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The use of analytics and cloud computing as business-critical technologies is quickly changing how governments deploy IT assets to support mission deliverables. As government budgets shrink and revenue declines, using analytics and business intelligence is critical for identifying revenue opportunities and better targeting benefits and services. Analytics provide insights into data and transactions, supporting the identification of additional revenue sources, as well as preventing the issuance of unsupported or questionable benefits. Government entrepreneurs are increasingly deploying flexible, cloud-based IT architectures to integrate services without the expense and time required to merge organizations. They are forging new relationships, collaborating across traditional boundaries, and breaking through silos to get things done. With cloud computing, government organizations have access to contextual information that is complete, accurate, and up to date. Cloud coupled with analytics can transform government by providing real-time information to decision makers, regardless of their location or functional role, enabling optimal mission delivery.

Government IT decision makers are developing more sophisticated uses of analytics and cloud to improve operational economics, citizen services, and mission delivery. This White Paper presents the transformational shifts that government is undergoing, through the Delivering Public Service for the Future framework developed by Accenture, fueled by these enabling technologies, and illustrates each shift with government use cases.

IN THIS WHITE PAPER

This White Paper is sponsored by Accenture and is based on briefings and IDC Government Insights primary and secondary research. In this White Paper, IDC Government Insights presents to government CIOs and line-of-business (LOB) managers a snapshot of how government entities are utilizing analytics and cloud computing to transform the way they manage IT resources while providing better services to the operational aspects of their organization. This transformation is occurring in four structural shifts as defined by Accenture’s vision of Delivering Public Service for the Future:

1. Standardized Services to Personalized Services
2. Reactive to Insight Driven
3. Public Management to Public Entrepreneurship
IDC Government Insights believes that the underlying enabling capabilities of analytics and cloud computing continue to bring more line-of-business professionals into discussion with their IT organizations about how to improve business performance, enhance products and services, generate new revenue streams, and innovate mission delivery. This White Paper presents use cases illustrating that the deployment of analytics and cloud is about making IT more efficient and flexible in serving overall line-of-business needs.

The Four Shifts of Government Transformation

1. Standardized Services to Personalized Services

The initial stage of government transformation is characterized as a shift from providing "one size fits all" services to providing citizen-selected information and personalized services. In this shift, government proactively listens and responds to citizens in the channel they choose, from any location, and efficiently and quickly deploys critical information to citizens. The results of shifting from standardized services to personalized services include efficiently enhancing citizen-centric service provisions, increasing citizen engagement, and increasing citizen satisfaction.

New York City

As an example, New York City, with over 120 agencies, offices, and organizations, offers 4,000 different services to over 8 million residents. The city combined the 311 hotline with a new customer service center that provides a single point of entry to government for all residents. The initial release focused on triage calls across all agencies. Subsequent releases include additional support, such as service requests, resources for parents seeking information about their children's education including transportation and admissions, and 311Online. 311Online provides self-servicing problem reporting, service requests and status, and agency complaints and compliments. 311Online also provides frequently accessed information, such as school schedules, alternate side parking, and garbage pickup, as well as breaking news and alerts.

New York deployed Enhanced 311 (E311) to provide better service to customers with complex health and human services needs. E311 customer representatives identify the underlying needs of callers and match these needs to services provided by health and human services agencies and not-for-profit organizations. A caller to E311 inquiring about food stamps would also receive information regarding additional hunger-related programs such as the location of soup kitchens and school meals.
New York City (Continued)

In addition to providing trusted information to and educating citizens, recommending services based on similar profiles and/or complementary services, New York City also deploys business intelligence and analytical tools to proactively provide services to citizens and hold agencies accountable for delivering results. As an example, analyzing 311 call patterns allowed the police to find and close illegal social clubs as these patterns revealed a connection between public drinking complaints and these locations.

By centralizing complaints citywide, New York City also eliminated duplicate services through analysis and mapping areas where multiple agencies were performing the same or similar tasks. Likewise, gaps in services have been identified, such as removing noxious odors from portable toilets. The 311 data is analyzed and each agency measured on its response to every inquiry through the Citywide Performance Reporting system. This system gives city leaders a management tool that allows the city to identify neighborhoods with the highest needs and concentrate resources in these key locations, and use data to solve problems and measure results. New York City not only tailors public services to the specific needs of citizens but does so efficiently. 311 alleviates calls to 911, and 311Online has helped the city reduce costs by offering self-service through a more economical channel.\(^1\)

NYC 311’s customer satisfaction total composite score is 83, up 4 points from the baseline set in 2008, and NYC 311’s customer service representatives achieved a composite score of 91 for being highly professional, personable, and excellent communicators. Other key considerations driving these results include a higher-than-ever percentage of caller issues being resolved, caller satisfaction, and a reduction in the need for customers to make follow-up calls.\(^2\)

This use case illustrates that a proactive, focused approach to citizen services provides citizens with choices, including the ability to quickly and more cost-effectively self-serve for a majority of government-citizen interactions. The role of government shifts from managing individual organizations to enabling citizen participation in designing more personalized public services. Public service managers gain insights of citizen needs through data analytics of citizens' requests and neighborhood events and are better equipped to efficiently provide services and information at a personal level.

2. Reactive to Insight Driven

This shift is characterized by government's ability to become insight driven to increase revenue and reinvent citizen services for better outcomes with improved accuracy of eligibility determinations. Current economic conditions have caused declining revenue for government entities in many countries and at all levels of government. Governments are realizing that preventing abuse of government through fraudulent procurements, improper payments, and tax abuse is critical for generating needed revenue and ensuring that the right services and benefits are being provided to those who are eligible. The cost of tax abuse worldwide is estimated to be 5% of the world's GNP. In the United Kingdom, public sector fraud costs the government 5.8 times more than fraud in financial services. Approximately half of the deficit in Greece in 2008 could have been eliminated through a major reduction in tax evasion by wealthy citizens. India loses $314 billion annually from tax evasion. In the
United States, an estimated $3.1 trillion of federal revenue has been lost over the past 10 years due to tax evasion. Realizing that no fraud is too small to ignore, and that fraud impacts all citizens by reducing the resources available for legitimate benefits and services, governments are using analytics to manage services and collect revenue in a way that is insights driven versus reactive.

Continuing long-term budget pressures coupled with an aging population with ever-increasing needs for health and human service benefits will continue to drive the need for providing the correct benefits to the correct recipient. As government social benefits to meet the growing needs of citizens draw ever greater scrutiny due to budget pressures, government entities are redesigning processes to ensure accuracy of payments. As fraudulent schemes continue and become more complex, government will shift from being reactive to being insight driven – using new technologies and new models of collaboration to problem solve proactively, saving costs and improving the quality and efficiency of services. Applying analytics to social media usage and trends and leveraging tools to boost communication are additional emerging pathways from reaction- to insight-driven government.

Becoming insights driven can drive revenue, improve delivery of services and benefits, and help reduce fraud. Analytics helps revenue agencies enforce compliance among non-filers or non-payers, reduce administrative costs and processing burdens, and build models that identify risks in areas that include registration, licensing, collections, and audit. Agencies can save money not only by reclaiming funds that have been improperly sent out but also by preventing improper payments in the first place.
3. Public Management to Public Entrepreneurship

This shift in government transformation is characterized by moving from analysis to action and collaborating across and outside public service boundaries to partner with citizens and business to better leverage government resources and services. Government entities that make this shift boost innovation, collaboration, and effectiveness through operationalized analytics (i.e., applying the insights delivered by analytics to business processes). Value is gained and enhanced through wider use of analytics and expedited movement from analysis to action to results.

Singapore Ministry of Home Affairs and Singapore Economic Development Board

The Singapore Ministry of Home Affairs’ and Singapore Economic Development Board’s use of advanced analytics, risk analysis, relationship modeling, and video monitoring in a Safe City Testbed project illustrates this shift. This project applies computer vision and predictive analytics of video feeds across selected locations to detect public safety concerns and issue alerts to the appropriate government agency to manage crowds, traffic, public disorder, and environmental threats. These alerts allow the city to anticipate and respond better to public safety incidents and crises as they are occurring, preventing escalation, harm to people and property, and increased costs.(5)

The Aidmatrix Foundation

The Aidmatrix Foundation Inc., a non-profit organization, provides supply chain management solutions that help relief organizations procure, manage, and deliver humanitarian aid around the world. Aidmatrix migrated to the cloud for anytime, anywhere crisis management, saving 20% in IT infrastructure costs. Prior to Aidmatrix being on the Azure Cloud, deploying solutions locally and procuring the hosting at a local datacenter during a disaster would take anywhere from one to many days. After Aidmatrix migrated to the Azure Cloud, this time was reduced to just a few hours. Moving to the cloud also provided Aidmatrix with elastic and scalable capacity to support the daily operations of international aid organizations in remote locations around the world. By running its SCM solutions in the cloud, these remote operations saw dramatically improved response times for the coordination, warehousing, tracking, and logistics around the aid they deliver due to the distributed geographic coverage model the cloud provides. Its shift to the cloud enables Aidmatrix to provide fast, reliable support to humanitarian agencies that serve millions of people in times of great need.(6)
Public entrepreneurs use everything at their disposal to leverage the scale and assets of government for maximum impact in the economy. They forge new relationships, collaborate across traditional boundaries, and break through silos to get things done. Government entrepreneurs are increasingly deploying flexible, cloud-based IT architectures to integrate services without the cost and expense of merging organizations.


This shift is characterized by efficiently improving outcomes through redesigning how public services are designed and delivered. This shift requires an integrated approach combining restructuring government operations with excellent operations administration and outcome-oriented governance.

Departments of Defense

Defense agencies across the world face rapidly emerging requirements and threats that require coordination of operations and analyzing real-time data to defend against attacks (cyber and physical), collaborate with allies, and deliver humanitarian relief. The U.S. Department of Defense (DoD) relies upon its ability to analyze enormous data sets very quickly, and it has invested in Data-to-Decisions projects that focus on automated analysis techniques, text analytics, and user interface techniques to reduce the cycle-time and manpower requirements required for the analysis of large data sets. The DoD is transforming to cloud computing as a secure and timely way to store and share information and situational awareness across all defense activities, as a strategic enabler of data-rich mobile information, as a scalable way to collaborate with other agencies, and as a way to deploy analytics to produce real-time intelligence. From front-line (mobile) soldiers wearing on-body cloud-connected sensors to ensure that the right type and volume of “meals ready to eat” are provided in theater to exploring situational awareness analytics through connected sensors to alert and protect warfighters, cloud computing, mobility, and analytics support smart data-driven decisions, such as making the supply chain more accurate and self-correcting.

These aspects of cloud, coupled with the ability to strengthen cyber-resilience by providing the massive and scalable processing power required for running predictive analysis and exploratory security analysis to forestall intrusion attempts, all enhance mission effectiveness. Cloud not only provides scalable processing required for running predictive analytics and security analytics, but through cloud, government gains insights to more effectively manage assets, experience considerable cost savings, and unleash asset efficiency.
Cloud Enables Government as a Service

IDC predicts that investments in Big Data, cloud, mobility, and social business and mashups of these applications for better decision making are fueling the growth of IT. By 2020, the global IT industry will reach $5 trillion, $1.7 trillion larger than it is today. Between now and 2020, 90% of IT growth will be driven by these four technologies that today represent just 22% of all IT spending.

Analytic tools are enabling analysis that goes beyond search to the discovery of hidden relationships and patterns. Being able to understand these hidden relationships and patterns helps government shift from managing individual organizations to enabling citizen participation in designing more personalized public services integrated across agencies. Government is using analytics software to access, store, analyze, model, deliver, and track information to enable fact-based decision making and extend accountability by providing all decision makers with the right information at the right time. Cloud environments enable the self-service provisioning, dynamic pooling, and elastic scaling of IT resources across diverse workloads and user groups, leveraging virtualization, automation, and analytics as well as advanced server, storage, and network architectures.

These enabling technologies are also impacting the role of the government CIO. As CIOs shift from managing a portfolio of systems to managing a portfolio of services, their focus will shift from IT agility for piecemeal efficiency and be replaced with a focus on business agility for whole-of-mission productivity. As CIOs and other emerging roles such as chief digital officers and chief analytics officers focus on optimizing strategic, operational, and tactical decisions for their organizations, analytics and cloud are key technologies enabling this shift to data-driven decisions.

Changing Role of CIO

Governments are undergoing cultural shifts in public service design and delivery, moving from providing standardized services to better understanding the needs of citizens and providing personalized services, often more efficiently. As government entities struggle to raise and collect revenue, they are deploying analytics for insights into additional revenue opportunities and preventative measures to stop fraud, waste, and abuse. As governments shift from analyze to action, they are becoming entrepreneurs, collaborating across and outside public service boundaries to leverage government resources and services. The shift to the whole of government transformation is characterized by redesigning how government services are designed and delivered to improve outcomes. This shift requires an integrated approach of combining a restructuring of government operations with excellent operations administration and outcome-oriented governance.
As government agencies engage in the shifts that Accenture has zeroed in on, they will drive a profound change in how IT solutions are purchased. IDC research indicates that in 2013, 58% of new IT investments involve direct participation by line-of-business executives, and by 2016, that number will be 80% of new IT investments, with LOBs taking the lead decision-making role in half or more of these investments.

Analytics and cloud become key elements of CIOs' strategies and success for shifting from managing information to driving innovation throughout their organization. Analytics assist CIOs in focusing on optimizing strategic, operational, and tactical decisions for their entity. Cloud services are an essential tool for addressing the biggest demands of IT (speed, cost, scale) and the most innovative needs of line-of-business managers. As data-driven decisions are extended across the enterprise, CIOs and line-of-business/program managers can deploy critical measures of success related to mission outcomes.

**Discussion of Accenture**

With today’s heightened sense of fiscal responsibility, the public sector's push to cut costs, capture owed revenue, and boost performance is stronger than ever. High performance hinges on the ability to gain insights from data insights that organizations need to make better decisions faster. Accenture helps government clients worldwide harness the power of analytics to improve processes and achieve better outcomes. From strategy to execution, Accenture provides a blend of experience, innovative tools, and alliances with leaders in business analytics software and services to inform real-time decisions. Robust analytics capabilities give government organizations powerful tools to dig deep and discover the hidden value of data, make informed decisions, and deliver effective services that improve outcomes for citizens while reducing costs. Accenture analytics also provide comprehensive and detailed reports that combine insight and help drive value within agencies.

Accenture views cloud as an integrating technology, combining analytics and Big Data to create insights, mobility solutions to connect people, processes to enhance decision making, and security tools to provide exploratory analysis to help forestall intrusion attempts. Accenture provides a cloud platform for government based on recognized industry infrastructures, platforms, and services. Accenture is investing heavily in cloud, having recently announced a $400 million investment in professional services capabilities including training, building new and existing offerings, and developing assets across the cloud stack of infrastructure, platform, and services.

Deep industry knowledge, ecosystem relationships, and experience from a wide range of integration projects have informed Accenture's view of "delivering public service for the future" and enabled the creation of differentiated solutions that address governments' unique issues. Accenture provides the capability to orchestrate provisioning, integration, and management of cloud infrastructure, platforms, and services, providing government with a "brokered services" approach.

Accenture provides government organizations the ability to build out cloud from legacy IT infrastructure systems and integrate with preapproved, pre-certified public and private cloud providers and provision with multiple deployment options based on recognized industry infrastructures, platforms, and services.
A key capability that Accenture offers is cloud labs for activities such as pilot testing and test as a service. Lab testing enables government to test their cloud solutions, with full scalability and an entire system environment such as ERP, without risk. Lab testing quickly demonstrates system capability and operational results to government clients. Accenture is also leveraging its commercial software, such as financial management services, to provide government with proven industry solutions, reducing the risk and increasing the speed of implementation. The firm is an active participant in the European Cloud Partnership, working with public sector leaders to establish strategic options to turn cloud into an engine to expand economic opportunity, innovation, and cost-effective delivery of public services.

**Challenges and Considerations**

Government entities continue to face a myriad of choices related to consuming the growing number of public and hosted private cloud services that exist in the market, and then integrating those cloud services with their existing IT operations. Systems integrators such as Accenture still have work to do in educating government organizations on cloud and their cloud capabilities such as sophisticated service-oriented architecture and workload management, provisioning, and end-to-end performance optimization.

Cloud is maturing, and solutions are developing rapidly. As a broker of pre-certified and compliant solutions, Accenture must stay on top of the cloud vendor ecosystem, continue to focus on key alliances including emerging technology vendors, and assemble solution components that are pre-certified and compliant for government use, all while strengthening and building teaming relationships with existing cloud providers.

Government procurement processes have tended to focus on purchasing hardware based on tightly specified requirements versus focusing on the process of integrating analytics and cloud computing into business outcomes. As Accenture leverages best practices in the commercial sector to bring value to government, the company is helping government focus on the "bigger picture" trend of analytics and cloud to boost operational performance and leverage ROI tools developed for government to help CIOs address the most pressing demands of line-of-business decision makers.

IDC Government Insights has observed that government line-of-business decision makers are beginning to perceive cloud as providing speed, scale, and an affordable cost to support their programs and work, as well as a nice variety of business solutions to transform the government. Line-of-business executives and program managers have a greater stake in the success of analytics and cloud adoption within their organization and are becoming more "hands on" in buying decisions regarding these technologies. Systems integrators such as Accenture should continue to refocus the business model in approaching government, from a traditional approach of server, storage, and networking to an approach based on converged systems and the emerging cloud-based technologies such as analytics for better decisioning and mobile content consumption and creation.
Essential Guidance

Successful adoption of analytics and cloud computing will help government make the shifts to the whole of government transformation. Government CIOs should perform an honest assessment of existing resources and infrastructure, and their ability to engage in these four shifts. Successful transformation requires a business view and includes not only technology adoption but also key changes that must occur in people. In addition to upgrading their architecture, government entities should also take stock of the skills required to move from being centered on technology, maintenance, and capacity planning to more of a line-of-business relationship and service-level audit set of capabilities. Citizen data must be aggregated across related programs, departments, and agencies to provide a holistic view to more effectively plan and deliver needed government services and information; help eliminate fraud, abuse, and errors; and improve the efficiency and effectiveness of delivering services and the long-term success of social outcomes.

In addition to an internal evaluation, government should evaluate the systems integration skills and experience of prospective systems integrators even if initial projects are only cloud strategies or pilot programs. Integration skills become increasingly important for migrating existing legacy systems to newer cloud services and may indicate the vendor's ability to assess the complexity of building and implementing cloud services.

A key advantage of cloud services for government should be the ability of organizations to shift IT resources from maintenance to new initiatives that when coupled with analytics and mobility solutions can lead to new levels of services, citizen satisfaction, revenue, and mission operational performance and efficiencies. Consider selecting vendors that understand that cloud services need to be considered in the context of analytics, mobility, and social technology to envision what these technologies can do – singularly and in combination – for your business.

Choose systems integrators that understand and have expertise in the four structural shifts in transforming the way you manage IT resources while providing better services to the operational aspects of your organization. Vendors should also provide examples of success in assisting government clients not only in delivering IT at a lower cost but also in making IT more flexible in serving overall line-of-business needs.

Perhaps the most important work that a government CIO can do is to collaborate across the organization to envision and develop next-generation technologies that include cloud and other emerging technologies such as Big Data and analytics. The underlying capabilities of these enabling technologies continue to bring more line-of-business professionals into discussion with their IT organizations about how to improve business performance, enhance products and services, generate new revenue streams, and innovate mission delivery.
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