



Liberating data for public value: The case of Data.gov



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ABSTRACT

Public agencies around the globe are liberating their data. Drawing on a case of Data.gov, we outline the challenges and opportunities that lie ahead for the liberation of public data. Data.gov is an online portal that provides open access to datasets generated by US public agencies and countries around the world in a machine-readable format. By discussing the challenges and opportunities faced by Data.gov, we provide several lessons that can inform research and practice. We suggest that providing access to open data in itself does not spur innovation. Specifically, we claim that public agencies need to spend resources to improve the capacities of their organizations to move toward 'open data by default'; develop capacities of community to use data to solve problems; and think critically about the unintended consequences of providing access to public data. We also suggest that public agencies need better metrics to evaluate the success of open-data efforts in achieving its goals.

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1. Introduction

Across the globe, public agencies are liberating data held in administrative systems. As of 2013, more than 44 countries (e.g. Brazil, Sweden, Kenya, India, etc.) have open data platforms, and over 1 million datasets are now available (Manyika et al., 2013; Open Data Barometer, 2013). While the commitment to open-data initiatives and efforts made to achieve them vary widely across the globe, there is no doubt that, collectively, these efforts are substantial (Neubauer, 2013). At the national level, countries are coordinating efforts for greater impact. Consider this case. During the 2013 G8 summit, the US, UK, France, Canada, Germany, Russia, Italy, and Japan signed the Open Data Charter. The signatories made a commitment to publish and make public data 'open by default,' provide easy-to-use application programming interfaces (APIs), and improve the quality and quantity of data released by their public agencies (Sinai & Martin, 2013).

Opening up data not only advances the needle on transparency, but also has the potential to improve civic engagement, spur innovation, and generate economic and social value (Lathrop & Ruma, 2010). Citizens have developed civic apps from open data, the private sector has tapped into open data to create innovate products and services, and the scientific community has begun to leverage

open data to study policy design, implementation, and evaluation. For instance, the McKinsey has estimated that globally the economic benefits of open data are more than \$3 trillion (Newcombe, 2015).

While public agencies around the world are interested in liberating public data, little systematic research has investigated the outcome of these open data initiatives (Desouza & Smith, 2014). Further, it is repeatedly reported that governments have to incur several costs (e.g. startup costs, employing new staffs) before they realize the economic benefits of open data (Newcombe, 2015; US PIRG Education Fund, 2012). The lack of metrics to evaluate the costs and benefits associated with the open data initiatives is problematic, particularly when public agencies are increasingly expected to do more with less. Consider this case. During the shutdown of the US federal government in October 2013, all open data platforms, including Data.gov, were considered non-essential services and were shutdown (Baker, 2013). Thus, from a researcher and policy maker perspectives, it is critical to develop a metrics to understand the value proposition of open data initiatives. A first critical step towards evaluating the open data effort is to understand what key obstacles are faced in the implementation of open government portal.

In this paper, we highlight the benefits and costs associated with open data movements. Particularly, we highlight the case of US Data.gov—a preeminent platform in open data movement. We trace the efforts undertaken by the US government in implementing the open data movement. Following this, we discuss the challenges and opportunities faced by Data.gov in achieving its goals

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and objectives. Particularly, we highlight that fostering an open by default culture requires considerable effort in terms of investment, management, and collaboration across agencies at multiple levels. By discussing the challenges and opportunities faced by Data.gov, we offer several lessons that for practitioners and academics.

2. Case study: Data.gov

The concept of open data movement is more than launching a website to share data. It involves numerous coordinated effort on the part of the government to garner support for the idea to launch of the website. Further, after the launch of the website, the open data website continues to evolve into a complex entity. In this section, first discuss the portal of Data.gov. Second, we highlight the coordinated efforts taken by the US government for promoting open data movement.

2.1. Data.gov

Data.gov (<http://www.data.gov/>) is an online portal to share data from various public agencies, which can be downloaded and manipulated for public use and re-use, was launched in May 2009, as a part of the open-government initiative (The White House 2011). Data.gov provides open access to machine-readable datasets generated by federal, state, and local public agencies. Data.gov enables the public to download datasets to conduct analysis, build web applications, and conduct research. Data.gov provides descriptions of (metadata) datasets and how to access them, as well as tools to visualize the datasets. As of January 2016, 78 federal agencies have published datasets on Data.gov (<http://www.data.gov/metrics>). In addition to publishing datasets from federal agencies, as of January 2016, Data.gov (<http://www.data.gov/open-gov/>) has hosted datasets 40 US states, 46 US cities and counties, 52 international countries, and 164 international regions. As of May 2014, Data.gov has grown to include 4.5 million unique visitors, and citizens from 195 countries visited the site. As of January 2015, Data.gov has provided access to 191,479 datasets.

Data.gov has a consolidated data catalog that allows people to search, browse, and download datasets. The catalog on Data.gov includes various features, including the ability to filter by location, dataset type, tag, format, community, and organization (organizations are entities that own and manage datasets, including public agencies at the federal, state, and local levels and universities). In addition to searching various datasets by different categories, Data.gov also features an interactive dataset tool. This tool allows users to filter and integrate datasets and create visualizations. For instance, the GEO viewer allows users to use geospatial data, overlay datasets, and explore information for deriving patterns (Kenyon, 2010). Data.gov also provides semantic web technology to create linked data mash-ups. Data.gov hosts demonstrations and provides access to documents for users to equip themselves with this new technology to create data mash-ups.

Data.gov actively engages the public to provide feedback and participate in forums, blogs, and communities to improve the quality of datasets hosted on the platform. The users and developers can actively participate in different communities, vote on ideas, comment on ideas, collaborate with each other, and compete in various competitions hosted across various public agencies. For developers, Data.gov lists resources that provide links to all federal agency APIs and a developer hub (Miller, 2013). The developer hub includes software development kits, open-source resources, and repositories of code. In February 2013, Data.gov launched a new community focusing on customers. Based on the concept of 'smart disclosure,' this community focuses on empowering customers to

make better data-driven decisions. The platform offers a wide variety of apps, such as education apps (search for college, search for public school districts), energy and environment apps (alternate fuel locator, energy app gallery), and food and nutrition apps (e.g., fooducate, goodguide, etc.) to help customers make complex decision concerning everyday life. Users can also submit suggestions for datasets and browse what other users have requested and the status of the request. Data.gov forwards these requests to the concerned public agencies, which respond with a decision on the data request.

2.2. US government: coordinated efforts to promote open data movement

In addition to launching Data.gov website, the US government has undertaken several initiatives to support open data movement. These initiatives can be classified into two main categories: (1) implementing regulations and policies, and (2) fostering a culture of open innovation and crowdsourcing.

2.2.1. Developing a detailed guideline for implementing open data policy

On January 29, 2009, President Barack H. Obama issued a memorandum on open and transparent government and asked his administration to establish "a system of transparency, public participation, and collaboration" (Obama, 2009). In the memorandum, President Obama pointed out that openness strengthens democracy and helps improve government efficiency and effectiveness. This memorandum builds upon existing laws and regulations, including the Freedom of Information Act (FOIA) (and subsequent amendments), the Paperwork Reduction Act, the E-Government Act (and subsequent amendments). However, compared to previous laws and regulations, the open-government initiative mandates public agencies to publish their data online for public use. For instance, the FOIA passed in 1966, provides citizens with the right to request information from the public agencies, where the public has to take a proactive role in requesting information from the concerned agencies (McDermott, 2010). In other words, public agencies were encouraged to disclose more information to citizens about their functioning and involve citizens in the decision-making process for arriving at informed policy decisions.

Further, in accordance with the president's memorandum on open and transparent government, the Office of Management and Budget (OMB) issued an Open Government Directive (OGD) mandating that all federal government agencies must publish their data online in machine-readable format. Specifically, the OGD advised federal agencies to (1) publish government information online, (2) improve the quality of government information, (3) create and institutionalize a culture of open government, and (4) create an enabling policy framework for open government (Office of Management and Budget (OMB, 2009).

Moreover, complying with the open government initiatives, several websites such as challenge.gov, ITDashboard.gov, and recovery.gov were created. On the day President Obama signed the American Recovery and Reinvestment Act of 2009 into law, the Recovery.gov online portal went live. This online portal allows the public to track the spending of the \$787 billion American Recovery and Reinvestment Act (Dawes & Helbig, 2010). The site provides easy access for users who want to learn how and where government is spending recovery funds. In addition to obtaining information about spending on recovery funds, the public has the ability to report fraud, waste, or misuse of recovery funds. Similarly, ITDashboard.gov allows the public, businesses, and public agencies to track a \$79 billion federal investment in information technology

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