4. A Model for Assessing the Impact of 21st Century Information Tools To Streamline the Operations of Government

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Introduction

Can government improve effectiveness and shrink costs by getting rid of paper-based approaches to serving citizens and regulating businesses? Virtually every service provided by government depends on information that comes from someone filling out a form: who qualifies for a social service, whether a business gets a license or registration, which company's bid is selected to build a road, etc. The vast majority of these processes now use electronic versions of government forms. But the government processes, or workflows, are almost always the same as they were when government relied on paper, leaving much room to reduce costs, errors, and the time government takes to make decisions and serve citizens.

Overview

Throughout the 20th century, government at all levels grew in both the breadth and volume of programs. Three types of government programs (statistical surveys, social services, and regulatory compliance) share a common operating process:

- A person or business fills out a form
- A government agency enters information from the form into its computers
- Computers tell the government whether everything is acceptable or whether more paperwork is needed

In addition, government purchasing, grants, and loan guarantees use a similar approach to receive bills and quarterly progress and financial reports.

Information technology creates opportunities to share information and the Internet makes volumes of data available much faster than government can collect and process information using 20th-century, paper-based approaches. The first generation of e-government solutions has shifted this paperwork to web-based forms, but has not changed the core government operating approach. Ironically, while governments have moved from paper to electronic forms, they have actually increased the use of paper-based operating approaches. The Office of Management and Budget's report, *Information Collection Budget for 2010*, found:

> In FY 2000, the public spent an estimated 7.4 billion hours responding to such collections. By FY 2010, that number grew to an estimated 8.8 billion, an increase of more than 19 percent. (p. 13).[1]

This chapter will examine the following three questions:

- What is the opportunity for government to get the paperwork out of operating processes?

1. White House Office of Management and Budget, *Information Collection Budget for 2010.* 2011. http://www.whitehouse.gov/sites/default/files/omb/inforeg/icb/2011_icb.pdf

- What are the potential cost and effectiveness benefits?
- What actions are needed that could generate those gains?

The Current Situation and Opportunities

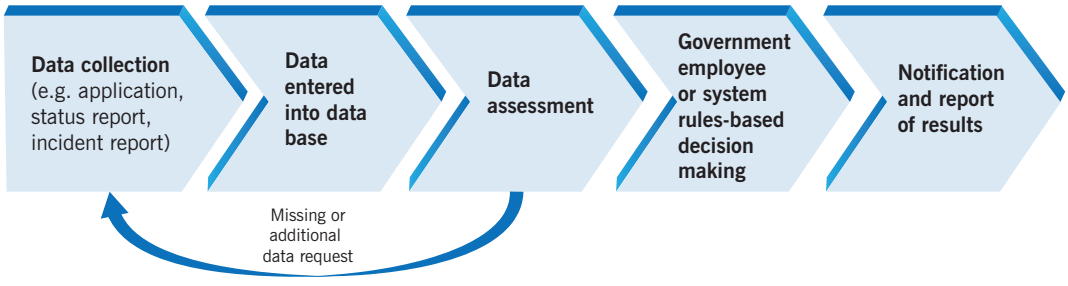
Is it possible to get order-of-magnitude improvements in government effectiveness and operating cost by streamlining common government operating processes? In general, government operating process success can be measured using four indicators:

- Policy outcomes
- Total costs
- Error rates
- Cycle time

Improvements in government operations will be reflected in such process metrics as fewer errors (e.g., improper payments), faster response time (e.g., stopping a robbery in process), and better outcomes for a given program budget. But identifying improvement opportunities requires an understanding of the way information is collected and used in government operations. Figure 1 depicts the five common operating processes of transactional government services.

A typical government operating process requires a citizen or organization to fill out a form. This includes forms for programs such as unemployment insurance, where an initial request for a benefit leads to a monthly status update to continue receiving the benefit or service. Next, the data are retyped or transferred electronically into a database. Under automation and e-government initiatives over the past 20 years, many government systems will review the data for completeness and issue a request for missing or additional data. Once those data are added, the process continues and the data are usually reviewed against a list of statutory criteria. Next, a government employee reviews the evaluation and notifies the applicant of the decision. In some cases, a computer system will issue the decision based on whether the data meet the criteria (for example, the Federal Housing Administration will issue a certificate of insurance based on an automated evaluation of whether an applicant's data meet certain criteria).

Figure 1: Common Government Operating Process



While this traditional process appears simple and straightforward, many people consider it to be slow, easy to manipulate, and burdensome. Often, people seem to think government is bureaucratic and more concerned with the form than the situation, especially since each form has its own user manual—a regulation comprising terminology unique to government. The problems start with a poorly designed form that create data problems that, in turn, often result in untimely or erroneous decisions.

Recently, the Office of Management and Budget issued a random call-to-action for U.S. federal agencies to reverse this trend. Cass Sunstein, then administrator of the Office of Information and Regulatory Affairs, wrote in an August 9, 2012, *Memorandum to Heads of Departments and Agencies:*

> To carry out their functions, Federal agencies must often ask members of the public to provide information by filling out forms (including applications to obtain permits, licenses, benefits, and grants). If poorly designed or unduly complex, such forms and their accompanying instructions can prove difficult and confusing, especially for individuals and small businesses. Unnecessarily burdensome paperwork requirements can undermine economic and other goals.[2]

With respect to federal forms, simplicity and ease of comprehension are exceedingly important. In recent years, agencies have made important efforts to simplify and streamline forms and, where appropriate, to eliminate them. Despite these efforts, it is a continuing challenge for agencies to minimize complexity and confusion.

Twenty-first century technologies offer new tools that can significantly and measurably improve government operations.

Complex or confusing forms will lead to people putting erroneous data into the process. Erroneous data lead to either bad decisions or timeliness stretched by requests for additional information. Moreover, these processes are focused on post-facto rather than preventative activities, and require someone to fill out a form before government can initiate an action. Clearly, there are always opportunities to simplify forms (e.g., auto-populating forms with data already collected). But might the biggest opportunities be achieved by replacing the common government forms-driven process with a more modern set of tools?

Emerging Tools

Table 1 describes seven emerging tools to improve government operating efficiency and effectiveness by streamlining common operating processes. The tools include a broad spectrum of technologies that are being applied to modernize government operations. They include analytic techniques for both structured and unstructured data made possible by recent growth in computing capability, as well as Internet-based social networking tools resulting from the wide use of the Internet in social media and e-commerce. In addition, there are virtual case management tools, which integrate pieces of 1990s technology with emerging tools to improve customer service.

Synopsis of Assessment Results

Table 2 presents a hypothetical assessment of each of the seven tools using the algorithm described in the box on page 33. Scores of six or more in a given process element illustrate

2. Cass R. Sunstein. Testing and Simplifying Federal Forms: Memorandum to the Heads of Executive Departments and Agencies, and of the Independent Regulatory Commissions. August 9, 2012. http://www.whitehouse.gov/sites/default/files/omb/inforeg/memos/testing-and-simplifying-federal-forms.pdf

Table 1: Seven Tools for Streamlining Common Government Operating Processes

Tool	Description	Purpose	Example Use in Government
1. Structured Data Analytics	Use of quantitative data and statistical tools to evaluate a situation, generally including performance measures, and determine relative likelihood of success of alternatives	To reduce errors and improve quality, timeliness, and usefulness of insights into a situation or options for responding to the situation	Risk analysis for targeting interdiction efforts in cargo screening, finding cause of a food-based illness outbreak
2. Tracking and Use of Social Media	Use of Internet-based social networking tools oriented toward community reviews and descriptions of events	To quickly identify and respond to events requiring government intervention or where government needs to rapidly communicate with citizens	Rapid identification of public safety incidents, such as restaurant uncleanliness
3. Web-Based Data Assembly	Use of Internet data sources for automated data collection	To rapidly assemble economic, statistical, transactions, and other data sets from open sources	Geographic data used in mash-ups.
4. Unstructured Data Analytics	Use of tools that organize and analyze non-quantitative data	To assess and improve understanding of non-numeric data (e.g., videos and independent audit and evaluation documents)	Fingerprint identification and facial recognition tools for criminal investigation
5. Social Network and Path Analysis	Also known as Link Analysis, a data-analysis technique used to evaluate relationships (connections) between various types of nodes, including organizations, people, and transactions	To identify criminal, fraud, terrorist, and other nefarious group activity.	The Recovery Accountability and Transparency Board's Recovery Operations Center (ROC) identification of fraud networks.
6. Use of Data Standards	Use of common terminology, or a taxonomy, to describe data across multiple databases	To enable information-sharing, communication, and re-use of related data	National Information Exchange Model (NIEM) used to share law enforcement data among federal, state and local first-responders
7. Virtualized Case Management	Use of software to relate information on a citizen's needs with service options	To enable information compiling, correction, analysis, and alignment of services to individual needs	Veterans Relationship Management

how a given tool can significantly improve government operations. Consider how each emerging tool is assessed for each process element, and certain emerging tools will stand out as most beneficial.

- Social media, web-based data assembly, and the use of data standards for data sharing tools score high for their ability to improve data collection.
- Web-based data assembly, the use of data standards for data sharing, and virtualized case management tools score high in getting data into databases because these three tools make significant use of XML and similar data exchange standards.
- For improving data assessment and decision-making, two emerging tools get very high scores (structured data analytics and virtualized case management) because their sophistication and robust analysis capabilities are especially well-suited to government operations.
- Unstructured data analytics and social network tools score high in improving data assessment and decision-making because of their analytic capabilities, although they did not get the maximum scores because they have some limitations in the breadth of applicability to government operations.

Table 2: Hypothetical Assessment of Tools for Streamlining Common Government Operating Processes

Tools	Data Collection	Data Base	Data Assessment	Decision Making	Notification and Report	TOTAL
1. Structured Data Analytics	1	1	8	8	1	19
2. Tracking and Use of Social Media	6	1	4	1	8	20
3. Web-Based Data Assembly	8	8	1	3	1	21
4. Unstructured Data Analytics	4	1	6	6	1	18
5. Social Network and Path Analysis	4	1	6	6	1	18
6. Use of Data Standards	6	6	2	4	1	19
7. Virtualized Case Management	4	6	8	8	6	32

Note: *Assessments ranked from 1 (low impact) to 8 (significant impact).*

- For notification and reporting, two elements (social media and virtualized case management) rate highly: social media ranks high for its ability to rapidly tailor and create two-way communications, especially in emergency situations; virtualized case management ranks almost as high because it facilitates tailoring communications and problem-solving to individual constituent needs.

In comparing tools in this hypothetical case against each other to prioritize the value of emerging tools for improving government operations, one tool stands out—virtualized case management. This tool offers a comprehensive approach to rework citizen service. It is unique in its ability to significantly improve assessment and decision-making, while also making large improvements in database management and notification and reporting. These improvements result from the broad visibility into client records and ability to make data current in today's virtual case management technology.

A good example of virtualized case management's application in government is the Veterans Relationship Management (VRM) initiative at the Department of Veterans Affairs. According to a press release from Secretary Eric K. Shinseki:

> Veterans will have a better experience when they contact VA for assistance, and our employees will be able to quickly convey accurate, up-to-date information through call centers and the Internet (September 21, 2010).

Virtual case management allows citizens and caseworkers to see all the data related to their situation, assess multiple facets of both the need and solutions options, and conduct follow-up and make modifications as needed—all faster, cheaper, and better than legacy approaches, which often have overlapping databases and operations that function independently. The virtual case management approach considers data and options across traditional silos, thereby providing benefits across the four metrics and at multiple phases of the operating process. It holds significant promise for improving government operating processes for benefits programs, licensing, and regulatory compliance.

An Algorithm For Evaluating Emerging Tools

Tools such as the seven presented in Table 1 can improve government operating processes. These improvements can be tracked by using standard process metrics, i.e., cycle time, cost, error rate, and outcome. Ideally, government should take advantage of any tools that help it perform faster. But given the reality of budget limits, few governments can afford to buy all available tools. Rather, governments can set priorities by ranking tool investments on the basis of costs and benefits using standard process metrics:

- **Cycle time:** Will the tools increase the speed of government action? How fast can government change course once it gets better information?
- **Total costs:** How many resources will be spent on the tool and what will be the net program impact?
- **Error rates:** Will the tool reduce errors in program decisions (e.g., improper payments)?
- **Policy outcomes:** Will the tool measurably improve achievement of policy outcomes?

The assessment method comprises three possible scores for a tool: high positive impact (score=2), low impact (score=1) or no impact (score=0). A score is assigned for each of the criteria: cycle time, total costs, error rates, and policy outcomes. So a given tool can be scored as zero (no impact in terms of cycle time, costs, errors, or policy outcomes) to eight (significant reduction in cycle time, total costs, and error rates, plus significant improvement in achieving policy outcomes). Since the common operating process has five elements, the maximum score would be 40 for a tool that significantly reduces cycle time, total costs, and error rates and significantly improves achievement of policy outcomes for all five elements of the common operating process.

Getting Ready to Manage the Use of New Information Tools

In the information age, 20th-century paper-based approaches still dominate public administration thinking on how government works. There are clear opportunities for improving government operations, including the seven emerging tools presented in this chapter and other new tools that will likely emerge in the future. To get started in identifying which tools may be best for improving a specific program, government executives should start initiatives by asking the following key questions regarding data collection and use:

- How much information is retyped into multiple government forms and systems? Does this create inconsistencies that are difficult to reconcile?
- How much of the information collected manually by government is printed out from a citizen or business computer and retyped into a government computer because the government computer does not allow for electronic data exchange?
- How many government services are not consumed, how many published data sets have errors, and how many services are delivered on the basis of erroneous information because the burdensome data form requirements are too difficult to get done right?
- How many government programs could be more effectively and efficiently operated using information already available from electronic sources, such as Twitter, Yelp, or existing databases?

Managing the Transformation

After identifying and evaluating tools using an assessment method such as the one presented above, government executives will have to manage the transformation. There are five issues that

executives will have to address in the transformation. Executives will have to tailor their specific actions to the specific circumstances surrounding each initiative.

- First, the leader will have to develop staff with knowledge of how to apply technologies in specific government operating environments.
- Second, some processes will need to break down data silos that prevent sharing and joint problem-solving.
- Third, leaders will have to confront or leverage cultural issues, such as being at the leading edge versus waiting for other approaches to fail.
- Fourth, leaders will have to consider the bigger delivery channel issues (both for services and touchpoint operations) that may affect how local, state, and federal governments work together in service delivery.
- Fifth, any changes in information-related processes have to incorporate an understanding of their implications for security and privacy issues.

Conclusion

Twenty-first century technologies offer new tools that can significantly and measurably speed up government operations and speed the delivery of services. Programs at local, state, and federal levels can apply the assessment method described in this chapter to select and prioritize those emerging tools that will best improve efficiency, effectiveness, and achievement of program outcomes. Additional emerging tools may be added to the scoring matrix and evaluated.

The assessment found that virtualized case management offers significantly more benefits for major government operations improvement when compared with other emerging government reform tools. However, the most beneficial tool requires significant executive effort in sponsoring and managing change. Using metrics in managing the initiative and maintaining focus on stakeholder pain points will enable the government executive to successfully apply the assessment method and obtain benefits from an initiative.

Given that emerging tools are new, government executives should have people on the project team who are increasingly knowledgeable about the initiative. At the same time, assessing options based on outcome metrics, such as those included in this chapter, will enable the executive to improve the likelihood of success by linking the prioritized projects with both the stakeholder desires and most beneficial opportunities.

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