

Open Data and Open Government

Information is a valuable national resource and a strategic asset to the Federal government, its partners, and the public. In order to ensure that the Federal government is taking full advantage of its information resources, executive departments and agencies...must manage information as an asset throughout its life cycle to promote openness and interoperability, and properly safeguard systems and information.

OMB Open Data Policy – Managing Information as an Asset¹

Summary

 Stakeholders	Responsibilities and governance are widely distributed in this policy area. Some initiatives are led by the Federal CIO, while others come directly from The White House. GSA manages Data.gov and Project Open Data.
 Impact	To date, over 185,000 government datasets have been posted on Data.gov. However, it can be difficult to measure the broader economic and civic impacts of open data and open government efforts.
 Risk	While most CIOs reported interest in open government and open data initiatives, many expressed challenges in obtaining resources, navigating conflicts with existing policies, and balancing priorities against other efforts such as infrastructure modernization and cybersecurity.
 Policy	Efficiently managing government data and information can increase operational efficiencies, reduce costs, improve services, and better safeguard personal information. Making information resources accessible, discoverable, and usable by the public can help fuel entrepreneurship, innovation, and scientific discovery.

Open Data and Open Government

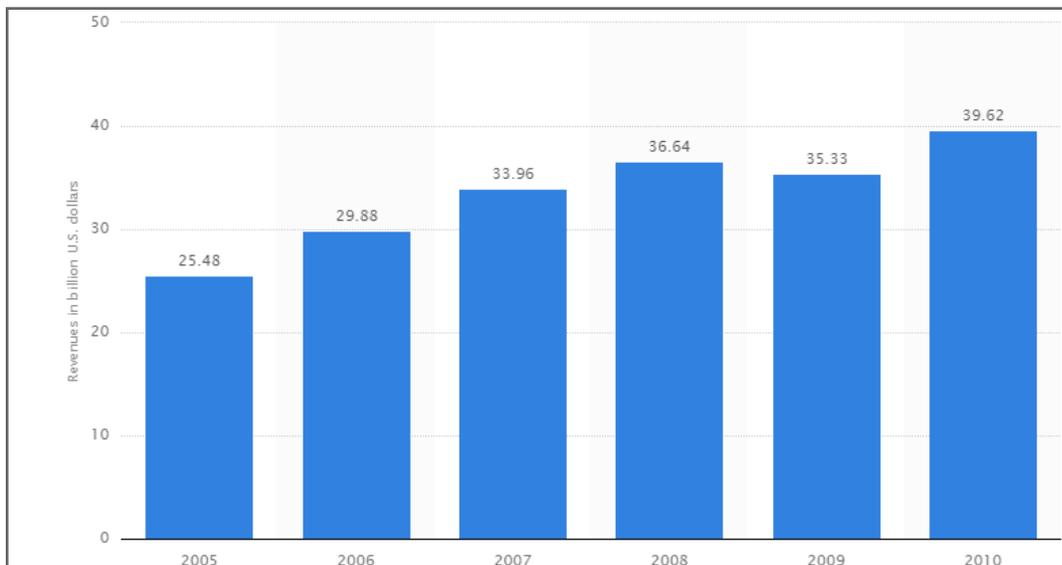
Overview

The Federal government creates and collects a wide variety of valuable data and has long sought to provide citizens with the right and ability to access this information.² On the first full day of the Obama Administration, the President signed the Memorandum on Transparency and Open Government that recognizes information generated in the Federal government as a national asset. The memo established three central principles that set the tone for future efforts in this area: (1) transparency; (2) public participation; and (3) collaboration.³ Making information and data accessible, discoverable, and usable by the public can transform citizen-facing services and help fuel entrepreneurship, innovation, and scientific discovery.⁴ For example, the government's release of weather data and the Global Positioning System (GPS) allowed for the creation of navigation

systems (see Figure C1) and weather forecasting that fundamentally changed citizens lives and had a tremendous impact on the American economy.

Key to achieving both of these goals is the effective and efficient management of government information. Improving the management of government data and information can increase operational efficiencies, reduce costs, improve services, and better safeguard personal information. Furthermore, improved information management can allow for the efficient release and reuse of this data by others outside of an agency. The next section will discuss several of the strategies and initiatives that the Federal government has pursued to improve how agencies manage information and to provide more data to the public.

Figure C1: GPS Equipment Revenue in the United States between 2005 to 2010⁵



Policy Evolution

Prior to 2009, government-wide efforts to bring government data into the public sphere were largely focused on meeting the requirements of the E-Government Act, which included establishing a public domain directory of Federal websites. This period also saw the creation of websites supporting a single business function or dataset (e.g., Regulations.gov in 2003),⁶ and websites created as a result of other legislation (e.g., USASpending.gov in 2007).⁷ Later efforts included the increased sharing of public resources which could become platforms for research, entrepreneurship, and innovation (e.g. the release of structured, machine-readable data pertaining to weather and climate).⁸ In 2016, the primary government-wide strategy shifted “to focus more broadly on enterprise data governance and to emphasize the message that Open Data is an output of good data management and critical to success in areas like cybersecurity, customer service, and internal data-driven decisionmaking.”⁹

The recurring theme throughout all of these efforts was to improve transparency, accountability, and information management while providing the public with increased access to government information.

Key Initiatives

- 2009** **Transparency and the Open Government Directive**
 Lays out open government principles of being transparent, participatory, and collaborative. Establishes the Open Government Dashboard. Requires agencies to post information online in open formats, and to identify three high-value datasets to post on Data.gov.
- 2009 – present** **Data.gov and the IT Dashboard**
 Citizen-facing websites designed to increase transparency and share government data directly with the public.
- 2011 – 2015** **Open Government National Action Plans**
 Launches the “We the People” online petitions platform, promotes public participation, modernizes records and information management, improves FOIA administration.
- 2012** **Digital Government Strategy**
 Directs the development and adoption of new open data, content, and web API policies. Requires agencies to identify two major customer-facing systems with information that can be exposed to the public via web-based APIs.
- 2013** **Open Data Policy – Managing Information as an Asset**
 Requires standard machine-readable and open data formats, supports interoperability and information accessibility, establishes the Enterprise Data Inventory and public data listing.
- 2014** **Open Data Action Plan and CAP Goals**
 Mandates collaboration with public and civil actors to identify and prioritize the release of new open data sets, incentivizes public outreach efforts such as challenges and industry roundtables, focuses Presidential Innovation Fellows on data innovation projects.

2009

Transparency and the Open Government Directive

On President Obama's first day in office he issued a Transparency and Open Government memorandum based on three principles: transparency, public participation, and collaboration.¹⁰ Later that year, an Open Government Directive was issued that, among other things, required the appointment of a senior agency official accountable for the quality of information presented via public-facing websites.¹¹ In addition, the Open Government Directive tasked agencies with creating an Open Government Plan, publishing agency information online in "open formats", and gave agencies a specific target of publishing three high-value data sets which were not previously publicly available, within 45 days. OMB later renewed agencies' focus on these approaches by updating instructions for Agency Open Government Plans in 2016.¹²

Transparency and the Open Government Directive	
Key Strengths	<ul style="list-style-type: none"> • Jump-started the movement to release government datasets • Provided high-level executive support for government-wide efforts to improve transparency and accountability • Shared performance data with the public through web-based dashboards
Key Challenges	<ul style="list-style-type: none"> • Like many other initiatives, raised expectations for agencies without providing additional resources • The focus of the initiative was frequently on counting the number of shared datasets rather than the data quality, value, or impact of released datasets
Policy Impact	<ul style="list-style-type: none"> • Began the discussion of the potential value of open government and open data to customers

2009-present

Data.gov and the IT Dashboard

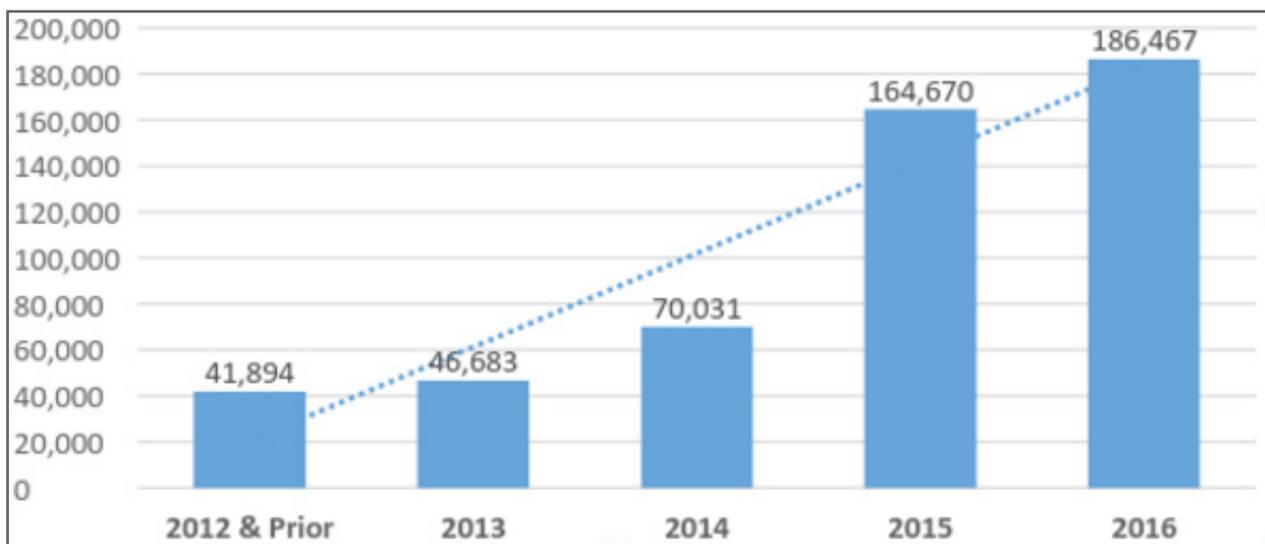
The Obama Administration launched several additional initiatives to improve the transparency of government spending on major IT investments and to provide a one stop shop for government datasets ranging from census data to public health information.

Data.gov: Data.gov, launched in May 2009, made an early push to publicize a broad range of agency datasets, ranging from consumer complaint data to information about 911 emergency service areas.¹³ Currently, Data.gov lists 14 different sectors for which data is available.¹⁴ However, in many cases the datasets are not available in open formats or easily machine-readable (e.g., PDF versus XML) or are not updated more often than once per year, limiting the usefulness of the data provided on the site.¹⁵ Finally, Agencies maintain their data listings (publicly) and Enterprise Data Inventory (usually not posted publicly) as structured data files which can be read by Data.gov and OMB. The “impact” section of the Data.gov website includes a number of anecdotal examples of how these datasets are being used by private sector companies and the public.¹⁶

Data.gov	
Key Strengths	<ul style="list-style-type: none"> Provides a one stop shop for government datasets Made government data more easily discoverable and searchable Supported the Obama Administration’s open government objectives
Key Challenges	<ul style="list-style-type: none"> Provides a one stop shop for government datasets Made government data more easily discoverable and searchable Supported the Obama Administration’s open government objectives
Policy Impact	<ul style="list-style-type: none"> Signaled a new government-wide approach to opening up data to the public Created a public-facing portal for government datasets to spark innovation (e.g., weather data)

Open Data and Open Government

Figure C2: Data Sets Available on Data.gov increased by over 400% from 2012 - 2016¹⁷



IT Dashboard: In 2009, OMB publicly launched the Federal IT Dashboard with information as to whether major IT investments were on schedule and within budget, as well as an assessment by the agency CIO of the investment’s overall level of risk.¹⁸ Currently, the IT Dashboard displays cost, schedule, and performance data for over 770 major federal IT investments accounting for \$81.5 billion in IT spending for FY 2016.

Federal IT Dashboard	
Key Strengths	<ul style="list-style-type: none"> Improves transparency into major IT investments Makes data available so the public could see how agencies spend taxpayer dollars In 2015, the Dashboard began displaying whether agencies use agile or incremental development practices on IT projects
Key Challenges	<ul style="list-style-type: none"> Variances both over budget and under budget are reported as negative conditions (as well as ahead of schedule and behind schedule), leading to some confusion The IT Dashboard draws from data that is self-reported by agencies, leading to questions about data quality and completeness Not all agencies have provided detailed, regular, up-to-date “Evaluations by Agency CIO” for all major investments
Policy Impact	<ul style="list-style-type: none"> The IT Dashboard represents a major shift away from the static, document-driven approaches, toward live data visualizations The public can download and analyze the data themselves, increasing citizen engagement and oversight The IT Dashboard and TechStat sessions helped agencies, OMB, and Congress identify at-risk IT projects and implement corrective measures

2011 – 2015

Open Government National Action Plans

In 2011, as part of the international Open Government Partnership, the Obama Administration launched the first in a series of National Action Plans (NAPs).¹⁹ Many of the initiatives in the NAPs focused on enabling public participation and citizen engagement in government (e.g., the “We The People” online petitioning platform). The initiatives proposed in the last NAP (2015) continue to be implemented today and are connected with a number of other open government, open data, and citizen-facing digital service strategies, such as the CAP Goals.²⁰

The special focus placed on improving Challenge.gov is an example of a NAP initiative from 2015. The Challenge.gov portal is designed to publish innovative opportunities for the public to engage in providing solutions to government challenges (e.g., providing veterans with better access to health services).²¹ The NAP’s focus on Challenge.gov centered around making it easier for the average person to find the prizes and challenges that interested them by increasing both the accessibility of the available data and the number of participating agencies.

Open Government National Action Plans	
Key Strengths	<ul style="list-style-type: none"> • Provided additional support from the Obama Administration for open government efforts, both in project support and public communications • Created synergies with Administration focus on increasing government usage of digital tools and services
Key Challenges	<ul style="list-style-type: none"> • Makes a number of “grand challenge” commitments where results are difficult to track • Engagement of offices outside of CIO organization have made it sometimes difficult for CIOs to focus on open government and open data efforts
Policy Impact	<ul style="list-style-type: none"> • Led to the development of the “We the People” online petitioning platform • Improved the “Challenge.gov” platform to engage the public in providing solutions to solve government’s “mission-centric” problems • Initiated the development of the Federal Source Code Policy on reusable and open source software

Open Data and Open Government

NAP Grand Challenge Commitments

- Improving Public Services
- Increasing Public Integrity
- More Effectively Managing Public Resources
- Creating Safer Communities
- Increasing Corporate Accountability

2012

Digital Government Strategy

In May 2012, the Administration launched a Digital Government Strategy that sought to improve the delivery of citizen-facing digital services.²² A primary focus of the strategy was to make the vast quantities of government data more easily available to the public.²³

The strategy’s data-driven components emphasized both interoperability and accessibility. This involved the application of metadata tagging in order to make published datasets more easily searchable and the adoption of an API-first mindset to allow developers to create highly accessible mobile applications to draw upon those datasets. In addition, pursuant to the Digital Strategy, Data.gov was expanded to include a web API catalog for all Federal agencies to centrally aggregate agency APIs. Since August of 2013, the public has been able to access the features of these APIs in order to receive automatic data feeds. These feeds are particularly useful for IT software developers.²⁴ In addition, agencies were required to:

- Ensure all new IT systems follow the open data, content, and web API policy and operationalize agency.gov/developer pages.
- Engage with customers to identify at least two existing major customer-facing services that contain high-value data or content as first-move candidates to make compliant with new open data, content, and web API policy.
- Make high-value data and content in at least two existing major customer-facing systems available through web APIs.

- Apply metadata tagging and publish a plan to transition additional high-value systems.
- Establish new websites which hosted human-readable (HTML) and machine-readable (JSON) descriptions of their progress implementing each action and milestone.²⁵

While there were a number of clear implementation outcomes that came from the Digital Government Strategy (e.g, the development of a web performance guidance²⁶ and customer experience metrics²⁷), there is no available information about the overall impact of these initiatives and their success.

Digital Government Strategy	
Key Strengths	<ul style="list-style-type: none"> • Provided clear guidance (e.g., identify 2 high-value data sets) • Emphasized open data concepts such as accessibility and interoperability through metadata tagging
Key Challenges	<ul style="list-style-type: none"> • The strategy did not contain metrics to assess quality or accuracy of information released. As a result, it is unclear if agencies actually fulfilled the requirements of the policy
Policy Impact	<ul style="list-style-type: none"> • PortfolioStat reviews in 2013 and 2016 included the number of APIs developed by each agency in its key performance indicators (KPIs) • Agency compliance with the creation of the HTML and JSON files was never measured in PortfolioStat KPIs

2013

Open Data Policy – Managing Information as an Asset

On May 9, 2013, President Obama issued an Executive Order titled “Making Open and Machine Readable the New Default for Government Information” with the simple principle that “openness in government strengthens our democracy, promotes the delivery of efficient and effective services to the public, and contributes to economic growth.”²⁸ That same day, OMB issued an Open Data Policy highlighting the need to “manage information as an asset” and to “improve the discoverability and usability of existing datasets by making them “open.”²⁹ Under the Open Data Policy agencies were directed to:

- Use machine-readable and open formats;
- Use data standards;
- Ensure information stewardship through the use of open licenses;
- Use common core and extensive metadata;
- Build information systems to support interoperability and information accessibility;
- Create and maintain an Enterprise Data Inventory;
- Create and maintain a public data listing; and
- Create a process to engage with customers to help facilitate and prioritize data release.

A significant component of this policy was the establishment, maintenance, and use of an Enterprise Data Inventory. This requirement is based on the concept of if you cannot inventory your asset, you cannot manage or protect your asset.

OMB and the Office of Science and Technology Policy (OSTP) also launched Project Open Data as a clearinghouse for definitions, best practices, tools, case studies, and community interaction.³⁰ While obstacles to widespread adoption remain (e.g., limited agency budgets, competing policy priorities),³¹ the policy helped shift agency focus in open data from simply releasing datasets to improving dataset usability.

Additionally, the Project Open Data Dashboard was launched to track metrics and OMB comments related to the completeness, accuracy, and use of agency open data materials across the following goals: Enterprise Data Inventory, Public Data Listing, Public Engagement, Privacy & Security, Human Capital, and Use & Impact.³² Many of these metrics also appear at a government-wide aggregate level in the Open Data CAP Goal on Performance.gov.

Open Data Policy – Managing Information as an Asset	
Key Strengths	<ul style="list-style-type: none"> • Reemphasized that data should be “open” by default • Expanded the meaning of “open data” to encourage more accessible and usable formats, licenses, and descriptions of datasets • Launch of Project Open Data
Key Challenges	<ul style="list-style-type: none"> • Efforts such as the Enterprise Data Inventory introduced a high degree of burden (cost), making it difficult for agencies to fully implement without additional support • Open data efforts in some cases have a tension with existing policies
Policy Impact	<ul style="list-style-type: none"> • It is difficult to measure the impacts of open data policies because it is hard to quantify concepts such as data usability, transparency, and downstream innovation • Focused agency attention on the usability of datasets released • The Project Open Data Dashboard is used to publicly track a number of metrics for open data efforts

2014

Open Data Action Plan and CAP Goals

Open Data Action Plan. In May 2014, the Federal government released the Open Data Action Plan which summarized many of the Federal government’s accomplishments to date, while committing to new initiatives.³³ These commitments included expanding agencies’ use of “Data Jams” (workshops) and “Datapaloozas.”³⁴

Numerous other approaches were also promoted by the Action Plan, including sector-specific feedback sessions with groups outside of government, incentive prizes, challenges, open-data-dedicated Presidential Innovation Fellows, appropriate licenses, and a list of detailed enhancements to specific datasets and data programs. Agencies were also tasked with a greater level of outreach to public, civil society, and private organizations in order to solicit input on what datasets should be prioritized for release. This effort was intended to increase both the usefulness of released government datasets and to spur additional opportunities for innovation within the private sector.³⁵

Open Data CAP Goal. In 2014, the Open Data Cross-Agency Priority (CAP) goal was created to provide more comprehensive implementation and oversight mechanisms for open government and information management efforts.³⁶ Progress on these actions and measures have been published quarterly on the publicly-available Performance.gov website.³⁷ Agency progress has also been evaluated through the Project Open Data Dashboard, but those measures are not tightly integrated with other IT management processes (e.g., PortfolioStat). Summarizing performance across many of the aforementioned

strategies and initiatives, the CAP goal includes many of the metrics calculated on Project Open Data Dashboard at a government-wide level, in addition to updates from related initiatives. For example, one sub-goal describes actions agencies have taken to improve the overall usage of government datasets through outreach activities such as Datapaloozas, code-a-thons, and roundtables.

Open Data Action Plan and CAP Goals	
Key Strengths	<ul style="list-style-type: none"> • Focused on public outreach through innovative techniques such as incentive prizes and “Datapaloozas” • Introduced a more comprehensive oversight mechanism for open data efforts through Performance.gov
Key Challenges	<ul style="list-style-type: none"> • Many Open Data CAP sub-goals have shown a lack of agency progress or a decline from baseline levels³⁸
Policy Impact	<ul style="list-style-type: none"> • 17% of agencies reported holding a datapalooza or other public outreach data event in FY 2016 Q3³⁹

Metrics and Oversight

Primary Objective Emphasized in Metrics and Oversight

The primary objective of OMB's efforts in open data and open government has been to improve transparency, enable external innovation based on government resources, and increase public engagement. Because of the nature of these goals, directly measuring outcomes can be difficult. Therefore, OMB adopted a series of qualitative anecdotes as well as tracking key outputs of efforts along the way.

Examples

Early efforts focused on counting datasets. Over time, OMB introduced more nuances to this approach, focusing on "high priority" datasets and developing a baseline of all datasets managed internally at each agency (enterprise data inventories). This count of datasets or percentage of datasets released became a KPI used in a number of years of PortfolioStat. Additionally, OMB established an Open Data CAP Goal which emphasized the importance of agency outreach to external organizations to understand how they are using publicly released datasets. Anecdotes based on dataset usage and counts of hackathon and Datapalooza events held by agencies became important parts of tracking public engagement. Finally, the Project Open Data Dashboard evaluates each agency based on dozens of calculations drawn from their public datasets, enterprise data inventories, and other agency reporting, such as how many bureaus at the agency had shared datasets. However, between PortfolioStat, the Open Data CAP Goal, and the Project Open Data Dashboard, there was no single place or metric to evaluate the complete picture of the government's progress on open data and open government across these different efforts and priorities.

Lessons Learned

After the launch of Data.gov, OMB focused on the number of datasets released by each agency. It was quickly realized, however, that additional context to understand such a count was an important part of the story. With M-13-13, OMB required agencies to establish a baseline of all unreleased datasets against which the public count could be compared.

Realizing that simply creating more datasets may not match the objective of the policy area, agencies began to focus on soliciting and measuring feedback from the public through electronic means on their webpages or through in-person events such as hackathons and Datapaloozas. Though this was motivated by a recognition that measuring the impact and value of datasets would be important, these metrics still focus on counting events rather than gathering satisfaction and results information from external users of agency datasets.

These metrics have been augmented by anecdotes about private sector uses of public data posted to Data.gov's "Impact" page. These anecdotes, however, are difficult to compare between agencies, do not always make clear what the contribution of public data was to overall value, or how the anecdote connects to data available on Data.gov or agency websites. The Federal government is still looking for effective ways to measure the value and impact of released datasets, realizing that it is difficult to translate these concepts into quantifiable impact.

Agency Observations and Findings

Although agency CIOs see value in open government and open data initiatives, they often have to focus their limited resources on other policy goals that may be more urgent. These efforts are further complicated by a large group of stakeholders that drive government-wide open government and open data efforts both simultaneously and independent of each other. Additionally, there are a number of existing laws and policies that can sometimes directly conflict with the principles of openness in government, including those dealing with records management, public information access, and cybersecurity. This has led to some uncertainty in agencies about the prioritization, measurement, and impact of open government and open data policies and initiatives.

FINDING #1

Agency CIOs Expressed Difficulty in Dedicating Resources to Open Government and Open Data Initiatives.

While many CIOs stated that they support the principles behind open government and open data efforts, they face challenges dedicating resources to these initiatives. Given limited budgets, support of mission activities takes precedence (e.g., modernizing agency IT infrastructure, strengthening cybersecurity protections). Finally, there are limited consequences should an agency decide not to implement open government initiatives, especially compared to the consequences from a public data breach or a disruption in network services.

Everyone loves the concepts of open government and open data, but we don't get extra funding for it. To accurately collect this data requires hundreds of millions of dollars..."

— Agency CIO

FINDING #2

The Broad Range of Stakeholders Complicates Governance.

Open government and open data tools and applications are widely available and accessible by stakeholders outside the traditional CIO community. Program offices, mission leads, and other agency officials can independently carry out open data initiatives, without needing the support of the agency CIO organization.

Our enterprise architect is working on open data efforts, and we release limited public data sets... but I'm not personally focused on it. Right now, open data is not a high-value initiative for our agency, but I think there will be more focus on this policy area in the future.

— Agency CIO

In addition, GSA, OSTP, and the White House lead numerous open government and open data efforts, often without significant engagement from the OFCIO or the CIO Council.

Implementation of the Digital Accountability and Transparency Act (DATA Act)⁴⁰ of 2014 follows a similar pattern. While this statute contains a significant number of IT-related open data provisions relevant to CIOs, current efforts are being driven primarily by the CFO community.

The ownership of open government and open data initiatives outside of the agency CIO organization can lead to conflicts between agency leadership and the CIO. Overall, the wide range of stakeholders can make it difficult for CIOs to engage in these efforts and ensure compliance with broader agency IT requirements (e.g., cybersecurity, privacy) and other policy initiatives. In addition, the recent appointments of Chief Data Officers at many agencies only adds to the complexity.

Key Organizations in Government-wide Open Government and Open Data Initiatives	
Lead Organization	Key Initiatives and Projects
OMB - Office of the Federal Chief Information Officer (OFCIO)	Open Government Directive, Open Data Policy, IT Dashboard, Open Data CAP Goal with GSA and OSTP
General Services Administration (GSA)	Data.gov, Project Open Data, Challenge.gov, Open311, Open Data CAP Goal with OMB and OSTP
The White House Office of Science and Technology Policy (OSTP)	Open Government National Action Plans (NAPs), Roundtables, Datapaloozas, "My Data" Initiatives, ⁴¹ Open Data CAP Goal with OMB and GSA
The White House Office of Administration	We The People
OMB - Office of Federal Financial Management (OFFM)	Digital Accountability and Transparency Act (DATA Act)

FINDING #3**Existing Policies and Statutes Can Conflict with Open Data Efforts.**

Existing statutes and policies such as the Paperwork Reduction Act (PRA) of 1995, the Freedom of Information Act (FOIA) of 1966, the Privacy Act of 1974, and various records management policies and requirements were established prior to the advent of modern technologies and did not necessarily account for the ease of collecting, sharing, and connecting data sources in a digital government. This tension can complicate agency implementation of open data initiatives. For instance, agency CIOs expressed concern that the release of datasets could inadvertently create vulnerabilities or expose confidential information. Furthermore, as more datasets are released, new challenges can emerge – such as the “mosaic effect”, which allows sensitive information to be derived from the combination of multiple public datasets, despite the fact that each individual piece of data does not contain sensitive information. Ultimately, CIOs are struggling to balance adherence to legacy policies and laws in the context of open government and open data efforts.

FINDING #4**Outcomes of Open Government and Open Data Efforts Can Be Hard to Gauge.**

Another challenge to the adoption of open government and open data initiatives is the difficulty in directly assessing their economic and civic impacts.⁴² It is inherently difficult to directly measure outcomes as well as broader economic and social impacts of releasing data sets and other government information. As such, the primary focus has been on measuring leading indicators (e.g., number of datasets released on Data.gov) and highlighting success stories and anecdotes across the public and private sectors.⁴³ While open data progress is tracked via CAP Goals and various Government-wide public-facing websites such as the Project Open Data dashboard, they have not been a primary focus of PortfolioStat. As such, CIOs do not see measurement of these efforts as a priority for OMB, even as the number of requirements and initiatives in this policy area has expanded.

Notes

1. M-13-13. Open Data Policy – Managing Information as an Asset. 5/9/2013. <https://www.whitehouse.gov/sites/default/files/omb/memoranda/2013/m-13-13.pdf>
2. One of the earliest and most well-known efforts in this area is the Freedom of Information Act (FOIA) of 1966, which provides the public with access to the records of their government leaders. 5 U.S.C. § 552. Public Information; Agency Rules, Opinions, Orders, Records, and Proceedings. 2012 edition. <https://www.gpo.gov/fdsys/pkg/USCODE-2012-title5/html/USCODE-2012-title5-partI-chap5-subchapII-sec552.htm>
3. President Barack Obama. “Transparency and Open Government”. 1/21/2009. https://www.whitehouse.gov/the_press_office/TransparencyandOpenGovernment
4. According to a 2013 private sector report, “Open data can help unlock \$3 trillion to \$5 trillion in economic value annually across seven sectors.” The diverse sectors listed were: “Education, Transportation, Consumer products, Electricity, Oil and gas, Healthcare, and Consumer finance”. McKinsey Global Institute. “Open data: Unlocking innovation and performance with liquid information”. 10/2013. <http://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/open-data-unlocking-innovation-and-performance-with-liquid-information>
5. Source: NPD Group. “Statistics”. <https://www.statista.com/statistics/199890/revenues-of-gps-equipment-in-the-united-states-since-2005/>
6. Regulations.gov was created pursuant to Section 206 of the E-gov Act of 2002. Public Law 107-347. The E-Government Act of 2002. 12/17/2002. <https://www.gpo.gov/fdsys/pkg/PLAW-107publ347/pdf/PLAW-107publ347.pdf>. The site makes all proposed rules available online in a single location and allows the public to comment on proposed rules. As of 11/1/2016, the five most-commented regulations posted on Regulations.gov had received 704,531 public comments since the beginning of the year. Source: Regulations.gov. “Site Data.” <https://www.regulations.gov/siteData>
7. USASpending.gov was created under the Federal Funding Accountability and Transparency Act of 2006. Public Law 109-282. Federal Funding Accountability and Transparency Act of 2006. 9/26/2006. <https://www.gpo.gov/fdsys/pkg/PLAW-109publ282/pdf/PLAW-109publ282.pdf> and provides details regarding spending on Federal contracts and grants. The site was recently transferred from GSA to the Department of the Treasury pursuant to the Digital Accountability and Transparency Act (DATA Act). The DATA Act also greatly expanded the information contained on USASpending.gov to include nearly all federal expenditures. Public Law 113-101. Digital Accountability and Transparency Act of 2014. 5/9/2014. <https://www.gpo.gov/fdsys/pkg/PLAW-113publ101/content-detail.html>
8. In one example of data-driven entrepreneurship and innovation, the Climate Corporation utilizes data from the National Oceanic and Atmospheric Administration, National Weather Service, U.S. Geological Survey, Natural Resources Conservation Service, National Aeronautics and Space Administration. Source: Open Data 500. “Climate Corporation”. <http://www.opendata500.com/us/climate-corporation/>
9. Performance.gov. “Cross-Agency Priority Goal: Open Data”. FY 2016 Q3 Update. https://s3.amazonaws.com/app_performance_prod_ahwdtloxscy/s3fs-public/FY%2016%20Q3%20Open%20Data%20FINAL.pdf
10. President Barack Obama. “Transparency and Open Government”. 1/21/2009. https://www.whitehouse.gov/the_press_office/TransparencyandOpenGovernment
11. M-10-06. Open Government Directive. 12/8/2009. https://www.whitehouse.gov/sites/default/files/omb/assets/memoranda_2010/m10-06.pdf
12. M-16-16. 2016 Agency Open Government Plans. 7/14/2016. <https://www.whitehouse.gov/sites/default/files/omb/memoranda/2016/m-16-16.pdf>
13. Peter Orszag. The White House Blog. “Democratizing Data”. 5/21/2009. <https://www.whitehouse.gov/blog/2009/05/21/democratizing-data>
14. These sectors are: Agriculture, Business, Climate, Consumer, Ecosystems, Education, Energy, Finance, Health, Local Government, Manufacturing, Ocean, Public Safety, and Science & Research. Source: Data.gov. “Browse Topics”. <https://www.data.gov/>
15. Data.gov has 36,529 (or 20%) of the total of 186,467 datasets are in PDF format. Source: Data.gov. “Data Catalog”. http://catalog.data.gov/dataset#sec-res_format
16. Data.gov. “Impact”. <https://www.data.gov/impact/>
17. Source: Data.gov. “Metrics”. <https://www.data.gov/metrics>
18. IT Dashboard. “Cost Savings”. <https://itdashboard.gov/drupal/cost-savings>
19. Whitehouse.gov. “Open Government National Action Plans”. Retrieved 11/4/2016. <https://www.whitehouse.gov/open-partnership/national-action-plans>
20. Anecdotal data (success stories, initiative highlights) can be found on Data.gov (<http://www.data.gov/impact/>). Additional measures can be found on Project Open Data Dashboard and the quarterly CAP Goals updates as reported on Performance.gov
21. GSA, in consultation with OSTP, developed the site and administers the approximately 700 challenges currently available. Challenge.gov. “Newest Challenges”. <https://www.challenge.gov>.
22. Whitehouse.gov. “Digital Gov”. <https://www.WhiteHouse.gov/DigitalGov>. See also, “Digital Government: Building a 21st Century Platform to Better Serve the American People”. 5/23/2012. <https://www.whitehouse.gov/sites/default/files/omb/egov/digital-government/digital-government.html>
23. In addition to data and APIs, the strategy also emphasized mobile device usage and improving development to support the mobile experience.
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