

Use of Dashboards in Government

By Sukumar Ganapati

The use of dashboards in federal government agencies increased dramatically following the Obama administration's Open Government Initiative issued in January 2009, which espoused the principles of transparency, participation, and collaboration. Federal agencies now use dashboards both for internal organizational management and to disseminate performance measures for transparency and accountability.

In February 2009, a month after President Obama's inauguration, his administration implemented Recovery.gov, incorporating a dashboard for transparency and accountability in federal stimulus funding under the 2009 American Recovery and Reinvestment Act. Subsequently, the U.S. Chief Information Officer, Vivek Kundra, implemented the IT Dashboard in June 2009 for accountability and transparency in federal IT investments. The Open Government Directive, issued in December 2009, required the creation of an "Open Government Dashboard."

In August 2010, in advance of the 2010 GPRA Modernization Act (GPRAMA), the Office of Management and Budget (OMB) launched Performance.gov, a central website with dashboards to track key performance metrics of federal agencies. Performance.gov is currently open only to federal government employees. Several additional federal agencies (e.g., the Food and Drug Administration, the Centers for Medicare and Medicaid Services, the United States Patent and Trademark Office) have implemented dashboards to track performance metrics. As described by Tim O'Reilly, "the dashboards are an incredibly ambitious undertaking."

Stephen Few defines a dashboard as a "visual display of the most important information needed to achieve one or more objectives; consolidated and arranged on a single screen so the information can be monitored at a glance." Dashboards summarize key performance metrics of organizations. They typically integrate data from different sources and display

performance measures through informative graphics. The visualization allows readers to understand complex data in less time than it would take to read similar material located in the text of a full report. At the same time, the dashboards should be self-contained. Dashboards can be static (providing metrics at a particular time, e.g., PDF files) or dynamic (providing metrics in real time, e.g., interactive web dashboards).

In terms of their use, dashboards can be of three types:

- **Operational** (for monitoring in real time)
- **Tactical** (for analysis and benchmarking)
- **Strategic** (for tracking achievement of strategic objectives)

There are two key elements in dashboard implementation and use:

- **Dashboard design: The design is not meant only for aesthetics, but also for easy grasp of actionable data and information.** Leading dashboard experts highlight three core principles of design: the dashboard should fit on a single page; the dashboard should be simple; and it should use the best display medium (i.e., the graphic visual) for communicating data effectively.
- **Dashboard performance measures:** Federal agencies follow GPRAMA requirements in reporting their performance. An agency must carefully select performance metrics to reflect its strategic goals. The measures should be useful to agencies in improving performance (e.g., the face-to-face TechStat sessions used in conjunction with the IT Dashboard to discuss IT investments). The measures should also serve the broader goal of public accountability.

This report examines the emerging implementation and uses of dashboards in the federal government. The intent is to identify practical principles in using dashboards in federal



Sukumar Ganapati joined the Public Administration faculty at Florida International University in August 2004. His research mainly deals with the role of institutions in the urban context, particularly with respect to housing, community development, and information technology. He obtained his Ph.D. in Planning from the University of Southern California in 2003.

agencies. Case studies of selected federal dashboards are included. The dashboards are both cross-agency and agency-specific. The case studies include:

- The IT Dashboard operated by OMB's Office of E-Government & Information Technology
- Two financial transparency dashboards (USAspending.gov and Recovery.gov)
- Two agency-specific dashboards (Food and Drug Administration's FDA-TRACK and the U.S. Patent and Trademark Organization's (USPTO) Data Visualization Center).

The case studies offer insights into the uses of dashboards. Four lessons can be learned from them.

Lesson One: Data Quality is Key to the Credibility of Dashboard Performance Measures

The dashboards in the case studies (especially the cross-agency ones) have faced data quality issues. This compromises dashboard performance measures and could eventually damage the dashboard's credibility. To overcome some of the data quality issues, standardized data definitions and training of key agency personnel are required. Adopting a standard schema, such as the Extensible Business Reporting Language (XBRL) used in business applications, for federal financial dashboards such as Recovery.gov or USAspending.gov would enhance data quality and reporting efficiency.

Lesson Two: Best Practices Resources Are Necessary in the Design and Use of Dashboards

Agencies have different design approaches to dashboards. Whereas the USPTO dashboards are visually rich, the FDA-TRACK dashboards are essentially tables. The Recovery.gov and USAspending.gov dashboards feature maps. Although design may be idiosyncratic and vary based on technical capacity within the organization, a set of best

practices or standards would enhance design quality. The Usability.gov website, developed a decade ago, enhanced government websites by providing standardized guidelines. A website for standardizing dashboards or giving best practices would be equally useful. Focus group feedback would assist in enhancing the usability of the dashboards as would the creation of communities of practice within government.

Lesson Three: Performance Measures Should Reflect Organization Goals

Performance measures differ based on agency needs. Cross-agency dashboards have common measures. The essential approach should be to align performance measures to organizational goals. This increases the usability of dashboards. Responding to different audiences requires reporting different performance metrics. Indeed, performance measures in some dashboards (e.g., Recovery.gov, USPTO's Data Visualization Center, FDA-TRACK) evolved in response to different audiences' needs.

Lesson Four: Dashboards are Only Tools; Effectiveness Depends on Use

Dashboards are only tools to visualize performance data. Their effectiveness depends on how organizations use them to enhance internal performance and external accountability and transparency. Organizations should be cognizant of both the strengths and weaknesses of dashboards. Dashboards need to be useful to the organization's purposes. In internal organizational management, this implies that dashboards are used in the decision-making process (e.g., the face-to-face sessions based on the Federal IT dashboard and FDA-TRACK to identify weak projects). At the external accountability level, use of dashboards means that agencies are exposing their performance metrics to public scrutiny. In this context, both the dashboard performance measures and the underlying data need to be publicly accessible for credible organizational accountability.

The IT Dashboard

Information technology investments in the federal government have been estimated at \$79 billion in 2011. To ensure greater transparency, OMB (under the Federal Chief Information Officer's leadership) launched the IT Dashboard on June 30, 2009, as a public website to provide information about IT investments. Data for the dashboard are drawn from the Exhibit 53, required to be submitted annually by federal agencies in response to OMB Memorandum M-02-01 (Guidance for Preparing and Submitting Security Plans of Action and Milestones). Exhibit 53, which reports IT investments, also requires agencies to identify major investments called "Capital Asset Plans" (Exhibit 300). The dashboard includes general information on over 7,000 investments (from Exhibit 53), and detailed data for over 800 major investments (from Exhibit 300) reported by 27 agencies. In essence, the dashboard displays basic investment information (e.g., investment name, description), CIO's information (e.g., name, contact e-mail, photo, bio), awarded contracts (e.g., obligation amount, vendor name, type, contract start and end dates), performance information (e.g., measurement indicator, baseline, actual results, target, rating), and cost/schedule ratings (milestone description, percent completed, planned completion date, planned cost, actual cost, cost variance).



Federal Financial Transparency Dashboards

There are two principal sites for federal financial transparency: USAspending.gov and Recovery.gov. These sites are mainly oriented toward disseminating federal financial data. The sites incorporate dashboards with financial indicators. USAspending.gov was launched in December 2007 in response to the Federal Funding Accountability and Transparency Act, which required OMB to maintain a single, searchable website that contains information on all federal spending awards (FFATA, P.L.109-282, as amended by section 6202(a) of P.L. 110-252). Recovery.gov, launched in February 2009, was mandated by the American Recovery and Reinvestment Act of 2009 to "foster greater accountability and transparency in the use of funds made available in this Act."

USAspending.gov

The USAspending.gov site provides data about contracts, grants, loans, and other types of spending in the federal government. The spending data required are:

- Name of the entity receiving the award
- Award amount
- Award information (transaction type, funding agency, etc.)
- Entity location
- Unique identifier of the entity receiving the award



Recovery.gov

The Recovery Act was passed in February 2009 in response to the economic crisis. To enhance accountability and transparency, the Recovery Act established the Accountability and Transparency Board as an independent agency to track funding and to maintain a public website for disseminating funding information. The Board launched Recovery.gov, an online mechanism for tracking the stimulus funding. The Recovery.gov site was launched on February 17, 2009, the day the President signed the Recovery Act. The site was expected to give user-friendly tracking tools in the form of charts, graphs, and maps that provide national overviews or display specific zip codes. The site is also meant to be a mechanism for the public to report suspected fraud, waste, or abuse related to the stimulus funding. The site also reports the number of complaints of wrongdoing and the number of triggered investigations.

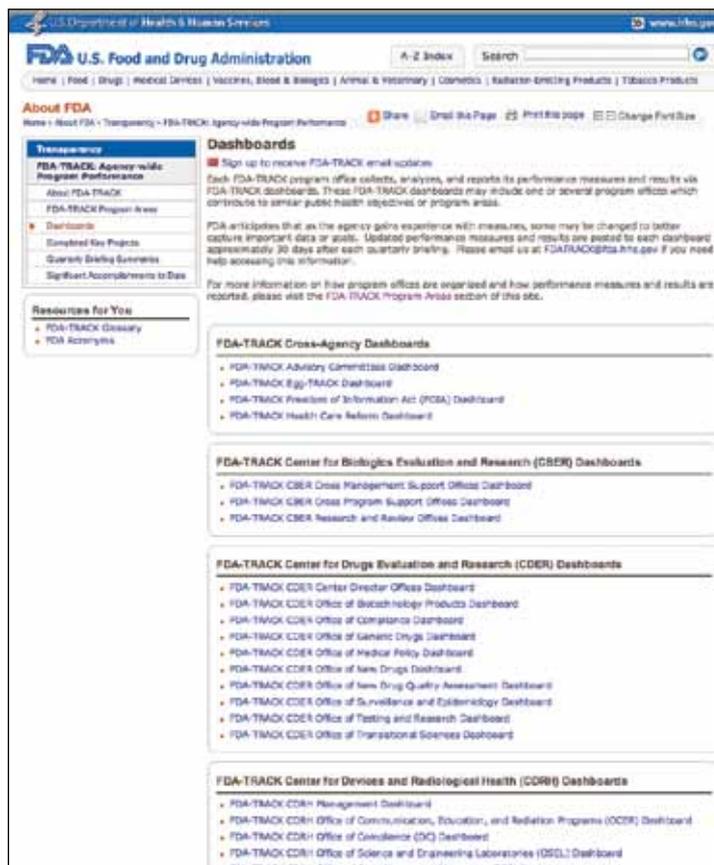


Agency-Specific Dashboards

A few federal agencies have implemented dashboards to track their agency-specific performance metrics. Two such dashboards are included here: the FDA-TRACK and USPTO's Data Visualization Center. The two dashboards have different approaches in terms of their design and use, as discussed below.

FDA-TRACK

The Food and Drug Administration (FDA) is an agency within the Department of Health and Human Services (DHHS). It has a public health mission, to ensure the safety, efficacy, and security of human and veterinary drugs, biological products, medical devices, food supply, cosmetics, and products that emit radiation; and to regulate the manufacture, marketing, and distribution of tobacco products. The FDA implemented FDA-TRACK in April 2009 as an agency-wide performance management program in direct response to President Obama's Open Government Initiative.



USPTO's Data Visualization Center

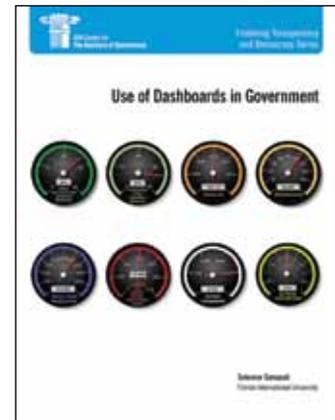
The United States Patent and Trademark Office (USPTO) is an agency within the U.S. Department of Commerce. Its main task is to grant U.S. patents and to register trademarks. It advises the Secretary of Commerce and federal agencies on intellectual property (IP) policy, protection, and enforcement. It also provides training, education, and capacity building programs on IP issues and IP enforcement. In 2009,

the USPTO launched several initiatives in response to the Obama administration's Open Government Directive. One initiative is the USPTO Data Visualization Center, a performance dashboard, launched on September 7, 2010. The site has been evolving, with new sets of performance measures added since its inception. The USPTO dashboards are not just for internal management, but also show the agency's performance to stakeholders and the general public. ■



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The report can be obtained:

- In .pdf (Acrobat) format at the Center website, www.businessofgovernment.org
- By e-mailing the Center at businessofgovernment@us.ibm.com
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