How to Reduce the Complexity of Data Initiatives

MARKET TRENDS REPORT

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Introduction

The idea of leveraging data as a strategic asset often leads to a discussion about the value of moving data to the cloud. Unfortunately, it's not that simple.

Data in the cloud is much more accessible, secure, available and able to deliver real-time insights and accelerate innovation. It also drives collaboration, enables higher degrees of automation and facilitates better management and monitoring.

Government oversight organizations also have made the value of data clear, with the Federal Data Strategy leading the way by directing agencies to create a data strategy and infrastructure for the future. Backing that up is the Federal CDO Council, which is currently working on identifying and addressing cross-cutting data challenges, developing templates and collaborating with other data-focused councils.

But simply moving data to the cloud isn't enough. Agencies are dealing with fast-growing data stores, the proliferation of disconnected data repositories and legacy technology. Too often, when agencies migrate their operations to the cloud, they end up replicating that complexity.

The solution is taking a data-led approach to cloud migration. That entails creating a comprehensive data strategy, understanding exactly where all data resides, finding a way to collect it and then using data visualization and analytics tools to provide insights and gain value.

To learn more about this approach, GovLoop teamed with government solutions aggregator DLT Solutions and cloud service provider AWS. In this report, we explore the tenets of a data-led migration and best practices for putting it to work.

By The Numbers

86%
of organizations have either <u>already adopted or are considering</u> data-driven projects.

47%
of IT decision-makers say their organization has a clearly defined and communicated <u>data and analytics strategy</u>.

89%
of state and local IT managers consider data analytics <u>a modern government necessity</u>.

98%
of state and local IT managers say data analytics can <u>supplement government priorities</u>, including public safety, public health and cybersecurity.

34%
of chief data officers in the U.S. government now use <u>predictive modeling</u>.

93%
of federal chief data officers say leadership <u>relies on data-driven insights</u> some or all of the time.

43%
of government CIOs around the world <u>plan to increase</u> their business intelligence and data analytics investments.

13%
of organizations are delivering on their data strategy.

Data and information management is a **top 10 priority** for state CIOs in 2022.

Cloud Migrations Can't Replicate On-Premises Complexity

Challenge: More Data in Disconnected Silos

During the past few years, agencies have created more data than ever before, and that trend is likely to continue. In many ways, federal data growth mirrors that of the world; the amount of data generated globally is expected to grow from 33 zettabytes today to 175 zettabytes by 2025. One of the richest sources of new data is from sensors or Internet of Things (IoT) devices, which are expected to number 500 billion devices by 2030.

Agency data also often resides in a combination of disconnected repositories. Whether in the cloud or on premises, disconnected repositories make finding the right data for analytics and other purposes more difficult than it has to be. And it's not just physical repositories that hold critical data; it's also applications. For example, it can be very difficult to exchange data in Microsoft SQL Server with data in Oracle. That would make queries requiring data from both databases complicated and expensive.

Moving data to the cloud is an important step and can help address these challenges, but it is not a solution. It doesn't ensure that data scientists are working with the right set of data for their models and queries, and it doesn't ensure that all of that data is clean, enriched and available.

"Just getting it to the cloud is … a good step, because you will reduce some of the costs that are associated with just ensuring the health of blinking green lights," said Brian Schoepfle, a solutions architect at Amazon Web Services. "But you need to start leveraging the new capabilities that you will have by virtue of being in the AWS Cloud to really extract the kind of information that you want from the data that you have."

Solution: Data-Led Cloud Migrations

The solution is a data-led cloud migration—one that makes all data ready and available to help agencies gain new insights and value. Here are the common components of a cloud-based data migration strategy:

Focus on data quality, data quantity and data sources.

Data can be extremely valuable, but only if it is free of errors and structured so users can interact with it efficiently. It's equally important to have enough data to perform required tasks. In general, more data leads to more reliable models and better results. Finally, it's important to have a variety of relevant data sources.

Clean, enrich and transform data.

Taking these steps is critical to the accuracy of the data and the resulting predictions or forecasts. Clean data is free of errors, with a high degree of integrity. After being cleansed, the next step is enriching the data by adding context from additional relevant sources. Finally, the data must be transformed, based on its intended use and the tools that will be used to interact with it.

Move data into cloud-based data lakes.

Essentially, a data lake is a large pool of data. The goal is to centralize as much data as possible into data lakes, and to have as few data lakes or lakehouses (a combination of data lake and data warehouse) as possible. In addition to making all data easily accessible, cloud-based data lakes ensure that the data is as close to the systems and people who need to interact with it as possible.

Apply analytics, AI and machine learning.

Whether it's predicting outbreaks, uncovering fraud or improving public safety, good data is at the root. By taking the previous steps, analysts and models will have access to clean, relevant data to power insights.

Best Practices in Data-Led Migrations

Link the data strategy to the mission.

A mission strategy helps decision-makers understand where the mission is and where it's going, while a data strategy ensures that data is used and managed strategically to help agencies make informed decisions and accelerate innovation. While each should be developed separately, the strategies also should be linked. This enables each to benefit from the other in ways that can foster innovation.

For example, two groups within an agency may not work together on a regular basis, but both support the same mission. Each group may build models and analyze their own data sets, but may not have access to each other's data. With linked strategies, both groups can work on their own projects, yet access each other's data to enable innovation and use data in ways the mission strategy may not have considered.

Have a data advocate.

Innovation can be hard to unlock when so many stakeholders are involved, all with different objectives and experiences. An experienced leader fully dedicated to the value of data can make a big difference. Often, this leader is the Chief Data Officer (CDO) — someone whose sole responsibility is to ensure that the organization treats data as its most valuable asset, and that the organization is getting the most value possible from its data.

"If you leave these responsibilities to others, your strategy will be unbalanced, because the infrastructure people will focus on what will make their lives easier, and specialists in other areas will do the same," Schoepfle said. Agencies that don't have a CDO can accomplish the same goal by assembling a group with representatives from IT engineering, enterprise architecture, governance, training and engagement, finance, organizational change and citizen engagement, as long as they speak with one voice.

Migrate your data in stages.

While it's tempting to migrate all data quickly, you'll be more successful if you take your time. "There is no knowledge as useful as your own experience and what works for your organization, and figuring that out takes time," Schoepfle said. "It pays to be methodical about what you are bringing into the cloud, and it gives you time to apply learnings from each stage to make the next stage more effective."

At the same time, there is no time like the present to start. "There will never be a time when conditions are perfect," Schoepfle said.

"Data quality, data management, data access — those are technical implementation challenges that people are motivated to solve when they see that leaders will use data to make decisions about things in which they have equity."

– **Clark Cully**, acting deputy CDO at the Department of Defense

Data-Led Migration in Action

The goal of a data-led migration to the cloud is to improve the ability of data scientists and other stakeholders to find and analyze the data they need, with full confidence that the data is clean and secure. Examples include:

→ Military commanders created a dashboard that enables leaders to securely access data from hundreds of disparate data sources, including information on training databases, inventories of equipment and supplies, and personnel and maintenance records. By giving senior leaders access to critical data from multiple sources, the department can now make better and faster decisions about resource allocation and preparedness.

→ A federal agency migrated all of its data to the cloud. By making all data accessible via the cloud, the agency was able to increase the number of valid, usable data sources from 30 to 75. This has allowed the agency's 7,000 analysts to better analyze the data.

→ A crime prevention department migrated multiple sources to a data lake on the AWS Cloud. With the help of a partner, the department used data analytics capabilities to speed up and simplify the sharing of public data with user-friendly data visualization tools. Information availability and access now takes just one day rather than a week. Department leaders have gained new and timely insights that have improved resource allocation and citizen protection while exposing various operational inefficiencies.

→ A financial regulatory authority moved data from more than 170 applications to the cloud, representing millions of financial transactions per day. Once in the cloud, the organization could apply analytics on its transactions, improving workflows and saving time.

HOW DLT AND AWS HELP

DLT Solutions is the premier government solutions aggregator that specializes in understanding the cloud needs of the federal, state, local and education markets. As an Advanced Consulting and Managed Services Partner for Amazon Web Services, DLT provides architectural and technical direction for government agencies in the areas of application lifecycle, big data and analytics, business applications, cloud computing, cybersecurity and IT infrastructure.

DLT's Big Data and Analytics practice helps agencies create a comprehensive, cloud-led data strategy that can support requirements for analytics, automation, AI and machine learning. With the data strategy in place, DLT recommends and implements solutions that enable public sector agencies to get the best value from their growing data stores. This includes integrating, preparing and training models and algorithms.

Learn more: dlt.com/government-products/amazon-web-services

Conclusion

Moving data to the cloud is only the first of several important steps to making agencies truly data-led organizations. Truly embracing data as a strategic asset requires having internal data champions; processes for cleaning, enriching and transforming data; and moving data into cloud-based data lakes. Only then can data scientists and others gather all of the data necessary to gain insights, make predictions, become more efficient and innovate.

It all starts with developing a data strategy that works for each agency. "The ideal data strategy is not one-size-fits-all; it should be adapted for the needs of the organization," Schoepfle said. In other words, an agency's data strategy should take into account the mission strategy, organizational culture and the need to drive value. With this structure in place, value isn't far behind.

ABOUT AWS

Amazon Web Services (AWS) is the world's most comprehensive and broadly adopted cloud platform. Millions of customers, including government agencies, are using AWS to lower costs, become more agile, and innovate faster while powering infrastructure and providing reliable, mission critical services.

For more information please visit aws.amazon.com.

ABOUT DLT SOLUTIONS

DLT Solutions is the premier government solutions aggregator that specializes in understanding the IT needs of the federal, state, local and education markets. We help simplify the process for independent software vendors, federal systems integrators and value-added resellers doing business in the public sector. Leveraging Tech Data's end-to-end portfolio, an extensive array of public sector contract vehicles, and dedicated channel and enablement services, DLT provides government agencies and channel partners with the means to rapidly and cost effectively transform technology to achieve mission success.

For more information, please visit www.dlt.com.

ABOUT GOVLOOP

GovLoop's mission is to "connect government to improve government." We aim to inspire public-sector professionals by serving as the knowledge network for government. GovLoop connects more than 300,000 members, fostering cross-government collaboration, solving common problems and advancing government careers. GovLoop is headquartered in Washington, D.C., with a team of dedicated professionals who share a commitment to connect and improve government.

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