7 Tips to Transform Your Data Into Compelling Stories

govloop

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Introduction

In recent years, data has literally been raining down from the skies, much like the famous scene in "The Matrix" in which numbers and code trickle across the screen. Whether you choose the blue pill to ignore data or the red pill to accept it, you can't escape the new reality that data and analytics are shimmering in the air all around, and governments are caught up in the storm.

Satellites and sensors, for example, zap instantaneous updates of GPS, weather, traffic and more to agencies that collect and analyze the results. Government agencies do with the data what few organizations at scale would dare attempt – from tedious fact-checks to extraordinarily difficult and precise research.

What does the rain of government data contain? The answer is everything – from minute, personal details to planetary motions – and in this guide, you'll read about the groundbreaking and lifesaving movement of data through the government pipelines. Here are a few examples:

- Data is helping deliver disability benefits to veterans faster and saving the government money in the process.
- Analytics are enabling crews to prevent potholes in the snowy city of Syracuse, New York and giving residents clarity about their services during blizzards.
- Open data is solving the problem of unfalsifiable results in science, known as the "reproducibility crisis," by providing a larger community for evaluation.
- Workforce data in Minneapolis is recognizing top performers, training employees and saving costs.

Moreover, the sun has risen on a new day of data in government, with the publication of the Federal Data Strategy and the passage of the Open, Public, Electronic, and Necessary (OPEN) Government Data Act, changing the rules and the ways data is managed. In this guide, seven case studies will illuminate key sections of the Federal Data Strategy, offering tips and steps to optimize data.

The Federal Data Strategy isn't for national government peers only. Data strategies are an indispensable part of organizational data management for state and local entities, too, as well as for any enterprise. These other entities can look to the document for templatization or comparison in modeling their own data guidance.

Get excited. Data isn't just a numbers game anymore. Let's explore the stories that data tells.

What's New in Government

Two watershed instructions on federal data hit the market in 2019, tracing future trends of data use in government.

OPEN Government Data Act

The first major advancement was the signing of the OPEN Government Data Act, which mandates that agencies establish chief data officers (CDOs) going forward, serving as a follow-up to an Obama-era transparency law that led to the creation of popular public-facing data repositories, such as USAspending.gov and Data.gov. The new law, which Rep. Paul Ryan (R-Wis.) introduced as part of the Foundations for Evidence-Based Policymaking Act, broadens the mandate for every agency to publish its data in common, machine-readable formats, such as XML files.

The law holds federal agencies accountable to the public and their peers. Citizens and public sector employees will now be able to obtain all publicly available information online. One hope is that by making information readily available and accessible online, the number of Freedom of Information Act (FOIA) requests will decrease. FOIA requests, in fact, have increased year-over-year in the federal government recently.

Federal Data Strategy

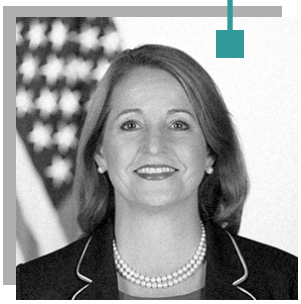
Next up, the Federal Data Strategy formalized practices and principles for data management in May 2019, coming as a long-promised administration initiative that clarified several key priorities but was delayed by the federal shutdown. The strategy focuses on three main guiding principles, targeted as "motivational guidance," surrounding ethical governance, conscious design and learning culture. Its 40 practices, or overarching actions, are filtered into three categories as well: building a culture that values data and promotes public use; governing, managing and protecting data; and promoting efficient and appropriate data use.

Federal leaders in the data field, in conjunction with input from academia, industry and the public, developed the strategy. They modeled it after agencies esteemed for data usage, including the White House's Office of Science and Technology Policy, the General Services Administration, the Small Business Administration and the Commerce Department, a senior administration official said.

A one-year action plan related to the Federal Data Strategy goes into motion in the latter half of 2019. Although federal agencies are at different stages of data maturity, some will unlock possibilities of emerging technology, and some, such as the Defense Logistics Agency, have already released updated strategy and governance plans for themselves.

On the Federal Data Strategy:

"What you will see is, like any lofty goal, we are looking both strategically and tactically, and we have to start with the basics and invest and build a rock-solid foundation. And the framework that we're sharing today supports raising the bar for consistency of skills, interoperability and the best practices for how the agencies manage and use data."



Suzette Kent
Federal Chief
Information Officer

GDPR and CCPA

Although many are excited for the future, the caveat of data privacy closely shadows every consideration, as Internet of Things devices spread and personal actions become more quantifiable. In 2018, the European Union implemented the General Data Protection Regulation (GDPR), which gives consumers a right to know what data of theirs is kept by businesses and offers them the chance to ask for its deletion. The law also enforces data protection standards.

GDPR affects how global companies, such as Google and Facebook, manage, store and secure data. Similar initiatives are coming to the United States. The California Consumer Privacy Act (CCPA) brings tenets of the law stateside, boosting citizen privacy, control and security for personal data. These laws come as cyberattacks increasingly pelt personal, industry and government networks.

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Industry Spotlight

The Value of Self-Service Analytics

An interview with Andy MacIsaac, Director of Public Sector Marketing, and Sean Brophy, Vice President of Public Sector, Alteryx

The President's Management Agenda targeted "leveraging data as a strategic asset" as a cross-agency priority goal. This call to action didn't come out of nowhere. Government agencies at all levels hold tremendous amounts of data, but oftentimes, legacy processes, organizational silos and a gap in data skills mean they are unable to take advantage of its potential.

Every day, the world is becoming more digital, causing organizations of all types, including government, to change. In this environment, data is making moves to the front of informed policy-making and service delivery.

Coupled with the increased recognition of the value of data is the evolution of advanced and easier-to-deploy analytic platforms, which have given rise to the "citizen data scientist." In this sense, the democratization of data analytics has enabled employees to produce more value without having to know how to code or rely on the capabilities of classically trained data scientists.

"Agencies are starting to realize that data is a strategic asset," Andy MacIsaac, Director of Public Sector Marketing at Alteryx, said. "They are understanding that there is a lot of insight about not only what is happening or what has happened, but also insight that can help predict what will happen and insight the can prescribe the best course of action."

GovLoop spoke with MacIsaac and Sean Brophy, Vice President of Public Sector at Alteryx, about how data can be used to generate insights and power decisions. The Alteryx platform helps strengthen agencies' ability to execute their missions using accessible and actionable intelligence.

The emergence of advanced self-service analytics platforms means people now have access to greater information and the power of insight.

In self-service analytic platforms, the ability to prep, blend and analyze information – including the ability to apply spatial, predictive and prescriptive processes – is all in one place.

With self-service analytics, the equation can be changed from the classic 80% data prep, 20% analysis to 20% data prep, 80% analysis, giving data workers more time to increase the organizational value of analytics.

"The advent of self-service analytics is an important part of the conversation as well, because as you start thinking about self-service analytics, what it did was put more data or more capabilities in the hands of the average everyday user."

- Sean Brophy, Vice President of Public Sector, Alteryx

With multiple reporting formats and user-friendly visualizations, the value of insight becomes more apparent to business leaders, and modern advanced analytics platforms can also work across data sources to ease the burden on IT.

In the context of advanced analytics, Alteryx provides organizations with the ability to catalog, consume, prep and blend data, and leverage predictive models that can be templatized, created, shared and governed. The Alteryx platform is built to support the collaboration and consumption of insight within a code-free or code-friendly environment, and its flexibility welcomes a variety of data sources.

"There's an opportunity for wins all the way around, where a business is getting what they want, and if managed properly, IT is actually implementing a data governance strategy," Brophy said. "And with a more analytical government, citizens win too."

TAKEAWAY: Change agents can be found throughout an organization, but they need the tools, like self-service analytic platforms, to develop actionable insight and provide higher-level value from their analyses. Democratized data creates a meritocracy of ideas, where data-driven insights can be matched to business savvy to challenge the status quo and improve the effectiveness of government.

7 Tips: Turning Your Data Into Stories

Tip #1: Use Data to Guide Decision-Making

Tip #2: Use Data to Increase Accountability

Tip #3: Connect Data Functions Across Agencies

Tip #4: Leverage Data Standards

Tip #5: Share Data Between State, Local and Tribal Governments and the Federal Government

Tip #6: Promote Wide Access

Tip #7: Leverage Partnerships

The following pages will introduce you to the Federal Data Strategy, which can be accessed in full online, through seven tips for using data to generate real-world improvements that otherwise wouldn't be feasible. These seven ideas do not cover the entire strategy, which contains 40 practices, or approaches, that agencies should take regarding their data holistically. Rather, the seven tips will specifically highlight how to use data to derive insights and tell stories.

Tip #1

Use Data to Guide Decision-Making

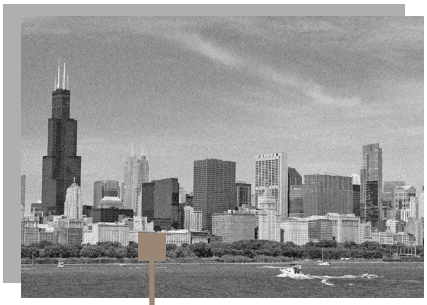
Federal Data Strategy Practice No. 4: "Effectively, routinely, transparently, and appropriately use data in policy, planning, and operations to guide decision-making; share the data and analyses behind those decisions."

TIP:
Consider how you can make smarter decisions day to day by analyzing data you have or could get.

From the mouth of government:

"Efficient and effective decision-making is fact-based and transparent. However, Government agencies do not consistently apply data-driven decision-making practices. Smarter use of data and evidence is needed to orient decisions and accountability around service and results."

Source: President's Management Agenda



Stats About Data and Decision-Making:

25%
was the increase in operational efficiency in Chicago after inspectors began using a predictive analytics model to rate food establishments by risk.

$785 million
is how much the Health and Human Services Department hopes to save by using automated contracting decisions with blockchain technology.

CASE STUDY

Picking the Right Pothole: A Decision Based on Data

Syracuse, New York is a research-rich, post-industrial city that happens to be home to one of the snowiest college campuses in the United States, and due to its geography, the hilltop location is rife with potholes and other weather-related ailments. However, the city's makeup – with an innovative in-city university in a town that otherwise has faced declining revenue and population – has poised it to pave over problems with ingenuity and resourcefulness.

"It's probably the way that we should be doing anything anyway, but it's really a necessity in terms of finding the best ways to deliver service in an otherwise pretty tight economy and budget ecosystem," Syracuse CDO Sam Edelstein said about the city's use of data to fuel process improvements.

When water pools and freezes below the surface, it expands, causing the asphalt above it to fissure slightly. Then when the ice warms back to a liquid state, it contracts into an amorphous shape, causing the surface roadway to give in along the cracks and form a pothole.

In any northern city, potholes crop up regularly, and although residents may accept rocky roads as a part of life, that doesn't mean they'll be pleased when the obstructions linger on neighborhood roads. So, after the frost thaws and a new crop of potholes springs up, the Syracuse city government fields regular calls from residents about problems with their streets.

The city had crews ready to go out and fix the potholes, but they were often delayed in responding to requests because en route to the specific call, they'd have stop to fill potholes that were not reported. Therefore, the process was inefficient, and citizen services were not as dependable as the city would have liked.

Edelstein and his team had to decide where to allocate resources. Repaving some streets entirely – to better insulate them against potholes as opposed to filling them year after year – could save costs and labor in the long run, but the city had no way of deciding which streets would be worthwhile to invest in.

Without the dedicated funds of a big government data team, Edelstein and his team searched for options in-house. They considered getting crews to track repair jobs on a spreadsheet or creating an app but decided these endeavors might only distract them from the task at hand and waste tax dollars.

Those concerns led to the solution.

"Instead of buying something new, we realized that we had this technology already on our fleet, in GPS units on all of the different vehicles," Edelstein said.

Edelstein and the city's Innovation Team – or i-team – synced the GPS technology with cement hose triggers on the fleets, so that every time a pothole was filled, the city knew where. In a database, the city could track where potholes were appearing – and, importantly, where they clumped together – so it could take the proactive step of repaving.

The project is just one of several that Edelstein and the i-team have led. With predictive analytics, data visualizations and partnerships, they were also able to better monitor and drive decisions about road plows and frozen water mains, improving citizen satisfaction and saving costs along the way.

TAKEAWAY: Data and analytics can directly improve resource and budget allocation. Syracuse proved that by listening to residents and harnessing existing technology to be more efficient and effective in making external decisions.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Industry Spotlight

Keeping the Public Safe Using Analytics in the Cloud

An interview with David Bargh, Solution Manager for SAP Analytics Cloud at SAP National Security Services

When you hear the term "national security," you might think of large boardrooms, world maps and mission defense systems. But clichés are just a small part of the story.

Instead, national security comes in many forms, all relating to public safety, and many of them rest with data. Vulnerable data can compromise the identity of individuals and corporations, risking financial or personal harm. Meanwhile, data without visibility or without pipelines can fail to make its way through government, for instance, not delivering important insights that could stop a terrorist attack. These responsibilities deal with more than the Intelligence Community and defense agencies; they fall on the shoulders of every agency.

GovLoop spoke with David Bargh, Solution Manager for SAP Analytics Cloud at SAP National Security Services (NS2), to talk about the centrality of data to national security and government operations. NS2 offers a wide array of analytic solutions that can help government agencies create a data environment conducive to security, productivity and interoperability.

"It's not just about the data. It's about the cybersecurity, the collaboration, how agencies and private sector coordinate and have transparency between each other," Bargh said.

For example, the Food and Drug Administration (FDA) Adverse Event Reporting System stores information submitted about adverse events, faulty medication and product quality complaints, pinpointing safety hazards not noticed in testing. Without the right analytics, important findings might not be discovered in a timely fashion, or at all.

"They said, 'If we don't get this right, people die,'" Bargh said about FDA.

With advanced analytical tools, FDA is able to discover dangerous linkages, such as an unhealthy combination of medicines. With this information, department employees can issue warnings or take products off the shelves.

A variety of analytical tools, including cloud-based analytics and capabilities, enable these sorts of insights. The advantage of the cloud is that it tears down silos, promotes standardization and generates insights for analysts and business leaders alike. Analytics coming from the cloud result in agencies working from a single source of truth, allowing for greater collaboration and faster action.

"As the federal government moves to the cloud, we're going to see much more standardization around data governance, in particular, but also questions around how we use analytics on all of that data..."

In addition to advanced analytics tools, SAP NS2 offers Qualtrics solutions, which provide a constant human feedback mechanism illuminating the "why" for decisions or results. When agencies enable intelligent business enterprise in the cloud, they are enabling employees to deliver more efficient and personalized customer service.

And, because of important governmentwide security programs such as FedRAMP, agencies are able to move data out of aging data centers into environments secured for modern-day risks and attacks.

The public sector has a responsibility to keep data secure. In the cloud, government can do just that, all the while gaining modern insights to fuel decision-making and service provision.

TAKEAWAY: Agencies are ready to move to the cloud, and there's no safer time. As enterprises grow and data collections expand, the cloud offers agencies certified, secure solutions that provide a single source of truth and advanced insights.

Tip #2

Use Data to Increase Accountability

Federal Data Strategy Practice No. 7: "Align operational and regulatory data inputs with performance measures and other outputs to help the public to understand the results of federal investments and to support informed decision-making and rule-making."

TIP:
See what metrics can gauge the effectiveness of internal programs, initiatives and employees.

From the mouth of government:

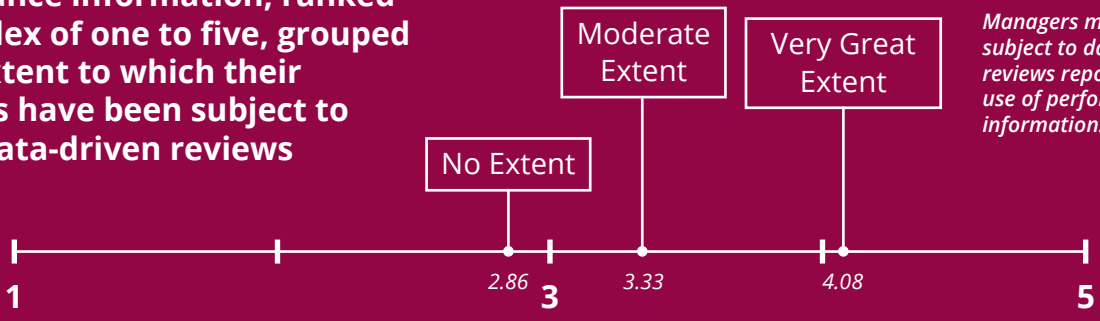
The positive results of practicing a constructive approach to accountability include:

- Improved performance
- More employee participation and involvement
- Increased feelings of competency
- Increased employee commitment to the work
- More creativity and innovation
- Higher employee morale and satisfaction with the work

Source: Office of Personnel Management

Stats to Know on Accountability:

Manager's average use of performance information, ranked on an index of one to five, grouped by the extent to which their programs have been subject to agency data-driven reviews



Managers more subject to data-driven reviews report greater use of performance information.

CASE STUDY

With the Power of Data, Accountability to Constituents Improves in Minneapolis

A common grievance levied against government is that money is being wasted and employees aren't working hard enough. The reality is, government employees have an impossible job to do, facing a landslide of needs with paltry resources and budgets. It's like David vs. Goliath.

Minneapolis is a city of more than 400,000 residents. That means there are 10 times the residents compared to public sector workers, as 40,000 government employees across 22 departments work to keep water running, streets clean and residents happy. With a workforce the size of a small city itself, the Minneapolis city government has used data to ensure that it is performing to its full potential employee by employee.

"This is a city that is data-driven, and so I'm really just modeling what I see in the city already," said Patience Ferguson, Chief Human Resources Officer for Minneapolis. "If we have data in terms of how we're leveraging our resources in the community, if we have data in terms of how we are being efficient and effective with taxpayer dollars, then why wouldn't we have data around our most basic asset, which is our human capital?"

To that end, the city has invested in data and analytics as they pertain to the workforce. The effort has already yielded gains.

For example, the city found that 82% of its public sector workforce engages in government-sponsored wellness programs. As a result, worker satisfaction has increased and benefits costs have decreased because of a healthier workforce. More money can go into other programs because of data.

Additionally, the city has doubled down on its employee feedback cycle, cutting the time between employee engagement surveys from once every two years to once every six months. With the new frequency, the people spoke and the government listened. What's more, employee recognition took on more importance as hundreds of public sector employees won Star Awards program, which recognizes the important accomplishments of government workers.

City employees also asked for more interoffice employee resource groups to help every person feel like they belong and could excel, and the city subsequently created several for African-American and female employees.

Analyzing the well of data that Minneapolis possesses has kept the city accountable to itself, the workforce and its standards. Data can reveal whether one subset of the workforce is resigning or retiring prematurely at higher rates than others, hinting at a culture or code in need of change.

Furthermore, the city's performance management technology, PerformMinneapolis, can pair up individual goals with department needs, ensuring employees are working with the right efficiency and toward community betterment. The platform also offers trainings to foster employee growth. These capabilities can show high performers worthy of promotion or reward and reveal low performers who need to be addressed.

"We can not only look at the data, but we can begin to start seeing if the things that we're doing and that we're investing in, as it pertains to our human capital, are making a difference," Ferguson said. "And then if they're not, we could take a step back and then ask ourselves why."

The use of data and analytics by Ferguson's department means Minneapolis taxpayers can rest assured that their money is funding motivated, talented and hardworking public servants to deliver services that will improve their city.

TAKEAWAY: Minneapolis used data to improve its workforce and evaluate employees. As a result, the city saved money and increased accountability of the organization and individuals.

Tip #3

Connect Data Functions Across Agencies

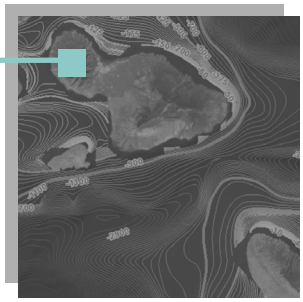
Federal Data Strategy Practice No. 9: "Establish communities of practice for common agency data functions (e.g. data management, access, analytics, informatics, and user support) to promote efficiency, collaboration, and coordination."

TIP:
Establish common grounds for people practicing data to share advice and collaborate.

From the mouth of government:

"Evaluating a data source at the enterprise level with varying business perspectives can point out these types of data quality concerns. Based on this knowledge, the GDAC [Government Data Analytics Center] can work with the data source agency to identify ways to improve and expand the capture of quality data to support more accurate analysis and decisions."

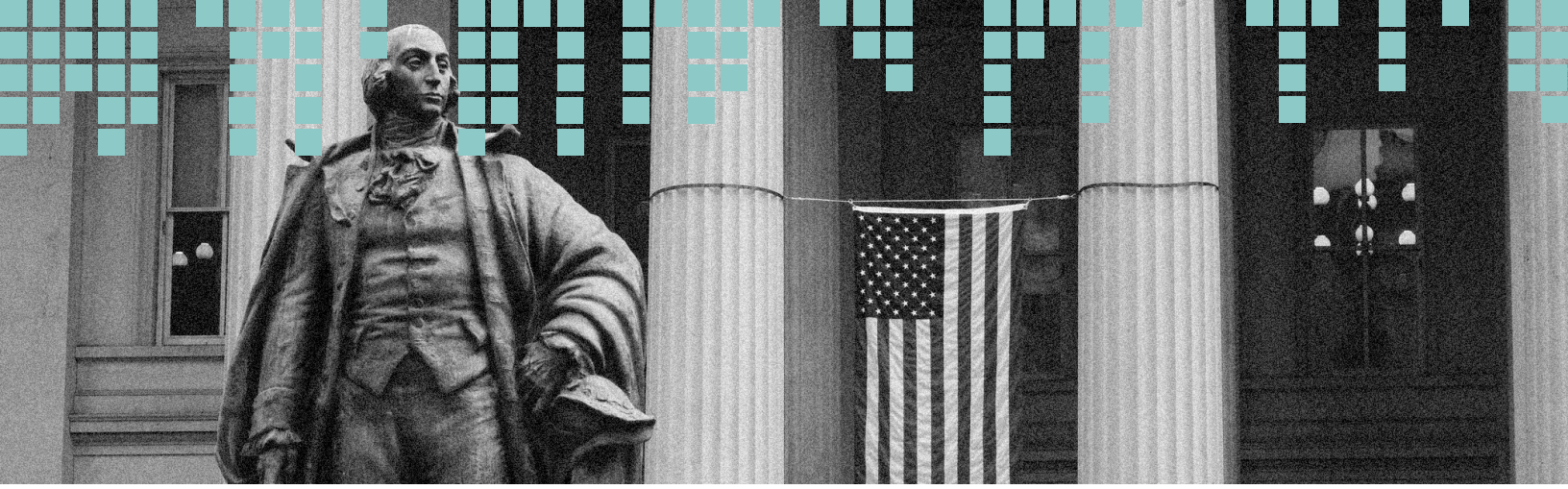
Source: North Carolina GDAC



Stats to Know on Data Functions:

500+
members of the grantee community collaborated with the federal government to pilot new ways of standardizing, sharing and collecting data from grantees.

35
data and information communities exist on GeoPlatform Communities, designed as "a multi-agency workspace to share data and information" regarding occurrences of regional or national importance.



CASE STUDY

Treasury Data Opens the Federal Government to Smarter Decisions

Among businesses that need to understand and maximize data, banks are at the top of the list. When banks fail to deliver the right numbers, the results are disastrous.

The Treasury Department faces similar pressure.

"Treasury sits in some ways in the center of the federal government because we're the financial managers for the rest of the government," said Justin Marsico, Deputy Assistant Commissioner and Data Executive at Treasury's Bureau of the Fiscal Service. "And at the heart of that financial management activity is data."

The federal government spends $500 billion a year – the size of a midsize nation's economy – on contracts ranging from office supplies to national defense systems, and the Bureau of the Fiscal Service is responsible for financing government operations in a variety of ways. Therefore, these contracts require a careful eye and meticulous processing to weed out waste and answer simple questions of affordability.

The bureau aims to elevate the fiscal process from rote – or repetitive and manual – reporting of financial contracts to deep and thoughtful analysis, enabling financial managers across federal agencies to strategically plan their spending for years ahead. By using detailed data that Treasury maintains, Marsico hopes that agency financial managers will be able to critically evaluate the costs and benefits of supporting programs or contracts.

Marsico said a big challenge in the federal government has been shedding the perception of data as strictly an accounting tool. Data, he said, can increase the performance of individuals and programs and identify efficiencies and cost savings.

While chief financial officers (CFOs) often have to spend a large amount of their time balancing budgets, their job isn't as simple as addition and subtraction. Agencies' balance sheets are incredibly complex, with moving parts across payout dates, money coming in and differing contract lengths. CFOs need to take stock of it all.

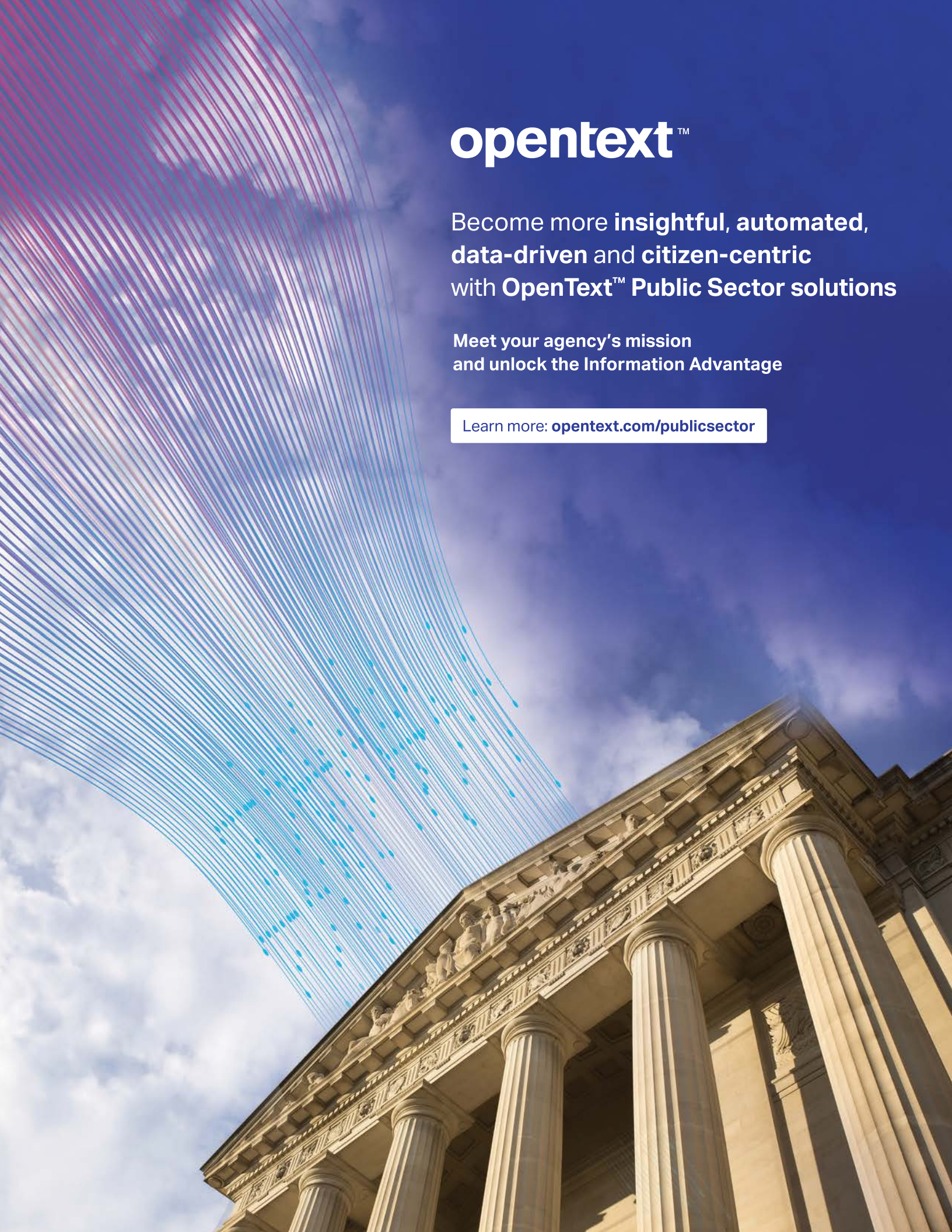
This sort of analysis is necessary for an efficient and effective government, but it takes away time and thought that could be spent looking to the future – toward new programs or ways to reduce costs.

Treasury is building out data visualizations that will tell financial managers the story of their money. These tools, which lend easy insights and courses of action, remove rote and manual processes from the CFO wheelhouse.

Instead, CFOs will be able to take a step back and evaluate important projects or initiatives that could offer agencies the financial flexibility to do more along the mission lines. Treasury is also leading efforts to make sure its employees have the skillsets to generate insights for agencies.

"That's the direction that the Treasury is hoping to lead the financial management community over the next eight to 10 years: away from the kind of rote reporting, simplistic, just keeping-the-lights-on approach to financial management – to a more strategic approach," Marsico said.

TAKEAWAY: For many agencies, the customer might be internal. Using data visualizations, Treasury is allowing other agencies to maximize their time and energy.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Industry Spotlight

Data Expands, Extends and Optimizes the Value of Work in Government

An interview with Brian Chidester, Senior Industry Strategist for Public Sector at OpenText

Not only is the amount of data rapidly increasing in government, but the potential value of data is growing as well. Predictive analytics, machine learning and artificial intelligence (AI) are broadening the use cases for data and in turn unshackling productivity for government employees.

To inform agencies about how they can unlock the value of their data, GovLoop interviewed Brian Chidester, Senior Industry Strategist for Public Sector at OpenText. OpenText is an enterprise information management partner that helps government agencies increase efficiency and deliver better services with departmentwide solutions.

"Data is really the lifeblood of how agencies are going about their work, and what you want is to be able to harness the power of that data and give organizations the information advantage."

Government archives used to be where data went to die. After information was collected, it was retained for compliance and records purposes, but it rarely was acted upon. Now, in an era of powerful computerization, digital governments cannot afford to operate in the same way.

When data is standardized and aggregated in one place, organizations can adopt the solutions that will allow for greater productivity and produce better results. These solutions, such as AI and automation, represent the future of work in government.

So far, though, the proliferation of data often overwhelms agencies. Information collection, standardization and archiving occupy incredible amounts of time, and as such, important responsibilities are often postponed or ignored.
Enabled by access to agency data, AI can remove many of these responsibilities, alleviating the overload of work currently in government.

Meanwhile, much of the manual work that employees have to do is laborious and tedious, involving scrolling through documents or scanning spreadsheets. Bringing in automation and AI can ease the burden on employees and perform these exacting tasks more accurately and more quickly.

Finally, value expands when data is actionable and available. Cyber incidents, for example, are too frequent to study each case, but with enterprisewide analytics and AI capabilities, trends are easily analyzed to reveal security improvements.

OpenText helps enable these solutions. By offering enterprise information management solutions, OpenText allows government to manage the full lifecycle of its data and bring in technologies like AI and automation to expand, extend and optimize the value of work.

Chidester said that agencies cannot forget about the people side of data required to transition to the future of work. OpenText worked with the Canadian government, for example, to design a digital strategy to help guide their 10-year digital transformation, accounting for recruitment, retirement and retention.

"As they're looking to shift from low-value to high-value work, making sure that these employees are ready for that and prepared for that high-value type of work is crucial," Chidester said.

TAKEAWAY: Within government, no longer is it enough to do good work. More is being asked of public servants, and enterprise information management is crucial to unlocking the tools that let agencies work better and show results.

Tip #4

Leverage Data Standards

Federal Data Strategy Practice No. 20: "Adopt or adapt, create as needed, and implement data standards within relevant communities of interest to maximize data quality and facilitate use, access, sharing, and interoperability."

TIP:
Check that data standards are in place and widely adhered to.

From the mouth of government:

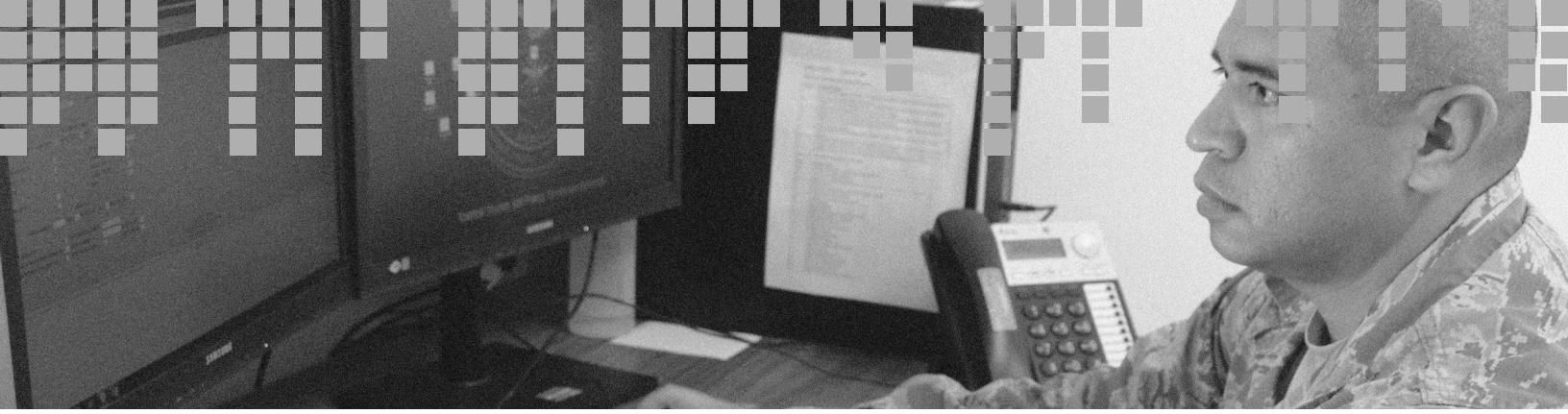
"To be effective, Standardization must be applied governmentwide. Therefore, government agency cooperation is necessary to achieve the benefits of Standardization."
Source: Treasury Department

"Data standards are documented agreements on representation, format, definition, structuring, tagging, transmission, manipulation, use, and management of data. EPA data standards are a means to promote the efficient sharing of environmental information among US EPA, states, tribes, local governments, the private sector, and other information trading partners."
Source: Environmental Protection Agency

Stats to Know on Standardization:

90%
of data we generate is unstructured.

90%
of the world's data has been created in the past 2 years.



CASE STUDY

Understanding the Arcane With Data Dictionaries and Governance Plans

Try to make it through the following sentence: Inculcating a dogma of data preeminence is an inordinately arduous and often enervating enterprise for agencies to undertake.

I know, ouch.

Whether you're studying for the SAT or reading a pretentiously written article, having a dictionary on hand never hurts. But to many people, deciphering data can be almost as painful as deciphering the sentence above – which is why data, just like language, needs a dictionary for it to make sense. No matter what truths the content may hold, they're useless if people can't understand it.

The Defense Logistics Agency (DLA) recently finalized a data and analytics strategy and governance plan to get everybody on the same terms when talking about data. The military agency, which is in charge of supply chain logistics for the Defense Department, is also looking at reforming and adding fields to its data dictionaries – or repositories outlining the contents, formats and important elements of databases.

These efforts come on the back of an internal push from the agency's CDO to demystify data at DLA. The strategy sets up policies for standardizing data, establishing data roles and managing data to ensure quality.

"The waters can get a little muddied, and you suffer from poor data quality," said Lindsey Saul, Lead Analytics Strategist at DLA. "We are taking measures to really ensure that our data is standardized, that we have tools to help the community with this effort and that we are all working from a single source of truth."

Saul described DLA's culture as generally appreciative of the value of data, but said translating raw numbers to business meaning could still be a challenge. For that reason, DLA recently acquired a data visualization tool that, once in full swing, will allow 26,000 users across 28 countries to have access to insights and user-friendly data. While business-side professionals will be able to look through read-only reports, DLA data scientists will have the chance to dig deeper and create their own reports.

Using a commercial data visualization tool, DLA Troop Support discovered "tremendous" cost savings by evaluating about 10% of its subsistence – or food and dining – contracts to find several pricing anomalies, Saul said. Although these insights can technically be discovered without data visualization tools, the technology removes painstaking and lengthy processes of aggregation and analysis by the user to show end results.

With new suites of technology to advance data insights, DLA is helping the military move materials more efficiently and with fewer mistakes. The agency is beginning to plan for predictive analytics and emerging technologies, and the new data strategy unveils a full-fledged vision for machine learning in the next five years, emphasizing the groundwork that will allow DLA to move its technology portfolio forward into next-generation technology.

But before going too far into disruptive technology, Saul emphasized that a foundation must be built to support big-name and big-money investments. That foundation is data quality and data standards, rooted in guiding documents for the organization, Saul said. She noted that the development of DLA's data governance plan and strategy was the proudest accomplishment of her tenure there.

"At the core of it is data, and making sure that we have our data quality, data standardization, all the relevant themes that come up in our data governance plan," Saul said.

TAKEAWAY: Create a data and analytics strategy and set up policies for governance. While technology is exciting, DLA and successful agencies are prioritizing data quality and standardization.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Industry Spotlight

On a Data Journey, the Next Stop is Cloud

An interview with Susie Adams, Chief Technology Officer, Microsoft Federal

People have long promised that artificial intelligence (AI), machine learning (ML) and emerging technologies would come in and do away with the challenges of society. And for agencies, that promise was especially tantalizing, as they have dealt with increasingly heavy workloads and shrinking resources.

But for most, the grandiose promises haven't materialized. Instead, maybe agencies have a fresh but clunky portal. Or maybe leadership delivered a new technology only for it to be entangled in legacy systems and networks and, as a final blow, relieved of its duties. History has shown, without a way to move data through systems to gain valuable insights, new applications and technologies will often fall short.

In this environment, cloud is making a difference. The fruits of labor that have been linked for decades to AI and ML finally are ripe, and agencies can harvest their full value by going to the cloud.

"People can now get insights from large datasets without having to have a data science degree," Susie Adams, Chief Technology Officer for Microsoft Federal, said.

GovLoop spoke with Adams and the Microsoft Federal team about how agencies can finally capitalize on the value of their data. Microsoft helps government agencies of all sizes maximize their data and remove silos using the power of hyperscale computing. Hyperscale computing brings the power of incredible amounts of compute and storage to individual agency components, using the power of the cloud.

When data is siloed, unexpected effects ripple outward. For one, analytics and AI aren't as effective or accurate, with smaller data samples. Governments also have to undertake duplicative efforts in attempts to create and share dependable databases, and these exertions come at great costs – as does storage. Finally, data dependability is often questionable with multiple duplicative, authoritative datasets sprawled throughout agency departments without much business context, limiting its usefulness.

But with cloud technologies, data is not confined to legacy data centers. Instead, it can be securely shared with agencies and the public using modern governance frameworks. This allows government to release the value of data to all. The effects stretch far and wide and are immediately impactful.

"Predictive maintenance is an area where I think government will tremendously see value over time – whether that's GSA, monitoring government vehicles, or DoD, monitoring military equipment and vehicles."

Microsoft offers top cloud capabilities to governments with Azure. On Azure, agencies pay pennies to the dollar, compared with on-premise systems, to acquire insights that come with built-in ML, AI and predictive analytics.

Cloud is leading the charge across agencies. By democratizing data and AI, cloud has transformed the way that agencies can acquire and act on information.

"This is why we're starting to see people really get excited about artificial intelligence and what it can do to improve the lives of citizens and those that serve the government," Adams said.

TAKEAWAY: Misconceptions range far and wide when talking about AI and cloud. But the truth is, both capabilities are new ways to take advantage of existing systems and structures – giving more value and insight to data.

Tip #5

Share Data Between State, Local and Tribal Governments and the Federal Government

Federal Data Strategy Practice No. 26: "Facilitate data sharing between state, local, and tribal governments and the Federal Government, where relevant and appropriate and with proper protections, particularly for programs that are federally funded and locally administered, to enable richer analyses for more informed decision-making."

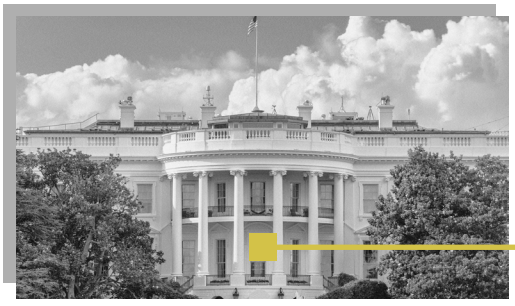
TIP:
Keep an eye out for intergovernmental programs and opportunities.

From the mouth of government:

"The Indian Health Service, an agency within the Department of Health and Human Services, is responsible for providing federal health services to American Indians and Alaska Natives. The provision of health services to members of federally-recognized tribes grew out of the special government-to-government relationship between the federal government and Indian tribes."

Source: Indian Health Service

Stats to Know on Data Sharing in Government



13
"principal statistical agencies" exist in the federal government, as defined by the White House to include the Bureau of Labor Statistics, the Census Bureau and others.

6/13
received more than $100 million in budget appropriations in 2018.

CASE STUDY
Health and Safety Come First for All Governments

Data can save lives, as North Carolina is proving. By standardizing, integrating and sharing data, the state has been able to provide better health care to those who visit its hospitals. In the medical field, accessible health care information is vital to patients' wellbeing, and in emergency rooms, its presence or absence can be the difference between life and death.

The North Carolina Government Data Analytics Center (GDAC), within the Information Technology Department, is working hard so that patient information is not lost in translation as it goes from one provider to the next. If health information is immediately and accurately available to health care providers, treatment outcomes will improve.

"This is really putting data into health care providers' hands," said John Correllus, CDO for North Carolina and GDAC Director. "From an operational perspective, it really allows the health care providers to see integrated clinical patient data to support better health care delivery."

The official name of the program is NC HealthConnex, and it had enrolled more than 11,000 organizations as of August 2019. Those who have agreed to the health information exchange include a wide array of private practices, clinics and departments.

Moreover, program participants are not confined by state borders. In fact, external local, state and national agencies have signed up to share patient data on allergies, medications and behavioral health.

The U.S. Veterans Affairs Department recently enrolled in NC HealthConnex. With more than 800,000 veterans, North Carolina is the fastest-growing veterans' health region in the United States.

It's free for health care providers to join, and the expectation is that overall costs to treat patients – and possibly the cost to patients – will decrease significantly with the elimination of duplicative tests, information acquisition and lost records. The North Carolina General Assembly currently funds NC HealthConnex at $9 million annually.

In other areas, North Carolina is managing more than 25 data initiatives. But contrary to stretching the state's resources thin, the projects are bringing agencies and government bodies across communities closer together. Working through a centralized office, the state is aggregating all sorts of information, such as data on crimes and performance management, within the IT Department's data division to deliver better services to citizens across a variety of fields.

Important to building out these value-added data projects was a problems-based approach, Correllus said. He encouraged those interested in using data to first ask how it could solve organizational challenges and then "start small, but think enterprise." That approach has netted North Carolina expansive gains in citizen services such as health care and criminal justice.

"I get very excited when I get an opportunity to use new technologies, to think about the data visualization and all these various technologies," Correllus said. "That's all well and good, but it's really about delivering on some type of value."

TAKEAWAY: For North Carolina, it's all about delivering value. Define the problem that can be solved and then look at who – and what – might be able to help.

Securely open data with APIs

APIs are setting the stage for data to be leveraged as a strategic asset to achieve agency mission. They are the fuel to drive new business models that capitalize on the creation of new apps, Internet of Things, hybrid integration and mobile first—from creating and publishing to the web, to usage, access, governance, feedback collection and security—APIs can unlock the value hidden in your data.

APIs deliver value to your agency

- Securely open your data
- Pioneer new business models
- Spark API-led innovation
- Build your ecosystem
- Apply runtime governance policies

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Industry Spotlight

Quickly and Securely Turn Data Into Value With APIs

An interview with Jeff Estes, Director of Technical Solutions for Software AG Government Solutions

Many new government initiatives like the Federal Data Strategy and the OPEN Government Data Act stem from the premise that data needs to be at the heart of decision-making and that its value extends beyond federal agencies themselves. Non-federal users, from businesses to private citizens, can also derive value and benefits.

But, with petabytes of government data on an exponential crest, the mandate to open data up to the masses is a challenge. Here, application programming interfaces (APIs) can provide a key means of optimizing value from their data. While APIs have been a common tool for powering government engagement for some time now, many agencies are finding, with any datasets which they make available via API, it's important to prioritize security in how APIs are managed.

"Because APIs expose systems of record that typically reside within an agency's trusted network, additional considerations must be made to avoid security risks that exposure can create," said Jeff Estes, Director of Technical Solutions for Software AG Government Solutions. "The importance of security being present in every aspect of API management, from aligning data stewardship with data usage and of building a culture that values data and promotes public use, has never been more critical given the scale of government data."

GovLoop spoke with Estes in a recent interview about how APIs are being used by government agencies and how Software AG can help agencies promote cybersecurity, data sharing and efficiency. Software AG offers cost-saving API solutions as part of a portfolio of integration technologies that can work across all environments.

APIs must be scalable, efficient and secure for resource-pressed and security-focused agencies.

"With an API, you should be offering a very selective dataset because otherwise you're increasing risk," Estes said. "Agencies can mitigate many of the risks by leveraging an API gateway to facilitate data requests on the front end and back end."

API gateways translate disparate formats and use policies to work with different environments to ensure a seamless flow of data. If a hacker was trying to overwhelm a portal that uses APIs, an API gateway could – per policy – shut down the portal, preventing a leak.

As the growth of data necessitates more APIs, agencies need ways to organize and oversee their solutions. API catalogues allow for easy pairing and integration, while API portals allow for agencies to test pairings and applications.

"Because APIs expose systems of record that typically reside within an agency's trusted network, additional considerations must be made to avoid security risks that exposure can create."

Software AG offers a full lifecycle API management solution, which can be adopted in tiered usage, ranging from individual connectors to API catalogues, and can work on premise, in the cloud or in a hybrid environment. APIs often don't need to be coded when using Software AG, which showcases more than 300 integrations so that data can directly flow to popular agency partners, like Salesforce or SAP.

"We don't look at integration as just APIs. We offer an ecosphere of different capabilities to connect anything, your old technology and your new and future investments." Estes said.

TAKEAWAY: Misconceptions range far and wide when talking about AI and cloud. But the truth is, both capabilities are new ways to take advantage of existing systems and structures – giving more value and insight to data.

Tip #6

Promote Wide Access

Federal Data Strategy Practice No. 33: "Promote equitable and appropriate access to data in open, machine-readable form and through multiple mechanisms, including through both federal and non-federal providers, to meet stakeholder needs while protecting privacy, confidentiality, and proprietary interests."

TIP:
Open data up to the community whenever possible.

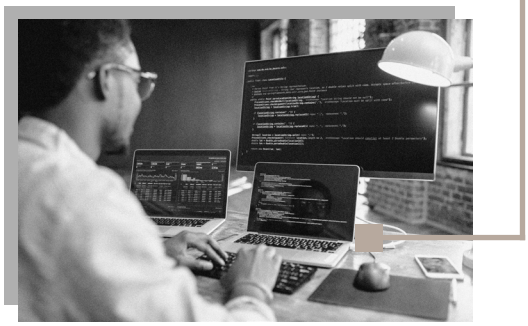
From the mouth of government:

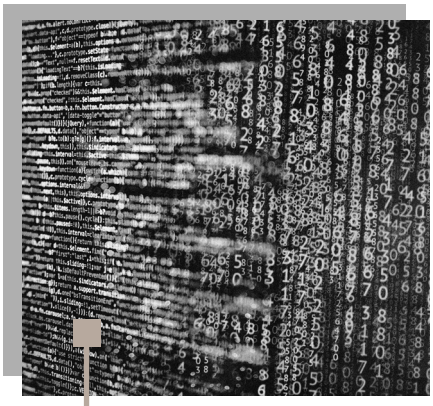
"Ultimately, open data can serve as a platform to change how we use, share and consume our data externally and internally; transform data into better services for citizens, and foster continuous improvement."

Source: NOLAlytics

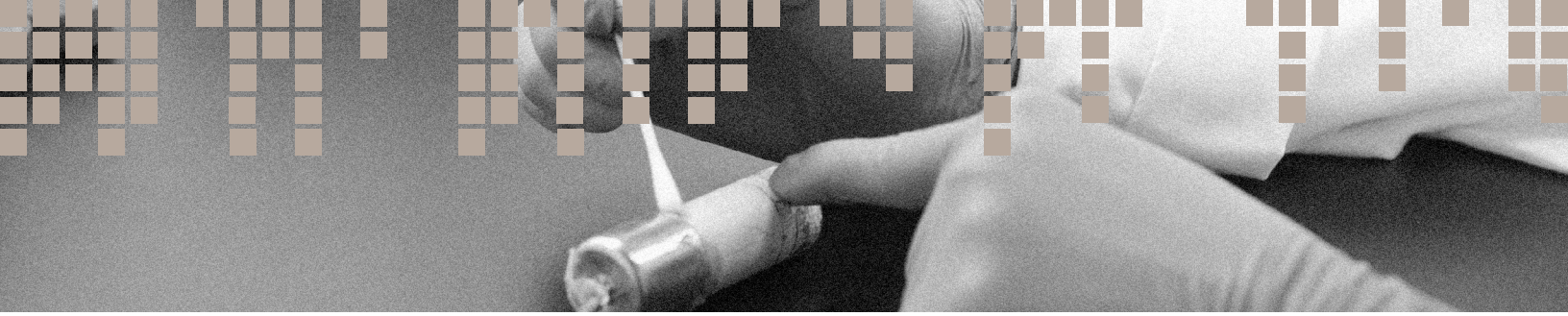
Stats to Know on Wide Access in Government

314
sources of non-federal data are available on Data.gov.





236,240
datasets live in open repositories on Data.gov as of Sept. 4, 2019.



CASE STUDY

The Sound of Science: Orchestrating a Data Symphony

A cacophony of data instruments, formats and practices collide on the field of materials science. And now the recorded tune is one of a "reproducibility crisis," whereby research fails to be confirmed by the larger scientific community and therefore shrivels into unverified results.

"The key to reproducibility is data management," said Dr. Robert Hanisch, Director of Data and Informatics at the National Institute of Standards and Technology (NIST).

Hanisch suggests that the so-called reproducibility crisis is not an actual crisis in science; instead, it's a space where poor data management and esoteric technologies have isolated scientists from the scientific community. But that's fixable.

Furthering NIST's mission of promoting scientific advances, Hanisch travels around the world to bring data management to the heart of science and advocate for the use of open data.

The approach comes in several forms. Hanisch's office publishes public files of open data and updates officially recognized standards and measurements to standardize data in the community. Hanisch also speaks 15 to 20 times a year at events and serves on international research consortiums promoting open data formats, such as XML and JSON, to industry providers of scientific instruments, which often operate in proprietary data.

"We're trying really, really hard to be good citizens and to enable the industry sector to take advantage of the tools and experience that we are developing here," Hanisch said.

By offering free public data management tools that are available in GitHub repositories, NIST hopes to encourage industries to invest in allowing their scientific instruments and solutions to export data in open, machine-readable formats. Therefore, with open formats, the larger scientific community can analyze raw findings.

Currently, NIST researchers have to reverse engineer data – making complex calculations to standardize their findings – to account for instrument specifications before the results can be widely analyzed. Interest in the open option is growing among industry experts because expanding from proprietary to open formats would encourage widespread use of their products, Hanisch said.

Of course, copious issues exist with data management for academic and public scientific researchers, too. Hanisch engages with research institutions and academic universities to implement data management "carrots and sticks."

Carrots can include widespread publicity, tenure and promotion for publishing open, standardized data, while sticks offer punishments and demands to dissuade unsatisfactory data management. NIST has a requirement that scientists engaged in data-producing research provide a data management plan.

"Publish that software as well as the data, and as well as your interpretation of the data, so that it's fully open for others to scrutinize and to assess whether the processing you've done is the best thing. If you do that, then science can advance in a fully transparent way," Hanisch said.

Hanisch noted that the federal landscape for data management is "uneven," but improving. He added that some federal agencies were model data stewards.

One such organization is NASA, where Hanisch oversaw the Hubble Space Telescope Data Archive. The space agency has had a standardized data format since the 1970s that the broader astronomy community shares.

But while difficult to mime the success of research across disparate scientific fields, guidance such as the Federal Data Strategy and the OPEN Government Data Act are helping government agencies get on the same page. Leaders in data management, such as at NIST, NASA, the Commerce Department and the Small Business Administration, have helped to orchestrate federal laws and guidelines on data in government.

TAKEAWAY: Open data is the way forward, as it is the most dependable way to test the successes and failures of models, programs and research. NIST is working toward the goal of disseminating open data practice across government and industry.

When data leads, transformation follows.

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Industry Spotlight

Enabling Data Heroes in Your Enterprise

An interview with Andrew Churchill, Vice President of Federal Sales for Qlik

Federal employees often don't feel like heroes, particularly during this time of extreme scrutiny of the U.S. government. Many spend their days behind desks instead of wearing capes, and the work they do might not fit the stereotype of heroic. Rather, it seems necessary, at best, or tedious, at worst.

But today, federal workers have the potential to make a real difference in the ways agencies serve citizens, and data is at the center of the movement. By fostering data literacy, operability and governance, agency leaders can remove the friction in their data pipelines, clearing the way for data heroes throughout their organizations.

"If I'm a chief data officer, I want to make data more available to more people so that they can use it to make data-driven decisions. What am I doing? I'm building policies around governance, I'm building policies around authorization and access, and I'm trying to eliminate friction."

Inefficiencies and ineffectiveness in how agencies manage their data have led to gridlock, which is why GovLoop spoke with Churchill about possible fixes. Qlik offers solutions to democratize actionable data within agencies and generate smarter business decisions.

The friction that Churchill refers to plagues public sector agencies and takes place in three forms: policy, technology and pedigree. With regards to friction, policy refers to the absence of ownership and strategy around data management, technology refers to legacy systems that cannot integrate or muddle data, and pedigree refers to the lack of data quality. Fortunately, solutions are now more accessible than ever, and new processes can capture the value of data from collection to disposal. Data operations, or data ops, incorporates data into every aspect of the business process, breaking down traditional barriers between analytics and business departments.

"We're looking at data as an enterprise asset – not one person's set of data," Churchill said.

Implementing data ops requires a data governance plan, which assigns roles and policies related to data throughout its usage. Data governance plans ensure standardization, lines to business and technological integration. Data strategies, meanwhile, can dictate how data, analytics and data-based emerging technologies – like artificial intelligence (AI) and machine learning – improve business within an organization.

Companies like Qlik can help resolve all three elements of friction. Qlik has partnered with CDOs to build out data governance plans and data strategies, and it offers the technology to make them work. Solutions offered by Qlik practice data ops, making data available throughout the enterprise so that it can be securely acted on, using a single source of truth, AI engines and data visualization tools.

Agencies can no longer afford to read from different books when it comes data. They need to be on the same page to foster data literacy, operability and governance so workers at all levels can use data to become heroes.

TAKEAWAY: Technology is just part of the equation. Agencies also need to remove friction in their policies and in data quality, and should partner with leaders in industry and government for guidance.

Tip #7

Leverage Partnerships

Federal Data Strategy Practice No. 36: "Create and sustain partnerships that facilitate innovation with commercial, academic, and other partners to advance agency mission and maximize economic opportunities, intellectual value, and the public good."

TIP:
Look for win-wins by reaching out to partners with similar interests.

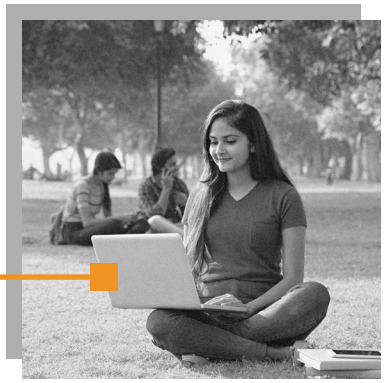
From the mouth of government:

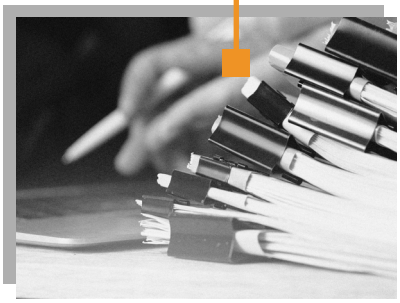
"Navigating relationships between academia and industry is complex and requires strategies that are transparent and responsive to the concerns of all. Employing a checklist of questions prior to beginning a research partnership may help to manage conflicts of interest."

Source: Genetics in Medicine Journal

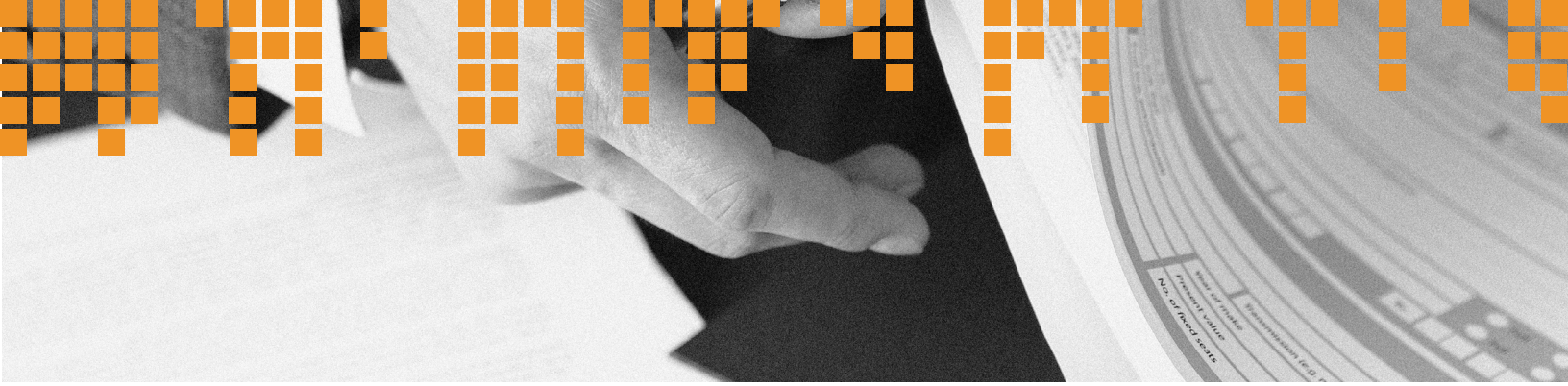
Stats to Know on Partnerships:

$65 billion
is how much state governments spend annually on higher education, the third-highest category.





$124
per capita was spent on federally funded research, although the average varied widely across regions.



CASE STUDY
Reaching Across Ally Lines to Bolster Data Programs

Sometimes to solve a problem in government, all you need is a dollar – or more likely, many dollars – and a dream. Then again, other times, you need to be an expert in coding, application programming interfaces, software development and all that good stuff.

Bennett Gebken, a Veterans Benefits Administration (VBA) employee, had an idea to streamline a process whereby the Veterans Affairs Department (VA) had to manually sort through about 1 million disability applications a year. Of the 1.7 million VA Form 21-526EZ applications for disability that the department receives annually, more than 1 million arrived via mail, and only 1% were classified and processed automatically with language-reading software.

Gebken had an idea for a natural language processing software that, with machine learning, could analyze far more applications – improving cycle times for veterans and decreasing costs for VA. He had the investment, the inspiration and even support from higher-ups at VA but no way to develop the product himself, lacking a data science or application development background.

That's where the Presidential Innovation Fellows (PIF) program, housed at the General Services Administration, came into play. Nelson Colon, who had worked in data science and machine learning products before joining the yearlong fellowship, was detailed to VA's Office of the Chief Technology Officer (CTO). VA in 2019 had several PIFs, and the CTO is a former fellow himself.

"He brought this idea to me, and that was right down my alley, so we started working on the side on this prototype," Colon said, referring to Gebken.

Once Colon was officially designated as a lead for the initiative, the software was earmarked to capture 70% of form submissions, a 69% increase from the previous technology's mark. The old technology could scan the printed forms and recognize categories written by veterans, but the slightest variation – such as a misspelling or difference in phrasing – could throw it off. For example, while it could recognize "hearing loss," it couldn't recognize "trouble hearing" or "ringing in ear."

As Colon and Gebken incorporated machine learning on top of natural language processing, the new technology could pick up similar phrases and misspellings. And after the first test, in which the software met the 70% target for the whole project, and following iterations, the product hit 92% accuracy.

"It's actually one of the things I enjoy the most," Colon said. "I think it's sort of like playing with a puzzle, you know. You start playing around and trying to figure out how can I make this better."

With the final product implemented at full scale, the project should exceed the $20 million goal of savings VA leadership set forth at the start.

But projects like these would be impossible without interagency partnerships such as the PIF program, which selects highly talented classes of applicants with in-demand skillsets to join government for a year and work on project sprints.

The whole experience has not only yielded a multimillion-dollar-saving solution, but it's also helped encourage Colon to want to continue his career in government and at VA.

"I would love to stay with the VA, and if that's the case that I get to stay, that would be great," Colon said. "But if I don't, then I would like to have some time to train someone to keep updating this and keep looking after this project."

TAKEAWAY: VA found its solution by looking at programs in government. Programs to help the public sector exist everywhere, so keep an eye out for a grant or partnership that might suit your interest.

Worksheet

Building a Data Governance Plan

Data in government is of the utmost importance, carrying risks and potential. And although the seven tips discussed in this guide can help improve the overall state of data in your organization – gleaning stories from numbers and improving business processes – those are just a small corner of the overall picture.

To best use, control and secure data, organizations need their own living document to tease out management policies, specifications and lifecycles. That document is often known as a data governance plan. The checklist below will help you create a data governance plan for your agency, organization or even a subgroup or small department.

On whether data governance plans and data strategies are important to guiding agencies' future with data:

"100%. It provides the blueprint — if you will — the map for where organizations want to go."

-Lindsey Saul, Lead Analytics Strategist, DLA

QUESTIONS FOR THE PLANNING STAGE

What to do when planning policies for data management

- What type of data is being collected/ generated?
- Who is involved in data collection?
- Who "owns" the rights to the data? Are there restrictions on sharing and reuse?
- Are there applicable institutional policies on how the data is handled, shared or archived?

QUESTIONS FOR THE COLLECTION STAGE

What to do when considering data collection standards

- How will data be acquired/collected?
- What descriptive metadata standards and schema will be used?
- What are the file and data field naming conventions?
- What are the temporary storage requirements (size, cost, media)?
- How, where and how frequently will data be backed up?

QUESTIONS FOR THE PUBLISHING STAGE

What to do when the data is collected and in storage

- What repository or platform will be used to share the data?
- Who will be responsible for deposit and archiving after the project ends?
- If the data is to be shared publicly, what license should be applied?
- Are there any user restrictions?

QUESTIONS FOR THE ARCHIVING STAGE

What to do once data has completed its lifecycle

- Who is responsible for maintaining and preserving the data?
- What data should be retained?
- Where will the data be archived?
- How much storage will be needed?
- How long should the data be maintained and why?
- What are the risks for future access to the data (i.e., proprietary software or file formats, password-protected systems)?

TIPS

- Smithsonian Libraries staff can help in selecting metadata standards. Email askalibrarian@si.edu.
- For safe backup, follow the 3-2-1 rule: 3 copies on 2 different types of media with at least 1 off-site or in-cloud storage.
- Choose nonproprietary, commonly used, open formats when possible. Always include sufficient metadata with your files. Without metadata, your files can't be found or interpreted.
- For collaborative research projects, have Memorandums of Understanding that define roles and responsibilities for data for all parties involved.

Source: Smithsonian

Conclusion

Math might not have been your class, OK. But data isn't just math; it's far more.

Data can be an objective measure of success. Data can predict and foreshadow trends imperceptible to human senses. Data can power the inventions of tomorrow.

Data is all of this. And increasingly, it's a central component to daily life and weekday work, because numbers are telling stories. And those who are listening are exceling in the public sector and beyond.

ABOUT GOVLOOP

GovLoop's mission is 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 the public sector.

For more information about this report, please reach out to info@govloop.com.

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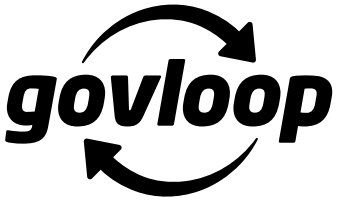

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