

Government cloud

A mission accelerator for future innovation

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A firm foundation for a cloud

THE CLOUD HAS arrived in government—but, perhaps like the edges of its cumulous namesake, its arrival has been a bit uneven. While some government cloud efforts have been successful and achieved significant benefits, others have ended up with IT cost increases or become bogged down in complexity and barriers. Several recent surveys

While some government cloud efforts have been successful others have become bogged down in complexity and barriers.

paint a mixed picture: nearly 40 percent of all surveyed organizations with public cloud experience have moved public cloud workloads back on premises,¹ half (50 percent) of CIOs believe cloud is only partly delivering on the promised benefits, and 16 percent think cloud “barely” delivers or does not deliver at all.²

The challenges with cloud may present a perfect opportunity for government leaders to refocus their efforts on how cloud can deliver the most value. The true benefit of cloud, after all, is

not from short-term cost savings, but in greater access to future innovations. Tools such as artificial intelligence (AI), data analytics, and other service applications are increasingly delivered by cloud providers. Whether large or small, single cloud or multicloud, organizations that can break down silos, achieve organizationwide insights, and tap

into a constantly developing innovation stream can achieve real gains.

This article aims to help government leaders make sound decisions around cloud, helping ensure the cloud delivers business value and enables an organization to take advantage of future innovations. The specifics of every organization’s approach to cloud will be different, but

it should encompass four essential building blocks:

- Defining success in terms of mission;
- Adapting the organization to the new cloud reality;
- Tapping into an innovation ecosystem; and
- Creating governance structures that promote innovation.

Partly cloudy

Government's uneven experience with cloud

GOVERNMENT ADOPTION OF cloud is accelerating. In the federal government alone, cloud spending saw an increase of 500 percent in the past eight years.³ While generally positive, government's cloud experience hasn't always delivered the hoped-for benefits.

According to a 2017 survey of federal IT leaders conducted by Deloitte and the Government Business Council, the top three reasons organizations move to the cloud are (figure 1):

- Potential cost savings;
- Improvements to operations; and
- Expanded and innovative ways to share and use data.⁴

For many government agencies, the high cost of maintaining aging legacy systems, coupled with the requirement to staff data centers, made cost savings an attractive motive for a move to the cloud.

These cost-saving targets for cloud haven't always been met. For example, the US federal government's Data Center Optimization Initiative, begun in 2016 and updated in 2018, set goals for its IT organization to save US\$2.7 billion in maintenance costs by transitioning to the cloud.⁵ However, while most participating agencies were closing their

data centers as planned, the cost savings realized were less than half of the US\$2.7 billion goal.⁶

Cost savings aren't the only area where many government cloud migrations are falling short of expectations. Some public officials have noted that expected operational improvements and data access weren't being fully realized either. Overall, more federal IT leaders surveyed are dissatisfied with their organization's cloud experience than satisfied.⁷

Failing to realize the top goals for a move to cloud may be a sign that government leaders have been aiming at the wrong goals. They may be losing sight of cloud's most powerful benefit: enabling innovation.

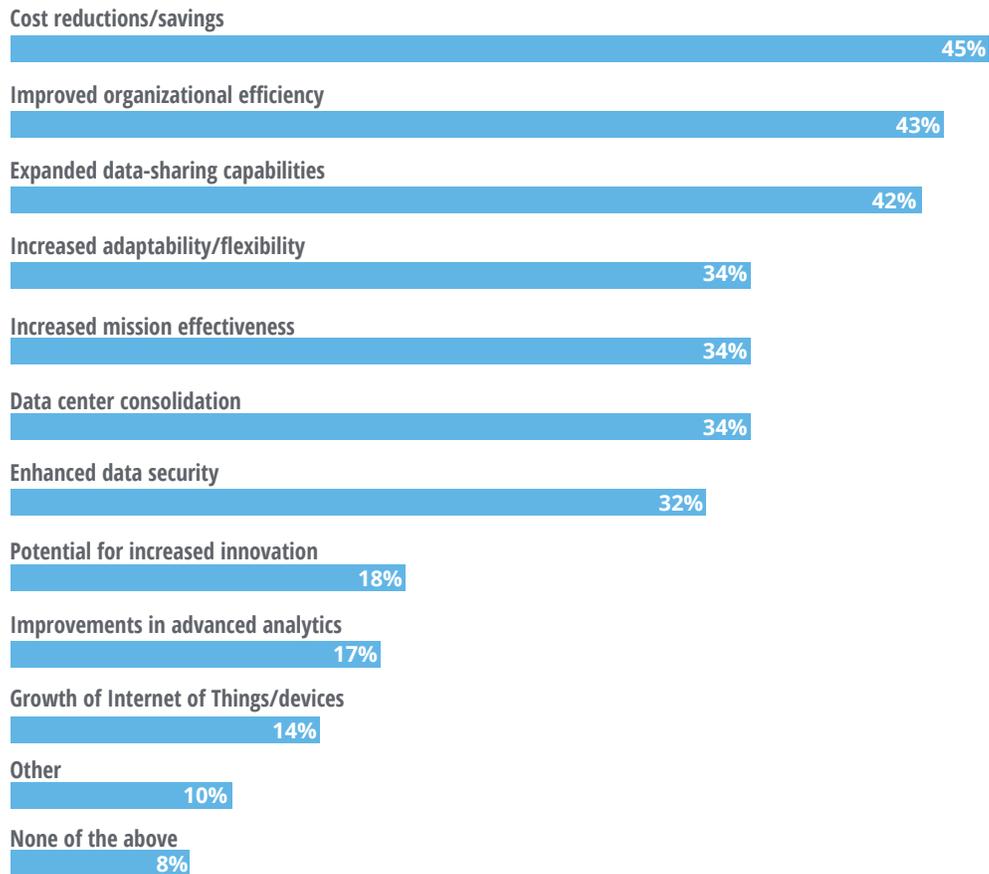
Government leaders may be losing sight of cloud's most powerful benefit: enabling innovation.

In other words, many government agencies may be too focused on the mechanics of migration without thinking enough about the ultimate goals of cloud. So what should government leaders do to realize the full benefits from their clouds? While every agency's path will be uniquely tailored to its specific circumstances, there are several common building blocks that can help IT leaders to take action today to help ensure that their cloud is producing real value tomorrow.

FIGURE 1

Cost savings top the list of government organizations' reasons to move to the cloud

In your opinion, what are the primary factors driving your organization's adoption of cloud technologies?



Note: N = 282.

Source: Government Business Council and Deloitte, *Channeling the cloud*, December 2017.

The four building blocks of cloud foundation

1. Defining success in terms of mission

While the Federal government's initial cloud strategy in 2010 emphasized the desire for cost savings, it has learned much about cloud transitions in the intervening years. Now the emphasis is increasingly being placed not on solely cost but on better support of the mission.⁸ The federal office of the CIO's new strategy is described as "Cloud Smart," and while it acknowledges the gains made under Cloud First, the new strategy emphasizes data capabilities and mission support: "The ability to evaluate, consume, and share knowledge is the driver of success in private sector IT modernization efforts—the federal government's approach should be no different."⁹

The success of cloud should be defined not only in dollars and cents but in increased mission performance. For example, when the Federal Bureau of Investigation's (FBI's) Counterterrorism Division moved its data centers to a cloud provider, it measured success in terms of how the cloud helped agents achieve their mission. By making core tasks such as information sharing, data entry, and even security of information easier, the transition to cloud resulted in a 98 percent reduction in time spent on manual work.¹⁰ Think about the process required to get access to sensitive investigative information. An agent likely would have to fill out multiple forms, send them to the appropriate contacts, and then create credentials to log onto a database or system, each step potentially taking hours or days. Because permissions are managed centrally in cloud, such access can be granted immediately based on secu-

rity clearances as soon as an individual logs on to the system.¹¹ These time savings allow analysts to spend less time doing data entry and more time on actual analysis.

When organizations start measuring success in terms of how it supports the agencywide mission, and not just IT costs, it can help to rationalize initial investments or to see where benefits are accruing to other parts of the organization. That paradigm shift can also help to encourage cloud users to begin to look for ever more ways to make use of cloud, evolving it in a new direction and uncovering unforeseen benefits that cloud can bring. (See the sidebar, "The Intelligence Community Cloud.")

2. Adapting the organization to the new cloud reality

Realizing the full value of cloud will almost certainly require changes to how an organization operates. As an analogy, imagine putting a powerful new racing engine into an old Model T. Sure, it would be important to choose a new engine and connect it properly. But to take advantage of the car's newfound power would require changing the steering and suspension as well. And if the car were to be operated safely, it would need better brakes—not to mention a driver with a different set of skills.

In essence, cloud is a powerful engine that offers an organization unprecedented speed, scalability, flexibility, and an ever-growing array of services. But traditional public agencies, including IT departments, may not be organized or staffed to take advantage of them. Government agencies

THE INTELLIGENCE COMMUNITY CLOUD: A PLATFORM FOR EMERGING TECHNOLOGIES

The US Intelligence Community's move to the cloud exemplifies the link between cloud and innovation. When the Intelligence Community (IC), a federation of 16 government intelligence entities plus a 17th administrative office, transitioned to its private cloud in 2013, it initially helped standardize IT across agencies.¹² Today, however, after six years of experience with cloud, the purpose of this effort has expanded much beyond what was originally envisioned.

When the IC adopted the first commercial cloud in government in 2013, AI was not as pervasive as today.¹³ Humans still held the high ground in tasks ranging from chess to identifying cat pictures (though not so much anymore), and voice-based assistants were just showing up on phones.¹⁴ Yet IC leaders have made it clear that the real value of the cloud is increasingly becoming its ability to bring AI to bear quickly and easily on a variety of problems.¹⁵ So how was the IC able to lay the IT groundwork for technologies that it was perhaps not anticipating?

The answer lies in its goals for cloud. While many cloud strategies are framed in terms of saving money, the goal of the IC's cloud, now called IC IT Enterprise or ICITE, was always increased innovation and collaboration.¹⁶ In fact, cost was recognized as one of the chief challenges that needed to be overcome. As Sue Gordon, principal deputy director of National Intelligence, recalls, "The cost of getting virtualized, getting to the cloud, was borne by people who didn't immediately benefit from it."¹⁷ And with a US\$600 million initial investment that has only grown since then, the burden of bearing those costs could be considerable.¹⁸

But with an approach to cloud that focused on future innovation in place, the costs could be justified by the benefits to the whole organization. The general public may never know all of the benefits from the ICITE cloud, since many of the activities that take place there are classified. We can only guess at how cloud-based AI could be applied in analyzing satellite photos, finding patterns in bank records, or uncovering pseudonyms used by wanted persons.

are unlikely to tap into the real potential of cloud if they simply migrate data and shift apps but fail to change how they operate.

The commercial industry that has migrated to cloud has struggled with this as well, often adopting approaches such as DevOps (the software development methodology where the same team both develops and operates software) and agile development to match organizational practices to powerful new cloud services. Some areas where government may need to adapt to realize the full power of cloud include:

- **Changing processes.** Simply moving an application to the cloud without taking the time to address the underlying business processes behind it is not just a missed opportunity; it can also be a recipe for costly failure. Take the

upcoming replacement of the Defense Travel System as an example. Building on work by the US Digital Service, the new system moves from legacy data centers to one that leverages proven commercial cloud solutions.¹⁹

But to improve the user experience, simply moving to the cloud will not be enough. Rather, core changes in how travel is booked, approved, and processed are needed. As a result, the new system will be specifically designed from the outset to eliminate redundant and time-consuming approvals to streamline the travel process for users and save the government not only money but also time.²⁰

- **Changing policies.** The real power of data in the cloud comes from when multiple different organizations are able to use the same data to improve their own services. (See the sidebar,

“Delaware: Cloud + data sharing = Benefits for families.”)

Because government handles so much personal information, including health data, it rarely makes sense to simply make all the data available to everyone. Luckily, cloud can make secure sharing easier by allowing for single digital identities, for example, so that users can immediately see all of the data they have permissions for rather than having to request access to each data source individually. Adjusting data-sharing policies to make the maximum data available to most people while still protecting security and privacy is key to getting the most from cloud.

- **Changing skills.** The move to cloud impacts more than just hardware and software; it changes the nature of work for the people in the organization as well. Clearly, the skills of a database administrator or data center manager may need to change. In addition, to the extent an organization adopts agile or DevOps methods, it

also may require different skill sets. IT in a cloud future may become even more of a services organization: Far beyond just providing underlying infrastructure, IT can become more involved in the day-to-day business challenges of other parts of the organization so that it can create custom solutions to those specific problems. As a result, IT workers increasingly need communication and liaison skills in addition to their core technical competencies.²¹

3. Tapping into an innovation ecosystem

No single organization, no matter how large, can do all of cloud by itself. Even the IC, with its significant budget resources, could have built a cloud purely with internal personnel, but it decided that working with an outside organization and purchasing a commercial cloud was a better path. The motivating factor was that working with an outside

DELAWARE: CLOUD + DATA SHARING = BENEFITS FOR FAMILIES

When the Delaware Department of Services for Children, Youth, and Their Families (DSCYF) moved to the cloud, the goal was more than simply replacing an aging legacy IT platform or saving money; it was to improve the care delivered to children and their families. The DSCYF and its partners used the move to the cloud as an opportunity to reimagine the case management system for caseworkers. First, the move to the cloud provided an opportunity to more easily meet goals of increased data-sharing among different departments. The new system allowed greater visibility across the organization’s divisions to create an integrated view of a client. With all of the data on a client available in one place, caseworkers could make better and more timely decisions for children, youth, and their families.²²

But the real transformational benefit from cloud comes in its ability to adapt with an organization. At its core, cloud offers a rare ability to both offer out-of-the-box functionality and simultaneously be tailored to meet the unique needs of an organization. Take the challenge of finding new software tools as just one example. Prior to cloud, if the DSCYF needed a new IT tool, it would have to run a procurement process to buy it or build it in-house. Cloud can provide access to an array of cutting-edge tools already built and just waiting “on the shelf.” For example, after the move to the cloud, the DSCYF found that it needed a way to easily search through records to identify individuals. Through the cloud provider, the DSCYF was able to find a prebuilt app to find an existing open-source tool to do just that.²³ Similarly, the DSCYF was even able to use a cutting-edge AI system built by the cloud provider so that managers could access real-time analytics about their clients instantly, anytime.

company would help the IC to more quickly catch up to—and stay abreast of—the latest innovations in commercial technology.²⁴

One of the additional benefits of cloud is that it can open up a wider ecosystem of innovation partners—the developers and designers dedicated to continuously improving their own products and services—than any organization can access alone (figure 2).

An innovation ecosystem can occur anywhere, perhaps most famously in certain geographies like Silicon Valley or in Boston’s rich university setting. Or take the example of the Defense Advanced Research Projects Agency, or DARPA, famous as the creator of the internet, GPS, and Siri.²⁵ But less well known is the fact that DARPA does not actually create anything itself. It makes use of an ecosystem of the most cutting-edge companies and universities to create its groundbreaking technologies.²⁶

What cloud can do is to take those ecosystems and make them accessible to anyone, anywhere. Now you don’t need to be located in the same in-

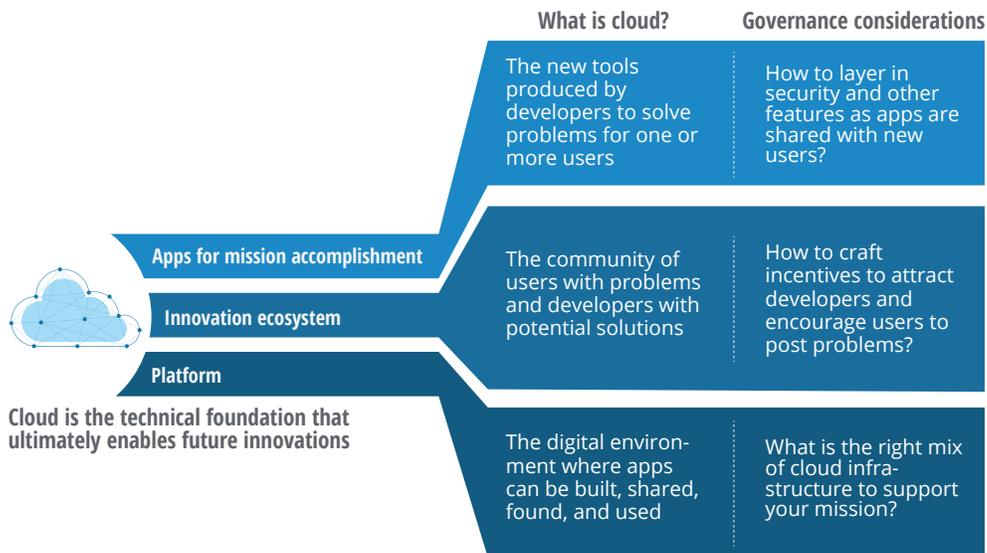
dustrial park or even the same city as collaborators; you just need to be on the same cloud platform to be able to benefit from their creation of useful tools. By using a commercial cloud (either public or private) you will be using a platform where innovative products are built. The cost and accessibility of commercial cloud make it the platform where many startups and innovators build their products, and therefore, where organizations should be to take advantage of those products.

The role of cloud as an innovation ecosystem can best be seen when looking at new software tools. While the image of a software purchase for many of us still may involve a CD in a box on a shelf, more and more software is being created in and only for the cloud. Some estimates point to nearly half of all software being solely in the cloud by 2021.²⁷ So any organization that wants access to the latest and greatest software tools needs to strongly consider being in the cloud.

And government is no exception. A cloud-enabled innovation ecosystem can give government

FIGURE 2

The cloud innovation “stack” is the technical foundation that enables future innovations



Source: Deloitte analysis.

agencies access to useful tools they may otherwise have gone without. To return to the FBI cloud example, after the 2017 Las Vegas mass shooting, teams of eight agents each worked in shifts 24/7 for three weeks to sift through videos for evidence of the suspect.²⁸ Today with cloud, the story would be different. By tapping into existing tools on its cloud—tools originally built for other users—the FBI could have analyzed all of that data in only one day.²⁹ That is the power of the innovation ecosystem: A software developer working on a different problem can end up solving a key mission need for the FBI. Without the cloud, the FBI would be unlikely to find the right tool, and, if it did find the tool, it would have to have it recreated and installed on its systems. With a cloud innovation ecosystem, finding the right tool could be as simple as searching in an app store or database.

4. Creating governance structures that promote innovation

A cloud governance framework is a set of guidelines on how to effectively approach cloud acquisitions, security, and data, to ensure interoperability while enabling choice. Think about the app store on your phone: It's a rules-based platform that enables innovators to provide new apps and customers to access them, all while ensuring that each app is appropriate for the environment. The app store gives you access to many things you need (and many you don't), all updated frequently to meet security standards and improve quality. It allows owners to set permissions for other users, analyzes and connects data across apps, and makes acquiring new apps easy. Like an app store, a governance framework sets the parameters of collaboration, not the details of content (figure 3).

FIGURE 3

How is cloud governance like an app store?

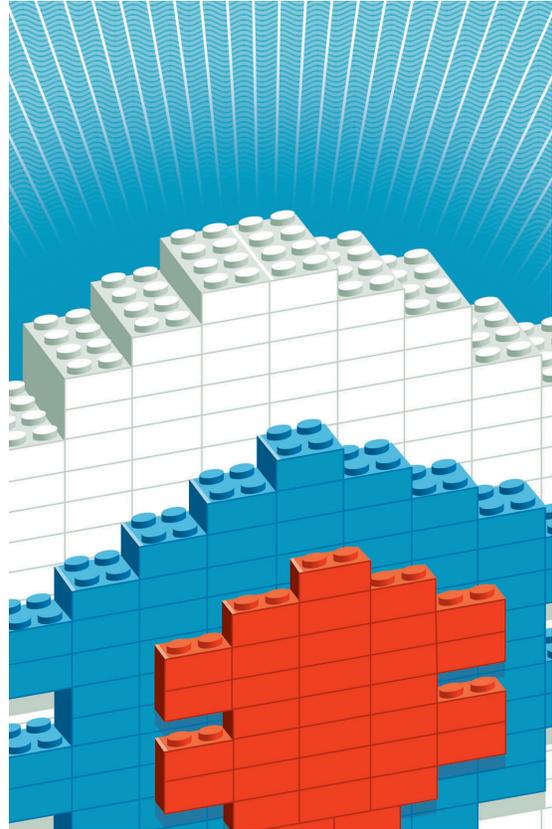


- **Access to innovation**
No organization can—or should—build all its operating tools. Luckily, millions of developers are constantly building new, innovative capabilities that may help your organization. Like an app store, cloud enables access to an extraordinary ongoing innovation stream.
- **Parameters**
In developing a cloud governance framework, you're setting the rules for your organization's app store—what types of innovations will be accessible to users, how users will acquire new capabilities, and how to ensure security.
- **Acquisitions**
All this can lead to a revolution in software acquisitions—not to mention the business processes enabled by them—as users get what they need, when they need it, without going through slow and cumbersome contracting processes.
- **Permissions**
Just like an app store, cloud governance can set permissions for users based on needs, roles, and capabilities.
- **Insights**
Whether you focus on open-market innovations or native cloud apps, a governance framework improves the interoperability of your applications and your data—allowing cloud to actually deliver on organizationwide insights.

Source: Deloitte analysis.

While most of us may be more familiar with the app stores on our smartphones, cloud versions are not significantly different. One example is Salesforce's AppExchange, which taps into an ecosystem of developers to create more than 5,000 apps designed to help solve even the most specific business problem that Salesforce users may face.³⁰ If users cannot find a prebuilt app that meets their needs, they can build apps themselves and make them available to other users with similar problems. There are even standardized building blocks called Lightning Components to help users build apps faster.³¹

Those seemingly insignificant policies and features are actually key. The power of the ecosystem is ultimately dependent upon its governance.³² *Any provider of a cloud innovation ecosystem* needs to make it easy to create, curate, use, and get rid of apps for users and developers alike. Balancing those diverse needs is a full-time job, but the cloud gives government access to the fruits of all the effort across the ecosystem.



A sunny future for government cloud

CLOUD IS ALREADY a fact for government. Every day more agencies at the federal, state, and even local levels are moving to cloud for better data-sharing, efficiency, and effectiveness. But will governments see a cloud-driven burst of innovation? With the right foundations in place, cloud can:

- **Find existing solutions to your unique problems.** Having access to a wider innovation ecosystem can help government agencies realize that they do not have to solve every problem themselves. Very often, there are existing tools that can address all but the most unique challenges. The FBI's need to analyze video or the DSCYF's need to search through case files both were met using existing apps from the cloud. Taking these tools "off the shelf" can offer government better performance faster and more cheaply than developing its own new tools from scratch.
- **Scale the benefits of new tools.** In the event an agency does have a truly unique problem and must develop its own new tool, cloud can help scale the benefit of that tool. Just because one department or agency was the first to need a tool

does not mean that it is the only one who ever will. By making those homegrown tools available to others, government can radically increase the value generated from the investment in creating those tools.

- **Uncover new insights.** Whether better services or better decisions, "better" in government often comes down to data. The more accurate data an organization has access to, the better it can serve the public. With such a variety of data in government, there is a strong likelihood that another organization has a data set that could help your organization perform better. Being able to find and access that data easily and securely is a foundational benefit to how cloud enables innovation.

If government organizations are to meet the needs of citizens into the future, government organizations should create a cloud that taps into innovation ecosystems with access to the best and newest tools available. That is how cloud works best—not just by saving dollars and cents but by becoming a powerful new engine that can help government fulfill its mission, both today and in the years to come.

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