

Stewardship and Usefulness: Policy Principles for Information-based Transparency

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Abstract

This paper is a conceptual and empirical exploration of the tensions inherent in the drive to increase openness and transparency in government by means of information access and dissemination. The idea that democratic governments should be open, accessible, and transparent to the governed is receiving renewed emphasis through the combination of government reform efforts and the emergence of advanced technology tools for information access. Although these initiatives are young, they already exhibit daunting complexity, with significant management, technology, and policy challenges. A variety of traditional and emerging information policy frameworks offer guidance, while diverse research perspectives highlight both challenges to and opportunities for promoting information-based transparency. Early experience with Data.gov, a central component of the US Open Government Initiative, suggests that two fundamental information policy principles, stewardship and usefulness, can help guide and evaluate efforts to achieve information-based transparency.

1. Introduction

Public policies pertaining to information flow are among the most fundamental aspects of democracy. These policies reflect societal choices about how information should be produced, processed, stored, exchanged, and regulated (Benkler, 1998). In the United States, for example, the First Amendment to the Constitution embodies democratic principles of free expression, an independent press, and free exchange of information among citizens. It reflects strong values attached to the desirability of diversity in information sources and content as well as universal access to and participation in the marketplace of ideas. By applying these principles, government treats information as an *object* of policy, that is, information itself is the subject of policy making. These policies tend to provide broad general guidance and to treat government as the regulator of societal information flow. In addition to First Amendment rights of free expression, examples of these kinds of policies are found in laws banning censorship, protecting personal privacy, and providing patent and copyright protections for intellectual property.

However, in addition to its regulatory role, government is also an information collector, producer, provider, and user. In this role, government treats information as an *instrument* of policy. In doing so, it makes decisions about whether and how to collect, develop, disseminate, analyze, and preserve information in the service of some other policy principle (such as transparency, accountability, or social equity), or to achieve specific goals in domains such as public health, environmental quality, or economic development. These instrumental information policies tend to be specific and prescriptive. They are generally carried out in one of three ways: by collecting data for the express purpose of publication, by requiring private entities to publish

certain kinds of information, or by releasing to the public information collected in the course of government program operations and regulatory activities.

The first method is exemplified by the work of the US Census Bureau, Statistics Canada, and similar organizations in nearly every country that collect standardized data and publish statistical series and special reports that are authoritative sources of public information about populations and economies. A policy of the New York City Health Department illustrates the second method of policy implementation. The department requires chain restaurants to post the calorie content of each menu item in the hope that consumers will take that information into account in making healthier meal choices. The department does not collect or report the calorie data itself, but instead requires restaurants to gather and provide it directly to customers. In the third method, information collected or produced by government for operational or program management purposes is released to the public for some additional or secondary purpose. For example, public school “report cards” use student test data and budget information to highlight the performance of schools for parents and community members to consider as they formulate educational policies, programs, and budgets.

This paper is a conceptual and empirical exploration of the tensions inherent in the drive to increase openness and transparency in government by means of information access and dissemination. Karr (2008) summarizes three enduring tensions associated with public use of government information. The first tension is between comprehensiveness of the data and its understandability by non-technically oriented citizens. The second tension is between the desires to ensure usefulness of detailed data and to simultaneously protect the confidentiality of data subjects. The third is the public need and desire to analyze and understand “global” data sets versus the reality that government data is not maintained as a global asset but rather is distributed across scores of organizations and policy domains, at all levels of government.

Tension also exists regarding the release of government information that may be subject to misinterpretation due to lack of descriptive metadata, or the need for expert frames of reference or specific analytical skills (Dawes, S. S., Pardo, T. A., & Cresswell, A. M., 2004). These problems often surface when information is used for purposes other than the purpose for which it was collected. Such information was generally not collected with public release in mind. It is seldom managed in the structured way that census data or other standard statistics are managed, making it more difficult for others to use and interpret and more subject to misunderstanding and misuse. In addition, some information is considered too sensitive or dangerous to release to the public (such as details of nuclear power plants, military installations, or power grids), especially in view of escalating global security threats.

An additional set of issues is associated with information that is meant to be published but that does not validly or accurately measure the things it purports to represent. Performance reports such as “report cards” and “benchmarks” are criticized for this weakness because they reduce complex phenomena to simple numbers or letter grades that ignore scale, scope, and context, and can mask data quality problems (Bannister, 2007).

Despite these challenges, access to government information is receiving renewed emphasis all over the world. This emphasis reflects two trends: 1) a drive for government reform that stresses openness and transparency, and 2) increasing availability and continuing development of information technologies that allow institutions, organizations, and individuals alike to find, share, combine, and re-use government information content.

This study begins with a summary of recent US initiatives to implement transparency principles followed by a discussion of multiple perspectives associated with this movement as reflected in both policy documents and research literature. That discussion concludes by presenting two overarching policy principles – information stewardship and information usefulness – that can be used to sort out and balance these perspectives and tensions. The paper then applies these principles to Data.gov, a central component of the Obama Administration’s Open Government Initiative, to illustrate how they might be used to help achieve and assess the effectiveness of these initiatives. The paper concludes with a future research agenda that builds on this exploratory investigation.

2. Recent US initiatives to achieve information-based transparency

Technology-supported, information-intensive initiatives to inform the public emerged with the initiation and growth of E-government in the 1990s. *Fedstats.gov*, is one early example in which the federal “statistical agencies” joined together to improve their data products and provide ancillary information and tools for the public. It provides access to thousands of data sources and reports on 400 topics provided by more than 100 organizations, including units of the Departments of Commerce, Labor, Justice, and Agriculture. Other early work focused on the collection and digitization of land records and associated geospatial data organized in state- and national-level data repositories such as the National Spatial Data Infrastructure (Federal Geographic Data Committee). These resources provide standardized spatial data useful to planners, police, emergency services, assessors, school officials, real estate professionals and others.

Information-intensive processes have also contributed to transparency. In the early 2000s, *Regulations.gov* started as part of an extensive electronic rulemaking initiative intended to provide citizens, businesses, advocacy groups, researchers, and lawyers with electronic information and tools to find proposed regulations, submit comments, do independent analysis, and track the progress of rule development. Extensive back office changes in the rulemaking process, still in progress, are an essential part of this effort.

In 2006, *USAspending.gov*, provided a single, searchable website that attempts to answer a fundamental public accountability question – where do federal dollars go? The site is frequently updated and summarizes federal spending in major categories. It also provides an IT dashboard for major technology projects, identifies the top government contractors and assistance recipients, and links to procurement information and related resources.

In 2009, the Obama Administration combined and augmented these approaches with additional information-based efforts to make government more transparent. Spending associated with the \$787 billion American Reinvestment and Recovery Act has been made available through *Recovery.gov*, which is designed to collect and display to the public frequently updated data about spending and performance across a variety of program areas and levels of government, including the private sector.

The 2009 Open Government Directive (OGD) (Office of Management and Budget, 2009) requires federal agencies to post previously internal electronic datasets for public use on a new government-wide website, *Data.gov*. The Web site states

As one of the flagships of the Open Government Initiative, Data.gov is designed to facilitate access to Federal datasets that increase public understanding of Federal agencies and their operations, advance the missions of Federal agencies, create economic opportunity, and increase transparency, accountability, and responsiveness across the Federal Government – i.e., ‘high value’ datasets.

Data.gov contains several catalogs of downloadable data sets, examples of data use, and an online dialog that invites public comment on ways to improve the site and the data it contains.

In addition to these executive branch activities, in March 2010, the bi-partisan Congressional Transparency Caucus adopted a set of principles to guide the development of legislation to formalize transparency goals in federal law (Caucus, 2010).

Although these initiatives are very young, they already exhibit daunting complexity, with significant information management, technology and policy challenges. All of the web-based information resources described above have been lauded as innovations, but they have also been criticized as incomplete, inaccurate, difficult to use, hard to understand, out of date, or expensive to operate, coordinate, and maintain.

3. Legal and policy frameworks for transparency

While the initiatives outlined above are recent ones, public access to government information as a foundation for democracy has a long and relevant legal and policy history.

3.1. Traditional frameworks

Information policy principles that address government transparency have been embodied in American law since the eighteenth century. As early as 1789, Congress enacted laws regarding the orderly recording of government activities. But, as the nation grew more complex, the simple approaches of the eighteenth and nineteenth centuries became less effective means of public information. Accordingly, other laws both strengthened the record keeping responsibilities of public agencies and facilitated citizens’ knowledge of and access to them.

The Federal Register Act requires an official record of executive branch activities much like the Congressional Record documents the proceedings of the national legislature; the Administrative Procedures Act requires agencies to follow prescribed rules for executing their powers and to publish in the Federal Register information about their organization, rules, decisions, and procedures; the Freedom of Information Act (FOIA) prescribes other "fair information practices" designed to allow public access to the vast holdings of government records systems, as long as access does not threaten national security or invade personal privacy. The E-government Act requires agencies to use their websites to provide essential information to the public as well as a means of electronic communication with citizens. In addition, a variety of laws address specific information access and public “right to know” topics, such as the Emergency Planning and Community Right to Know Act of 1986, that established the Toxics Release Inventory to collect and publish data about pollution associated with chemical manufacturing (US Environmental Protection Agency). However, critics maintain that enactment of these specific laws, although well-meaning, can serve to fragment and complicate rather than strengthen information policy foundations (Jaeger, 2007).

3.2. Emerging frameworks

In the last several years, policy advocates have re-invigorated efforts to craft and adopt more generally applicable policy frameworks to govern access to government information, regardless of topic, program, or organizational responsibility.

In one such effort, the Open Government Working Group, a consortium of 30 open government advocates, recommended eight principles regarding access and use of public data to promote civil discourse, public welfare, and more efficient use of public resources (OpenGovData, 2009). These principles focus on the characteristics of the data itself. The principles state that public data is open when it is:

- Complete - All public data (defined as data that are not subject to valid privacy, security, or privilege limitations) are made available.
- Primary - Data are collected at the source, with the finest possible level of granularity, not in aggregate or modified forms.
- Timely - Data are made available as quickly as necessary to preserve the value of the data.
- Accessible - Data are available to the widest range of users for the widest range of purposes.
- Machine-processable - Data are reasonably structured to allow automated processing.
- Non-discriminatory - Data are available to anyone, with no requirement of registration.
- Non-proprietary - Data are available in a format over which no entity has exclusive control.
- License-free - Data are not subject to any copyright, patent, trademark or trade secret regulation. Reasonable privacy, security and privilege restrictions may be allowed.

The Carter Center offers policies that focus on information access as a fundamental human right in all cultures and systems of government (Carter Center, 2008). Its Plan of Action recommends that all governments and international organizations assure this right by providing:

- Equitable exercise of the right of access;
- Training of public officials on the practice and application of access rights;
- Public education to empower full use of the right;
- Allocation of necessary resources to ensure efficient and timely administration;
- Strengthening of information management to facilitate access to information;
- Regular monitoring and reporting; and
- Oversight of operation and compliance (pp. 3-4)

Researchers at Princeton and George Mason Universities share a perspective that rests on the assertion that government should be a publisher of free, open, structured, machine-readable data while private sector- or citizen-led initiatives should turn that data into useful, usable, and creative information products (Brito, 2007; Robinson, D., Yu, H., Zeller, W. P., & Felten, E. W., 2009). They assert that government is inevitably constrained from effectively using the most advanced technologies by an array of compliance requirements associated with privacy, confidentiality, cost control, FOIA requirements and others, as well as by lack of resources to explore simultaneously many new avenues of information management, analysis, and communication. These scholars argue that government resources would be better spent preparing data for publication than trying to anticipate what users want to see on structured government

websites. They further argue that the private sector and even motivated individuals are better suited to the tasks of analyzing, combining, and presenting information to users because they lack these constraints. Such entities represent diverse means, skills, and motivations which help to spread the risks of innovation and encourage competition and thus create more kinds of information products and services. Examples of the information services that could be provided through this approach already exist due to the efforts of certain nonprofit organizations and individuals. For instance, the Sunlight Foundation sponsors OpenCongress.org, a web-based service that combines official government data such as bills under consideration, with news feeds, blogs, and other resources that allow people to track legislation, issues, and the voting records of members of their choosing (Sunlight Foundation).

4. Research contributions regarding information-based transparency

Political science, public administration, and information science research all shed some light on the challenges of information-based government transparency. These studies explore some of the salient concepts and tackle some of the shortcomings of current efforts to promote transparency through the medium of electronic information.

4.1. Alternative views of transparency

Meijer considered transparency in light of larger societal trends regarding legitimacy, trust, and openness. He argued that transparency – defined as a lack of secrecy and an openness to public scrutiny – is traditionally considered a means for reducing uncertainty and increasing public trust. However, he asserts that computer-mediated transparency has several characteristics that can actually threaten trust. Unlike direct, face-to-face forms of transparency, computer-mediated transparency is unidirectional (i.e., not interactive), decontextualized (i.e., removed from shared social experience), and overly structured (i.e., highly selective and simplified with a bias toward quantitative information). Using the example of Dutch school performance reporting, he shows how the necessarily partial selective list of topics addressed by school performance reports comes to dominate perceptions of performance, increase ambiguity, and contribute to more rather than less distance in relationships between parents, teachers, and school managers (Meijer, 2009).

4.2 Data quality and measurement challenges

Data quality research offers insight into one of the most difficult practical challenges of public access. Quality is most often characterized as simple accuracy, but research shows that high-quality data should be not only intrinsically good, but also contextually appropriate for the task, clearly represented, and accessible to users. In other words, it needs to be “fit for use” (Wang & Strong, 1996). The same information may be fit for some uses, but completely inappropriate for others, particularly those that have different temporal, security, granularity, or other requirements. Moreover, unrealistic assumptions about the quality and usability of information are frequent problems, including the common beliefs that information is objective, neutral, and readily available (Radin, 2006). Research has shown that E-government interoperability and information integration is particularly sensitive to a variety of quality considerations including comprehensiveness, authoritativeness, assurance or trustworthiness, and perceived value as determined by the information seeker (Klischewski & Scholl, 2006).

In order for information seekers to assess data quality, they need to understand the nature of the data and must be able to identify the factors that determine its quality or fitness for an intended use. Since data producers cannot anticipate all users and uses, the provision of good quality metadata can be as important as the quality of the data itself (Dawes et al., 2004).

The emphasis on and current popularity of performance measurement has generated another important set of quality considerations. Performance measures are quantitative indicators of selected aspects of government performance. However, research shows that quantifiable measures are inherently inaccurate representations of the complex processes that generate performance. In addition, given the intricacy of many programs and organizations, it is not feasible to measure all value-generating activities. Accordingly, those activities that can be readily quantified tend to be the ones that are measured, prompting a related tendency to value more highly those things that are easily measured and thus to undervalue or ignore those that are not. One consequence is reliance on measures that may be precise, but irrelevant (Jacobides & Croson, 2001).

4.3. Program design and management challenges

Other research emphasizes the challenges of designing and managing electronic information access programs. One study reviewed 22 access programs to identify 15 key design factors, or dimensions. Eight dimensions address information users, suppliers, content, and use. Seven others consider technical and managerial aspects of the access program and its organizational context. The complete framework considers how these components interact in the context of a complete information access program. (Dawes et al., 2004).

The same research also included the development and evaluation of three prototype data repositories. In each one, the main goal was to increase the availability and use of government information for planning and decision-making by providing Web-based access to electronic data and records. In all three projects, designers had to find ways to meet the needs of users, while ensuring that the design (1) could be sustained, (2) did not threaten the privacy, security, or confidentiality of data subjects or contributors, and (3) provided sufficient metadata and other tools to ensure appropriate use.

4.4. Information sharing challenges

Research in cross-boundary information sharing and interoperability within government offers additional insights that may be useful in formulating a policy framework for public transparency initiatives. When information is shared across organizational boundaries or levels within government, the participants generally expect certain benefits such as lower cost, better quality information, and the ability to deal with more complex problems. However, they also recognize the risks of data discrepancies, misinterpretation, and resource drains. In one study, nearly all respondents recognized and endorsed the benefits of information sharing, but 40 percent also cited lack of common data definitions, inadequate planning and consultation about data use, and insufficient staff and technical resources as reasons why information sharing efforts fail to achieve desired ends. They were also concerned about how shared data would be used and whether they could control or prevent misuse (Dawes, 1996). A subsequent study showed that, intra-governmental information sharing is more likely to succeed when several conditions are met: first, when policies are in place and practical tools are available that make sharing both legitimate and feasible; second, when trusted social networks of relationships underlie the

sharing process; and third, when roles and relationships are clear and widely understood by all participants (Pardo, 2008).

This line of research concluded that any government seeking the benefits of internal information sharing needs a set of policies that balances the risks and benefits. It offered a pair of complementary principles – stewardship and usefulness – to guide decisions about how, why, when, and who uses government information (Dawes, 1996). These principles, as discussed below, seem even more salient when information is to be made available outside the government.

5. Information policy principles: stewardship and usefulness

These two principles offer a simple framework for working through the variety of goals and challenges inherent in information-based transparency initiatives.

Stewardship is a conservative principle that recognizes that government information shares some of the characteristics of public goods like clean air and safe streets. The dictionary defines “stewardship” as the careful and responsible management of something entrusted to one's care. Applied to information, stewardship focuses on assuring accuracy, validity, security, management, and preservation of information holdings. Stewardship does not fix a single point of responsibility, but rather conveys the idea that all public officials and government organizations are responsible for handling information with care and integrity, regardless of its original purpose or source. Stewardship demands that government information be acquired, used, and managed as a resource that has organizational, jurisdictional, or societal value across purposes and over time (Dawes, 1996). It thus promotes two essential requirements for information-based transparency: it protects government information from damage, loss, or misuse; and it makes information “fit for use.”

Policies that promote information protection address such issues as information and system security, confidentiality of sensitive data, information quality, records management, and long term preservation of information with enduring social, legal, or historical value. Data and metadata standards, for example, govern how data elements are described, defined, and represented in systems. These standards contribute to data quality and to the ability to use data for more than one purpose. Records management, retention, and disposition rules not only specify the reasons and manner in which public records are created and maintained for active use, but also how they are preserved for future generations. Security policies help assure that both information and systems are protected from unauthorized use or abuse.

The principle of usefulness recognizes that government information is a valuable asset that can generate social and economic benefits through active use and innovation. The US National Institute of Standards and Technology (NIST) describes the usefulness or utility of information in this way: “utility” means that disseminated information is useful to its intended users; “useful” means that the content of the information is helpful, beneficial, or serviceable to its intended users, or that the information supports the usefulness of other disseminated information by making it more accessible or easier to read, see, understand, obtain, or use.

Policies and practices that foster usefulness and utility give agencies guidelines and incentives to share data and related information resources to benefit a wide variety of public and private users. They encourage investment in information management, analysis and presentation and lay the foundation for organizational and financial mechanisms to support information sharing and access inside government and with the public (Dawes, 1996). Policies that promote

usefulness enhance public access to government information, encourage public-private information partnerships, and make possible the combination or reuse of information for new purposes. These policies can also address better use of information inside government through interagency and intergovernmental information sharing as well as through creative use of information to improve the quality or lower the cost of government activities and programs or to create new services or devise better ways of doing traditional business.

These two principles may appear to be antithetical, but they can also be viewed as complementary. Although they serve different goals, those goals are compatible and they can be mutually reinforcing. As shown in Figure 1, not only can stewardship policies help produce better quality, more reliable, and better managed information, they can also create well-tested and documented practices that, in turn, assure that information seekers will be able to determine fitness for use. These products of stewardship reduce the risks of misuse, and make possible both better public understanding and more trust in government information, thereby encouraging innovative tools and uses. As these uses become fine-tuned and better known, they increase demand for data and appreciation for the policies and activities that assure its quality.

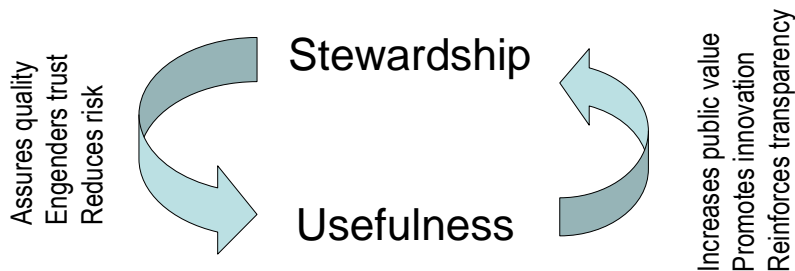


Figure 1. A conceptual model of information-based transparency principles.

The section below presents a preliminary test of this view by assessing two successive online public dialogs on information-based transparency. The first dialog was conducted in three phases in the spring and summer of 2009. It invited public comment on a wide variety of transparency concerns, including ideas for the basic framework for Data.gov. The second dialog, conducted in early 2010, and focused on the Data.gov *Draft Concept of Operations* (CONOP) (Office of Management and Budget and CIO Council, 2009). The CONOP document was prepared by OMB and the Federal CIO Council to describe the goals, architecture, infrastructure, value, and operations of Data.gov after it had been in operation for about six months. This second dialog invited current and potential users of Data.gov to comment and make suggestions for improvement.

6. Assessing the 2009 and 2010 online dialogs

The first Presidential Memorandum issued by the Obama Administration in January 2009 asserts that federal government agencies should “disclose information rapidly in forms that the public can readily find and use.” It further ordered that an Open Government Directive be issued within the Administration’s first 120 days to implement principles of transparency, participation, and collaboration (Executive Office of the President, 2009).

To launch this initiative, the Office of Science and Technology Policy (OSTP), in cooperation with the National Academy of Public Administration (NAPA), launched a brief but intense initial phase of online nationwide brainstorming to solicit recommendations for the content of the then forthcoming Open Government Directive (Holden, 2009; Trudeau, 2009). At the 120-day point, OSTP had gathered more than 1000 ideas, culled and organized them according to several major categories, and initiated an online discussion regarding a rough “mind-map” of the 90-plus ideas that were judged to pertain to transparency. These ideas were clustered into six categories:

- Transparency principles and definition (five proposals to require plain language rationales for policy decisions and to adopt balanced principles already developed by several professional and international organizations).
- Government-wide transparency proposals (40 ideas such as establishing a Transparency or Open Government Officer in all federal agencies, posting frequently requested categories of information on agency websites, various reforms to the Freedom of Information Act (FOIA), and providing more raw data in standard formats).
- Records management (8 proposals including better oversight, better metadata, and adequate funding for electronic records requirements).
- Open government operations (14 proposals covering such topics as providing summaries of all agency programs and services, adopting common innovative technology platforms, reducing secrecy, allowing government scientists to speak freely about their work, and requiring all agencies to develop web 2.0 communications strategies).
- Technologies for transparency (7 proposals including more focus on usability as well as such tools as permalinks, graphics, and dashboards).
- The growth and evolution of Data.gov, which had been launched in its initial form in May 2009 (18 proposals aimed at collaboration with the private sector, research on data quality, data repositories on various policy domains, and ways to protect sensitive information).

Phase 2 involved a discussion period during which members of the public were invited to comment on these ideas, the categories, or other aspects of transparency. Phase 3 comprised a policy development activity in which public participants could contribute to the draft language of the Open Government Directive, which was later issued in December 2009 (Office of Management and Budget, 2009).

The brainstorming results (from phase 1) were assessed in June 2009 by categorizing the 92 ideas according to the broad information policy principles of stewardship and usefulness (Dawes, 2010). The majority of the ideas contributed by participants (55 of 92, or 60 percent) fell into the usefulness category. This is not surprising given the focus of the exercise and the natural tendency for members of the public and civic and research organizations to seek more information and more diverse information from government. Participants offered recommendations for executive branch action, for private sector involvement, and for legislation to be considered by Congress. Transparency-specific ideas, suggestions for designing Data.gov, and recommendations for open government operations were most numerous (with 24, 14, and 10 ideas contributed, respectively).

By contrast, only 13 ideas, or 14 percent, were clearly motivated by a perceived need for stewardship; most of these ideas were in the often-criticized area of records management. It is

possible that brainstorming participants gave stewardship less attention, partly because so much of the existing policy on government information management already emphasizes this dimension. In addition, the Obama Administration policies were widely viewed as reversing a trend toward secrecy and therefore attracted advocates of openness.

More than a quarter of the ideas fell into a third hybrid category that appears to illustrate the need for achieving a balance between these two principles. These ideas focused especially on organizational and professional requirements, such as the creation of multi-disciplinary teams in agencies to work on information management and dissemination, and better coordination among Chief Information Officers, records managers, and FOIA officers. These ideas also advocated for research and pilot projects to test, refine, and evaluate new approaches.

The second dialog was launched as part of the implementation of the Open Government Directive, which was issued in December 2009 and included requirements for agencies to post their machine-readable data sets on Data.gov. This dialog is particularly interesting because it took place after members of the public began to use Data.gov and thus reflects their actual experiences rather than their expectations, which had been represented in the preceding Open Government dialog.

This dialog, called “Evolving Data.gov with You,” invited proposals on any relevant topic covered by the draft concept of operations document (CONOP), and encouraged participants to comment on each other’s posts and vote for or against the various proposals as they were posted on the site. The votes were presented as a composite score which is the net of positive and negative votes on each proposal. The actual numbers of votes for and against were not reported on the public site. Thus, for example, a proposal that received 10 positive votes and two negative ones would show a score of eight, the same as for a proposal that received 108 positive votes and 100 negative ones. The assessment reported below was conducted in April 2010. It used the proposals, their composite scores, and the number of additional comments per proposal to explore the nature of and balance between concerns for stewardship and usefulness.

As of April 21, 2010, 131 proposals had been posted on the CONOP dialog. Twenty advocated for inclusion of certain specific data sources or topics in Data.gov. These included such subjects as disclosure of nursing home problems, timely release of local area economic data, access to real time science data, and information on State Department development projects. An additional 19 proposals represented recommendations for overall policies and practices to govern Data.gov as a government-wide program. These focused on ways to improve efficiency, sustainability, and collaboration across organizations. They included proposals to create a Data.gov “evangelist,” to give Data.gov adequate funding, to engage Congress to participate, and to partner with states and local governments to include their data.

The remaining 91 proposals could be classified as addressing either stewardship needs (45) or usefulness features (44). The stewardship proposals focused most often on the need for good quality metadata and sound enterprise-wide data management practices. Consistent data standards and file formats, information quality improvements, and mechanisms for users to report errors to data providers were also prominent. Ideas for consolidating requests for new datasets and for developing semantic tools were also presented. Overall, the stewardship proposals had a mean composite score of 14 (based on the voting feature), with an average of three additional comments per proposal.

The usefulness proposals had a mean composite score of 10 with an average of two additional comments per proposal. Proposals for easy-to-use basic features for most users and

improved searching and display were most numerous. Ideas were also presented for using social media to promote innovative uses and to enhance data descriptions through tagging and similar tools. Other proposals addressed tools for developers, features for advanced data users, functions that would push data to regular users, and examples of innovative data use. Table 1 below summarizes these 91 proposals in logical categories, showing the number, total composite score, mean composite score, and total additional comments associated with each category.

Table 1
Assessment of stewardship and usefulness in the Data.gov online dialog

Stewardship Proposals (N=45)				
	N	Total score	Mean score	Additional comments
Create or improve metadata	12	158	13.2	44
Improve data management practices	12	136	11.3	29
Adopt data standards and standard formats	7	116	16.6	28
Assure information quality	5	46	19.2	11
Provide for user feedback and error correction	4	92	23.0	8
Consolidate requests for new datasets	4	52	13.0	18
Develop taxonomies, ontologies, thesauri	2	27	13.5	6
Usefulness Proposals (N=44)				
	N	Total score	Mean score	Additional comments
Provide easy to use basic features	10	65	6.5	10
Improve and enhance searching and display	10	91	9.1	21
Use social media to enhance description and use	8	46	5.8	19
Create and provide tools for developers	5	83	5.2	16
Provide features for advanced users	5	44	6.3	7
Push data and notifications to users	4	63	15.8	4
Demonstrate data uses	3	65	4.0	12
Data as of April 21, 1010				

The assessment presented in Table 1 is markedly different from the patterns observed during the initial Open Government dialog which took place before users had any substantial experience using Data.gov. In the earlier dialog, the comments were concentrated on usefulness topics (60 percent), with only a small fraction (14 percent) devoted to stewardship topics. Actual hands-on experience with Data.gov dramatically shifted the focus of concern. In the later dialog, participants' proposals were divided equally between stewardship and usefulness topics. Moreover, the total and mean composite scores, which are rough indicators of importance, are considerably higher for the stewardship proposals, which also attracted a much larger number of additional comments. It appears that the 2009 dialog drew comments about the idea and potential characteristics of information-based transparency, while the comments in the 2010 dialog reflect

actual experience and a host of practical considerations which are directed toward the need for stewardship and the consequences that occur when it is weak or lacking.

These results support the contention that stewardship and usefulness are complementary information policy principles that need equal consideration. When stewardship far outweighs usefulness, data management and quality may improve, but less transparency can result. When usefulness dominates over stewardship, the true value of transparency can be diminished by poor quality, inaccessible, or hard-to-use data. When these considerations are in relative balance, they can work together to help deliver information-based government transparency.

7. Conclusion and a future research agenda

Two broad principles, stewardship and usefulness, help simplify and balance the many considerations that are necessary to achieve greater government transparency and to realize the potential public value of government information. Stewardship is concerned with assuring responsibility, validity, and legitimacy; usefulness with encouraging application, exploration, and innovation. Without simultaneous and conscientious application of stewardship, a strong emphasis on use could lead to ineffective, inaccurate, or misleading results. However, without encouraging use, stewardship principles plus inherent conservatism and constraints on the bureaucracy can prevent both government and society from deriving greater public value from investments in government information.

Future research on this topic could focus on several areas. First, evaluation studies could take advantage of the natural experiment that is represented in the Open Government dialogs. For example, how well do the policies eventually adopted reflect the dialog comments? To what extent do they conform to the underlying values of open government? What are the elements, format, and dynamics of an effective public dialog? A related computer science and technology research agenda could develop, test, and evaluate a variety of information management, analysis, and presentation tools suited to meet the needs of different uses and users.

Research could also aim to develop an assessment framework that defines and evaluates the capabilities government organizations need to assure transparency. These capabilities would need to address stewardship and usefulness, as well as the balance between them. The goal of such a framework would be to help government organizations determine what a healthy balance between stewardship and usefulness might be in different policy domains and under different conditions. Studies that apply such a framework would generate data to test and refine the proposed conceptual model of self-correcting relationships between stewardship and usefulness. The results of this kind of research could also contribute directly to improved practice by helping government professionals better manage information content, design better systems, and develop more effective open government initiatives.

A policy research agenda is also evident. The Open Government Initiative brainstorming results are only a first attempt and a rough proxy for the full set of considerations that must go into a fully implemented transparency initiative. Important questions remain: Are all the salient issues identified? Have all legitimate stakeholders had a voice? Is this method of seeking public involvement fair, accessible, responsive, open? Does it generate public trust? The answers to these and similar questions will help determine the effectiveness and value of information-based transparency.

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Final version appears as Dawes, Sharon S. (2010). Stewardship and Usefulness: Policy Principles for Information-Based Transparency. [Government Information Quarterly](#), *Volume 27, Issue 4*, Pages 377-383.

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