforms	The market for AI platforms as a service has grown considerably in just a few short years, and the selection of cloud service providers has a significant impact on how AI architects can approach the market. Guidehouse can explain the tradeoffs between different platforms and their impacts on the organization's business and help identify the right platform for organizational needs.

Considerations for Integrating Data Strategy

Data strategy may be the most mature area of study out of the three discussed strategic domains. As a result, Guidehouse frequently finds our clients start with more developed data strategies than either AI or cloud strategies. Special care is often required to ensure that data strategy doesn't exert excessive influence over other strategic domains. Here are some examples of intersections that data strategy shares with both AI and cloud strategies.

Topic	Description
Artifact Storage	AI strategies may call for artifact storage, such as for storing snapshots of the inputs, outputs, and metadata for each operation of an AI program. Aligning data strategy with AI strategy to support the use of AI artifact systems can clear the way for collaboration between data operations teams and data science programs.
Log Analytics	Making logs fully available in a log analytics tool can be a considerable undertaking that combines the efforts of AI, data operations, and cloud infrastructure teams.
Enterprise Search	Guidehouse can help implement intent-based, natural language searches across documents, emails, chat logs, data warehouses, and many other existing but underutilized sources. Enterprise search solutions can have a profound impact on the productivity of AI programs and data science workflows, but they require significant investment and governance.

Considerations for Integrating AI Strategy

As discussed in the previous sections, building the Ultimate AI Lab means making affordances in cloud and data strategy for the AI domain. Yet how does AI strategy take the other domains into account? In the following table, we share some examples that explore the intersection between strategic domains from the perspective of AI strategy.

Topic	Description
Scaling Experiments	At scale, AI experiments can require distributed computing clusters, which are offered by cloud service providers as managed services in some cases. Elastic scaling of cloud computing resources can have a dramatic impact on the cost of these experiments, while allowing the flexibility to access necessary resources.
AI Stewardship	AI leaders must exercise good stewardship of sensitive information. In particular, AI leaders have an obligation to set clear guidelines that are aligned with existing data governance.
Platform Governance	Governing an AI Lab requires collaboration between cloud infrastructure, data management, and data science teams. Guidehouse has experience managing this collaboration and can set clear rules of the road for AI programs to reduce the burden on cloud infrastructure and data-management teams.

Conclusion

Guidehouse is uniquely positioned to support organizations developing an integrated strategy across these central domains. Intelligently integrating these domain strategies enables key outcomes and allows organizations to fully realize the value of their investment in each domain.

Creating an **Ultimate Lab** for AI is only possible when AI approaches seamlessly integrate with data governance requirements and are enabled for data discovery. Cloud operations give AI teams the capability to scale experiments rapidly without sacrificing cost efficiency.

Developing **secure, agile infrastructure** is only the beginning of value creation in the cloud domain. Connecting these cloud infrastructure operations to the organization's data strategy enables all lines of business to realize the value of both data and infrastructure. AI operations on cloud infrastructure are only fully empowered when this takes place.

Effective data strategy is fundamentally dependent on having the right infrastructure to enable security, durability, and control. Integrating cloud and data strategy enables data owners to create the right roles and access patterns within the organization's data infrastructure. When data is discoverable, secure, and accessible, AI and business teams can rapidly realize and benefit from its value.

Together, these approaches create a synergistic, value-driven outlook. Guidehouse leverages our singular expertise in applied sciences, life sciences, AI, cloud, data governance, IT strategy, and change management, to ensure that our partners and clients are successfully integrating these strategic domains and creating an environment for success.

Contacts

Bassel Haidar
Director
bhaidar@guidehouse.com

Charles Landau
Systems Engineer
clandau@guidehouse.com

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 17,000 professionals in over 55 locations globally. Guidehouse is 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 guidehouse.com.

🌐 www.guidehouse.com/services/data-analytics-intelligence

𝕏 @GHTechSolutions 　　in www.linkedin.com/showcase/guidehouse-technology-solutions/