Building a Methodology for Measuring the Value of E-Services

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Preface

Driven by both federal regulations and public demands for greater and more convenient access to its information and services, the Social Security Administration (SSA), in cooperation with the General Services Administration (GSA), commissioned a study, *Measuring the Value of Electronic Services (E-Services)*. The objective of the study was to design a methodology and make recommendations for measuring the value of e-services that might be used not only by the SSA but also across the federal government. The selected study team was composed of Booz Allen Hamilton consultants and academic leaders associated with the Kennedy School of Government at Harvard University.

The approach employed by the study team was iterative and inclusive, incorporating a cycle of research and analysis, development, presentation, and discussion with representatives from across the federal government, oversight organizations, and the private sector. Over six months, the team excavated the issues associated with evaluating e-services through the development of a teaching case, one-on-one interviews, and structured group discussions facilitated during a one-day symposium and a two-day workshop. Individuals participating in these activities included senior-level career government staff (i.e., chief information officers, directors, associate commissioners, and deputy/assistant directors) from several federal agencies and federal oversight organizations, as well as senior staff from private sector companies and non-profit/educational think tanks.

This report is the culmination of the *Measuring the Value of E-Services* study. It introduces the Value Measuring Methodology (VMM), a flexible framework for a multi-perspective assessment of e-services that is responsive to the e-Government environment, builds upon existing legislative guidance and executive direction, and incorporates proven analytical approaches. It reflects the analysis of all study findings as well as the insight and experiences of the study team.

Overview

"The explosive growth of the Internet has transformed the relationship between customers and businesses. It is also transforming the relationship between citizens and Government. By enabling individuals to penetrate the Federal bureaucracy to access information and transact business, the Internet promises to shift power from a handful of leaders in Washington to individual citizens."

President George W. Bush
A Blueprint for New Beginnings

The popular lexicon has been forever changed by electronic and digital technology, particularly the Internet. We now talk about accessing information using on-line databases and search engines rather than card catalogs. Business hours are 24/7 rather than 9-to-5. Modems are supplementing and, in some instances, replacing pavement as the conduit between customers and service providers. "Bridges" spanning digital divides and islands of information are more likely topics of conversation than those of the suspension variety. "Communities" are no longer delineated by street names and county lines, but by areas of interest and http addresses. And, whether on the phone, on-line, or face-to-face, phrases like "in a moment" have been replaced by the one simple word, "instant."

72.3% of Americans in 2001 go on-line, an increase from 66.9% in 2000.

UCLA Internet Project

This new vocabulary is only symptomatic of the fundamental shift in what we as a society expect and value. Research by GartnerG2 found that 79% of on-line consumers value convenience when shopping on-line, while only 32% valued price savings.[1] We have come to expect customized and integrated services, capable of remembering personal preferences and extending past our keyboards into over-the-counter transactions. The successes of "click and mortar" ventures compared to the struggles of "pure play" (web-only) retailers demonstrate the need for multi-channel integrated services that combine in-store service with the convenience and access to information provided by e-services.[2]

The gap between what customers want and what services are provided is the likely catalyst for customer dissatisfaction, declining revenue streams, and, ultimately business failures. Dissatisfied customers will tell 10 others about a negative experience and 2% of those told will make decisions based on that information.[3] To satisfy evolving requirements and provide the level of integrated services demanded, private sector organizations have changed their traditional ways of doing business.

The Internet and the use of advanced software technology have spawned new business models, and re-focused strategies on serving individual customers…

Across all markets, business strategies reflect a movement away from mass marketing toward individualized services, a focus on managing and maintaining a relationship with their customers, and the integration of electronic delivery channels. Organizations such as IBM, General Electric, and Ford are assimilating customer requirements into their formal business decision-making, processes, and IT systems using methods such as Customer Value Management and 6Sigma. They have created websites that provide their customers, stakeholders, and business partners with anytime/anywhere access to information and services.

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[1] *Price Is Nice, but Convenience Comes First*, GartnerG2, October 2001.

[2] *Multichannel Integration – The New Retail Battle Ground,* PricewaterhouseCoopers, March 2001.

[3] *The Impact of Customer Satisfaction on Revenue*, baldrigeplus.com, 1999.

The flip side of the movement toward tailored customer-focused business practices and adoption of digital technologies has been the effect on internal benefits resulting from redesigned business processes and the strategic use of information technology (IT). While making their customer-facing services more convenient, more flexible, and more integrated for their customers, private sector organizations have had to redesign their backend systems, using the same principles to increase internal efficiencies and cost savings. For example, FedEx has realized $10 million dollars in annual savings from allowing customers to track packages on-line instead of through its call center. Cisco Systems has reported savings of over $800 million per year by putting key business applications on the web. Perhaps the most notable success story is the whopping $1 billion in annual savings Oracle has reportedly realized by re-designing its business processes using advanced software and digital technologies.

> "Technology is the promise of changing the world…. It offers a possibility of not only making government better and more efficient, but fundamentally to rethink how government should work."
> Jacob Lew, Former Director, OMB
> Government Executive

The technological, process, and customer relationship transformation in the private sector has also had an irreversible impact on the public sector. Governance models worldwide are undergoing broad changes. Public officials at all levels of government are engaged in the same wholesale transformation that has caused private sector CEOs to reconsider the strategic value of IT and the importance of satisfying customer expectations and desire for customized services.

For the federal government, the digital age heightened the need and provided an unprecedented opportunity to transform its structure and fundamental relationship with citizens, empowering them with improved access to information and more responsive services while simultaneously achieving greater cost efficiencies. Like their private sector counterparts that are moving quickly toward "mass customization," the federal government is moving away from delivering "stock" services toward the delivery of "citizen-centered" services.[4]

> "The structure of the Federal Government was in large part developed more than 50 years ago and no longer meets the needs of today's citizens. This structure was designed so that stock solutions would flow from Washington along carefully established bureaucratic hierarchies. The result is a Federal Government today that is both insensitive and expensive."
> The President's Management Agenda
> Fiscal Year 2002
> Executive Office of the President,
> Office of Management and Budget

In January 2001, the Chief Information Officer's Council unveiled a database cataloguing more than 1,300 federal e-Government initiatives.[5] Many of these efforts have been criticized for using IT to simply automate rather than create or transform processes.[6] Perhaps the most notable initiative of this time period was FirstGov.gov. The federal government's first web portal, FirstGov.gov was launched in September 2000 and provides access to 47 million pages of government information, services, and online transactions.

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[4] *A Blueprint for New Beginnings, A Responsible Budget for America's Priorities,* US Government Printing Office, February 28, 2001.

[5] *Federal e-Gov Initiatives Number in the Thousands,* Government Executive Daily Briefing, January 24, 2001.

[6] *The President's Management Agenda, Fiscal Year 2002,* Executive Office of the President, Office of Management and Budget, August 25, 2001.

Key legislation and executive mandates and guidance supported these early e-Government efforts and helped to refocus government business models. They required the development and implementation of e-services and a shift in the relationship between the government and the governed. Additionally, they created a framework for planning and investment analysis in the digital age focused on performance outcomes and the strategic value of IT.

With the turn of the new century, President Bush has placed a new priority on performance/results, government's relationship with its citizens and use of the Internet, thus building on efforts initiated during the previous administration and reaffirming the nonpartisan, global qualities of this transformation. In the first year of his administration, President Bush called for an "active, but limited" government that: "Empowers states, cities, and citizens to make decisions; Ensures results through accountability; and Promotes innovation through competition." [7]

Regulation/Executive Guidance
Executive Order 12862: Setting Customer Service Standards, 09/11/1993
Government Performance Results Act (GPRA) of 1993 (OMB A-11)
Federal Acquisition Streamlining Act of 1994, Title V (FASA)
Paperwork Reduction Act of 1995
Electronic Freedom of Information Act Amendments of 1996
Clinger Cohen Act of 1996
Government Paperwork Elimination Act of 1998 (GPEA)
Executive Memorandum – Electronic Government 12/17/1999
Digital Signature Act of 1999
Government Information Security Act of 2000

To fulfill this vision of government and adapt to the "rapidly changing world," President Bush has articulated three guiding principles for government reform. Government should be:
- Citizen-centered, not bureaucracy-centered;
- Results-oriented; and
- Market-based, actively promoting rather than stifling innovation through competition.[8]

These principles are the cornerstone of the *President's Management Agenda* for fiscal year 2002. In this document, President Bush defines five government-wide initiatives or goals, one of which is "Expanded e-Government." The Office of Management and Budget (OMB) has articulated this element as follows: "The vision of e-Government is an order of magnitude improvement in the federal government's value to citizen."

To advance the effort to expand e-government, President Bush established a task force commonly referred to as QuickSilver. Led by the OMB's Associate Director for IT and e-Government, the task force was composed of individuals from across the government. The group solicited state, federal, and local government representatives to submit proposals for cross-government e-initiatives. The task force grouped the initiatives into four categories:
- Government to Citizen – "building easy to find one-stop shops for citizens to create single points of easy entry to access high quality of governmental services";
- Government to Business – "reducing the burden on businesses by using Internet protocols and consolidating the myriad of redundant reporting requirements";
- Government to Government – "make it easier for states to meet reporting requirements, while enabling better performance measurement and results"; and
- Internal Effectiveness and Efficiency – "improve the performance and reduce costs of federal government administration by using best practices in areas such as supply chain management, financial management, and knowledge management."

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[7] *A Blueprint for New Beginnings, A Responsible Budget for America's Priorities,* US Government Printing Office, February 28, 2001.

[8] *The President's Management Agenda, Fiscal Year 2002,* Executive Office of the President, Office of Management and Budget, August 25, 2001.

Of the more than 200 proposals received and reviewed by the Task Force, 23 were selected for further analysis and consideration. Each managing partner organization has been asked to further evaluate and document the value of their respective initiatives. The primary challenge of this task will be identifying and communicating the full value of their initiative in a way that is meaningful to both their partners/stakeholders and individuals/organizations responsible for making funding decisions.

The digital age has brought with it a fundamental change in both business and government based on the availability and accessibility of information and services, as well as changing customer expectations. No facet of the public or the private sector has been untouched by this revolution. To succeed in this environment, business planning and the evaluation of any investment – whether directly linked to an e-service or not – must create a balance within a multi-dimensional spectrum of value. This does not suggest that traditional business planning and analysis techniques should be abandoned, but that they should be supplemented to address the requirements of the digital age and a new form of governance.

E-Gov Initiatives: Final Selections and Managing Partners

Crosscutting Initiative: e-Authentication, Managing Partner, GSA

Government to Citizen	Managing Partner
1. USA Service	GSA
2. EZ Tax Filing	TREAS
3. On-line Access for Loans	DoEd
4. Recreation One Stop	DOI
5. Eligibility Assistance On-line	Labor

Government to Business	Managing Partner
1. Federal Asset Sales	GSA
2. On-Line Rulemaking Management	DOT
3. Simplified & Unified Tax & Wage Reporting	TREAS
4. Consolidated Health Informatics (business case)	HHS
5. Business Compliance One Stop	SBA
6. International Trade Process Streamlining	DOC

Government to Government	Managing Partner
1. e-Vital (business case)	SSA
2. e-Grants	HHS
3. Disaster Assistance & Crisis Response	FEMA
4. Geospatial Information One Stop	DOI
5. Wireless Networks	DOJ

Internal Effectiveness & Efficiency	Managing Partner
1. e-Training	OPM
2. Recruitment One Stop	OPM
3. Enterprise HR Integration	OPM
4. Integrated Acquisition	GSA
5. E-Records Management	NARA
6. Enterprise Case Management	DOJ

source: OMB News Release, 2001-54

In government's rush to electronic service delivery, it is important to remember that fundamental principles and practices of good IT planning & management apply equally as well to effective customer-centric web-based applications.

David L. McClure, Associate Director
Government-wide & Defense Info Systems
GAO Testimony to the Subcommittee on
Government Management, Information & Technology

Environmental Inhibitors to Progress

The energy and excitement created by the progress of President Bush's e-Government Task Force and the anticipated implementation of the QuickSilver initiatives belie the relatively sluggish progress being made toward e-Government in this country and throughout most of the world. Although a consistent vision of e-Government has emerged, the means for actualizing that vision have not. Research suggests that major inhibitors to the realization of the e-Government transformation include government stovepipes (and associated turf battles), funding availability, and leadership. To be effective, a methodology for measuring the value of e-services must be developed based on an awareness of the environment in which it must function.

Government Stovepipes/Turf Battles – The current structure of government was built upon bureaucratic requirements far removed from the requirements and the potential of today's digital age. Between and within government agencies, disparate business processes and islands of information and automation have entrenched government in a culture that is often inflexible, inefficient, and at times, ineffective. Organizations within government (whether considering the structure of government as a whole or by departments and agencies) are likely to exhibit significant resistance to dismantling niche business units and processes, fearing that doing so will result in a loss of control, funding, and ultimately mission.

The most important inhibitors to eServices progress will be …

source: SSA Measuring the Value of eServices Workshop, November 2001

The organizational structure of government is mirrored in its lack of enterprise architecture and standard approaches to foundational applications and technologies (e.g., authentication, security). In spite of requirements to develop enterprise and IT architecture plans (OMB A-130, Clinger Cohen Act), government entities continue to build IT systems project by project. The failure to recognize IT economies of scale and place value on infrastructure that can support a variety of systems across service and organizational boundaries perpetuates current structural and managerial isolation. This patchwork approach has also made channel convergence more difficult, often isolating data and processes for the same service at multiple entry points within a single organization.

Disparate technologies and a lack of interoperability/standardization have an analogous effect when considered across the boundaries of all federal government organizations. The failure of organizations to adopt standard approaches to foundational applications has and will continue to impede the ability to create truly seamless government services. If this is allowed to continue, the results will be duplicated effort and spending and increased frustration amongst citizens. For example, authentication will be required in varying degrees for many government e-services. If authentication approaches are independently developed and implemented by each agency, multiple sets of protocols will be required to access the federal government's e-services. This would be both inconvenient for government customers and costly for government.

Using standard technology protocols, providing seamless services, and creating unified and simplified business processes will create significant benefits for government, its business partners, and its customers. Still, cross boundary initiatives are considered to be highly challenging and risky. In the current environment, the threat of disenfranchisement continues to overshadow potential benefits.
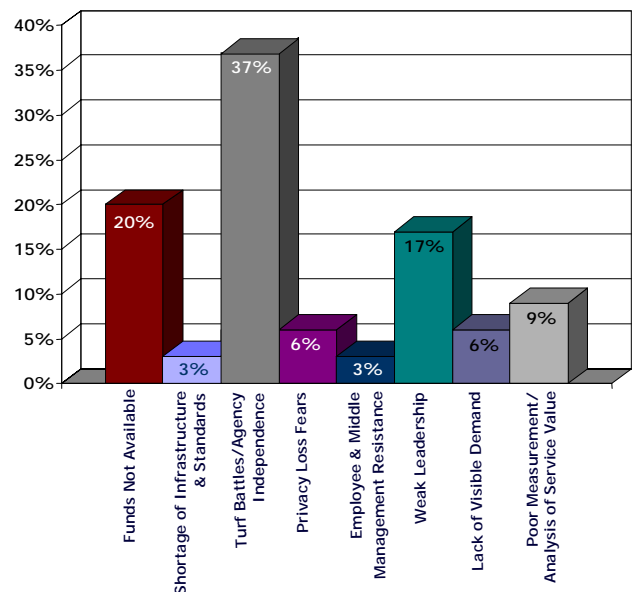
Attempts by the Bush administration and the e-Government Task Force to break down these barriers and encourage cross-agency initiatives have been somewhat successful in alleviating the resistance to the creation of "seamless" services. However, many challenges remain as the Task Force attempts to move from words to action.

Funding Availability – The current appropriation process is built on the same bureaucratic tenets that created today's stovepiped structure and culture. Agency and program budgets are considered individually, funded by separate "buckets" of dollars that limit the terms of their use and provide appropriators with limited opportunity to identify spending on redundant or related services. Appropriations not spent at the end of a fiscal year are often re-incorporated into general funds, effectively confiscated if they have not been obligated. This causes an end-of-year flurry of spending. Moreover, organizations attempting to reduce the cost of their services are often reluctant to report cost savings, knowing that their increased efficiency will likely result in a reduced budget rather than an opportunity to reallocate resources.

Compounding the inconsistencies between the e-Government vision and the flexibility required in the rapidly evolving digital age are the legislation and timing associated with the federal budget process. The numerous pieces of legislation and executive guidance issued since the 1990s created the structure in which government organizations must plan, evaluate, and justify investment requests. Written in what was effectively the infancy of e-Government, legislation including GPRA and the Clinger Cohen Act made significant improvements in guiding organizations toward linking budget to performance and demanding rigorous analysis of costs, benefits, and risks. Although OMB has amplified its guidance, accommodating the changing and more strategic role of IT investments, the importance of ROI continues to loom large, sometimes causing "gaming" of the system or performance of an incomplete cost benefit analysis.

The final funding related issue inhibiting the progress of e-services is the length of the federal budget process. The typical timeframe from project conception to the appropriation and authorization of funds is a period of no less than 18 to 24 months, an eternity for organizations attempting to keep pace with rapidly evolving customer needs and technology. The greatest variable in the federal budgeting process is likely to be the time spent attempting to obtain support, which requires communication of the value of an initiative in a manner that is meaningful to and in alignment with the priorities of multiple organizational units within a single agency.

Leadership – Leadership can have either a positive or negative effect on the progress of e-services. Ineffective or poorly defined leadership exacerbates the time-consuming and often frustrating process of building the consensus required to move forward with an e-service. Research strongly indicates that the confusion and conflict over priorities and goals (as well as fear of political risk) can effectively shut down the creativity and initiative required to design the processes and adopt the technology necessary to enable e-Government. Decisive leadership can catapult the rate at which e-services are developed and implemented.

Underlying the impact of leadership on the progress of e-services is the need for comprehensive planning and analysis. While indecisive leaders may become paralyzed by the need for the reassurance afforded

The most important facilitator of e-services progress will be:
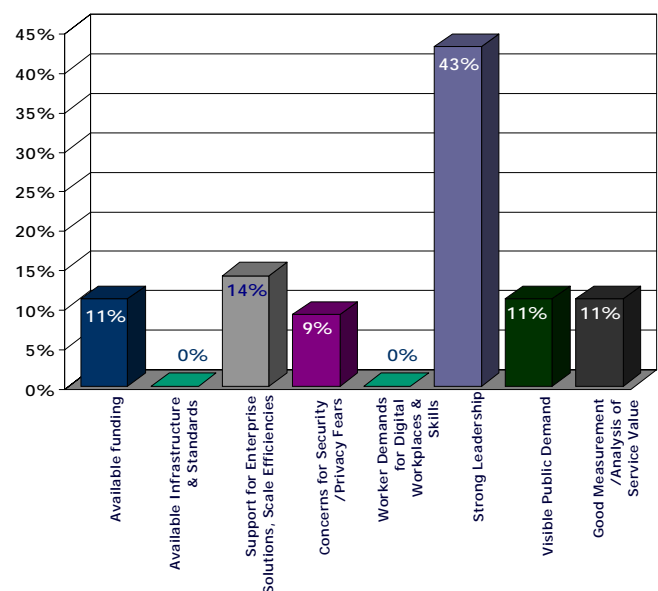
source: SSA Measuring the Value of e-Services Workshop, November 2001

by exhaustive analysis (often referred to as "analysis paralysis"), strong leaders may move too quickly, precluding the necessary substantive analysis.

"…while it (federal government) is moving aggressively to modernize and make extensive use of new technologies and Internet capabilities to better serve its citizens, it is also suffering a steady and inexorable deterioration of its current IT leadership."

The Transforming Power of Information Technology: Making the Federal Government an Employer of Choice for IT Employees [9]

In the digital age, leadership is not just a managerial issue. Keeping pace, making forward-looking investment decisions, and effectively implementing e-services require the stewardship of experienced and knowledgeable IT leaders. But maintaining an adequate level of federal IT leaders – or staff – has become an issue that could potentially halt e-Government progress. According to the Information Technology Association of America, 60-70% of the estimated 70,000 federal IT staff will need to be replaced by 2003. In recent testimony by the General Accounting Office (GAO) before the Subcommittee on Technology and Procurement Policy Committee on Government Reform in the U.S. House of Representatives, the use of contractor support is not a cure for the IT workforce shortage. Without the appropriate IT skills and knowledge, agencies have difficulty defining requirements, analyzing alternatives, performing price analyses, or providing adequate oversight of contractor performance.[10]

Each of the inhibitors identified – stovepipes/turf battles, funding, and leadership –contribute to poor organizational performance in measuring the value of e-services. A recent assessment in the *President's Management Agenda* contends that the $45 billion federal investment in IT during FY01 has not produced measurable gains. The report identifies four key reasons for this poor performance:
1. Agencies continue to evaluate IT systems according to their ability to satisfy internal requirements rather than by standards relevant to the organization's mission.
2. IT continues to be used to automate existing processes rather than as a tool for facilitating new processes.
3. Agencies continue to be territorial, remaining consistent with obsolete governance models, effectively maintaining stovepipes, and continuing redundant investing.
4. Agencies continue to look at IT systems in isolation, failing to create an integrated enterprise architecture.

A new methodology for measuring the value of e-services, in itself, is not likely to bring down the barriers of these inhibitors. Some inhibitors will need to be addressed by changes in policy and procedures across the federal government. Others, however, may be addressed through incorporation into a set of inclusive requirements.

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[9] This report, published in August 2001, was prepared by a Panel of the National Academy of Public Administration for the Chief Information Officers Council and the Administrative Office of the U.S. Courts.

[10] *Human Capital: Attracting and Retaining a High-Quality Information Technology Workforce*, Statement of David L. McClure before the Subcommittee on Technology and Procurement Policy Committee on Government Reform, October 4, 2001.

Methodology Requirements

A methodology for measuring the value of e-services that may be applied across the federal government and for services in each of the business lines identified by the President's e-Government Task Force (Government to Citizen, Government to Business, Government to Government, and Internal Effectiveness and Efficiency) must be based on a set of broad requirements. The foundation of the Value Measuring Methodology (VMM) are three all-encompassing requirements that were defined based on the identification of the environmental inhibitors to the progress of e-services, research of current government practices and mandates, best practices, and interviews and polling feedback from government employees from both agency and oversight organizations.

The value of e-services must be measured within the context of e-Government. The value of an e-service is inextricably linked to its ability to move government closer toward the fulfillment of the vision of e-Government. The common characteristics of the e-Government vision around the world, presented in the box to the right, have been synthesized for the purposes of this study.

For the methodology to be responsive to the context of e-Government, it must consider the environmental inhibitors that are impeding the progress of e-services. While these inhibitors, broadly categorized in the previous section as government stovepipes/turf battles, funding availability, and leadership, cannot be eliminated by the methodology, their impact may be diminished. The table below lists a sampling of requirements that demonstrate how the VMM should mitigate the effect of inhibitors in each of the three categories.

Common Characteristics of the E-Government Vision Around the World
The business of government is "to serve" all people equitably. Government activities/services are driven by the needs of the whole constituency (i.e., citizens, businesses, employees and partnering governments)
Government services are evolutionary, producing the results required today while building the capacity and capabilities required for the future. New government processes and systems advance the achievement of government-wide and departmental performance outcome goals
Government, its partners, and its "customers" are parts of a single, seamless system. Changes in the processes or needs of any one part of a system will impact all of the other parts.
Government's ability to serve depends on a relationship of trust. Assurance and preservation of security and privacy are core requirements of any government initiative.
Government actively promotes innovation, competition, and choice. Government leverages skills, capabilities, and products available in the private sector to maximize efficiency.

source: Booz Allen Hamilton Analysis

Inhibitor	Sample Requirements
Government Stovepipes/Turf Battles	• Apply a decision framework consistently throughout and across organizations. • Consider and measure the value of services based on their ability to breakdown stovepipes. • Consider investments in e-services within the context of a portfolio to allow for the identification of redundancies in processes and infrastructure.
Funding Availability	• Conduct analysis from multiple perspectives to provide the depth and flexibility required to facilitate justification, communicate value and build a compelling business case. • Perform analysis incrementally in concert with the development of the initiative, refining analysis and building support over time.
Leadership	• Define the factors that must be considered when measuring the value of an e-service. • Require the consistent application of a decision framework throughout and across organizations. • Employ portfolio management to view the entire scope of investments and provide the information required to balance investments, priorities and redundancies in process and infrastructure.

The value of an e-service must be measured within the general framework for strategic, performance, and capital planning created by current legislation.
The framework of analysis established in GPRA and Clinger Cohen and supported by OMB circulars and memoranda provide specific requirements for linking strategy, performance, and capital planning. Although shortcomings in these requirements have been identified, they represent current best practices and are the foundation for developing a new methodology.

The value of an e-service must be measured in a manner that is flexible enough to communicate strategic direction and value across the spectrum of agency and government-wide management levels without creating "analysis paralysis." The methodology for measuring the value of e-services must be not only rigorous and structured enough to be comprehensive and repeatable, it must also be do-able. The method must avoid an excess of process and ensure that analysis itself does not stymie progress. It must be flexible enough to allow for a top-down communication of strategic direction and imperatives and the bottom-up communication of value, allowing each level of management to have its own point of view, while maintaining a consistent sense of purpose.

These requirements, joined with an understanding of the digital age, emerging trends in e-governance, private sector best practices, and established analytical approaches were used to develop the VMM.

OMB/Congress
Appropriation Decisions
Will the initiative provide value to the public at large?

strategic direction | communication of value

Senior Leadership
Prioritized Investment Portfolio
Will the initiative maximize value-for-the-dollar?

strategic direction | communication of value

Mid-tier Management
Investment Justification
Will the initiative satisfy the needs of customers?

strategic direction | communication of value

Program/Project Level
Investment/Activity Management
Will the initiative increase the speed of service while maintaining quality?

Methodology

Measuring the value of an investment is an inextricable component of business planning. Whether undertaken by a private or public sector organization, the process is fluid and iterative, moving from the notional to the concrete. It begins with the formulation and definition of an organization's vision and strategy and begins to actualize with the development of concepts for achieving that vision. When those concepts are actualized, the organization's vision should be realized—but that is by no means the end of the process. To remain vital to and in sync with their customers, organizations must continuously use the knowledge gained through this process and re-assess the direction in which they are headed. The process of planning and working through these phases helps organizations develop and refine the information they use to make decisions.
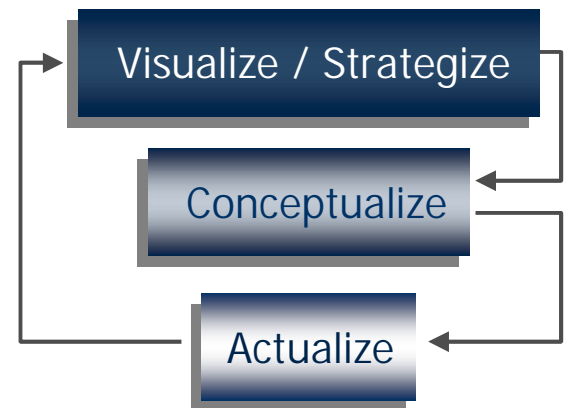
It is within this context that the methodology for developing e-services was conceived. The methodology is presented in two parts: **6 Essential Factors** and *VMM Framework and Assessment Analytics*. The discussion of factors – customer value, social value, government financial value, operational /foundational value, strategic/political value and risk – surveys issues captured in the factor and discusses techniques used to measure the associated value. The VMM Framework and Assessment Analytics section offers approaches and tools for creating a government-wide investment analysis process that is not only consistent with the vision of e-Government, but also complies with commercial best practices, current legislation, and OMB guidance.

6 Essential Factors

In the past, the measurement of the value of an IT investment revolved primarily around the comparison of quantitative benefits accompanied by a narrative description of qualitative benefits. The mechanics of developing an ROI were well developed, while a structured approach to evaluating non-financial benefits remained ill defined. This tended to emphasize the value of ROI, primarily an internally focused metric, and diminish the importance of evaluating potential benefits to other stakeholders.

The movement toward e-Government demands a new approach to business planning and analysis. ROI remains an important metric, but must be balanced by the rigorous analysis of other impact points. The **6 Essential Factors** we have identified create a framework for the multi-dimensional analysis required to understand and capture this value fully.

When analyzing an e-service initiative within the **6 Essential Factors** framework, linkages or duplication will be found among the factors. This is both unavoidable and critical to the accurate measurement of value. Decisions must be made about where to capture value and how it should be measured based on an understanding of the overall purpose of the initiative and, to a lesser extent, whether or not the value can be best expressed as a dollar figure.
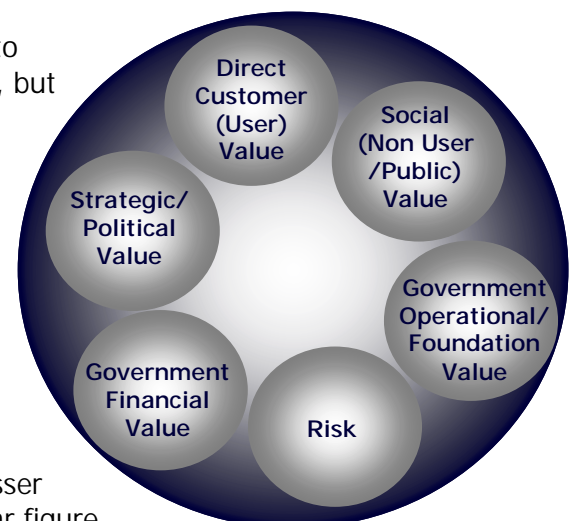
Factor 1 – Direct Customer (User) Value

Providing a service through an electronic channel can satisfy customer requirements – whether the customer is a citizen, business, employee, or other government organization – that cannot be realized fully via paper-based or face-to-face processes. Although a key to success in the private sector, where customer value often translates directly into revenue, consideration of the customer benefits of a government IT investment frequently relied upon the questionable assumption that if an investment or process was good for government, it was good for the public.

The impact of misinterpreting or ignoring direct customer value can be devastating. As with any commercial product or service introduced in the e-business marketplace, the ability of a government e-service to deliver value hinges in large part on whether or not that service is used. The short history of the dot.com industry is littered with examples of promising websites and services that failed due to a lack of understanding of customer value issues (e.g., usability, privacy/security tolerance, pricing). For example, May 2000 marked the official demise of Boo.com, a fashion retail site that reportedly spent $120 million in a period of six months. Its failure has been in large part attributed to usability issues. The Boo.com website was described as "wildly over-designed, difficult to navigate and completely out of touch with most Web retailers' vision of quick shopping and ease of use."[11] The site was blocked to MAC users, demanded the use of plug-ins, hid navigation tools under graphics, and caused browsers to crash.[12] The failure of this well-funded venture exemplifies the importance of understanding and analyzing direct customer value.

> "Where did Boo go wrong? Most memorably, on the screen. Everywhere on the screen. The site seemed actively designed to stop people…buying stuff. It behaved in exactly the opposite manner to Amazon.com, the site that first made consumer Web commerce seem like a good idea."
>
> How to rebuff stupidity:
> "Remember Boo.com"
> Shorewalker.com
> May 29, 2000

Quantifiers of customer value for a government e-service should be selected according to the business line, type of service and customer needs. For example, if customers indicate that easy access to government information is their priority, value may best be quantified by calculating the percentage of transactions conducted via electronic channels (the take-up rate), calculating the number of users who access services outside of normal business hours, or counting the number of clicks required to find information on a web site. If the e-service falls within the Government to Government and Internal Effectiveness and Efficiency business lines, value may be measured by considering such things as attrition rates, staff recruitment rates, employee satisfaction, absenteeism, and percentage of time spent in tasks consistent with skill levels. Due to the criticality of this factor, a discussion of some additional methods for assessing customer value is provided in the following sections.

The Value of Customer Time – Multiple techniques are currently used to measure the value of customer time. Some organizations quantify time saved in terms of minutes, while others choose to monetize the value of customer time based on a single rate (e.g., Iowa ROI Program) or multiple rate structure (e.g., Department of Transportation/Federal Aviation Administration). The selection of the appropriate technique for measuring the value of customer time should be based upon an understanding of who will "receive" the value.

Organization	Category	Recommended Value
US Department of Transportation / Federal Aviation Administration[1]	Air Carrier: Personal Business All Purpose	$19.50* $34.50* $26.70*
	General Aviation Personal Business All Purpose	$26.30* $37.50* $31.10*
Iowa ROI Program[2]	All Citizen Time	$10.00

* 1995 US dollars per person

1. *Economic Values for Evaluation of FAA Investment and Regulatory Decisions*, Treatment of Values of Passengers in Air Travel, FAA
2. *IOWA Return on Investment Program Funding Application for FY 2003 Request*, State of Iowa

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[11] *Boo Hoo!*, salon.com, May 18, 2000.

[12] *How to Rebuff Stupidity: Remember Boo.com*, shorewalker.com, May 29, 2000

Whatever the technique applied to measure the value of customer time, it is important to remember that the purpose of this particular measure is to communicate the value of this investment to the individual citizen. Unless it is used to determine a price to charge for the service, it is probably best to calculate the value at the individual level (e.g., 1 hour annually for 30 million customers has more meaning than only stating 30,000,000 hours of time saved).

Customer Group	Recommended Approach	Rationale
Citizen	Single dollar value x Time saved Time saved	• Often, the monetary value of customer time is largely inconsequential: it is not fed back into the agency budget and is unlikely to make a significant increase in economic indicators such as consumer discretionary spending or family savings. Therefore, it is recommended that the value of citizen time be quantified in units of time (i.e., minutes and hours). • If there is a need to monetize customer time, it is strongly recommended that a single rate for all citizens be used. Using higher rates for some individuals risks skewing services and raises questions of equitable treatment of members of our society.
Business	Appropriate rate x Time saved	• Enabling business to reduce the staff time spent transacting with government has a direct impact on the bottom line. Therefore, it is reasonable to monetize time based on appropriate hourly rates.
Government (Direct Users)	Appropriate rate x Time saved	• Enabling other government agencies to reduce the amount of staff time expended on transactions with other government agencies will affect that organization's budget. Therefore it is reasonable to monetize time based on appropriate hourly rates. • May be assessed in Government Financial Value (Factor 3); however, be careful not to double count.
Employee	Reductions in government employee staff time will result in value more appropriately captured in either an organizational productivity measure (Factor 4) or internal cost savings or cost avoidance (Factor 3); however, be careful not to double count.	

Other Customer Cost Savings – When an electronic delivery channel is used in lieu of a face-to-face or paper-based process, customers will be spared costs such as those associated with automobile mileage, gasoline, postage and stationery.

Contingent Valuation/Willingness to Pay – An alternative means of determining the value of a service is to survey users regarding how much they hypothetically would be willing to pay for something that is not currently available to them. Determining a user's willingness to pay (WTP) is a concept of contingent valuation that is a frequently used method to place monetary value on goods not bought and sold in the marketplace. Although this method has some skeptics, it is considered a highly flexible way to estimate the value of nearly anything. For example, in *The Benefits of Reducing Gun Violence: Evidence from Contingent-Valuation Survey Data*, Jens Ludwig and Philip J. Cook described how they used a national survey to estimate the statistical value of life and the "real" cost of gun violence. Their approach involved asking survey respondents questions about their WTP to reduce gun violence by 30%. Based on the responses, Ludwig and Cook determined that the public's WTP to reduce gun violence by 30% was $23.8

> In the majority of cases, citizen time and cost savings should be evaluated exclusively on an individual basis. Multiplying this type of savings by the total number of potential users is likely to distort the actual benefit.

billion, or $750,000 per injury. They concluded that the statistical value of a life is between $4.05 and $6.24 million, a range consistent with estimates developed using other approaches.[13]

Customer Feedback – A discussion of approaches to measure user value would be incomplete without the mention of customer feedback. Although government decision-makers may have a strong intuitive *feeling* for what citizens, employees, business partners, and other government agencies want and how they perceive value and performance, the only way to *know* is to ask. Customer feedback is a pivotal input at all decision points throughout the development and delivery of an e-service for any business line. Requirements and ability to get customer feedback for a particular service will increase as the service nears full implementation and operation.

> "While the role of government is to deliver services, not necessarily to make taxpayers happy, it is important that government be perceived as both efficient and effective by those taxpayers."
> American Customer Satisfaction Index

> "Customer satisfaction is also a measurable assessment to make Federal managers accountable and to provide feedback to Congress on how well agencies and their programs are delivering services."
> American Customer Satisfaction Index

Numerous government agencies currently use the American Customer Satisfaction Index (ACSI) to gather customer satisfaction data. ACSI, produced by the University of Michigan Business School and its National Quality Research Center in partnership with the American Society for Quality and the CFI Group, was chosen by GSA to provide government agencies with an accurate way to measure customer satisfaction. The ACSI is based on responses from actual service users who are polled on their expectations and perception of service quality. Responses are measured on a scale of 0 to 100. The ACSI model incorporates causal equations that link customer expectations and perceived quality and value to customer satisfaction.[14]

For organizations assessing the value of an e-service during a more conceptual phase, benchmarking information on satisfaction and perceptions of value may be used.

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[13] *The Benefits of Reducing Gun Violence: Evidence from Contingent-Valuation Survey Data,* Jens Ludwig and Philip J. Cook, 1999.

[14] CustomerService.gov.

Factor 2 – Social (Non-User/Public) Value

The social value of an initiative is the benefit realized by individuals and organizations that are neither direct users of the service nor providers of the service. The increased use of the Internet and development of advanced software technologies, such as data warehousing, have significantly impacted areas of social value including but not limited to: enhanced government service effectiveness, efficiency, fairness and equity; improved or increased personal privacy, safety and security; greater access to government information; improved economic development; and the reduction of fraud, abuse and waste.

The events of September 11, 2001, and the priorities of the Bush administration have highlighted the importance of considering the social value of investments. For example, an initiative designed to reduce the fraudulent use of Social Security Numbers (SSNs) will have multiple impacts on social value. It may improve the stewardship of public funds by reducing payments on fraudulent claims. It may also increase public privacy and safety by reducing identity theft and making it more difficult for terrorists or criminals to use SSNs to facilitate their plans.[15,16] Failure to explicitly analyze and weigh the effect of an e-service on social value can result in the implementation of a service that is insensitive to the needs and concerns of society-at-large. For example, it may be perceived that an initiative exposes personal information to public access or caters to one segment of society over another. Furthermore, failure to incorporate this value in the decision-making process may cause highly valuable projects to be missed.

The value chain that must be followed to link an e-service to social value can be either direct or quite removed. Organizations must determine whether downstream effects on social value are so far removed that the cost and ultimate worth of the analysis is minimal. For example, it is fairly simple to observe and therefore measure the impact of improvements in the oil drilling permitting process on the cost to drill and, ultimately, the consumer price for oil. It is however, not as clear to connect the effect of a particular e-service such as on-line change of address filing, with the reduction of smog in a particular community. Is this linkage possible? Yes. Would it be valuable to the decision-maker? Not likely. Ultimately, determining which elements of social value to evaluate will be most effectively and efficiently made through the informal analysis of decision-makers.

Equity	• Quality of service is consistent regardless of delivery channel.
	• Electronic information and transactions have been made accessible to all members of society (compliance with Section 508 of the Rehabilitation Act and Executive Order 13166, "Improving Access to Services for Persons with Limited English Proficiency.")
	• Individuals without access to electronic channels are provided with alternative means of access.
Access to Government Information	• Estimated usage of electronic channels to access information or conduct transactions outside of traditional business hours.
	• Increased percentage of eligible people served.
Privacy/ Security	• Preservation of public trust through compliance with industry and government standards.

The table provides examples of how social value in the areas of equity, access, and preservation of security/privacy may be evaluated.

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[15] *Social Security Administration's Response to the September 11, 2001 Terrorist Attack, Testimony of: James G. Huse, Jr., Inspector General of the Social Security Administration,* November 1, 2001.

[16] *Inspector General's Semiannual Report to Congress: A Calling That Counts April 1 2001 – September 30, 2001,* Social Security Administration.

Factor 3 – Government Financial Value

Government financial benefits have a direct impact on organizational (service provider) and other federal government budgets. Identified as either cost savings or cost avoidance, these benefits are typically captured in ROI calculations. Accurate measurement of government financial benefits requires that organizations understand not only the technology proposed by the e-service but also the business processes and management requirements of the new service. For example, organizations must determine whether an e-service that provides the opportunity for self-service will eliminate staff hours or simply re-distribute staff efforts.

Cost Savings (examples)
- Potential reduction of staff hours.
- Elimination or reduction of costs associated with paper processes, such as postage & printing.
- Elimination or reduction in the operation and maintenance of brick & mortar facilities.
- Elimination of redundant or outdated systems.

Cost Avoidance (examples)
- Avoid the cost associated with increasing the size of the workforce due to increased demand by implementing a self-service initiative..
- Avoid the cost associated with expanding IT infrastructure due to increased demand by implementing a scaleable web-based system.
- Avoid the costs associated with leasing additional facilities to serve increased demand by moving services on line..

Also impacting the determination of government financial value will be the selected business model supporting the e-service. Before financial value can be determined accurately, organizations must make decisions such as whether a fee will be charged for access to a particular e-service or if the hardware and software required for the e-service will be acquired through a share-in-savings relationship with an application service provider.

Even the most comprehensive and complete cost analysis of a proposed e-service is not enough to determine its full financial value. The estimated costs of the proposed initiative must be compared to the current cost of providing the same or analogous service. The availability and accuracy of current cost information will largely determine the ability to estimate the financial benefit of a proposed e-service accurately.

Determining the financial value of an e-service may be accomplished through an understanding of cost allocation. This facilitates a comparison of the estimated unit cost of the proposed solution to the unit cost of continuing current processes. One method of cost allocation is Activity Based Costing (ABC). Using the ABC approach, analysts may measure the costs and performance of activities and processes and assigns them to all products or services delivered. One of the benefits of this method is the ability to create a complete understanding of costs by accounting for the full range of direct and indirect costs that can be attributed to a particular process. This technique is very valuable in communicating to decision-makers how changes in processes affect performance and cost.

"Right now, if you try to cut funding, [agencies] say it will hurt and they will achieve less results. But they can't show how performance will decline…If [agencies] knew the unit cost of an activity, they could see what the impact of a change in funding would be."

John Mercer,
Former Counsel to the
Senate Governmental Affairs Committee
Government Executive

Factor 4 – Government Operational/Foundational Value

An important aspect of the value of an e-service is the order of magnitude improvement that may be achieved in both current services (operational) and in preparation for future demand (foundational). The ability to measure either of these values requires an understanding – both current and projected – of the size of the user community, workforce resources, business processes, productivity and quality indicators such as error rates. Based on this information, an analysis can be conducted to determine estimated order of magnitude improvements that can be achieved by implementing the e-service.

A compelling way to measure government operational and foundational value is to develop the Base Case Option. More than a picture of the status quo, the Base Case Option projects the effect of maintaining current systems and processes while attempting to keep pace with changing levels of demand and workforce (e.g., retirement/attrition) at current levels of service quality and customer satisfaction.[17]

Government Operational Value
• Increased number of people served   • Reduced errors (e.g., erroneous payments, duplication)   • Simplified processing (fewer steps)   • Reduced duplicated effort (collect information once, use many times)   • Increased self-service   • Increased staff productivity   • Channel convergence (seamless services across delivery channels)

Evaluating this scenario, even at the rough order of magnitude level, will allow the measurement of operational value from a point of view not otherwise possible. As a project moves through the stages of development and more precise data are required, the Base Case Option should also be refined.

> **"It is not adequate to state the base case simply as the continuation of the current situation. It … should predict the long-term costs and benefits of maintaining the current method of operation, taking into account the known external pressures for change, such as predicted changes in demand for service, budgets, staffing or business direction."**
> **An Enhanced Framework for the Management of IT Projects, Treasury Board of Canada**

Foundational value is created when measurable advancements are made in preparing government employees and processes, society, and infrastructure for the future demand and expansion of e-services. Early investments in e-services are burdened with the costs associated with building required infrastructure and skills. Cost analyses that do not incorporate foundational value can make calculating and demonstrating a short-term or even long-term value difficult or even impossible. Decisions made based on these calculations will stifle innovation and make progress toward transforming government sluggish at best. Organizations taking an enterprise-wide approach to e-Government will be able to demonstrate the foundational value of an investment by calculating how the infrastructure, skills, and processes being put in place will be leveraged by other services and by increasing levels of demand. It is paramount that organizations resist the temptation to forego analysis in this area particularly when they are attempting to secure funding for creating the technical foundation for e-services. The inability to provide a business case that communicates the synergy between government services/processes and IT infrastructure will reduce the likelihood of receiving funding.

Foundational Value
• Develop capacity for future (e.g., bandwidth)   • Build workforce of the future (the correct mix of skills for an increasingly digital environment)

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[17] *An Enhanced Framework for the Management of Information Technology Projects, Creating and Using a Business Case for Information Technology Projects,* Treasury Board of Canada, Secretariat, March 1998.

Factor 5 – Strategic/Political Value

To measure the strategic and political value of an e-service initiative it is necessary to look beyond the boundaries of the initiative itself to gauge its ability to move an organization – and the government as a whole – toward fulfilling its mission. To accomplish this, an agency-wide strategic and performance plan, linked to the priorities set forth by the administration, must clearly articulate the organization's goals and objectives in a manner that avoids platitudes and defines specific targets and goals. The strategic and political value of an initiative is measured by comparing its projected performance to the targets defined in the strategic plan. This process should be conducted from the point of view of the other **Essential Factors** in order to ensure that both internal and external benefits are considered. The closer the initiative moves the organization toward its goals, the higher its strategic and political value.

Strategic Goals	Strategic Objectives
Citizen-centered—not bureaucracy-centered	Flatten the federal hierarchy to ensure that there is as little distance as possible between citizens and decision-makers.
	Use the Internet to enable citizens to penetrate the Federal bureaucracy to access information and transact business.
	Conduct transactions with the public along secure web-enabled systems that use portals to link common applications and protect privacy.
	Provide high-quality customer service regardless of the access channel.
	Increase access for persons with disabilities to agency websites and e-Government applications.
	Reduce the expense and difficulty of doing business with the government.
	Reduce the reporting burden on businesses.
Results-oriented—not process-oriented	Establish accountability systems that allow citizens to judge whether performance is effective.
	Expand the use of performance-based contracts.
	Consolidate similar functions among agencies around the needs of citizens and businesses.
	Share information more quickly and conveniently between federal and state, local, and tribal governments.
	Deliver significant productivity and performance gains across the government.
	Make government more transparent and accountable.
Market-based—actively promoting, not stifling, innovation and competition	Make e-procurement the government-wide standard.
	Open government activities to competition.
	Expand use of "share-in-savings" approaches, in which market incentives reward contractors who can retain a portion of any savings that result from innovation.
	Incorporate successful private sector reforms throughout the Federal workforce.

sources: Blueprint, Management Agenda, OMB Presentations

There will be circumstances under which the strategic value of an initiative cannot be fully evaluated against the strategic plan. This will be the case when the initiative was specifically mandated by an executive or congressional act or if the organization's strategic plan has not incorporated the reform goals of the President's Management Agenda and Blueprint for Change. In both of these cases, organizations should analyze each initiative's ability to move the organization toward meeting the stated objectives and goals. The table above provides a framework that has been used to assess the ability of e-services to meet executive goals and objectives.

Factor 6 – Risk

The Risk Factor needs to be examined in two ways. First, as the project is defined, an understanding of the risk areas will allow the inclusion of risk mitigation actions and associated costs. For example, if the skills necessary to implement an alternative and the availability of those skills over the life cycle were inadequate, it would be prudent to include sufficient training or contracted technical staff in the plans and cost estimate.

Through 2004, more than 50% of e-Government projects worldwide will fail to deliver the service levels that citizens and businesses require (0.7 probability).

Gartner Group Research

Later, along with the potential value of the investment captured in the first five factors, those deciding whether to fund a project must understand the potential risk (a combination of the probability of the risk occurring and the impact should it happen). An organization should understand its risk tolerance and ensure that not only individual projects but also the entire portfolio of investments are within this tolerance.

	Project Risks	Organizational Risks	Technical Risks
Associated With...	• Political • Acquisition • Legal • Cancellation • Scope creep • Schedule/ implementation • Program management	• Utilization • Funding • Alignment of process and operations • Skills	• Privacy • Feasibility • Obsolescence • Vendor market • Architectural dependencies • Integration complexity • Security
Note: Some of these risks are more general in nature and require analysis at a higher level (e.g., political); others can be evaluated for effect, costs and value in more detail (e.g., integration complexity).			

Example from State of California's Risk Assessment Model

What is the vendor's ability to implement the technology?

This question measures the risk associated with vendor experience or lack of it.

1. The vendor has successfully completed a number of previous implementations

3. The vendor has successfully completed some previous implementations (1-3)

5. The vendor has limited experience with this technology

7. The vendor has not previously implemented this technology

The methods for measuring risk fall along a wide spectrum from a subjective "low-high" scale to an actuarial approach that uses probability in conjunction with potential monetized impact of the risk. In between these two poles is the approach adopted by the State of California, as illustrated in the box to the left, which uses a defined scale for specific risk areas to compute a risk score.

Understanding Value through the Lenses of the 6 Essential Factors

The value of an e-service must be considered in each of the **Essential Factors** regardless of business line. However, where value is captured and how it is measured will vary. For example, an organization has decided to implement an on-line invoicing system that will reduce the time an employee spends processing an invoice. How does an analyst determine how to measure the value of this initiative in the Direct User Factor? Keeping in mind that there are linkages between factors and the potential for double counting, the analyst must do the following: determine under which business line the initiative should be categorized; identify and understand the requirements of the customer; and determine the most appropriate way to measure the value delivered to the employee. In this case, the initiative should be categorized under Increased Effectiveness and Efficiency and the customer (user) is the government employee. The analyst will determine how to measure employee value based on an understanding of their needs and requirements. These measures may include how the employees rate the usability of the new system or the take-up rate. In this example, the value of the time saved by the employee will directly impact the organization's budget. Therefore, it should be captured in the Government Financial Value Factor and measured by monetizing the employee time saved in processing each invoice. An increase in the number of invoices that can be processed in a specified unit of time will be captured in the Government Operational/Foundation Value Factor.

The table below illustrates the different ways in which value may be captured in each of the factors by providing a sampling of issues to be considered.

Business Line	Government to Citizen	Government to Government	Government to Business	Internal Effectiveness and Efficiency
Direct Customer (User) Value *Captures value associated with providing a service through an electronic channel.* • These criteria will be selected based in large part on customer requirements. • The specific details of an initiative will also guide which criteria are analyzed.	Quantify time saved	Monetized customer time*	• Monetized customer time • Lower regulatory burden costs	Monetized employee time**
	• Take-up rate • Contingent valuation • Customer satisfaction index • Click count • Time of day usage measurement • Abandonment rate • First-contact resolution • Complaints • Customer frustration (abandoned transactions divided by total completed transactions) • Creation of communities of interest			• Take-up rate • Employee satisfaction index • Click count • Attrition rates • Staff recruitment rates • Absenteeism • Complaints • Customer frustration (abandoned transactions divided by total completed transactions)

* Captures direct users from **other** government organizations (federal, state, or local)

** Captures users who are employees of the service provider; may more accurately be assessed as Government Financial Value (avoid double counting)

Business Line	Government to Citizen	Government to Government	Government to Business	Internal Effectiveness and Efficiency
Social (Non-User/Public) Value *Benefits realized by individuals and organizations that are neither direct users of the service nor the service provider.* • Informal analysis of decision-makers should determine which criteria are important to evaluate based on an understanding of mission and linkages to social value. • Analyses that require spanning great distance between cause and effect are avoided.	• Movement to close the "digital divide" • Increased participation in the political process • Improved trust in government • Usage of electronic delivery channels outside of traditional business hours	• Improved sharing of information (e.g., threat, environmental, national security)	• Lowered cost of doing business • Improved monitoring of regulatory compliance • Usage of electronic delivery channels outside of traditional business hours.	• Greater visibility into the government process • Greater accountability • More efficient use of taxpayer dollars
	• Consistent quality of service across delivery channels • Compliance with Section 508 • Compliance with Executive Order 13166 • Compliance with security and privacy policies (frequency of cyber-security assessments and testing of security controls, vulnerability scanning, and time to develop and implement corrective action plan) • Security and privacy policies and procedures that are consistent with current regulations and best practices • Continuity of operations plans			
Government Financial Benefits *Benefits have a direct impact on organizational (government service provider) and other federal government budgets.* • The estimated costs of the new system must be compared to the current cost of providing the same or analogous service. • Caution should be taken not to double count benefits, particularly where linkages are strong. • Input for ROI calculation.	• Cost per step • Cost per transaction • Decreased cost of materials • Reduced costs of correcting errors • Reduced workload • Reduced IT unit costs • Shared infrastructure • Reduced workforce requirements • Reduced facility costs • Costs associated with continued operation and maintenance of disparate legacy systems avoided • Costs associated with continued legacy business processes avoided • Costs associated with inefficient use of resources (failure to leverage economies of scale) avoided			

Business Line	Government to Citizen	Government to Government	Government to Business	Internal Effectiveness and Efficiency
Government Operational/Foundation Value *This is the order of magnitude improvement that may be achieved in both current services (operational) and in preparation for future demand (foundational).* • If it is possible to monetize the value of the criterion, it should be captured in the Government Financial Value Factor.	• Core processes mapped • Data accurate • Data unduplicated • Data entry timely • Employee productivity per customer • Errors corrected • Streamlined processes (number of steps, number of transactions) • On-time completion rate • Availability • Redundancy • Scalability • System reliability • Connect rate • Cycle time • Interoperability • Net congestion • Flexibility			
Strategic/Political Value *The ability to move an organization - and the government as a whole – towards fulfilling its mission* • Sound and measurable agency strategic plan must be place. • Requires top-down communication and commitment to values and goals	• Partner satisfaction • Political image (number of positive press articles) • Community awareness • Negative/positive publicity • Legislative guidelines met • Percentage of business processes e-enabled (e-quotient) • Partnership with private sector and other government agencies (all levels) maximized • Use of COTS/GOTS software and systems maximized • Advancement toward meeting mission and strategic goals and objectives (government-wide and agency)			
Risk *The variables that might directly cause a project to be unable to meet goals.* • Early risk assessment may facilitate inclusion of risk mitigation mechanisms that will reduce risk impact but be reflected in costs. • Once an alternative is defined, residual risk should be evaluated. • Risk should be analyzed across the entire value chain and associated delivery channels	• Project success ratio by project team • Project Risk: cancellation, scope creep, schedule, program management, political, acquisition, and legal • Organizational risk: process/operational alignment, utilization/demand, skills, impact on other delivery channels • Technical risk: feasibility, obsolescence, vendor market, architectural dependencies, integration complexity, and security			

The **6 Essential Factors** are not in and of themselves a methodology, but a structure in which to capture value. For organizations developing and implementing e-services, the time and effort associated with understanding the effects of these factors can seem overwhelming. The analysis that must be conducted for each initiative, the creation of a plan, and on-going performance analysis and program refinement appear time-consuming and expensive. Often what is not considered is that failure to go through this process is likely to be more expensive, more time consuming, and less valuable if not conducted at all or at the appropriate time. The risk of forging ahead with no or insufficient information may be quite significant, particularly in the areas of public trust and political favor, where recovery can be extremely difficult. Therefore, it is important to make the planning and analysis process more do-able. The following section describes how the **6 Essential Factors** are used as the cornerstone for a methodology measuring the value of e-services.

"The plan is nothing…
planning is everything"
Dwight D. Eisenhower

VMM Framework and Assessment Analytics

There are three primary components to a methodology for measuring the value of an initiative: a decision framework, predicting performance, and estimating costs. The absence of any one of these parts will result in incomplete or "flat" analysis that fails to capture the scope of information required to correctly assess the value of an e-service. The purpose of this section is to provide the information and structure required to incorporate the **6 Essential Factors** into a methodology that is flexible enough to not only accommodate varying layers of decision-making, but also the availability of information.

Creating a Decision Framework

The purpose of creating a decision framework is to build a structure to guide the analytical process that accurately reflects organizational priorities and business imperatives in a manner flexible enough to accommodate the perspective of decision-makers across an organization. The foundation of the decision framework for the methodology to measure the value e-services (the value measuring methodology or VMM) is the five **Essential Factors** that directly address value. (The sixth factor, risk, is not prioritized, but considered as a separate element.) A team of decision-makers of all levels and stakeholders create this framework by prioritizing the value factors *for each business line.* This high-level structure will remain consistent for all initiatives within a particular business line. Once this initial framework structure is set, it will be the task of project managers to determine how success will be defined and measured in each factor for a particular initiative. The definition of sub-criteria should be based on an understanding of business imperatives and desired performance outcomes. Sources of information for defining and prioritizing these sub-criteria may be gleaned from an organization's strategic plan, user needs/requirements and business goals. The ability to appropriately identify and define sub-criteria will have a significant effect on the ability of decision-makers to understand investment alternatives. The organization may also choose to define specific sub-criteria and targets that will remain constant across all or most initiatives bringing an additional level of consistency and comparability to the process. An important aspect of defining sub-criteria is the creation a normalized scale that will enable the development of scores that permit the comparison and analysis of both objective and subjective measures of predicted performance.

The priorities set for the **Essential Factors** should remain as constant as possible among levels of management and from year to year. However, it is very likely that priorities will shift for decision-makers at varying levels of management in a single organization. Senior managers may choose to focus on performance in a specific factor or subset of factors without concern that other aspects of value have been overlooked or require additional analysis. It is also likely that as political tides ebb and flow, priorities will also change. For these reasons, the decision framework must remain flexible.

◉ How to Set Priorities

You and four other people are stranded on an island in the middle of the ocean with no supplies: you are all desperate to return home safely. After two days a genie appears and promises that he will provide all of the following: 1. all the food and water you need, 2. a radio, 3. a boat, 4. flares, and 5., $10 million per person. The only condition of his generosity is that he will deliver the items one at a time at three-day intervals. How will your lucky group of castaways decide which item they want the genie to deliver first?

Setting priorities for investments in e-services requires a decision-making process very similar to the one the group of castaways in the example above must employ. The castaways must decide the relative importance of each gift for reaching their ultimate objective – getting home safely. Given that goal, it is likely that they would first request food and water and, second, a boat. The other gifts offered by the genie would also be ranked so that the remainder of the schedule may be determined.

The process of deconstructing goals or problems into a structure of criteria and sub-criteria is based upon the analytic hierarchy process (AHP). Rather than dictating variables, this approach relies on the knowledge and expertise of individuals to establish relevant criteria, sub-criteria and weightings. This reliance carries with it the risks associated with group decision making, such as the group following the lead of the highest-ranking staff member or the individual with the loudest voice without speaking up even if they believe the speaker is wrong or because no one else can be heard. Using an AHP-based decision tool, such as Expert Choice, mitigates these risks by helping groups prioritize factors through a series of pairwise comparisons. During sessions facilitated by specially trained individuals, "votes" are privately entered into a handset and real-time results are made available for viewing and discussion. The value of the facilitated sessions should not be underestimated. Criteria and weights could be set by a senior staff member working alone based on his or her experience, however this would not encourage ownership of the process or its outcome and would likely reduce the vigor with which the criteria are applied. Conversely, the value of facilitated sessions should not be overestimated. At a minimum, the value of the output of any tool is equal to the quality of the data it is fed. If the criteria compared during a facilitated session have been selected arbitrarily, the outcome of the pairwise comparison will be equally arbitrary and may negatively impact the quality of decision-making. The selection and definition of criteria must rely on an understanding of the business or initiative under consideration from the point of view of the **6 Essential Factors**.

> **AHP structures decision with a hierarchy of goals. It's a preference structure and not "salami slicing," where certain things are weighted by a [arbitrary] point scale. There are no good quantitative decisions with "salami slicing."**
> **Daniel Saaty, COO of Expert Choice**
> **Federal Computer Week**
> **September 4, 2000**

◉ How to Create a Normalized Score

Business imperatives (sub-criteria) defined for each initiative will incorporate both objective and subjective measures. For example, a specific government to citizen initiative may be judged by its ability to serve a specific number of customers (objective measure) and improving the quality of life (subjective measure). The creation of a normalized scale will allow for performance in each of these categories to be measured. The first step in developing a normalized score is to define a single scale. The parameters of the scale - whether performance is rated from 0-1 or 0-10 is of no consequence. The key is that the scale remains consistent.

For each imperative, decision-makers must define how performance will be scored on the selected scale. This determination may result in a scale that is binary, linear or curved. A binary scale reflects a yes or no response to a particular measure of performance. For example, a measure of performance in the Strategic/Political Value Factor may be whether or not a particular initiative has been mandated. On a scale of 0 to 10, mandated initiatives would score a 10 while initiatives that are not responding to a specific mandate are score a 0. Linear scales reflect an equal value in variances of performance. For example, an organization may measure performance in the Direct User Value Factor as the number of customers served, giving an organization 1 point for every 10,000 customers. If that same organization had determined that there is a specific threshold requirement to serve 50,000
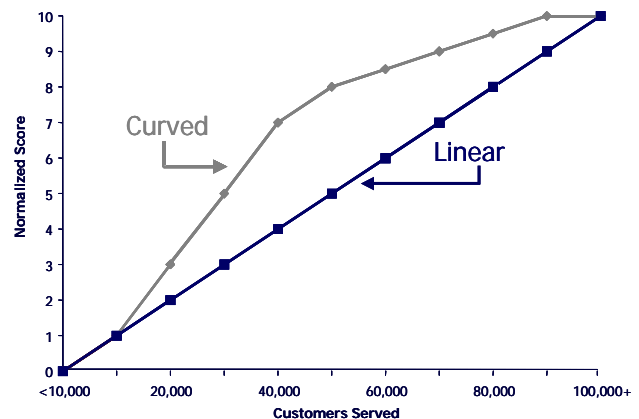
customers, they may employ a curved scale. The figure to the right shows how these two methods of scoring customers served would look if plotted on a graph.

◎ How to Consider Risk

The final aspect of the decision framework is the consideration of risk. By removing the Risk Factor from the prioritization process, it reduces the likelihood that the decision framework will itself discourage consideration of innovative initiatives. Those responsible for developing and defining initiatives should understand the impact of risk on their initiative and attempt to mitigate that risk to the greatest degree possible using tactics such as using COTS/GOTS software or modular contracting and implementation constructs. The analysis of residual risk should be part of the business case documentation. Senior managers should consider risk in the context of all initiatives it is undertaking to ensure that the compilation of risk falls within the organization's risk tolerance boundary.

Understanding Performance (Benefits) and Estimating Costs

Once the decision framework has been devised, analysts will be tasked with assessing the predicted and, ultimately, the actual performance (benefits) and costs of initiatives. Although considered separate facets of the methodology, the primary challenges to analysis and their potential solutions in these areas are the same. These challenges are 1. ensuring that analysis captures the full range of variables and 2.overcoming the challenges associated with the complexity, time and expense of collecting data and performing these analyses.

Complete and Comprehensive Analyses: Typical complaints associated with cost benefit analyses are that costs are underestimated and predicted performance is exaggerated. This problem is likely to become exacerbated as organizations attempt to transform their organizations and implement e-services with which they have little of no experience. Mitigating this risk requires pre-planning, research and consideration of impacts within each of the **6 Essential Factors** and cost.

◎ How to Capture the Full Range of Performance and Cost Variables

The creation of a decision framework built upon the foundation of the **6 Essential Factors** and specific business imperatives is also a blueprint for measuring performance. The time and thought given to defining measures of success and targets for the decision framework will ensure that performance analysis addresses benefit impacts from multiple perspectives including those of all external stakeholders (i.e., direct users and society at large) and organizational and government-wide requirements. It is important that analysts remain flexible and modify the initial decision framework if imperatives are found to be irrelevant or if other imperatives are identified. This re-tooling of the decision framework is likely to occur late in the conceptualize phase as initiatives become better defined. It is important to keep in mind that while these adjustments may be made at the sub-criteria level, the prioritization of the **6 Essential Factors** must not be adjusted on a project-by-project basis.

The decision framework does not provide the same blueprint to guide cost estimating. Standard cost element structures should be used as a basis for identifying the full range of costs associated with IT investments. Used primarily as a starting point, these standard structures are often customized to a specific project, making it possible to mitigate the risk of incomplete estimates. The use of these structures has the added advantage of acting as a catalyst for the planning process.

To apply this same approach to e-services will require an expanded standard cost element structure that considers elements beyond the typical IT investments. For example, in the past the cost of an IT investment did not include the elements associated with public relations and marketing or process re-engineering. Ignoring or failing to invest in these areas can be disastrous to any organization

introducing a new service to customers – whether they are individual citizens, businesses, other governments or employees. Standard cost element structures should be customized to the business line of the initiative being analyzed.

Overcoming the Complexity: The apparent complexity of predicting and analyzing the performance and costs of an initiative can generate dysfunctional responses in organizations. Organizations may elect to spend enormous amounts of time and money attempting to develop exact (point) estimates for all identified elements of performance and cost. However, the level of resources expended to generate an estimate will not necessarily correlate to its validity: estimates produced in this fashion cannot be guaranteed to be accurate. Perhaps the greatest danger of this practice is that it can stall advancement of an initiative for an extended period of time (if not indefinitely), frustrating all stakeholders. At the opposite end of the spectrum are organizations so overwhelmed and ill prepared to perform this type of analysis that they rely exclusively on experience or "educated guesswork." Organizations engaged in this type of practice are exposed to risks such as cost overruns, under funding, poor investment decisions and incomplete analysis.

◉ How to Match Data to the Phase of Development and Implementation

The VMM uses an approach to understanding performance and costs that lies between the risks of "analysis paralysis" and decisions based on fictional numbers generated to reassure rather than inform. As depicted in the graphic, this approach acknowledges that the granularity of information available and levels of analysis required to analyze performance and cost changes as an initiative moves through the visualize/strategize, conceptualize and actualize stages, as does the importance of decisions that must be made. Determining the value of an e-service during the visualize phase will rely on expert opinion and benchmarks. At that point, when minimal resources are required, more uncertainty can be tolerated. However, as that service moves through a limited pilot and nears the point at which a "go/no-go" decision must be made, more concrete performance and cost data should be used to reduce the uncertainty of initial performance and cost estimates. For example, the acceptable level of uncertainty associated with the decision to pilot an e-service is likely to be different than the level of uncertainty associated with the decision for full implementation.
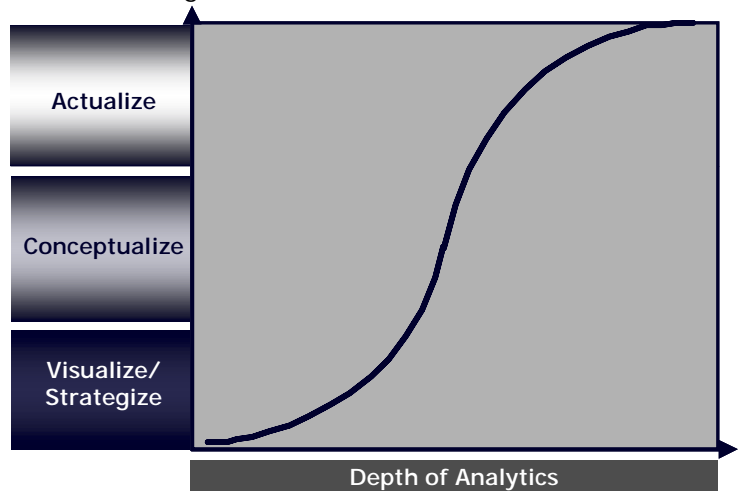
To match levels of analysis to the phases of an initiative's development and implementation, organizations must be able to periodically re-visit initial performance predictions and cost estimates.

◉ How to Predict Performance and Costs

Assigning an exact value or point estimate for each element – or variable – in a cost or benefit analysis is possible if it is done after an initiative is in operation. Prior to that point, the potential for determining the exact value of a particular variable is not promising. How then is the information required to make sound decisions developed?

The Trouble with Point Estimates

One will encounter difficulty crossing a river with an average depth of three feet; or if it takes an average of 25 minutes to get to the airport, leaving 25 minutes before the flight takes off will result in missing the flight 50 percent of the time.

2000-2001 Decisioneering, Inc.

Use Ranges – On **The Price Is Right**, contestants who come closest to guessing the price of a washing machine without exceeding the real price win prizes. Players fortunate enough to have just purchased that same washing machine a year before will feel fairly certain that their "price is right." Those who have never bought a washing machine or bought one ten years ago will only be able to guess; they are likely to feel very uncertain about their answers. But how would this situation change if, rather than an exact price, the prize went to the contestant who provided the smallest price range that included the actual price of the washer? Contestants who felt fairly certain about the exact price would feel very confident providing a narrow price range: any uncertainty they had associated with the exact price would be alleviated by the opportunity to provide a range. The other, less savvy contestants would provide wider price ranges that would allow them to feel comfortable that the actual price of the washer was somewhere in their answer.

Organizations attempting to estimate the costs and benefits of an e-service play their own version of **The Price is Right**. They attempt to come up with an exact value for each variable being analyzed, unconsciously – or consciously – keeping their cost estimates low to demonstrate a positive ROI and to avoid going over the actual price. By using ranges, these organizations can also increase their confidence in the values that they provide for each variable under analysis. Consider an organization that sets a 90% confidence level requirement for all values in an estimate. To comply with this requirement, value ranges will be set that are as narrow as possible while achieving that level of confidence: the more uncertain the value the broader the range will be.

Understand the Impact of Uncertainty – The ranges used to determine the value of a variable capture the spectrum of possibilities from worst case through most likely to best case. To move forward with this analysis a probability distribution should be assigned for each variable and a simulation should be conducted using a tool such as Crystal Ball that incorporates Monte Carlo capabilities. This type of simulation automatically calculates numerous scenarios using random samples of values from within the probability distributions. The result is a range for the grand total and an indication of which variables have the greatest impact on the final results.

Determine the Impact of Additional Information – The "sensitive" variables identified in the Monte Carlo simulation create the starting point for determining where further analysis is required. (Remember that the rationale for additional analysis is to reduce uncertainty and ultimately to improve decision-making.) The results should be a determination of which of these sensitive variables merit additional analysis based on their expected impact and the cost of collecting more accurate information.

> **Pareto Principle
> The 80:20 Rule:**
> "A minority of input produces the majority of results."

Pulling Together Information

Analysts, who have used the decision framework to develop a performance score for initiatives and have developed cost estimates in which they feel confident, have the opportunity to determine the value they will receive for their investment dollar. This is done through a simple calculation of the number of value "points" received per dollar. Following the logic of matching levels of analysis to the phase of development and implementation, initial value-per-dollar invested assessments should be expressed as ranges. As initiatives are developed and ultimately implemented, ranges in value-per-dollar assessments will narrow until they reflect actual performance and costs. Using the information Government Financial Value and cost estimate, analyst may also calculate the ROI for each solutions being assessed.

Enterprise-wide Understanding

A stock portfolio consists of a mixture of investments that balance elements of risk and return to accommodate the tolerance of the investor. An IT investment portfolio consists of a series of IT investments similarly balanced according to elements of risk and return.

Applying portfolio theory to IT investments allows decision-makers to observe the full spectrum of initiatives undertaken in their organization. Even without an in-depth comparison, the power of simply having all investment information in one place can be impressive. Based solely on observing the breadth of planned spending, decision-makers are likely to identify areas of redundant or repetitive spending. ING Americas was able to do just that. In 1999, the first year the company used a portfolio approach; it saved $16 million by eliminating redundant projects. Even more impressive are the $36 million in savings realized by the U.S. Department of Housing and Urban Development (HUD) over fiscal years 2000 and 2001 when projects were consolidated after HUD adopted an enterprise-wide portfolio-based review process.

> **"Most technology-based businesses could improve the return on their product development investment by 25-50% if they were able to align all their product development priorities and decisions with the key value drivers …"**
>
> **- PRTM**
> **"Dynamic Portfolio Management"**

When an organization understands its spending pattern, it can better compare proportional allocations to strategic goals. Decision-makers will be able to answer such questions as: Is our organization spending most of its money to improve internal processes, while the goal is to deliver superior customer service? Is the first related to the second? How and by how much? Answering these questions helps an organization visualize how individual IT investments fit into the overall system, and how the master portfolio contributes to strategy and business objectives.

Portfolio management also brings greater flexibility into the organization. Nothing holds constant in this world, including strategic goals. With new political leadership and shifting priorities, an organization can use the understanding of its portfolio to adjust to a new agenda by reallocating funds within the portfolio. For example, if security becomes critical, strategy to tackle the problem will be far more efficient if the organization examines existing projects, finds possible synergies, considers the effect of ending or delaying another investment, and pulls resources to leverage on the existing platform. Additionally, at this point the risk of the portfolio of investments should be considered to ensure that the compilation of risk associated with all initiatives falls within the organization's risk tolerance boundary.

Methodology Summary

The VMM, depicted in the graphic below, has been designed to guide organizations as they seek to capture and evaluate value as it is defined in the digital age. As organizations develop and implement e-services, the processes of VMM are repeated, setting in motion an iterative process of strategic planning and business analysis involving strategy development, data collection, analysis, refinement and evaluation. VMM will help organizations mitigate the inhibitors associated with the current e-Government environment including government stovepipes/turf battles, funding availability, and leadership by using a consistent, flexible and multi-dimensional decision framework and approaches. Lessons learned and data collected will be used to improve the analysis of future efforts.
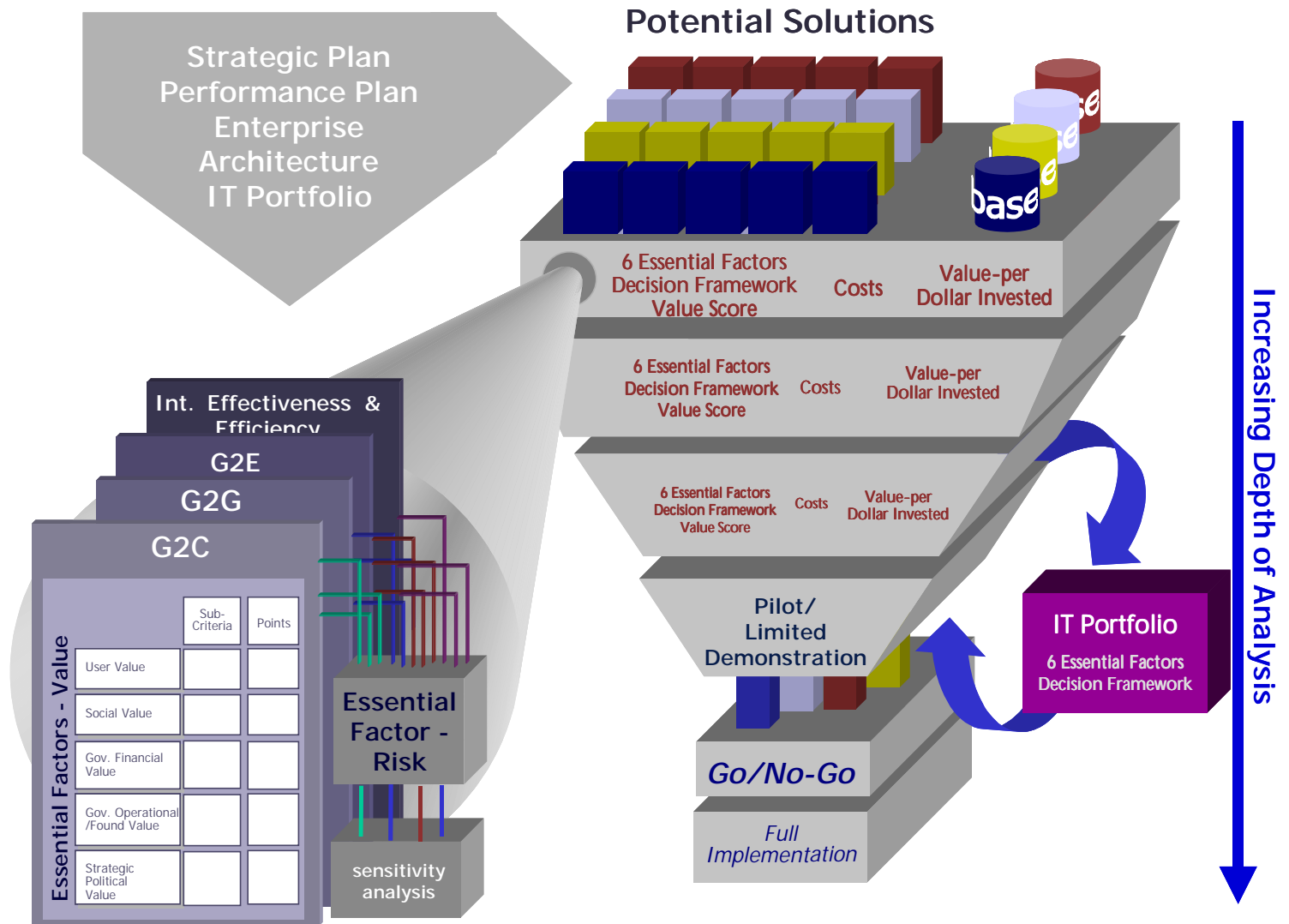
No methodology can guarantee a 100% success rate with certainty. The methodology proposed here is not exempted from that rule. It is certainly true that examples of government and private sector e-services have been successfully launched with minimal information and planning. However, without analysis and pre-planning, it will not be possible for managers at any level to know if they are achieving the greatest value for their dollar. Additionally, organization's that rely too heavily on the opinion and knowledge of their expert staff will run the risk of losing time and momentum as knowledge of how to do it better next time is lost through employee attrition. The significance of the VMM is that it highlights

both the importance of making explicit what has previously been assumed to be implicit and the need for sharable values and guidelines that can be evaluated and refined over time.

The processes of this methodology, most notably the framework of the **6 Essential Factors**, should not be used exclusively to yield the information required to make sound investment decisions. It should also be used to guide program management, including on-going performance measurement and cost analysis. If it is considered solely as a means to justify investments and secure funding, its impact on our nation's progress toward e-Government will be minimized.

In addition to VMM, the research for this report identified numerous areas of further study that may help the federal government overcome the challenges of achieving the e-Government vision. These areas have are discussed in the following section.

For Further Study

To facilitate the methodology outlined in this document and further the progress of e-Government, it is recommended that additional tools and policies be considered.

Create a Citizen's Advisory Board

The axiom "If you build it they will come" has no place in business planning: it has wasted both money and time as service providers automated existing process, building unusable or unwanted websites. Customers brought into the middle of a process can only react to what is being done; they cannot drive the process. To create a customer-driven service, the customer must be consulted continuously throughout the process, from early planning stages through continuous performance monitoring and improvements.

"How do you stay on top of this changing world? Ask your customers."
Robert Passikoff, Ph.D.

The most direct and efficient way to gather information about citizen needs and perceptions of value is to ask them. Currently, government organizations conduct citizen surveys and focus groups on a case-by-case basis. Consideration should be given to the creation of a national citizen's panel representative of the population of the U.S. It would provide an opportunity to develop a source of data for cross agency efforts, a shared library of pooling data, and create economies of scale, providing a more cost efficient and effective means of communicating regularly with customers. Additionally, national surveying of customer needs may provide a better way for determining what customers require from government in general than current practices that focus on the perspective of a particular agency or service offering.

In 1998, MORI, a market research firm, and Birmingham University's School of Public Policy, were commissioned by the United Kingdom (UK) to establish the world's first national citizen plan known as the People's Panel. The panel is composed of 5,000 individuals who provide a representative sample of the UK. The benefits of using the Panel include the level of cost efficiency it provides for developing targeted survey pools and for conducting a broad range of services, the opportunity to track individual views over time, and the development of comparable benchmark data.

http://www.cabinet-office.gov.uk/servicefirst/2000/panel/Summary.htm

Use Trained and Experienced Staff to Analyze Investments

Analyzing e-services requires objectivity as well as skills and experience in areas such as cost analysis, benefit analysis, and program management. It requires a balance of analytical expertise coupled with an understanding of government legislation and executive direction, technical knowledge, and insight into an organization's policy and stakeholders. Performed by individuals without training or experience in analysis, estimating costs and benefits can be time consuming, inaccurate, and incomplete. Performed by vendors, cost-benefit analyses may be incomplete or skewed toward a particular product. Performed exclusively by technology specialists, analysis may lack an understanding of policy and stakeholder concerns. Designating a balanced team that relies up on a core of analysts guided by a cross section of subject matter experts. This type of blended and balanced team approach will free project and program staff to concentrate on their core functions, allowing them to function as advisors and provide data rather than perform analyses. It should also be considered whether allocating funds to create and support a dedicated core business analysis team would be a cost effective and efficient approach for the

Finally, I believe we need more capability in preparing solid business cases and in managing projects to deliver on those business cases.
Testimony of Mark Forman before the Subcommittee on Technology and Procurement Policy of the Committee on Government Reform October 4, 2002

production of more timely, valid, complete, and uniform analyses and the resulting effect this would have on the quality and judiciousness of decisions.

Provide Incentives for Savings

In the current environment, government organizations that successfully save or avoid costs are likely to be "rewarded" by receiving less funding. If government is to be results-oriented, positive results must be rewarded. The Hammer Award program established by Former Vice President Gore recognized teams that were able to demonstrate significant impact on "customer service, bottom-line results, streamlining government, saving money and exemplary achievements in government problem solving." Although such public recognition is certainly an incentive for innovation, it falls short of providing proven organizations with the flexibility to use resources freed by greater efficiency for further innovation. Ways this might be accomplished, including the use of an independent review board to validate and verify the results reported, should be considered.

> Of course, you could simply claim that your fixes will save millions. Who would know — either before your plan was implemented or afterward? … When you start playing this "savings game," however, you can get in trouble. …if you start saying that some action in agency X will save $Y, someone may demand that agency X reduce its budget by $Y. This is why I recommend that you try to get people to focus on the number of fixes, not on the dollars saved.
>
> **Robert D. Behn**
> **Visiting Professor, Harvard University**
> **Author of "Rethinking Democratic Accountability"**

Make Real Data and Benchmarking Information More Accessible

Measuring the value of an e-service requires the collection of a considerable amount of data. This is a time-intensive process, made more difficult when the service being analyzed uses tools or techniques untested in the government sector. Short cuts to finding data often employ guesswork that results in inaccurate analyses and poor investment decisions. Creation of a national source of benchmarks or case studies collected from both the private and public sectors will give government organizations instant access to the data required to conduct more accurate, timely, and consistent analyses of e-services.

Measure the Right Indicators More Often

Security, acquisition, performance, and risk plans emerge as government organizations work through the process of developing, evaluating, and selecting e-services for funding and implementation. Realizing the value of an e-service will be contingent on the ability of program management teams to coordinate execution, measure performance, change what does not work, and maximize what does. Traditionally government performance reviews are considered an annual event, occurring as part of the preparation of a new organizational budget; performance is thus judged exclusively on cost and schedule measures. In the digital age, where what is right today may not be right in six months, measuring performance so infrequently on such a limited spectrum of measures may prove costly. Consideration should be given to a performance management program that requires frequent measurement of appropriate indicators across the **6 Essential Factors**. This would provide managers with the information required to refine initial analyses, effectively minimizing the financial, strategic, and political impact of an initiative that is not producing the projected results. Organizations that understand the performance of their investments can "fix" problems by re-allocating project resources or re-evaluating the service as a whole.

> "If we only looked at performance every year at budget time, I'd be old and gray before anything would change…"
>
> **Martin O'Malley**
> **Mayor of the City of Baltimore speaking about CitiStat in Governing Magazine**

Additionally, a review of innovative performance management tools should be conducted to identify innovative ways to use technology to facilitate more accurate and more frequent performance measurement. A tool that warrants further investigation is CitiStat, based on Compstat ("computer comparison statistics") and first used by the New York City Police Department in an attempt to reduce crime. These tools are used to collect specific, geographically targeted performance data on a bi-weekly basis. The four tenets of this approach are:

1. *Accurate and Timely Intelligence* to ensure the most complete analysis possible.
2. *Rapid Deployment of Resources* to quickly address problems.
3. *Effective Tactics and Strategies* to ensure proactive solutions.
4. *Relentless Follow-Up and Assessment* to ensure that problems do not reoccur.[18]

Communicate Value

Moving an e-service from concept to implementation and successful performance requires the ability to communicate value at multiple levels. From Congress to the public and support staff to executive management, an understanding of the value of what is trying to be achieved must be communicated. Organizations must consider how they can use the information generated through the analysis of e-services to encourage buy-in and ownership among project leaders and staff; generate support and excitement among senior agency leaders; show appropriators how an initiative will provide value to their constituencies; and encourage the public to use a new delivery

> "'Tech talk' is unpersuasive talk. The powers that be do not understand it and will not respond to it."
>
> "An E-Government is a Better Government "
> Government Computer News

channel. As organizations build the business case for an e-service, they should also build support for the value of the service. To accomplish this goal, multiple levels of staff must be engaged and appropriate materials must be prepared. The costs of communication efforts should be added into the estimated costs of a project.

Adopt e-Government Guiding Principles

The impact of leadership – either negative or positive – on e-service progress is indisputable, as is the fact that it is impossible to legislate the appointment of visionary and strong leaders. Therefore, consideration should be given to establishing a series of guiding principles to convey concisely and powerfully the values and fundamental tenets of e-Government. These principles should be communicated directly to government employees at all levels often and persuasively, so that all involved in making government work may internalize them. Defining and communicating guiding principles to facilitate a transformational effort has been used with great success in the private sector. For example,

when Larry Ellison, CEO of Oracle, decided that his company was going to realize annual cost savings of $1 billion dollars, he provided his employees with "five simple principles of transformation." Using these

Oracle's Five Simple Principles of Transformation

Simplify   Standardize   Web Enable   Integrate   Consolidate

source: Implementing e-Services at Oracle Corporation, A Case Study Presentation, John Foster

principles, each Oracle employee, regardless of position, understood what was expected and could therefore play a role in transforming the company.[19]

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[18] "City Figures to Improve Efficiency," *Baltimore Sun,* November 19, 2000.

[19] *Implementing E-Services at Oracle Corporation,* Presentation for the SSA Measuring the Value of E-Services Workshop November 29, 2001.

Plan for the Program Rather than Each Discrete Initiative

The process of justifying investments initiative by initiative is inconsistent with the basic characteristics of e-government. It encourages a view of e-services that isolates initiatives from the entirety of services and perpetuates a model where decisions are driven by the appropriation process rather than the needs of the customer and the fulfillment of the vision of e-government. Consideration should be given to planning an overall e-Government strategy that may be implemented incrementally. This type of planning will provide the information required to justify individual investments across business lines, including less "glamorous" infrastructure initiatives. This approach will provide appropriations committee members and staffers the level of information required to review requests for specific initiatives in the context of an overall e-government strategy, making value more visible and more palatable.

Keep Options Open

Much of the data or conclusions for a cost/benefit analysis at times can only be collected or recognized in the course of doing, but such experiments may be extremely costly. Consideration should be given to leveraging the concepts of options theory and allowing government organizations to test concepts on a smaller scale. Pilots help to reduce the amount at risk. If, based on pilot feedback, it is determined that further implementation is unwise or a different course should be taken, an organization can have the flexibility to act on this information. Remember that piloting should be done not only on projects with a 99% confidence level of success to "prove" the idea. On the contrary, initiatives with potentially high returns but a high level of risk should be tested to arrive at a go /no-go verdict.

Examine and Resolve Impediments to Strategic Planning

Strategic planning is the foundation of all business planning. It is the process required to understand where an organization is today, where it wants to be in the future, and how it will know that it has arrived. Without those two points and explicitly articulated metrics, organizations will continue to make ad hoc investments linked to fuzzy or inappropriate goals. Moreover, if organizations continue to regard their strategic plans simply as a requirement – a box that needs

> "…in defining goals and objectives, agencies should avoid platitudes or rhetoric that is inherently unmeasurable, either directly or through the use of performance goals and indicators."
>
> OMB A-11, Part 2

to be checked – rather than a high level action plan, the plans will be prepared in isolation and forgotten. Consideration must be given to why many organizations, in spite of the direction provided in OMB A-11, continue to develop strategic plans that fail to provide the specificity and clarity needed to move organizations forward. Until barriers to sound strategic planning are broken down, government organizations will continue to make investments that are not aligned to a clear vision or goal and will be unable to provide meaningful performance data.

"Simplify and Unify" the Process of Justifying Investments

An organization considering the implementation of an e-service must analyze the effect on both front-end and back-end systems, addressing not only new delivery channels but the business processes required for their support. The same is true of the Federal government as a whole. The e-Government transformation must not only address how organizations measure the value of e-services but how executive level processes – from OMB evaluation of funding requests to the structure and decision processes of appropriations committees – support those evaluations. Current legislation and guidance as well as appropriations committee spheres of influence are based on a model inconsistent with the vision of e-Government. Consideration should be given to how those processes should be reformed to reflect current priorities, enabling rather than inhibiting e-Government progress. The length of the Federal budget process, the limits of appropriation authority, and the structure of appropriations committees deserve analysis. In addition, the OMB should consider the appropriateness of current investment justification processes. Are the requirements of OMB A-11, specifically Exhibit 300, guiding organizations to ask the right questions? Could these requirements be simplified and further standardized across government to allow for more accurate comparison of budget requests? In addition, do e-Government transformational efforts require more financial flexibility than is currently available? Without examining and re-forming these back-end processes, the U.S. e-Government transformation will continue to be fragmented and inconsistent.

> **"The Structure and Processes of the Federal Government are Outdated and Need Redesign**
>
> **Participants observed that the current structure of the federal government is plagued by overlap, duplication, mission fragmentation, redundancies, and in some cases cross-purposed programs… several participants noted that the current budget process (annual cycle and activity/input-oriented) and civil service system significantly hamper efforts for innovative management and performance improvement efforts."**
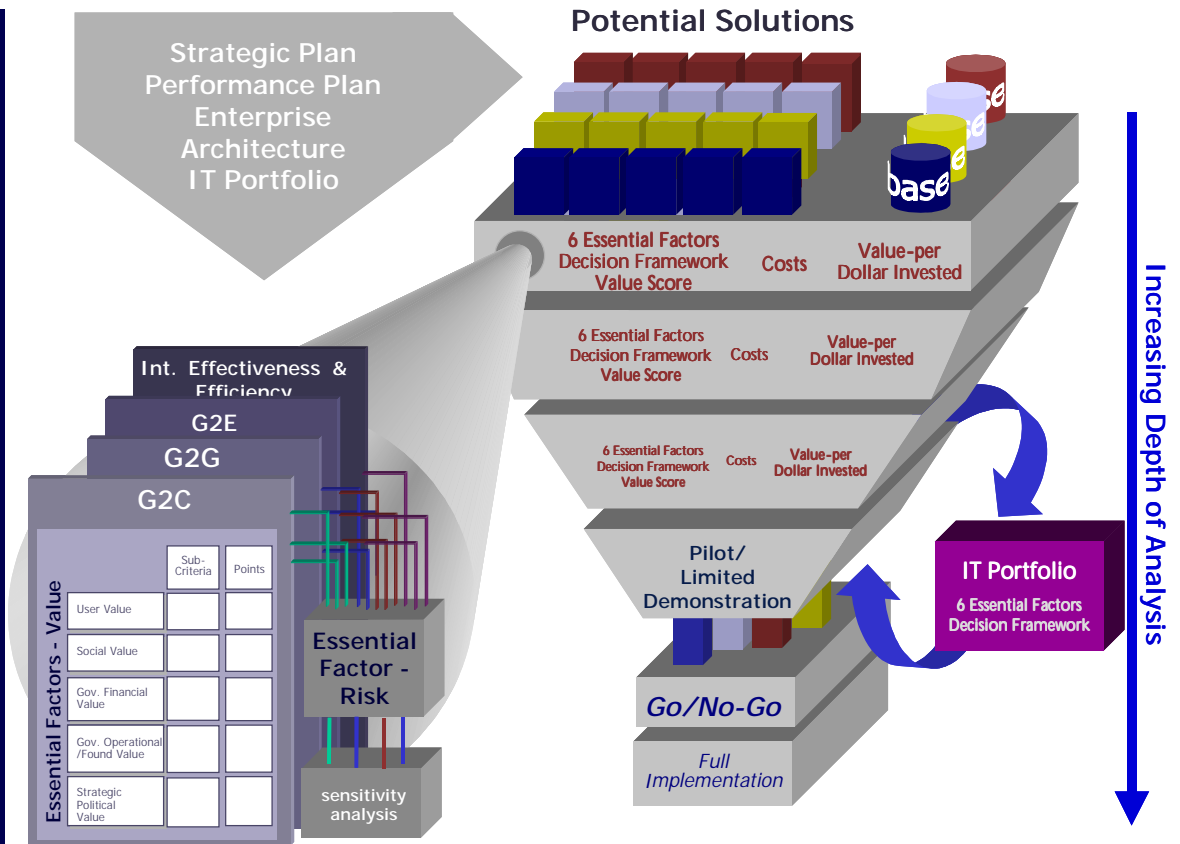>
> **Transitioning to Performance-based Government, The Transition Dialogue Series Reason Public Policy Institute**

Attachment 1 – Quick Guide

Quick Guide

Measuring the Value of E-Services:

The Value Measurement Methodology (VMM)

Potential Solutions

Strategic Plan
Performance Plan
Enterprise
Architecture
IT Portfolio

Int. Effectiveness & Efficiency

G2E

G2G

G2C

	Sub-Criteria	Points
User Value		
Social Value		
Gov. Financial Value		
Gov. Operational /Found Value		
Strategic Political Value		

Essential Factors - Value

Essential Factor - Risk

sensitivity analysis

6 Essential Factors Decision Framework Value Score — Costs — Value-per-Dollar Invested

6 Essential Factors Decision Framework Value Score — Costs — Value-per-Dollar Invested

6 Essential Factors Decision Framework Value Score — Costs — Value-per-Dollar Invested

Pilot/ Limited Demonstration

IT Portfolio
6 Essential Factors Decision Framework

Go/No-Go

Full Implementation

Increasing Depth of Analysis

The **Value Measurement Methodology (VMM)** is a customizable framework for the structured measurement of the value of government e-services at all stages of development. It is compliant with current Office of Management and Budget (OMB) guidance and federal legislation. The primary steps in this methodology are:

- Understand the investment imperatives and business processes.
- Create a decision framework for each business line using the multiple perspectives of the **6 Essential Factors**, prioritizing the 5 value factors and defining risk tolerance boundaries. Identify imperatives (sub-criteria) in each factor and define a normalized scale.
- Identify potential e-service for each business line. Understand current processes and costs (base case option).
- Use the decision framework to conduct high-level analyses of potential solutions using existing data, expert opinion, and user input. Reflect uncertainty by using ranges.
- Calculate the value-per-dollar invested based on cost analysis and value score. Calculate return on investment (ROI) based on cost analysis and data collect in Government Financial Value Factor. Identify most likely solutions for each business line.
- Use the decision framework to refine solution concepts and deepen the analysis of potential solutions and the understanding of the base case. Conduct sensitivity analysis to identify variables requiring further analysis.
- Adjust the value-per-dollar invested and ROI based on refined cost analysis and value scores. Identify most viable solution. Develop budget and justification documentation.
- Evaluate proposed solutions (senior management – portfolio perspective) and select initiatives for funding.
- Conduct initial implementation of the chosen solution (i.e., phased implementation, limited demonstration, pilot).
- Collect "real" data, refine analyses and make final Go / No-Go decision.
- Fully implement initiative.
- Perform on-going performance measurement.

VMM Questions

Who should use the VMM? Why? Staff ranging from day-to-day project managers to senior level executive managers should use the VMM. Its flexible framework accommodates value measurement and communication from the initiative to the portfolio level while maintaining a consistent strategic vision.

Is the VMM approach consistent with federal legislation and OMB guidance? Yes. Current legislation and executive direction provides a solid framework for the planning and analysis of e-services: They are the foundation of VMM.

How do I know if I am doing it right? The process of measuring value is both an art and science. You can help your organization stay "on track," by complying with the *VMM Guiding Principles* listed below.

VMM Guiding Principles

- The full value of an e-service must be measured from multiple perspectives represented by the **6 Essential Factors**; it cannot be captured in a single internal financial metric (i.e., ROI).

- An e-service does not exist in isolation. Its value must be measured within the context of an organization-wide strategic vision.

- To measure value, it must be understood and defined.

- Value is perceived, defined and communicated differently from different points of view.

- The data used to measure value must become more accurate, more detailed and more in-depth as an initiative moves from vision to implementation.

- The quality of information is determined by certainty, not specificity (i.e., benchmarks are preferred over guesswork, reasonable ranges that capture certainty are preferred over uncertain or fabricated point estimates).

- The value of an initiative or a portfolio should be considered within the context of the business lines to which it best aligns. Government business lines, identified by President Bush's e-Government Task Force, are Government to Citizen, Government to Business, Government to Government and Internal Efficiency and Effectiveness.

What are the 6 Essential Factors? The **6 Essential Factors** are the core of the VMM and are used consistently to guide the measurement and communication of value in ALL initiatives. The factors, defined in the table below, provide a structure that ensures that value will be assessed and communicated from multiple points of view. Although defined as discrete "buckets" or categories, organizations will discover redundancy and linkages among the factors. Through careful consideration of each factor within the context of each business line, organizations will define how value will be measured for each factor, eliminating the risk of double counting. The table below provides a definition for each factor and examples of how its value may be measured by business line.

6 Essential Factors	Business Lines			
	Government to Citizens	Government to Government	Government to Business	Internal Efficiency & Effectiveness
Direct User Value Value realized by users of an e-service	• Quantify time saved	• Monetized customer time*	• Monetized customer time • Lower regulatory burden costs	• Monetized employee time** • Click count • Attrition rates • Staff recruitment rates • Absenteeism • Complaints
	• Take-up rate • Contingent valuation	• Click count • Time of day usage measurement	• Abandonment rate • Customer satisfaction index	
Social Value Value realized by individuals and organizations that are neither direct users of the service nor the service provider	• Improved trust in government • Usage of electronic delivery channels outside of traditional business hours	• Improved sharing of information (e.g., threat, environmental, national security)	• Lowered cost of doing business • Improved monitoring of regulatory compliance • Usage of electronic delivery channels outside of traditional business hours	• Greater visibility into the government process • Greater accountability • More efficient use of taxpayer dollars
Government Financial Value Value that directly impacts organizational (government service provider) and other federal government budgets.	• Cost per step • Decreased cost of materials • Reduced workload • Shared infrastructure • Reduced facility costs • Costs associated with continued operation and maintenance of disparate legacy systems avoided • Costs associated with continued legacy business processes avoided • Costs associated with inefficient use of resources (failure to leverage economies of scale) avoided			
Government Operational/ Foundational Value Value achieved through an order of magnitude improvement achieved in current performance and in preparation for future requirements	• Data accurate • Data unduplicated • Data entry timely • Employee productivity per customer • Streamlined processes (number of steps, number of transactions) • On-time completion rate		• Availability • Redundancy • System reliability • Connect rate • Net congestion • Flexibility	
Strategic/ Political Value Value of the ability to move an organization - and the government as a whole towards fulfilling its mission	• Community awareness • Negative/positive publicity • Legislative guidelines met • Percentage of business processes e-enabled (e-quotient) • Partnership with private sector and other government agencies (all levels) maximized • Use of COTS/GOTS software and systems maximized • Advancement toward meeting mission and strategic goals and objectives (government-wide and agency)			
Risk Variables that might directly cause a project to be unable to meet goals	• Project success ratio by project team • Project Risk: cancellation, scope creep, schedule, program management, political, acquisition, and legal		• Organizational risk: process/operational alignment, utilization/demand, skills, impact on other delivery channels • Technical risk: feasibility, obsolescence, vendor market, architectural dependencies, integration complexity, and security	

* Captures direct users from **other** government organizations (federal, state, or local)
** Captures users who are employees of the service provider; may more accurately be assessed as Government financial Value (avoid double counting)

What information is required to get started? Every investment decision made in an organization has an impact on the overall performance and direction of that organization. Customizing and using VMM requires an understanding of an organization's mission, strategic goals and objectives, business processes and performance priorities and expectations. This information should be captured in an organization's Strategic Plan, Performance Plan and Enterprise Architecture. Requirements and direction for developing these documents are provided in OMB circulars A-11 and A-130 and the Government Performance Results Act.

If the strategic and performance plans fail to provide clear guidance and metrics for moving forward, a remedy should be considered immediately. If necessary, project managers may prepare a "mini-strategic plan" that builds on the foundation of information provided in the organization's planning documents.

What is the VMM decision framework? How is it built? The VMM uses the **6 Essential Factors** as filters through which ALL investments are valued and compared. To establish a decision framework, organizations must:

– Create an investment review group composed of organizational stakeholders.
– Utilize an AHP tool such as Expert Choice to prioritize (weight) each of the five **Essential Factors** associated with value (Direct User Value, Social Value, Government Operational/Foundational Value, and Strategic/Political Value). The total weight should equal 100%. Repeat the weighting process for each business line.
– Determine risk tolerance boundary. (Note: This boundary should be broad enough to encourage innovation and limited enough to avoid expending time and effort on initiatives that cannot and will not be supported.)
– Define the sub-criteria to be used to measure value in each of the **6 Essential Factors**. Repeat this process for each business line. Criteria should be linked to the goals and targets established in the strategic and performance plans. Organizations may choose to define specific sub-criteria and targets that will remain constant across all or most initiatives bringing an additional level of consistency and comparability to the process.
– Develop a normalized scale for measuring performance in each of the factors.

How does the VMM avoid "analysis paralysis" without compromising the quality of decision-making? VMM requires a balance between the levels of analysis required, the type of data used and the phase of project development and implementation. The table below provides broad guidelines for determining how to balance information and analysis requirements to the phase of development.

Phase	Level of Analysis	Suggested/Potential Data Sources
Visualize/ Strategize	Targets	• Strategic and performance plans • Subject matter expert input • New and existing user surveys • Private/public sector best practices, lessons learned, and benchmarks • Enterprise architecture • Modeling and simulation
Conceptualize	Ranges that reflect 90% certainty	• Subject matter expert input • Data from analogous government initiatives • New and existing user surveys for each business line • Private/public sector best practices, lessons learned and benchmarks • Refinement of modeling and simulation
Actualize	Actual cost & performance data	• Data from phased implementation • Actual spending / cost data • User group/stakeholder focus groups • Other performance measurement

Does VMM provide an approach for lowering uncertainty associated with measuring the value of e-services? Yes. VMM suggests that an analysis be conducted to identify variables that have the most significant impact on the outcome. Performing additional analysis of these variables will lower uncertainty and improve the quality of data used for decision-making. Sensitivity analysis may be conducted using automated tools capable of performing Monte Carlo simulations.

How does the VMM ensure that all costs, benefit and process impacts of an e-service are considered? The VMM recommends the use of standardized, but flexible cost element structures and the use of the decision framework These should be based on industry standards, best practices, an understanding of business processes and the **6 Essential Factors**. The VMM recommends incorporating cost allocation, such as Activity Based Costing, into this process to help organizations better understand the resources expended to deliver a particular service.

If our organization is focused on finding new solutions, why is analyzing the base case option important? The base case option is not merely a report of the status quo, but a prediction of how current processes and technology will perform in the future. In other words, how much will it cost and how will performance be impacted if an organization continues current practices and maintains current infrastructure. If the base case option shows a significant degradation of service and increase in costs, this is an important message to convey to decision-makers particularly if the investment doesn't show an immediate "return."

What is the purpose of valuing initiatives using a portfolio? Portfolio management provides decision-makers with the opportunity to view the entire span of their investments, providing the visibility required to identify redundant systems or processes and develop a mix of investments that balances priorities, levels of risks and the allocation of funds across business lines enterprise-wide.

Is VMM flexible enough to be used by both project and senior level managers? Yes. Project and senior level managers can use VMM to compare alternative solutions for a single initiative or determine which projects are worthy of receiving limited departmental funds. By prioritizing and applying **6 Essential Factors**, decision-makers are able to use filters that reflect the vision and values of the entire organization. By the time an initiative evaluated using VMM moves from consideration at the project level to the consideration at the departmental level, it is possible for senior managers to narrow the focus of evaluation. Senior managers may choose to focus on performance in a specific factor or subset of factors without concern that other aspects of value have been overlooked or require additional analysis.

Attachment 2 – Illustrative Case Study

Illustrative Case Study: How VMM is Applied

Although VMM may be useful in the abstract, the true test of a methodology is how it works in practice. One way to demonstrate this would be to create a fictional project to show how decision-makers might use outputs of the methodology. However, the temptation would be strong to create a fictional project that somehow demonstrates every possible aspect of the methodology under perfect circumstances, complete with the supporting test data. Such fictional projects are never as "messy" or confusing as real projects and therefore are not very helpful in demonstrating actual use. An equally valid technique might be to find an "up and coming" project to evaluate. The VMM, however, assumes that projects are developed over time and that many crucial decisions are made at later stages – after a pilot study, for example. A new project would allow for evaluation of the initial stage and would not accurately demonstrate best use of the methodology. Therefore, a hybrid approach to this case study has been taken.

As part of the study supporting the development of this methodology, a teaching case was prepared to document the process by which SSA developed its Internet Retirement Insurance Benefits Application (IRIB). The teaching case served two purposes: to provide a real-world example that discussants could engage with that would help to stimulate new ideas for evaluating e-services, and to serve as a case study for the methodology, giving a real world example with a story that took place over time.

> The Internet Retirement Insurance Benefits application or IRIB provides the public with an alternative way to apply for retirement benefits. Previously, those wanting to claim retirement benefits had to contact SSA for a face-to-face interview or arrange for a teleclaim. Using IRIB, a claimant can go to the Social Security website almost any time of the day or night, and, following a set of questions, independently fill out a claim. Upon completion, the data from the session are transmitted electronically to SSA. The claimant must then print, sign, and mail a copy of the form along with the proper original documentation either to a local Social Security office or to a centralized processing facility.

Facilitated discussions of the teaching case indicated that the IRIB was widely viewed as a successful initiative. This finding was tempered by one SSA case reviewer who commented that, under slightly different circumstances, IRIB could just as easily have been a failure. This observation suggests that the level of analysis supporting IRIB may have been insufficient. In a best-case scenario, the development of IRIB or any other e-service application would be supported at the outset by a plan shaped by comprehensive and accurate data and analysis. However, reality rarely mimics a best-case scenario. The key to successful planning and analysis in the real world is to start the process as early as possible with the best information available, validating or modifying the analysis as more reliable data become available. This case study approximates how the methodology presented in the previous sections may be inserted at multiple points – from formulation of a vision or strategy to the actualization of an e-service.

Case Study Framework

The case study has been structured according to the three phases of development – visualize/strategize, conceptualize, and actualize. For the purposes of demonstrating the methodology, assumptions have been made that early decisions would lead to similar outcomes (e.g., we will assume that the retirement application would still be the preferred initiative to implement).

Applying the Methodology

Visualize/Strategize

The Story

After the Personal Earnings and Benefits Estimate Statement (PEBES) controversy, SSA, which had been moving fairly aggressively towards using the Internet, was virtually stopped in its tracks. The strategy for implementing Internet-based services became one of going slowly, looking for "low - hanging fruit" – items that posed little risk and were relatively easy to do (e.g., a replacement 1099 form). Within this philosophy the goal was to look first to applications that were aimed at "post-entitlement" customers, people who were already enrolled with Social Security. Once the agency had achieved some successes, a second wave of Internet applications was envisioned that would include more complex transactions, like a retirement benefits application.

However, based on the early calculations and increasing public use of the Internet, many in the SSA Operations group were convinced that, regardless of initial setbacks, there would be a steadily increasing demand for conducting SSA transactions on the Internet. In anticipation of this demand, some Operations group members started experimenting with the idea of putting Social Security's retirement application on-line.

The 1998 passage of the Government Paperwork Elimination Act (GPEA), which directs agencies to make services available electronically wherever possible, helped to accelerate interest at SSA for making transactions available on the Internet. Aware that the agency would need to move more aggressively, a senior staff member decided to look outside the agency for help. In November 1998 she hired PricewaterhouseCoopers (PwC) to conduct an "Analysis of Internet Management Practices and Architecture." The PwC report included an analysis of organizational options and recommendations to make the Internet a priority and to become more customer focused by targeting Internet applications into "suites of services."

SSA

Action:
- Operations group made rough calculations of internal cost savings due to reduced workloads.
- SSA looked to external sources (PwC report) to help with development of strategy.

Output:
- Strategy to target "suites of services" and move slowly (pick "low-hanging fruit")
- Preliminary development of the on-line retirement application

Value Methodology Applied

Action:
- Create a decision framework by prioritizing the **6 Essential Factors.**
- Gather inputs to understand customer requirements.
- Understand the following:
  – Core processes and associated resource requirements;
  – The data and application relationship among those processes;
  – Current performance within the framework of the **6 Essential Factors**; and
  – The future (demand analysis, political and strategic trends, workforce issues).
- Use the understanding of customer requirements and listed in the bullet above to select sub-criteria for each Value Factor. Develop normalized scales.
- Establish risk tolerance boundaries.
- Tailor a standard cost element structure (CES).

Marrying Depth of Analysis to Decisions:
- Gather high-level data on current cost and capacity of processes and infrastructure.
- Collect performance benchmarks (how should they be doing) for each of the **6 Essential Factors**.
- Solicit customer input.

Output:
- A strategic plan (or better understanding of the strategic plan) for reforming the organization that documents specific goals and targets
- An understanding of the strategic role of e-services in fulfilling the plan
- An understanding of current business processes and services and their interconnection and supporting resources (high-level base case)
- The current portfolio of services/IT systems and applications mapped against the prioritized **6 Essential Factors**
- A customized VMM Decision Framework and CES

Conceptualize

The Story	SSA
In 1999, SSA Commissioner Ken Apfel returned from an international conference of social security agencies. Inspired by what he saw as new possibilities for what on-line services could mean for the agency, he asked his staff to assess the status of current agency e-service efforts and offer a range of options for how aggressively to pursue the Internet as a channel to deliver services. Using the suites-of-service concept as a baseline, the SSA team summarized their research and analysis in a report outlining four options ranging from status quo (Option 1) to very aggressive (Option 4).	*Action:* • Earlier internal cost savings data were compared for different alternatives. • Customer service data were collected to assess the demand for Internet services. • High-level decision-makers considered the strategic/political value of a successful implementation. • Options for meeting SSA's perceived goals were identified. *Output:* • Report listing four options and identifying internal (and some external) costs and benefits
	Value Methodology Applied *Action:* • Define the potential solutions to meet strategic goals for each suite of services. • Perform a rough order-of-magnitude cost, benefit, and residual risk analysis, using ranges, on the spectrum of solutions for the suite of services. Use the CES, VMM Decision Framework as guides. • Deepen the base case for each initiative. • Develop a score for each initiative. • Calculate an initial value-for-dollar-invested for each solution under consideration (including the base case option). *Marrying Depth of Analysis to Decisions:* • Collect industry/government benchmarks and expert opinion. • Gather data from analogous government initiatives. • Drill down the base case in targeted area. *Output:* • Scenarios with a logical order of initiatives based on a high level understanding of the costs, benefits and risks of a spectrum of solutions for each suite of services, within the context of prioritized factors

Conceptualize (cont.)

The Story

Apfel chose Option 3, a relatively aggressive option, to move the agency into new territory.

In November 1999 Bill Halter was appointed Deputy Commissioner. He also supported Option 3 but accelerated its schedule, tasking the organization to get the first application up and running in 18 months or less.

Although there was now an aggressive plan in place, questions remained about how to prioritize initiatives. After discussion and deliberation it was decided that a suite of applications for retirement benefits would be the best candidate for piloting a new direction on the Internet.

There were several reasons cited within the agency for this decision. Initial work was already underway on a version of an Internet retirement application to replace the existing face-to-face interview-based application process typically completed at an SSA field office. The retirement suite also showed slightly higher internal cost savings than other suites. It was also believed that getting the retirement suite on-line would go a long way towards meeting requirements of the Government Paperwork Elimination Act. And finally, there was awareness within the agency of the political value of putting the SSA's "flagship" application on the Internet.

SSA

Action:
- Options were informally weighted by how well they met internal and external needs (e.g., cost, GPEA requirements) as well as meeting the revised timeframe.

Output:
- Executive decision to pursue on-line retirement application

Value Methodology Applied

Action:
- Conduct a sensitivity analysis:
  - Examine the order of initiatives and determine what must be changed to meet the revised timeframe.
  - Analyze the impact on other initiatives from the perspective of the **6 Essential Factors.**
- Analyze variables that warrant further study based on the effect of uncertainty.
- Be aware of the how changing priorities will affect customers.

Marrying Depth of Analysis to Decisions:
- Collect or validate data as required.

Output:
- Revised scenarios with a logical order of initiatives based on the revised timeframe

Actualize

The Story	SSA
A cross-discipline team was assembled to develop the application and to get it on-line, but no specific funding or budget had been established. From the beginning there were questions about the required level of user-friendliness and how back end systems would be impacted. These issues drove further concerns about who should be in charge of the development process. Still wary of perceived privacy problems that had caused the dismantling of an earlier interactive Internet service, the agency sought help in avoiding similar problems. Groups of stakeholders as well as privacy advocates were engaged during the early stages of development. Results of usability testing and a pilot showed high satisfaction with the service. This finding contrasted with additional data suggesting that rates of use were relatively low and recontacts due to missing information or questions about information supplied by customers was relatively high. However, an evaluation by the SSA Quality Assurance (QA) Office determined that the quality (measured in terms of the accuracy of final claims after any necessary recontacts) of the Internet service was not appreciably lower than that of face-to-face interviews.	***Action:*** • Stakeholders were brought in to critique the application. • Selected institutions were asked to test the usability of the application to identify potential problems. • A pilot study was conducted to capture customer feedback (including feedback from individuals who chose not to use the service) as well as data on usage and claims accuracy. ***Output:*** • Modifications to privacy requirements • Pilot study report • Report on QA implications of the pilot

Value Methodology Applied

Action:
• Feed actual data back into the initial estimates to refine and validate initial analysis and value-per-dollar-invested calculation. Take corrective action if necessary.
• Prepare necessary documentation/budget requirements to secure funding:
  – Use the analysis of the **6 Essential Factors** to guide the structure and composition of the project management team.
  – Use the analysis of the **6 Essential Factors** to guide the management plan, including the cost, schedule, and performance measures.
• Solicit user feedback throughout development.
• Communicate with stakeholders to generate buy-in and support. Use analysis of **6 Essential Factors** to identify and focus on issues most important to each stakeholder.

Marrying Depth of Analysis to Decisions:
• Secure actual data from pilots, including customer/advocacy group feedback.

Output:
• Documentation to secure funding, including project controls (*typically this would occur at the end of the "conceptualize" phase)
• Refined cost benefit analysis

Actualize

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The Story

On November 2, 2000, the IRIB application was launched.

The application that first went public in November was never intended to be a final product. It did not incorporate all of the features that had been envisioned, so upgrades and enhancements were both expected and planned. An early upgrade, based on customer feedback, allowed users to save an application mid-stream and return to it later. A major upgrade to include spouse benefits resulted in a change in the name of the application to IRIB/ISBA. Additional upgrades and enhancements are ongoing.

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SSA

Action:
- Make adjustments as necessary based on customer feedback and planned upgrades.

Output:
- Upgrades, including savable application and spouse benefits

Value Methodology Applied

Action:
- Continue with the plan, making adjustments as necessary based on actual data and lessons learned.
- Pursue funding for the program to implement future initiatives.
- Continue to deepen the analysis as more information is available/required.
- Keep measuring IRIB/ISBA performance.

Marrying Depth of Analysis to Decisions:
- Use actual data from implementation, including user feedback and performance data.

Output:
- Program Capital Plan (*Note*: although internal funding was found to implement IRIB, all the information required for a capital plan is in place.)
- Momentum from the success of IRIB can be used to continue the development of e-services

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Case Summary

On brief examination of the analysis above, it may appear as though SSA did a poor job in analyzing the true costs and benefits of developing the IRIB application. Very little formal analysis was performed, and very few obvious parallels can be seen between the actions that SSA took and those recommended by the VMM methodology. However, closer examination of the case shows that during the development process SSA informally considered many of the values identified in the implementation. For example, Bill Halter knew that SSA's first large-scale Internet service after the controversy surrounding PEBES would be watched carefully. He understood the political value of putting SSA's "flagship" product – the retirement benefits application – on-line. The developers were also aware of the importance of direct customer value. Many hours of effort went into making the application as "friendly" as possible for the user.

What SSA lacked at the time were systematic procedures to categorize and measure different values, to show how those values matched with the goals of the organization, and to compare one set of values (e.g., government financial benefit) with another (e.g., direct customer value). Although the IRIB implementation seems "successful," without base-case data, or data from other initiatives, it's relative value to SSA is nearly impossible to ascertain. From this perspective, the value of baseline data that VMM would have generated in the process of developing IRIB would have been well worth the extra cost (if any).

Problems with SSA's practices during the development IRIB are not evidenced in the application itself. Instead, the problem lies in the fact that those practices are essentially unrepeatable. Knowledge of how to do it better next time resides only in the memories of SSA staff. Lessons learned cannot be easily passed along.

The graphic below depicts the way in which VMM would have been applied to the development of a single service such as IRIB over time. As organizations develop and implement additional e-services, these processes would be repeated in an iterative fashion, improving analysis, performance and deepening insight overtime.

outputs

6 Essential Factors
Decision Framework

Actualize

Conceptualize

Visualize/ Strategize

• Continue with the plan, adjust as necessary
• Deepen analysis
• Monitor performance

Refined cost/benefit analysis

• Feedback actual data into initial estimates
• Solicit user feedback throughout implementation process
• Use analysis to frame communication with stakeholders

Use analysis to develop budget request, program management plan, & performance metrics

• Define potential solutions
• Perform ROM cost/benefit analysis
• Conduct sensitivity analysis
• Analyze variables that warrant further study
• Calculate value-per-dollar invested

• Scenarios with a logical order of initiatives based on high level analysis
• Refined base case in targeted areas
• Preliminary value metric

• Define customer requirements
• Develop base case (evaluate current performance)
• Understand enterprise/business architecture
• Understand the future (demand analysis, political/strategic trends, workforce)
• Define sub-criteria, normalized scale and tailored CES

• Strategic plan
• Strategic role of e-services defined
• High level base case
• Sub-Criteria/Scale
• Tailored CES

High level base case data	Benchmarks	Actual data from pilots	Actual data
Performance Benchmarks	Expert opinion	& early implementation	
Customer Input	Analogous Initiative Data		

Depth of Analytics

Portfolio Management