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## Introduction

The term, virtual state, is a metaphor meant to draw attention to the structures and processes of government organizations that are becoming more and more deeply designed with digital information and communication systems. Digitalization of information and communication allows decisionmakers in the institutions of the state to rethink the location of data, decisionmaking structures, services and processes that include not only government organizations but also nonprofits and private firms which increasingly work in partnership with governments. I have called states that make extensive use of information technologies virtual states to highlight what may be fundamental changes in the nature and structure of the state in the information age.

This paper discusses the technology enactment framework, an analytical framework to guide exploration and examination of information-based change in governments.[1] The original technology enactment framework is extended in this paper to delineate the distinctive roles played by key actors in technology enactment. I then examine institutional change in government by drawing from current initiatives in the U.S. federal government to build cross-agency relationships and systems. The U.S. government is one of the first central states to undertake not only back office integration within the government but also integration of systems and processes across agencies. For this reason its experience during the past ten years may be of interest to e-government researchers and decision makers in other countries, particularly those in countries whose governments are likely to pursue similar experiments in networked governance. The summary of cross-agency projects presented here introduces an extensive empirical study, currently in progress, of these projects and their implications for governance. I present two brief case studies, focused on the management of federal grants and on electronic rulemaking, to illustrate and ground the analytical framework. The central argument of the paper is that technology enactment requires considerable knowledge and skill on the part of actors in order to construct networked governance systems. Rather simple technological systems require extensive reconceptualization of policy,

processes, culture and management behavior to mediate between bureaucratic and networked arrangements.

A structural and institutional approach that begins with processes of organizational and cultural change, as decisionmakers experience them, offers a fruitful avenue to understanding and influencing the beneficial use of technology for governance. Focusing on technological capacity and information systems alone neglects the interdependencies between organizations and technological systems. Information and communication technologies are embedded and work within and across organizations. For this reason, it is imperative to understand organizational structures, processes, cultures and organizational change in order to understand, and possibly influence, the path of technology use in governance. Accounts of bureaucratic resistance, user resistance and the reluctance of civil servants to engage in innovation oversimplify the complexities of institutional change.

One of the most important observers of the rise of the modern state, Max Weber, developed the concept of bureaucracy that guided the growth of enterprise and governance during the past approximately one hundred years. The Weberian democracy is characterized by hierarchy, clear jurisdiction, meritocracy and administrative neutrality, and decisionmaking guided by rules which are documented and elaborated through legal and administrative precedent. His concept of bureaucracy remains the foundation for the bureaucratic state, the form that every major state -- democratic or authoritarian -- has adopted and used throughout the Twentieth Century to the present. New forms of organization that will be used in the state require a similar working out of the principals of governance that should inhere in structure, design and process. This challenge is fundamental to understanding e-government in depth and extends the study of e-government beyond service delivery to consider institutional stability and change.

Throughout the past century, well-known principles of public administration have stated that administrative behavior in the state must satisfy the dual requirements of capacity and control. Capacity indicates the ability of an administrative unit to achieve its objectives efficiently. Control refers to the accountability that civil servants and the bureaucracy more

generally owe to higher authorities in the legislature, notably to elected representatives of the people. Democratic accountability, at least since the Progressives, has relied upon hierarchical control -- control by superiors of subordinates along a chain of command that stretches from the apex of the organization, the politically appointed agency head (and beyond to the members of Congress) down to operational level employees.

The significance and depth of effects of the Internet in governance stem from the fact that information and communication technologies have the potential to affect production (or capacity) as well as coordination, communication, and control. Their effects interact fundamentally with the circulatory, nervous, and skeletal system of institutions. Information technologies affect not simply production processes in and across organizations and supply chains. They also deeply affect coordination, communication and control – in short, the fundamental nature of organizations. I have argued that the information revolution is a revolution in terms of the significance of its effects rather than its speed. This is because the effects of IT on governance are playing out slowly, perhaps on the order of a generation (or approximately 25 years). Rather than changes occurring at "Internet speed," to use a popular phrase of the 1990s, governments change much more slowly. This is not only due to lack of market mechanisms that would weed out less competitive forms. It is significantly attributable to the complexities of government bureaucracies and their tasks as well as to the importance of related governance challenges – such as accountability, jurisdiction, distributions of power, and equity – that must be debated and resolved.

In states that have developed a professional, reasonably able civil service, public servants (working with appointed and elected government officials and experts from private firms and universities) are the key knowledge workers who craft the details and carry out most of the work of organizational and institutional transformation. An intensive examination of their actions allows for exploration of research questions such as: What is the transformation process by which new information and communication technologies become embedded in complex institutions? Who carries out these processes? What roles do they play? Answers to such questions are of critical importance if we

are to understand, and to influence, technology-based transformations in governance. Government decisionmakers acting in various formal and informal knowledge management processes produce decisions and actions that constitute the building of the virtual state.

Career civil servants are not impediments to change, as some critics have argued. They are key players in government reform. An extended example may be drawn from the experiences of civil servants in the U.S. federal government beginning in approximately 1993. Working with political appointees and outside experts, career civil servants worked out the details critical to the success of several innovations that otherwise would not have been translated from their private sector beginnings to the organizations of the state.[2] Over time, as their mentality and culture has begun to change, a cadre of civil servants have become the chief innovators in government combining deep tacit knowledge of policy and administrative processes with deep understanding of public service and the constraints it imposes on potential design choices. Their involvement is critical not simply because they are "users" of technology but because they are the architects of implementation, operationally feasible processes and politically sustainable designs.

## Technology Enactment

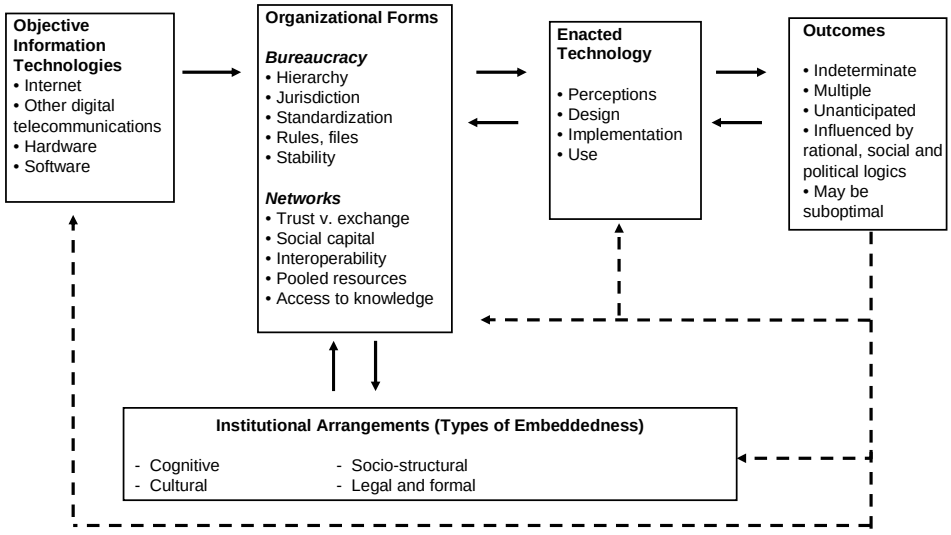
Many social and information scientists have examined the effects of the Internet and related ICTs on organizations and on government. Yet the results of such research often have been mixed, contradictory and inconclusive. Researchers have observed that the same information system in different organizational contexts leads to different results. Indeed, the same system might produce beneficial effects in one setting and negative effects in a different setting. This stream of research, focused on effects and outcomes, neglects the processes of transformation by which such systems are enacted, or come to be embedded, in organizations. Because these processes may develop over several years, they cannot be considered transitional or temporary.

The technology enactment framework emphasizes the influences of organizational structures (including "soft" structures such as behavioral patterns and norms) on the design, development, implementation and use of

technology. In many cases, organizations enact technologies to reinforce the political status quo. Technology enactment often (but not always) refers to the tendency of actors to implement new ICTs in ways that reproduce, indeed strengthen, institutionalized socio-structural mechanisms even when such enactments lead to seemingly irrational and sub-optimal use of technology. One example include websites for which navigation is a mystery because the organization of the website mirrors the (dis)organization of the actual agency. Another example are online transactions that are designed to be nearly as complex as their paper-based analogues. A third example is the cacophony of websites that proliferate when every program, every project and every amateur HTML enthusiast in an organization develops a web presence. These early stage design choices tend to pave paths whose effects may influence the development of a central government over long periods of time because of the economic and political costs of redesign.

The underlying assumptions of designers play a key role in the type of systems developed and the way in which systems are enacted in government. The Japanese government, known for planning and coherence of response, is currently engaged in development of a national strategy for e-government. This response is distinctly different from a bottom-up approach in which innovation from the grassroots of the bureaucracy is encouraged. The U.S. Army's design of the maneuver control system, a relatively early form of automated battlefield management, developed in the 1980s and 1990s, was developed with the assumption on the part of system designers that soldiers are "dumb" operators, button pushers with little understanding of their operations. When much of the detailed information soldiers used for decisionmaking was embedded in code and made inaccessible to them, there were substantial negative effects on the operational capacity of the division.[3]

## The Technology Enactment Framework




Source: J. E. Fountain**,** *Building the Virtual State: Information Technology and Institutional Change* (Washington, D.C.: Brookings Institution Press, 2001), p. 91. Copyright, Brookings Institution Press, 2001.

I developed the technology enactment framework (presented in the figure above) as a result of extensive empirical research on the behavior of career civil servants and political appointees as they made decisions regarding the design and use of ICTs in government. If information technology is better theorized and incorporated into the central social science theories that guide thinking about how government works, researchers will possess more powerful tools for explanation and prediction. In other words, theory should guide understanding of the deep effects of ICTs on organizational, institutional and social rule systems in government which is not ordered by the invisible hand of the market.

The most important conceptual distinction regarding ICTs is the distinction between "objective" and "enacted" technology depicted in the figure using two separate boxes separated by a group of mediating variables.[4] By objective technology, I mean hardware, software, telecommunication and other material systems as they exist apart from the ways in which people use them.

For example, one can discuss the memory of a computer, the number of lines of code in a software program, or the functionality of an application. By "enacted technology," I refer to the way that a system is actually used by actors in an organization. For example, in some organizations email systems are designed to break down barriers between functions and hierarchical levels. Other organizations may use the same system of email to reinforce command and control channels. In some cases firms use information systems to substitute expert labor for much cheaper labor by embedding as much knowledge as possible in systems and by routinizing tasks to drive out variance. In other cases firms use information systems to extend their human capital and to add to the creativity and problem solving ability of their employees. Many organizations have taken a plethora of complex and contradictory forms, put them into pdf format and uploaded them to the web, where they can be downloaded, filled out by hand and FAXed or mailed for further processing. Yet other organizations have redesigned their business processes to streamline such forms, to develop greater web-based interactivity, particularly for straightforward, simple transactions and processes. These organizations have use ICTs as a catalyst to transform the organization. Thus, there is a great distinction between the objective properties of ICTs and their embeddedness in ongoing, complex organizations.

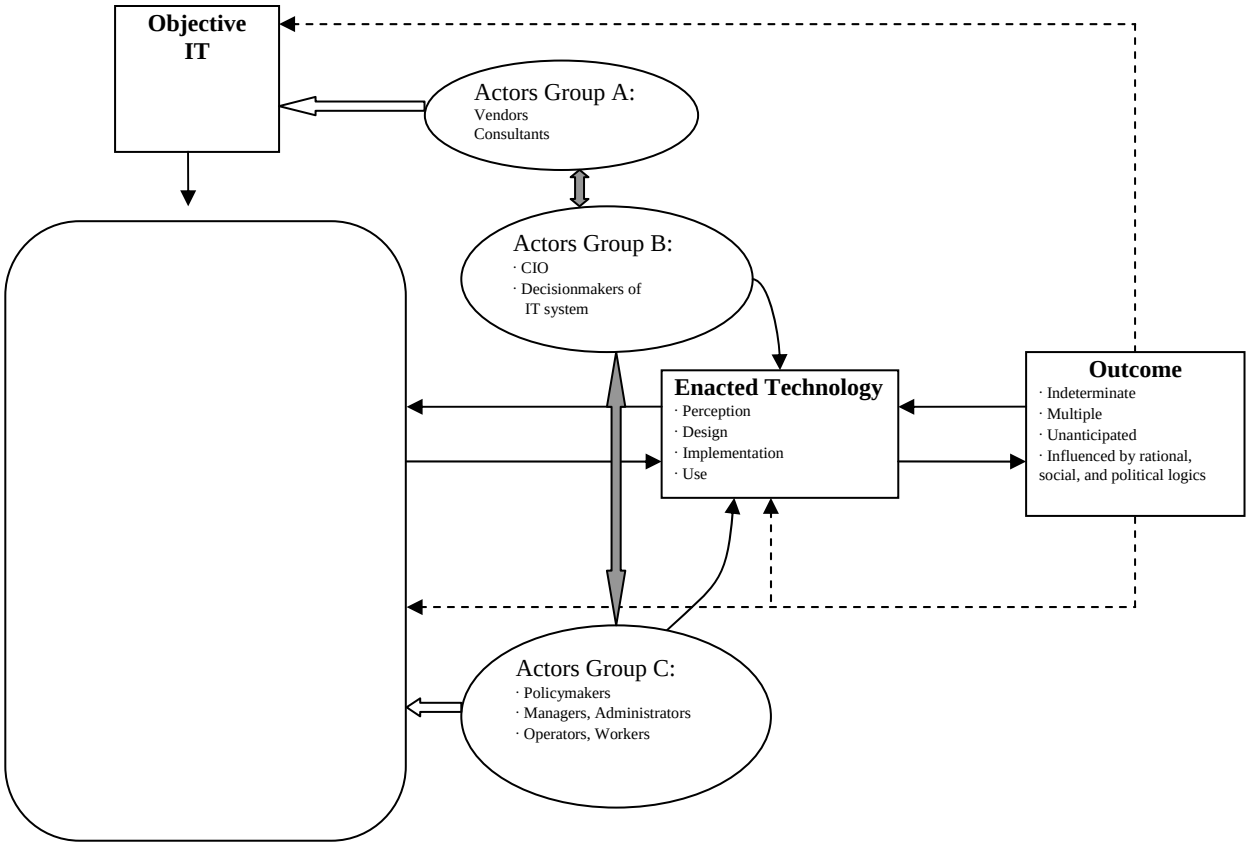
Two of the most important influences on technology enactment are bureaucracies and networks. These appear as mediating variables in the framework depicted in the figure above. These two organizational forms are located together in the framework because public servants manage and act in both types of organization simultaneously. On the one hand, they work primarily in bureaucracies (ministries or agencies) in order to carry out policymaking and service delivery activities. On the other hand, public managers are increasingly asked to work across agencies and across public, private and nonprofit sectors – in networks – to carry out the work of government. Thus, these two major organizational forms, and their respective logics, heavily influence the ways in which technologies in the state will be designed, implemented and used.

As shown in the figure, four types of institutional influences undergird the process of enactment and strongly influence thinking and action.[5] *Cognitive institutions* refer to mental habits and cognitive models that influence behavior and decisionmaking. *Cultural institutions* refer to the shared symbols, narratives, meanings and other signs that constitute culture. *Socio-structural institutions* refer to the social and professional networked relationships among professionals that constrain behavior through obligations, history, commitments, and shared tasks. *Governmental institutions*, in this framework, denote laws and governmental rules that constrain problem solving and decisionmaking. These institutions play a significant role in technology enactment even as they themselves are influenced, over the long run, by technological choices.

Note that causal arrows in the technology enactment framework flow in both directions to indicate that recursive relationships dominate among technology, organizational forms, institutions, and enactment outcomes. The term "recursive" as it is used by organization theorists means that influence or causal connections flow in all directions among the variables. This term is meant to differentiate recursive relationships from uni-directional relationships in which, for example, variable A leads to variable B. For example, smoking leads to cancer. But cancer does not lead to smoking. In a recursive relationship, variable A and variable B influence one another. For example, use of ICTs influences governance. And governance structures, processes, politics and history influence the use of ICTs. Recursive relationships specified in the technology enactment framework do not predict outcomes. Rather, they "predict" uncertainty, unanticipated results and iteration back through design, implementation and use as organizations and networks learn from experience how to use new technologies even as they incur sunk costs and develop paths that may be difficult to change. The analytical framework presents a dynamic process rather than a predictive theory.

An extension of the model, presented in the figure below, highlights the distinctive roles played by three groups: IT specialists in the career civil service, program and policy specialists and other government officials at all levels from executive to operational, and vendors and consultants.

## Key Actors in Technology Enactment






The three groups of actors play distinctive but inter-related roles in technology enactment. Actors in group A, comprised of vendors and consultants, are largely responsible for objective technology. Their expertise often lies in identification of the appropriate functionality and system architecture for a given organizational mission and set of business processes. What is critical for government is that vendors and consultants fully understand the political and governance obligations as well as the mission and tasks of a government agency before making procurement and design decisions. It is essential to understand the context and "industry" of government, just as one would have to learn the intricacies of any complex industry sector. Just as the information technology sector differs from the retail, manufacturing, and the service sectors, so the government sector exists in a unique environment.

Within government as well are varying policy domains and branches whose history, political constraints, and environments are important to understand.

Actors in group B, according to this model, include chief information officers of agencies and key IT decisionmakers. These government actors bear primary responsible for detailed decisions of system design. Actors in group C – policymakers, managers, administrators, operators, and workers – have a strong, often unappreciated and overlooked, influence on adjustments to organizational and network structures and processes. It is imperative that some members of this group develop expertise in the strategic uses of ICTs in order to bridge technological, political and programmatic logics. These depictions simplify the complexities of actual governments and the policymaking process. They are meant to draw attention to the multiple roles involved in enactment and the primary points of influence exerted through each role. In particular, the relationships between groups B and C are often neglected when, in fact, they are crucial for success of projects.

The empirical case studies in the following sections illustrate the critical role of civil servants, the tensions between bureaucracies and networks and the fluidity in the enactment of ICTs.

## From Bureaucracy to Network: The Presidential Management Initiative

A key strategy of the Clinton administration government reform efforts included the development of virtual agencies. The virtual agency, in imitation of web portals developed in the 1990s and initially used in the private sector, is organized by client—say, senior citizens, students, or small business owners -- and is designed to encompass within one web interface access to all relevant information and services in the government as well as from relevant organizations outside the government.

During the Clinton administration, the development of cross-agency websites often floundered due to intransigent institutional barriers. Oversight processes for cross-agency initiatives did not exist. Budget processes focus on single agencies and the programs within them. There were no legislative committees or sub-committees designed to authorize or oversee cross-agency, or networked, initiatives. The government lacked a chief information officer, or

any strong locus of executive authority or expertise, to direct and manage initiatives lying across agencies and across jurisdictions. These institutional barriers, and others, posed deeper challenges to networked government than the usual and oft-cited complaints about bureaucratic resistance to change. Bureaucrats were simply responding to incentives, norms, and the dominant culture and lacked channels, processes and organizational designs to support networked arrangements.

In August 2001, in a continuation of the path toward building inter-agency capacity (or networked approaches within the state) the Bush administration released the Presidential Management Agenda. The complete agenda includes five strategic, government-wide initiatives; this paper summarizes one of the five initiatives: e-government.[6] The e-government plan focuses on the infrastructure and management of 25, cross-agency e-government initiatives. The projects are listed in the table below. (They are described briefly in Appendix One.) The overall project objectives are to simplify access to government information; to reduce the cost to business of government regulation; to better share information with state, local and tribal governments; and to improve internal efficiency in the federal government.[7]

The 25 projects are grouped into four categories: Government to Business, Government to Government, Government to Citizen and Internal Efficiency and Effectiveness and a project which affects all others, E-Authentication. Government-to-business projects include: electronic rulemaking, tax products for businesses, streamlining international trade processes, a business gateway, and consolidated health informatics. Government-to-government projects include: interoperability and standardization of geospatial information, interoperability for disaster management, wireless communication standards between emergency managers, standardized and shared vital records information, and consolidated access to federal grants. Government-to-citizen projects include: standardized access to information concerning government benefits, standardized and shared recreation information, electronic tax filing, standardized access and processes for administration of federal loans, and citizen customer service. Projects focused on internal efficiency and effectiveness within the central

government encompass: training, recruitment, human resources integration, security clearance, payroll, travel, acquisitions and records management. Also included is a project on consolidated authentication. (For further information concerning each project see www.e-gov.gov).

**Cross-Agency, E-Government Initiatives**

| | |
|---|---|
| ***Government to Citizen*** | ***Government to Government*** |
| Recreation One Stop | Geospatial One Stop |
| GovBenefits.gov | Grants.gov |
| E-Loans | Disaster Management |
| IRS Free File (IRS only) | SAFECOM |
| USA Services | E-Vital |
| ***Government to Business*** | ***Internal Efficiency and Effectiveness*** |
| E-Rulemaking | E-Training |
| Expanding Electronic Tax Products for Business | Recruitment One-Stop |
| Federal Asset Sales | Enterprise HR Integration |
| International Trade Process Streamlining | E-Records Management |
| Business Gateway | E-Clearance |
| Consolidated Health Informatics | E-Payroll |
| | E-Travel |
| | Integrated Acquisition Environment |
| | E-Authentication |

Source: http://www.egov.gov

In nearly all cases each of the 25 projects began during the Clinton administration. The projects focus attention on the development of horizontal relationships across government agencies. Thus, they move beyond the first stage of e-government, providing information online to citizens, and the second stage of e-government, putting transactions, such as payments to government, online. The third stage requires institutional change.

Their specific objective of a focus on cross-agency consolidation is to reduce redundancies and complexity through standardization of generic business operations in government. A cross-agency approach also limits operational and information processing autonomy -- the "stovepipes" -- of

government agencies and departments (http://www.whitehouse.gov/omb/egov/about_backgrnd.htm).

The projects are overseen and supported by the Office of E-government and Information Technology, a statutory office within the U.S. Office of Management and Budget established by law in 2002. An organization chart detailing the new structures within OMB is presented below. The Administrator for E-government and IT, shown at the apex of the organization chart, is the Chief Information Officer of the federal government and an associate director of OMB reporting to the Director. The position initially was held by Mark Forman, a political appointee, and is currently held by Karen Evans, a career civil servant. The Associate Administrator for E-Government and Information Technology, reporting to the Administrator, is responsible for the 25 cross-agency projects. The five portfolio managers represented in the organization chart – some career civil servants and others political appointees -- have specific responsibility to oversee the 25 cross-agency initiatives. A management consulting group (not shown), whose members are not government employees but private contractors detailed to OMB have been responsible for most of the day-to-day communications and reporting with the programs. In effect, they have served as staff and liaisons between OMB and the cross-agency projects which are based in and across government agencies.

The new organization within OMB signals a major institutional development in the U.S. federal government. Before passage of the E-Government Act of 2002 (Public Law 107-347), which established the federal CIO and OMB structure, there was no formal structural capacity within OMB to oversee and guide cross-agency initiatives. This gap impeded development of networked governance during the Clinton administration. One can see in these organizational changes the emergent institutionalization of a governance structure for networked agencies.

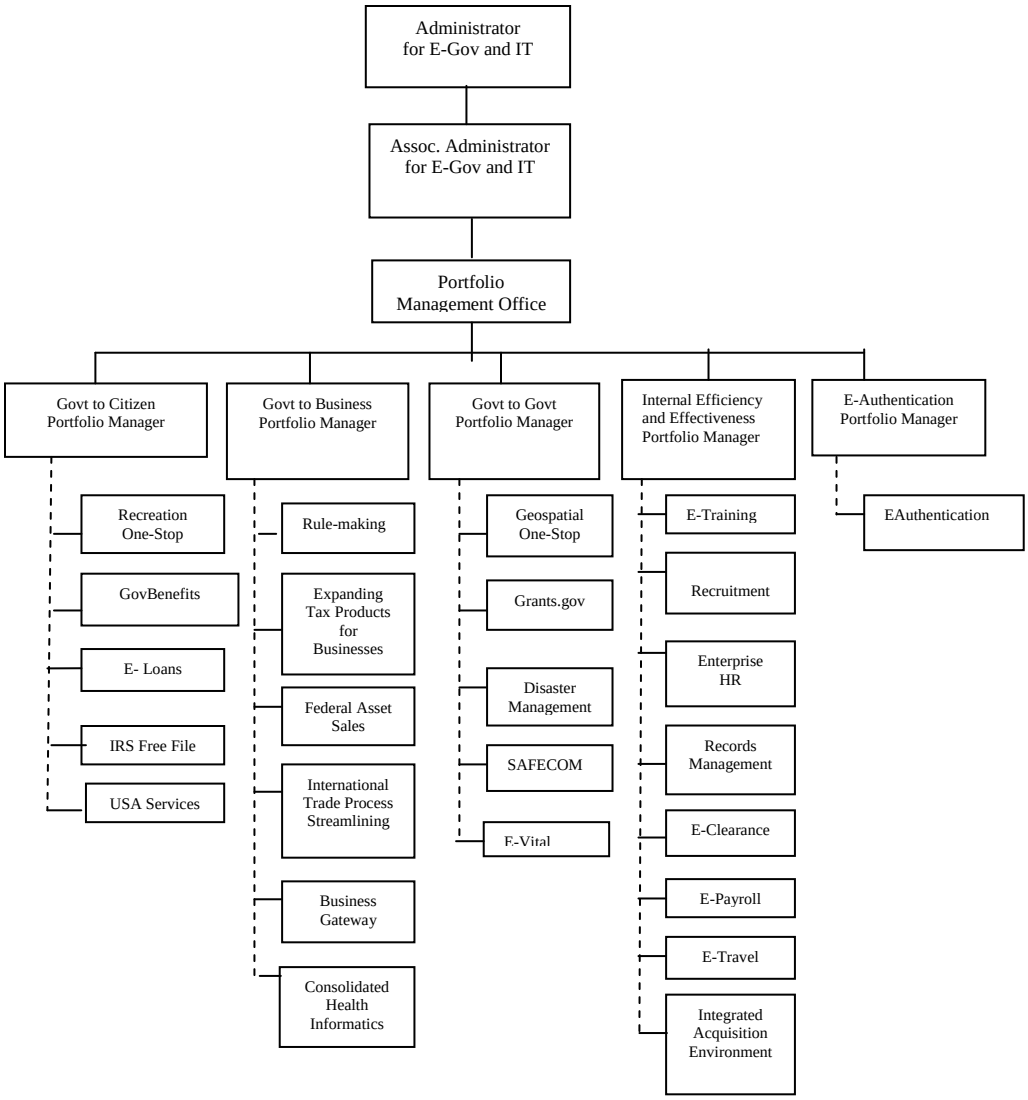
The organization chart depicts the 25 cross-agency initiatives reporting directly to portfolio managers within OMB. But the managing agency for each project is a federal agency rather than OMB. Formal authority for each project belongs to the federal agency designated by OMB as the “managing partner,” or lead agency.

The matrix presented below arrays federal agencies along the top of the grid and projects along the left side. Agency partners for each project are marked with an x. The managing partner is denoted by an X in bold-face type. For example, the column and row tinted blue indicate that the U.S. Department of Health and Human Services is a partner agency in eight initiatives and the managing partner of two projects, health informatics and federal grants.

Each managing partner agency appointed a program manager to lead its project. Program managers are typically senior, experienced career federal civil servants with more than 20 years experience in government. They have been responsible for developing a consultative process among agencies involved in each project and, in consultation with OMB, they are responsible for developing project goals and objectives. In most cases, program managers were also required to devise a funding plan to support the project in addition to a staffing plan. Neither funds nor staff were allocated as part of the president's plan.

The E-Government Act, the legislation that codified the new organizational structure within OMB, provided for federal funding for the projects of approximately $345 million over four years. But an average of only $4 to 5 million per annum has actually been appropriated by Congress. Strategies developed by each project for funding, staffing and internal governance vary widely and have been largely contingent on the skills and experience of the program manager. So far, the legislature has not adapted organizationally to networked government. This lag in institutional development makes it difficult to build networked systems because appropriations of funds continue to flow to individual agencies and programs within them. Yet this disjuncture has led to considerable ingenuity and innovation from civil servants as well as needed autonomy from legislative oversight as agencies learn to form networked arrangements.

# OMB Office of E-Government and Information Technology Organization Chart




Source: Office of Management and Budget "Implementation of the President's Management Agenda for E-Government: E-Government Strategy" p 19, 2/27/2002, http://www.whitehouse.gov/omb/inforeg/egovstrategy.pdf, and www.egov.gov, accessed 7/1/2004.

## Presidential Management Initiative E-Government Projects: Partner Agencies and Managing Partners

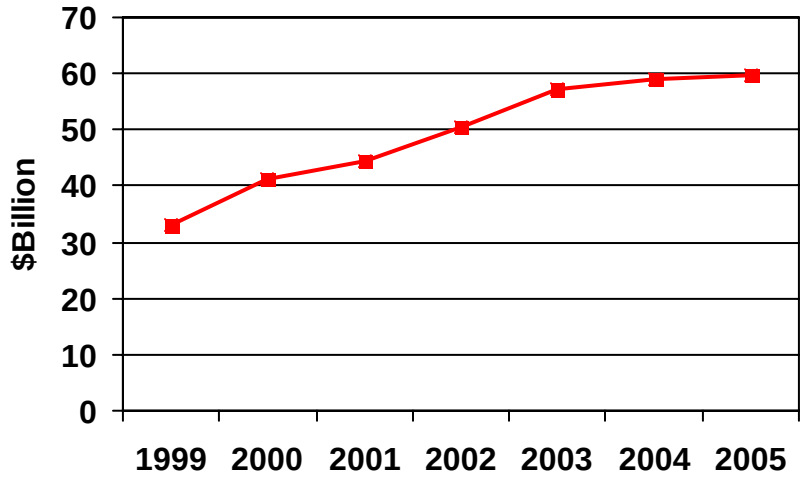
| Projects / Departments | DoC | DoD | DoE | DoEd | DoI | DoJ | DoL | DoT | EP | FDIC | FEMA | GSA | **HHS** | HUD | NARA | NASA | NRC | NSF | OP | SBA | Smithsonian | SSA | Statte | Treasury | USAID | USDA | VA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Consolidated H'lth Informatics | | X | | | | | | | | | | | **X** | | | | | | | | | X | | | | | X |
| Disaster Management | X | X | | | X | X | | X | | | **X** | X | X | X | | | X | | | X | | X | | | | X | |
| E-Authentication | X | X | | X | | X | | X | X | | | **X** | X | | | X | | | | X | | X | | X | | X | X |
| **Grants.gov** | X | X | X | X | X | X | X | X | X | | X | | **X** | X | | X | | X | | X | | | | | X | X | X |
| E-Payroll | | X | X | | | | | | | | | | | | | | | | **X** | | | X | | X | | | |
| E-Training | | X | | | | | X | X | | | | X | | | | | | | **X** | | | X | | | | | |
| E-Travel | | X | | | | | | X | | | | **X** | | | | | | X | | | | | | X | | | X |
| E-Vital | | X | | X | | X | X | | | | | | X | | | | | | X | | | **X** | | X | | X | X |
| E-Records Management | | X | X | | X | | | X | X | | | | | | **X** | | | | | | | | | X | | X | |
| GovBenefits.gov | | | X | X | | | **X** | | | | X | | X | X | | | | | | | | X | X | | | X | X |
| Expanding Electr. Tax Products | | | | | | | | | | | | | | | | | | | | | | X | | **X** | | | |
| IRS Free File | | | | | | | | | | | | | | | | | | | | | | | | **X** | | | |
| Federal Asset Sales | | X | | X | | | | | | X | | **X** | | X | | | | | | X | | | | X | | | X |
| Geospatial One-Stop | X | X | X | | **X** | | | X | X | | X | | X | X | | X | X | | X | | | | | | | X | |
| Integrated Acquisition Env. | X | X | | | X | | | X | | | | **X** | | | | X | | | | X | | | | | | X | X |
| Enterprise HR Integration | | X | | | | | | | | | | | | | | | | | **X** | | | | X | X | | X | |
| E-Clearance | X | X | X | | | X | | | | | | | | | | | X | | **X** | | | | X | X | | | |
| Int'l Trade Proc. Streamlining | **X** | | | | | X | | | | | | | | | | | | | | X | | | X | X | X | X | |
| Business Gateway | X | | | | | | X | X | X | | | | | | | | | | | **X** | | | | X | | | |
| E-Loans | | | | **X** | | | | | | | X | | X | X | | | | | | X | | | | | | X | X |
| E-Rulemaking | | | | | | X | X | **X** | | | | | | | | | | | | | | X | X | | X | X | |
| Recreation One-Stop | X | X | | | **X** | | | X | | | | | | | | | | | | | X | X | | X | X | X | |
| Recruitment One-Stop | X | X | | | X | | X | X | X | | | | | X | | X | | | **X** | | | | | | | X | |
| USA Services | | | | | | | X | | | | X | **X** | X | | | | | | | X | | X | | | | X | X |
| SAFECOM | X | X | | | X | X | | X | | | **X** | | X | | | | | | | | | | | X | | X | |

Source: OMB Project Management Office: E-Gov Partner Agencies Public.xls, unpublished document, no date, Revised, July 1, 2004.

## *U.S. Federal IT Budget*

U.S. federal investments in government IT spending increased steadily from approximately $36.4 billion dollars in 2001 to 59.3 billion in 2004. According to OMB estimates, eighty percent of this spending pays for external consultants, indicating a high level of contracting out of ICT services. Technical expertise and human capital in the federal government is being greatly weakened as a result under the "competitive outsourcing" policy and lack of human capital with IT expertise in the federal government. But this increase in investment also suggests a commitment to building a virtual state.

**U.S. Federal Government IT Spending**




Source: OMB: "Report on Information Technology (IT) Spending for the Federal Government, Fiscal Years 2000, 2001, 2002" , OMB: "Report on Information Technology (IT) Spending for the Federal Government, Fiscal Years 2002, 2003, 2004" Excel spreadsheet: http://www.whitehouse.gov/omb/budget/fy2004/, accessed 7/2/04, OMB:"Report on Information Technology (IT) Spending for the Federal Government for Fiscal Years 2003, 2004, and 2005": http://www.whitehouse.gov/omb/budget/fy2005/, accessed 7-2-04.

The E-Government Act tied IT appropriations to agencies to their strategic business plans and created (but did not appropriate) a fund of $345 million to support cross-agency initiatives and monitoring of their development for fiscal years 2002 to 2004. In contrast to the bottom-up approach to innovation of the Clinton administration, the Bush administration approach is top-down and emphasizes strict and rigorous project management. At the same time, projects that have forward momentum are giving considerable leeway to innovation, learn and experiment within performance objectives. There have been serious disparities between the funds actually allocated to the e-government projects and congressional appropriations. As John Spotila, former director of Information and Regulatory Affairs in OMB, remarked: "… Even without homeland security absorbing most of the IT dollars, cross-agency projects have never been a favorite of Congress, where appropriations are awarded through a stovepipe system of committees that makes a multi-agency approach difficult."[8] Appropriations for the cross-agency initiatives were $5

million in FY2002 and 2003 and only $3 million in FY2004. A congressional source recently noted: "We have never been convinced that the fund [requested to support cross-agency initiatives] doesn't duplicate what already exists in other agencies or performs unique functions … It has never been well-justified, and we don't have a lot of spare cash lying around." [9]

## Electronic Rulemaking: The Development of Regulations.gov

Federal regulations are central to governance in the United States. The rulemaking, or regulatory, process is arguably as important as the legislative process yet is less well understood. A key feature of U.S. democracy is public participation in rulemaking: the right of citizens to be notified when an agency intends to develop a rule and the right of citizens to comment on proposed rules. Each year, approximately 150 different Federal agencies, bureaus and commissions develop more than 8,000 rules to give greater coherence and detail to Federal laws. The U.S. Office of Management and Budget reports that nearly 500 rulemaking processes may be open for comment during any period of time. Regulations.gov is a major cross-agency initiative whose goal is to develop a government-wide electronic rulemaking system.

Particularly complex rulemaking may require five, and sometimes ten, years to complete deliberations. During this process, an agency gathers public comments and responses or rebuttals to comments. All of this information, called the docket, is public. Public comments and *ex parte* communications, those communications treated outside the public process, are handled rigorously and systematically to preserve transparency and integrity in rulemaking. The Pew Charitable Trust's Internet Survey of American Life reported that in 2001 more than 23 million people forwarded public comments as part of rulemaking. At that time, electronic rulemaking was in its infancy.

Rules encompass all policy domains including employment, health and education, the environment, transportation, energy, business and finance. Consider, for example, the importance of just four of the 24 rules published for comment on one day, April 13, 2005:

- Milk in the Pacific Northwest and Arizona-Las Vegas Marketing Areas; Recommended Decision and Opportunity To File Written Exceptions on Proposed Amendments To Tentative Marketing Agreements and Orders (Department of Agriculture: Comments due: June 13, 2005)
- Protection of Stratospheric Ozone: Substitute Refrigerant Recycling; Amendment to the Definition of Refrigerant (Environmental Protection Agency (EPA): Comments due: May 13, 2005)
- Airworthiness Directives; Pilatus Aircraft Ltd. Models PC-12 and PC-12/45 Airplanes (Federal Aviation Administration (FAA): Comments due: May 13, 2005)
- Special Access Rates for Price Cap Local Exchange Carriers (Federal Communications Commission (FCC): Comments due: June 13, 2005)

In these examples, the comment period is a mere one or two months meaning that an interested citizen would need to act quickly to develop and submit a substantive comment.

The traditional rulemaking process, devised at the time of the Administrative Procedures Act of 1946, was complex, arcane, and cumbersome. A citizen interested in, for example, child safety would require familiarity with the multiple agencies sharing jurisdiction over child safety. Rules in a given subpolicy area often do not map onto one agency's jurisdiction. The timing of public comment differs for each rule. Public comment requires that one know the docket number of the rule; the agency, bureau or commission controlling the docket; and the address of the docket room, a physical facility, for a given agency. The docket rooms of federal government agencies hold and organize, on paper, all public comment relevant to a rulemaking process. It is physically within these rooms that an interested citizen, or his or her agent, would read comments, and it is physically to these facilities that one would submit, on paper, a public comment. (Note that "citizen" in this case refers to individual and corporate citizens.)

It is difficult for citizens to access rules in order to comment on them. It is even more difficult to search through existing rules, previous comments, issues (for example, on legally permissible levels of mercury or arsenic in drinking water) and the multiple rulemaking processes that might exist

simultaneously across different federal agencies. Intermediaries -- lobbying groups and other organizations -- have performed these knowledge management tasks on behalf of corporate and individual citizens for a fee.

A related problem has been the autonomous processes, the "stovepipes," or autonomous agency structures designed within each agency for rulemaking. A signal contribution of Regulations.gov is development of a culture, management systems, governance procedures and processes that allow, and actually encourage, staff from several agencies to develop one system to allow citizens to participate in rulemaking. This system connects to existing agency rulemaking systems, thus allowing agencies to maintain many elements of their own approaches to rulemaking while standardizing the interface with the public and with other parts of the government that manage regulatory knowledge such as the Federal Register, the Government Printing Office and the National Archives.

## *Background*

The diffusion of the Internet, from approximately 1993 forward, led to attempts, with varying levels of success, by two or three large agencies with broad regulatory responsibilities to build agency-specific commenting websites. But agency commenting systems were not linked to one another much less to all the open rules in the federal government. Each agency system operates differently. Each requires different information from citizens. Web designs, navigation methods and layouts differ greatly from one agency to another.

More than one hundred small agencies – and a surprising number of large agencies -- have built no online commenting capacity, either because they lack budget and expertise to do so or because they don't manage enough rulemaking to make development of such a system a priority. In fact, some public managers have decided that making public comment accessible online would generate unwanted comments or a greater volume of comments than the agency could manage. They, therefore, maintain paper-based commenting systems, in part, as a barrier to entry for public comment. The eRulemaking Initiative is wholly different in scope, scale and significance from its predecessor innovations. But part of it innovativeness lies in building upon and connecting

important, but disparate, software, systems, tools and emerging practices from several agencies.

The eRulemaking Initiative has predecessors that date to projects begun during the Clinton Administration. At the beginning of the Bush Administration, eRulemaking was selected as one of the 25 Presidential Management Initiative cross-agency projects. The Bush Administration originally designated the Department of Transportation (DOT) to be the managing partner because this agency had the most sophisticated online rulemaking system at the time. But little progress was made during the first year of the project to develop the DOT agency system into a government-wide system. The DOT system was advanced but highly customized to a particular policy domain and unsuitable for other agencies. Moreover, the approach to collaboration originally undertaken ill matched the stage, scope and politics of the project. In 2002 OMB changed the lead agency from DOT to the Environmental Protection Agency (EPA) following a consultant's report which found that the EPA commenting system would provide a more robust and adaptable platform for a cross-agency system.

One of the first steps taken by the new project manager, Oscar Morales, was to form a strong partnership among senior civil servants from a small group of line agencies heavily involved in rulemaking -- EPA, Labor, Transportation, Food and Drug Administration, and Agriculture, the Government Printing Office, which was developing web-based capacity, and the Office of the Federal Register, which at that time was developing a web-based system for organizing the Federal Register to provide daily notification of rules open for comment. They are a devoted – an unusually devoted and energetic – core group from several agencies with a strong esprit de corps and a collegial and rigorous working style. This core group developed an innovative prototype system, the first version of Regulations.gov, in only four months, through a series of grueling, and at times highly contentious, meetings and on a shoestring budget. This group remains at the core of the project and is actively involved in the development of enhancements to the system.

### *Value Creation and Regulations.gov*

Regulations.gov responds to several needs. The public's right to access and comment on rulemaking processes in an information society is no doubt the chief need. But public servants themselves cannot easily access rules and comments that pertain to their regulatory area. Rulewriters, public servants who have the task of synthesizing comments in the process of developing new regulations, need a system that enables search through successive iterations of rulemaking in particular policy areas. Similarly, interest groups and associations, businesses, policy researchers, activists and others with an interest in the regulation of health and safety, energy, airlines, communications and a host of other areas, can not readily access vital, public information without a web-based, searchable system.

The e-Government Act of 2002 (Title II, Section 206) requires federal agencies, to the extent practicable, to make information available online and to accept input from the public electronically. The e-Government Act regulatory agency provisions mandate agencies to migrate to electronic communication and record management. Regulations.gov advances beyond the legislative mandate. The system makes it possible to search, read and comment on rules in the comment stage by searching according to regulatory topic, agency, or key words. In addition, Regulations.gov is close to making it possible for citizens to comment on other comments thereby creating possibilities for public discourse in regulatory development that has never been available.

The three most important outcomes are the technical design achievement, the democratic and political significance of the innovation, and advances in management and governance that make possible a sustainable cross-agency arrangement. Regulations.gov moves the U.S. federal government toward deep institutional-level transformation through its influence on regulation, citizen participation and deliberation.

The system connects not only the rulemaking functions across agencies but also the initial publication and documentation of rulemaking, managed by the Federal Register, and the final document and record handling that is the responsibility of the National Archives. The Government Printing Office is developing a central docket room to allow agencies to "outsource" docketing to

one government entity. This consolidation benefits agencies and users of docket rooms.

Innovations typically comprise interesting and important re-combinations of existing designs, systems, and other elements that make possible important new capacity. This is the case for Regulations.gov. Experience and skill displayed by the team allowed members to extract and reassemble pieces of systems and processes from several different agencies. The project provides a vivid example of re-use and re-combination of small innovative pieces, stitched together in a creative and flexible fashion, to form a government-wide system.

**The Technical System.** The technical system (hardware, software and interface design) is simple technologically and uses a commercial platform, Documentum, as its base. But the combination of technical features is innovative and powerful in the capacity it produces for providing access to rules and rulemaking. Regulations.gov connects the systems used to update and publish the Federal Register with agency commenting systems. It provides an online commenting and search capability for many agencies that had no online capacity. The system connects back to the National Archives so that the comments are ready to be archived at the end of the rulemaking process. This is the first government-wide system for regulations.

Regulations.gov is also an organizational, management and political innovation. Sustainable cross-agency projects require sustainable oversight, management, budget, staff and business processes that have developed from being temporary, ad hoc structures to become institutionalized as "the way things are done." The core group of managers and architects of Regulations.gov developed such systems in order to be able to develop and implement technologies that would work, that would be adopted and used, and that would be sustainable across agencies.

**Flexibility and Preservation of Diversity in a Standardized System.** The political and operational decision was made not to try to standardize every agency's rulemaking procedures in order to produce a consolidated approach. This insight and the development of a strategy based on political reality was a

key success factor. Rulemaking is far too complex for simplistic standardized treatment.

Business process standardization makes sense to reduce the number of simple processes such as payroll systems, travel systems, and human resource systems across agencies. But rulemaking processes are fundamentally different from routine administrative processes. Several elements of the eRulemaking Initiative respects agency differences while working toward streamlining and standardizing those procedures that can be consolidated. This respect for diversity is also the reason why Regulations.gov moved forward under its present leadership and why it failed to move forward under its previous leadership, whose approach was to mandate one system onto all agencies.

The comment form in Regulations.gov is "configurable" meaning that it is adapted for the differing requirements of different agencies and their rulemaking procedures. This means that the innovation doesn't force agencies to leave aside their present rulemaking procedures. The Regulations.gov system provides the appearance of unity to the user while also preserving the diversity of approaches across agencies. In time, some of these differences across agencies are likely to diminish. A group of about 100 public managers are involved in the development of the system and its approach. The project participants have built a robust, vigorous community of practice with a high level of commitment and an ability to achieve compromises on tough issues. Their commitment is not to a website or a set of web-based technologies; it is to greater and more equitable public access and better, more democratic rulemaking.

**Public Use.** The Regulations.gov website was launched in January 2004. Between January and November 2004, according to project records, approximately 500,000 people visited the website. The site received 5.5 million "hits" (number of times accessed, including repeat users) during this time period. These figures represent a 250% increase in visitors over the previous version of the site available in 2003 and a 204% increase in hits from the previous year. Visitors in 2004 not only clicked onto the homepage of Regulations.gov, project reports note that they "reviewed or downloaded 4.5 million pages, reviewing or downloading 850,000 pages in 2003 and 3.6 million

pages from January to November 2004 – a 730% increase over the previous year." By September 2004, the website averaged approximately 10,000 hits per day with 26,000 different visitors each month.

Many different groups use Regulations.gov: businesses, trade associations, individual citizens, interest groups, public servants in the federal government, state and local governments, researchers, and librarians. Several non-U.S. governments, businesses and interest groups are increasingly using Regulations.gov to monitor current rulemaking processes.

Agencies such as EPA already contract out the reading and sorting of public comments due to unmanageable volume. Many comments are not really considered in the decisionmaking process. Software firms and researchers are beginning to develop effective programs to detect and filter out repeat messages, for example, from interest groups that wish to flood a website with a particular type of comment. Some interest groups believe that a paper-based comment on letterhead carries more weight than one submitted "with the masses" through a website. Other interest groups strive to submit the last comment believing that these receive more weight because they can respond to previous comments and positions. Some agencies favor comments submitted directly through their own commenting websites. In sum, there are important changes afoot in the game of public commenting as the process moves to the Internet and web.

**Outreach Strategy.** The project managers have an outreach coordinator and a strategy for educating the public and other stakeholder communities about Regulations.gov. The program managers have worked assiduously and strategically to brief government officials, key stakeholders in interest groups and associations and the wider public through a set of effective presentations that promote the value of the project. The management capacity of the group, including attention to outreach and a keen ability to persuade and communicate, is obviously key to the success of the initiative.

**Internal Government Accomplishments.** Regulations.gov is helping to move nearly 150, federal agencies into online notification and comment for their rulemaking processes. The ongoing work of the project, through the constellation of Regulations.gov workgroups (technical, legal and policy) and advisory and stakeholders groups is transforming the meaning of rulemaking

within the government. The innovation has achieved new approaches to regulatory knowledge and practice that themselves are likely to catalyze further innovations.

### *Program Management and Implementation*

The leadership team combines authoritative and visionary executive skills with strong management -- a rare combination. Oscar Morales, the project director, has been a force in the modernization of the federal government during the present and former administrations. He has a love of learning, knowledge creation and knowledge sharing essential to innovation. An ex-Marine who runs every day, Morales is often described as "taking bullets" for the 100 or so civil servants and public managers involved in the project. He runs interference for them; he advocates for them; he is a human shield for the project.

John Moses, deputy director -- quiet, calm, methodical -- writes down every question and comment and feeds the information back into the development and enhancement of the system. The active listening and feedback into project development are an integral part of his highly respectful style which has been so much a part of the success of the multi-agency effort. As a result of the behavior of these dual leaders, agency managers trust the project leadership to represent the interests and needs of their agencies.

Among the many comments praising the leadership and management of the project, one, in particular, stands out. A quiet, senior civil servant on the core team observed: "They [the director and associate director] have provided continuity in the management of the project. The project team literally had to slug it out over many months [to build the initial version of the system]. They showed integrity of leadership. The crunch came when they had to decide on architecture. Sunk investments [by agencies] are important. It became clear that they did not flinch at the point of decision. They held firm and didn't flinch when it came time to make a decision."

The program runs effectively and collaboratively by design: several levels and types of collaboration have been structured into the project by its leaders. There is a culture of respect, listening to diverse opinions and views across agencies, and a commitment to turn important comments and suggestions into

action items that is still unusual in the U.S. central government but that signals a cultural shift toward collaborative approaches to governance and management. The project leaders have displayed an ability and willingness to fight for Regulations.gov against strong, able and diverse opposition. They combine this toughness and political savvy with an impressive ability to build collaborative management and communication systems – for funding, modifying plans, communicating advances in the project, attracting and using staff as well as bits and pieces of software, hardware and other material from across agencies – that is rare in the federal government.

One of the first actions taken when responsibility for eRulemaking was given to EPA was development of a series of cross-agency executive, management and advisory groups. The workgroups, tasked with the daily development and operations, are staffed with civil servants from several different agencies. Civil servants request to work on the eRulemaking Initiative because of its extraordinarily collaborative, rigorous and productive culture.

The project is meant to move to a "fee for service" structure, meaning that agencies will fund the operation of Regulations.gov according to a formula under which large rulemaking agencies pay more than smaller agencies. (Fee for service here refers to inter-agency transfer payments for services and systems provided by the managing partner or core agencies in Regulations.gov.) Many small agencies that generate only a few rules each year will pay nothing. This funding system is feasible given that agencies participating in Regulations.gov development have already using a similar approach to funding. System operation is estimated to be far less expensive than its development.

**Business-Government Partnerships.** Although the technological system could, in principal be built and operated by the private sector, the arcane and complex nature of rulemaking with its complicated deliberations, political judgments and long streams of rulemaking requires the expertise and tacit knowledge of experienced civil servants. Nevertheless, partnerships between public and private (and nonprofit) sectors are multiple and highly effective. Lockheed Martin is the prime contractor and has staff embedded in the eRulemaking team based at EPA. They have found existing commercial systems that can be modified for use in Regulations.gov thus driving down cost

and development time. They work with other, smaller firms to find, modify and link together existing tools and applications for use by Regulations.gov.

The project uses as its platform the document and content management package, Documentum. The role of Documentum is similar to that of Microsoft Office. It is the base set of software programs, tools and applications that form the "platform" for Regulations.gov. It is no more the innovation than the spreadsheet Excel is the innovation in project management systems. It is simply a robust, usable technological tool that is part of the complex portfolio of software, applications, and tools that have been combined in a novel and useful way to build Regulations.gov. Lockheed Martin finds this project important for obvious business reasons given the potential for replication in state and local governments and in other countries. Because of their estimate of the project's importance, they have provided "free" services and work, for example, the use of their usability lab to test how different types of individuals actually interact with the system. One of the chief contract managers is a former civil servant with nine years of experience in the federal government.

**Interest and Advocacy Groups.** Another type of public, nonprofit, private sector "partnership" lies in the external stakeholder groups and advisory groups, which are many and effectively used. For example, the following advocacy organizations, or lobbyists, are key users and external stakeholders with an active interest in the direction of eRulemaking: the Office of Advocacy at the Small Business Administration is interested in reducing the costs to and increasing the influence of small business; the American Association of Law Libraries represents those who conduct research for firms in the area of rulemaking and regulations; the Center for Regulatory Effectiveness is an interest group whose goal is to reduce the costs of regulation for business. These groups are enthusiastic about Regulations.gov and recognize its transformative potential to enable fundamental change in the way that deliberations within rulemaking are handled by government decisionmakers.

Paraphrasing comments made by several lobbyists who are active supporters of Regulations.gov: The "shadow government" [lobbying groups] are concerned about the potential threat to lobbyists. This is threatening their business model. They will have to change their business model. Businesses

are concerned that government will model comments in ways they can't control. You could put an agency's model on the website and have people run their numbers through the model. More precisely, in the complex rulemaking relevant to business regulation, the government's proposed model or formula governing, for example, arsenic levels in drinking water and their potential health hazard, could be made public on the web. In comments, various parties – including chemical manufacturers, businesses that use arsenic in their production processes, public health researchers, and other interested stakeholders, could put their own data or competing models on the web for all to see and challenge. This level of transparency and its potential to change the nature of public deliberation is an impressive innovation with deep implications for governance not only within countries but across central governments internationally.

Some interest groups oppose Regulations.gov because these interest groups have developed their own online commenting and influence systems. Ironically, these tend to be interest groups that have been leaders in developing online influence mechanisms. Imagine: Your mission is to help formulate and aggregate public opinion and to use this aggregation to influence decisions in Washington. Part of an interest group's power lies in its ability to navigate the maze of the federal government. Many groups – the Sierra Club, the Audobon Society, GetActive and others – have built commenting websites. Regulations.gov might divert or dilute the strength of their members' voices by providing a direct channel to government.

Moreover, firms that develop web-based interfaces and tools to help organizations interact online with their customers oppose a government-built system. For example, GetActive is a company that works with OxFam, Detroit Public Television and other not-for-profits to develop their online interactive tools. Its website notes that: "GetActive tools allow more than 400 organizations to communicate effectively with millions of constituents, including these groups who are seeing great success online." Regulations.gov competes directly with this industry.

## Streamlining Grants Management: Grants.gov

In the U.S. federal government, cross-agency initiatives have been a central focus of a move toward information-based governance for more than a decade (Fountain 2004). In February 2002, the Grants.gov project was officially launched as part of the Presidential Management Initiative, a government modernization effort that includes, among other activities, 25 cross-agency initiatives.[1] (See http://www.grants.gov for the project website.) Years of discussion and development to further standardization of grants administration across agencies preceded the current project. The goal of Grants.gov is to consolidate and streamline the location of and application processes for federal grants by providing to citizens and institutions a unified, cross-agency, web-based interface.

The first phase of the project did not seek to standardize grants processes across agencies but simply to build a standard web-based interface to which all agencies would connect. This virtual integration would simplify grants seeking and administration for the public and, it is assumed, would create a path to deeper integration across agencies that might be pursued in future phases. The project's initial meeting was held in February 2002 and the initial product -- a centralized, web-based "storefront" – was launched officially by the then Secretary of the Department of Health and Human Services, Tommy Thompson, in November 2003.

Approximately $360 billion in federal grants are offered annually by 26 federal agencies through approximately 800 programs and comprise more than 210,000 individual awards. Grants are disbursed to state, local and tribal governments as well as to educational institutions and non-profit organizations. The grants process is relatively mature having developed during the past 25 to 30 years. Within agencies, strong autonomous cultures for grants processing and idiosyncratic data requirements evolved as well. Like most government processes, the federal grants process was until recently largely paper-based

[1] The information on which this case study is based was gathered through archival research and face-to-face, tape recorded interviews with the program manager, assistant manager, project staff, OMB officials and stakeholders. At its inception, the project was known as "E-Grants" and changed officially to "Grants.gov" in 2003. The name "Grants.gov" will be used throughout.

with each agency and grant program using dissimilar forms, data, and certification procedures.

As agencies began to automate their grant processes, it became clear that the result would be hundreds of stove-piped, computerized grants systems. Ironically, customer service strategies and decentralized approaches to innovation and computing led to hyper-customization and further fracturing of grants processes across the government enterprise. The net result for the grantee community was not greater responsiveness, but cacophony. In the environment of decentralized agency computing which characterized the U.S. government in the 1990s, attempts to unify the application process for federal grants had been attempted several times before but without success.

Grants.gov offered the promise of benefits to organizations that apply for federal grant assistance and to federal agencies themselves through simplification of the grants process. For grant applicants, search across agencies and programs for grants and their associated application procedures was labor intensive and demanded specialized, tacit knowledge. Web-based interfaces across grants programs differed substantially from one another with autonomous layouts, navigation, and organization.

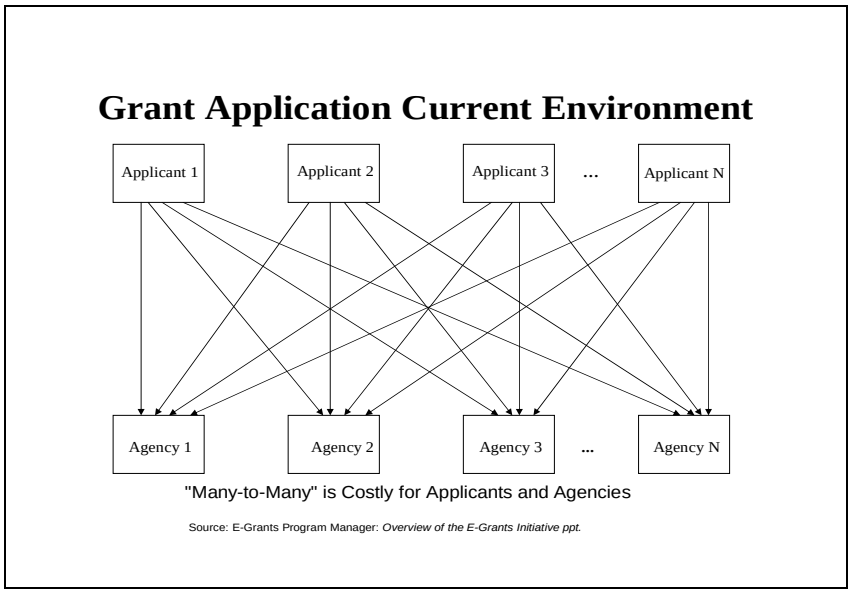
In many cases, potential grant recipients experienced difficulty locating appropriate programs. Often the experience or tacit knowledge required in the application process poses a barrier to entry to many potentially deserving grant applicants, thereby limiting and biasing access. As one senior government official remarked: "[The federal government] has been doing business in a relatively high-handed way …`If you want the money, you've got to play the game our way.' The playing field hasn't been level. Sometimes, it's been a secret handshake club to try and figure out … how to apply in order to … get awarded. People would have to buy – hire – experts in order to find opportunities and to get an application that would get funded. And that's not fair and that's not transparent."

The Grants.gov project is sequenced in several phases. This case briefly summarizes the initial phase. The current, successor phase focuses on improved information flows including more effective management of the newly implemented grants process, focusing on delivering "… simplified, unified

mechanisms for grant award, financial reporting, and performance reporting." A future phase is anticipated to consolidate the participating agencies' back-end, or internal, grants management processes.

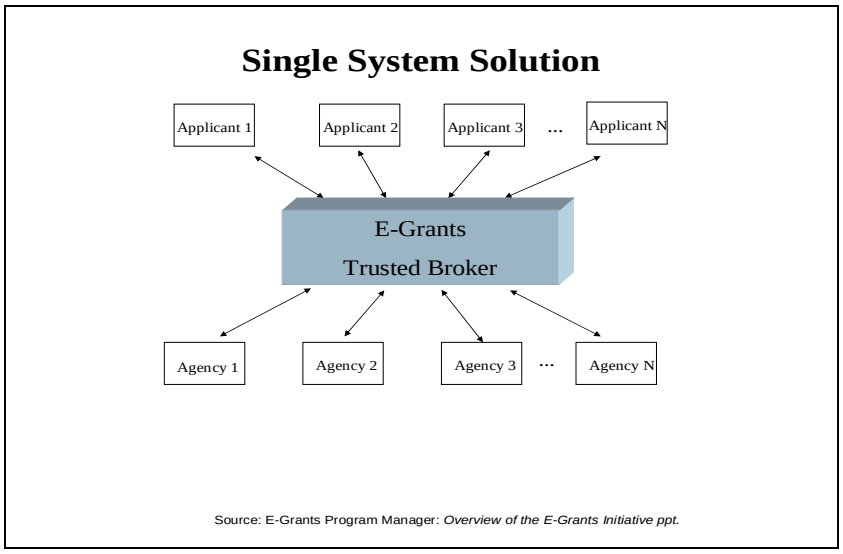
The key objectives of the first phase of the project were determined at the original assembly in February 2002 by then Director of the OMB Office of E-Government and Information Technology, Mark Forman, with the participation of constituents, users and agency team members. The objectives -- to develop a single web interface "storefront" to enable potential applicants to find appropriate grants and to apply for them – required that agencies standardize information concerning grants and application processes, develop unique identifiers for applicants that would be used by all agencies, and build one web-based interface (the storefront) which would link to all agency grants.

The grant application environment, prior to Grants.gov, is presented in the figure below showing the repetition and autonomy of grants administration processes in each agency.




The Grants.gov system would provide one interface for applicants to federal grants. The figure below presents a schematic view of the single system

approach. Note that the actual agency systems are not redesigned. An additional interface has been developed on top of current agency systems.




As the largest grantor of federal funds, the Department of Health and Human Services was designated by OMB, in concert with public managers, as the managing partner agency for Grants.gov. Other partner agencies include the Departments of Transportation, Education, Housing and Urban Development, Justice, Labor, Agriculture, Commerce, Defense, National Science Foundation, and the Federal Emergency Management Agency.

The initial program manager, Charles Havekost, is a career civil servant who has worked on information technology projects in health-related policy domains. His professional background includes a brief period in a dot.com start-up in the private sector. Several other program managers possess non-traditional federal government backgrounds as well. Havekost was named the Chief Information Officer of the Department of Health and Human Services during the first phase of Grants.gov. Rebecca Spitzgo, the former deputy program manager, is now program manager.

Although the project designation, goals, participating agencies and oversight in an OMB program office were agreed upon during the first weeks of Grants.gov, key resources, such as funding and project staff, were not provided.

The project manager was responsible for sourcing the funding and staff for Grants.gov. Each of the 25 Presidential Initiative cross-agency projects were tasked with developing their own funding and staffing in order to keep the projects budget neutral. Agencies would jointly fund the collaborative projects. Lack of funding for the 25 projects forced program managers to spend much of their time and effort developing inter-agency budgetary Memoranda of Understanding and then tracking budgetary transfers between agencies. The participating agencies in Grants.gov developed an innovative approach to funding that became a model for other Presidential Initiative projects.

Agency participants determined that the staffing and funding for the project would be 15 people and $20 million over the first two years. Participating managers then developed a funding algorithm, dividing partner agencies into three groups – large, medium, and small -- according to the proportion of grants they processed annually. The proposed funding structure was submitted to the Grants.gov executive board for approval, which was granted. After the funding algorithm was approved, it was published on the Grants.gov website. The project team also published contributions by agency on the website. This transparency in funding helped preserve equity as well as accountability to the collaborative effort. As one official commented, "… it's a hall of fame which also, conversely, is a hall of shame." The mechanism for funding largely has been successful in that most partner agencies have contributed their share.

## Funding Formula for Grants.gov by Agency

| | Agency | Awards | Award% | Dollars | Dollars % | Total % |
|---|---|---|---|---|---|---|
| Large Partners | HHS | 69,000 | 38.0% | 60,000,000,000 | 33.6% | 71.6% |
| | DOT | 28,274 | 15.6% | 37,600,000,000 | 21.1% | 36.6% |
| | Ed | 19,678 | 10.8% | 30,400,000,000 | 17.0% | 27.9% |
| | HUD | 14,150 | 7.8% | 26,100,000,000 | 14.6% | 22.4% |
| Medium Partners | NSF | 20,526 | 11.3% | 4,150,000,000 | 2.3% | 13.6% |
| | DOJ | 10,200 | 5.6% | 5,000,000,000 | 2.8% | 8.4% |
| | Labor | 5,027 | 2.8% | 9,500,000,000 | 5.3% | 8.1% |
| Small Partners | Ag | 7,304 | 4.0% | 1,540,000,000 | 0.9% | 4.9% |
| | DoC | 2,982 | 1.6% | 1,580,000,000 | 0.9% | 2.5% |
| | DoD | 2,780 | 1.5% | 793,000,000 | 0.4% | 2.0% |
| | FEMA | 1,667 | 0.9% | 1,800,000,000 | 1.0% | 1.9% |
| | Total | 181,588 | 100.0% | 178,463,000,000 | 100.0% | 200.0% |

In addition to funding, a cross-agency project of such scope requires adequate staffing. The program manager has the challenge of convincing agencies to free up scarce human resources to contribute staff to the project. A key argument employed focused on opportunities for professional development. A second, politically important argument was the advantage to departments of having "eyes and ears" on the project. By the end of 2002 Grants.gov was staffed at levels prescribed by its charter with career civil servants, largely on six-month detail to the project.

The staffing strategy lent advantages and disadvantages. On the positive side, the team structure allowed for useful cross-fertilization of ideas from different agencies. As one official put it: "It's turned out that the detail experience has been just wonderful because these people come in from these different agencies kind of speaking different vernaculars, talking about different processes. And it's just kind of a mind blower every time somebody new comes in who's been at a different agency and starts talking about, 'Well, we do it this way' or 'We do it that way.' It's been a fabulous, fabulous experience." The official continued: "I think a lot of times people who have been at one agency for a long time tend to think, 'Oh, we're smart and every other agency is dumb. We do things the right way and everyone else – who knows why they do it that way?' It pulls this together, this ecumenical group here. We get to find out that there are good people at all those other agencies."

On the other hand, the use of six-month details meant that staffing needed to be continually addressed. As the program manager commented: "We had a day-long retreat to make sure that everyone's on the same page and the only really scary moment there was, we went around the table and … we asked them to say what day their detail runs out. And we had three people on the team right now who began their detail on the 13th of January, which means that [soon] their six months is over. Some of the agencies may extend, but it's not a given."

The program team members also had to persuade senior management at the Department of Health and Human Services to approve designated office space for the project. This was not an easy process. But the shared space, in

addition to regular informal team gatherings, proved a strong contributor to the 'esprit de corps' which developed among project members.

One of the key issues involved in working across agencies is governance. While senior government management may agree in principle to a collaborative project, in practice those working on the project report to middle managers within separate agencies. These managers often have their own goals which are not necessarily aligned, in fact are often at odds with, those of the cross-agency project. To address this challenge, the initial program manager Havekost created a governance structure whose chief components are an Executive Board and a Steering Committee. This simple structure has proven robust and valuable for conflict resolution. It has been adopted as a "best practice" by other cross-agency projects.

According to its charter, the Executive Board is to "…have oversight of strategy and timetables, ensure partner agency consensus, provide executive sponsorship for [Grants.gov] outcomes in the partner agencies and resolve interagency issues."[2] Havekost arranged for the Secretary of the Department of Health and Human Services, Tommy Thompson, to invite the other 10 partner agency heads to appoint executive board members for the project, apparently not an easy process. In due course, senior agency representatives with authority to speak for their respective agencies were appointed. (The table below lists the names and titles of the executive board members.)

[2] E-Grants Executive Board, Charter, p.1.

**Grants.gov Executive Board Members, 2002**

- Marc Weisman, HHS, Acting Deputy Assistant Secretary for Grants and Acquisition Management; also Co-Chair, Grants Management Committee
- Bryan Keilty, DOL, Deputy Assistant Secretary for Employment and Training Acquisition
- David J. Litman, DOT, Senior Procurement Executive
- Vickers B. Meadows, HUD, Assistant Secretary for Administration/CIO
- Joseph Marshall, USDA, Associate CFO/Financial Policy & Planning
- Mary Santonastasso, NSF, Director of the Division of Grants and Agreements
- William Berry, Ph.D., DOD, Director for Basic Research
- David Zeppieri, DOJ, CIO of Office of Justice Programs
- Jack Martin, Education, Chief Financial Officer
- Otto J. Wolff, Commerce, CFO and Assistant Secretary for Administration
- Patricia A. English, FEMA, Senior Procurement Executive

**Ex-officio Members:**

- Charles Havekost, E-Grants Program Manager
- Anthony Frater, OMB, E-Gov Government-to-Government Portfolio Manager

According to Havekost, there was little disagreement with the concept of the program, that is, almost all agreed that the project was a good idea.[3] That the program was *possible* was harder. The program team focused on four main tasks in order to build momentum.

First, the team demonstrated to its agency partners that their objective had already been accomplished in another form by a related project. Federal Business Opportunities -- the fedbizopps.gov project -- was a cross-agency initiative similar to Grants.gov in concept and functionality. Second, the team actively engaged the agencies' clients and constituents. According to Havekost, active stakeholder management persuaded grants applicants that the program team was committed to building a truly inter-agency process. It also signaled to agencies that their customers were aware of the project and would exercise voice if progress was delayed by an individual agency.

Third, early on the project team forced agreement on an issue that had previously proved a stumbling block for prior efforts to streamline federal grants processes. In July 2002, well ahead of the stated deadline of October later that year, partner agencies agreed on the standard data to be collected by grant applicants. This standard was based on the OMB standard approved Form 424

[3] E-Grants Stakeholder Opinions, p. 3.

and policy standard ANSI X.12 194. Prior efforts at standard development had started from a blank slate, by erasing the form, and agencies debated every addition. In effect, this amounted to rewriting policy and created rifts between agencies. The adoption of standard data collection was not only operationally important but also significant psychologically. This early accomplishment reportedly built a strong reputation for the project and the seriousness of intent of its participants. It also reinforced the reputation of the program manager, Havekost, as an entrepreneur who could deliver results.

Finally, the project team looked for creative ways to work around lack of cooperation and noncompliance of some partner agencies. Initially many agencies sought ways to resist cooperating with the project. The project team responded by acknowledging the issues and then by seeking methods to solve problems posed by agencies. For example, one agency reported that they would be unable to comply because their grants process required them to keep data on paper. The Grants.gov team promised to print out the information and send it to them.

In summary, the Grants.gov project has built an inter-agency interface to integrate the process of finding and applying for federal grants. Project participants agreed on the importance of the goal, although they doubted its feasibility. They developed governance and funding structures that have become models for other cross-agency projects. The entrepreneurship and skill of the project leader proved critical to building trust and project management systems that would work within the institutional environment. A shared perception of equity in terms of agency contributions has been a vital element of success.

## Conclusions

In the traditional view of government, public servants are agency-centric actors who face a set of perverse incentives as they make decisions regarding the possible benefits of new information uses, sharing and flows for their programs and agencies. In most adversarial democracies, public executives learn to try to accumulate larger budgets and more staff in order to increase the power and autonomy of their agency. They also learn to negotiate skillfully for

appropriations for their program and agency. In fact, in adversarial democracy, such conflicts among programs and agencies are assumed to force public servants to sharpen their arguments and rationales for programs, to produce results in order to sustain resources. But the adversarial model of democracy does not align well with development of knowledge-based and networked approaches to government.

For this reason, public executives face perverse incentives. If public managers implement new information flows and uses that are horizontal in nature, they may not gain greater agency resources in terms of dedicated agency budget: they are likely to have their budget decreased. If they implement new ways of using information that reduce redundancies across agencies and programs, again, they are likely to lose resources rather than gain them. If they develop inter-agency and enterprise-wide systems with their colleagues in the bureaucracy, they will lose autonomy rather than gain it. If the goal to be achieved is better governance, the decisions are clearly in the direction of collaboration across boundaries. But when the proximate goal is to increase, or maintain, agency budget and authority, the criteria for decisionmaking are vastly different and tend toward the agency-centric. So the traditional incentives by which public executives have worked are "perverse" incentives for networked governance.

The role of the public servant is changing but remains critical in democracies. Civil servants play a vital role in domestic—and increasingly in transnational and global—policy regimes. Professional, dedicated, experienced public servants are essential to information government. Many private firms have gained expertise in information-based systems and management. Yet most firm managers do not have a deep understanding of the differences between government and private sector organizations. Hence, public servants must understand the differences between the attributes of systems optimized for use in the private sector and the sometimes subtle differences in requirements necessary for government systems. Vendors generally do not understand the higher standards of accountability that are the obligation of the state: fair and equal treatment of citizens, access, transparency, and, in particular, security and privacy of citizen information.

The cases of Regulations.gov and Grants.gov illustrate major cross-agency initiatives that have had the effect of rethinking knowledge production, flows and use. These have been exemplars for other collaborative initiatives. Informal interactions, carried out by individuals on behalf of their organizations, when handled with respect and some measure of interpersonal skill, can create trust across boundaries and the beginnings of a shared sense of purpose. At a more formal level, inter-organizational relationships require strong coordination, communication, and control systems that must be, nevertheless, implemented in a collaborative way to sustain the participation of actors. Projects require governance bodies as much for the legitimacy and authority they confer on fledgling projects as for their substantive decisionmaking. Cross-agency collaborations in government tend to develop within institutional environments designed to work in highly vertical, command-and-control organizational settings. Entrepreneurs and innovators in government learn to work within, and when opportunities arise, to modify these institutional arrangements.

The bureaucratic state is not outmoded, but the nature and structure of the state is changing fundamentally as information and communication technologies are being absorbed into governments by civil servants. Although communications researchers have used the concept "co-evolution" to refer to reciprocal relationships between technology and organizations and their co-development, the reference to co-evolution connotes that enactment simply happens. By contrast, I developed the technology enactment framework to examine how the actions of public officials and other government decisionmakers interact to enact technology. The technology enactment framework builds specificity and explanatory power into models of co-evolution of technology and government organizations

This paper has focused on structural and institutional changes to the state in the elaboration of the technology enactment framework and the illustration of recent efforts by the U.S. government to create inter-agency structures and processes. Technology plays a key role in changing the capacity of public servants to engage in knowledge creation and exchange. These informal exchanges among professionals within and outside government

through the Internet comprise a powerful change in the public policymaking process. Information technology has afforded the capacity for different and greater communication, for different and great information and knowledge sharing, and for greater transparency and display of complex information. All of these change the types of conversations and dialogue for government officials. The daily, informal exchanges are among the most important and potentially far-reaching changes in policymaking and governance.

The virtual state is intersectoral, interagency, and intergovernmental. But it achieves this fluidity and cross-boundary character through standardization, rationalization, and the management of interdependence.

# Appendix One
# 25 E-Government Initiatives: Brief Descriptions

| Program | Description |
|---|---|
| Government to Citizen | |
| Recreation One-Stop<br>www.recreation.gov | "Provides a single point of access, user-friendly, web-based resource to citizens, offering information and access to government recreational sites"<br>http://www.whitehouse.gov/omb/egov/gtoc/recreation.htm |
| GovBenefits.gov<br>www.govbenefits.gov | "Provides a single point of access for citizens to locate and determine potential eligibility for government benefits and services"<br>http://www.whitehouse.gov/omb/egov/gtoc/govbenefits.htm |
| E-Loans<br>www.govloans.com | "Creates a single point of access for citizens to locate information on federal loan programs, and improves back-office loan functions"<br>http://www.whitehouse.gov/omb/egov/gtoc/online_loan.htm |
| USA Services | "Develop and deploy government-wide citizen customer service using industry best practices [to] provide citizens with timely, consistent responses about government information and services via e-mail, telephone, Internet, and publications"<br>http://www.whitehouse.gov/omb/egov/gtoc/usa_services.htm |
| IRS Free File<br>http://www.irs.gov/app/freeFile/welcome.jsp | "Creates a single point of access to free on-line preparation and electronic tax filing services provided by Industry Partners to reduce burden and costs to taxpayers"<br>http://www.whitehouse.gov/omb/egov/gtoc/irs_free.htm |
| Government to Business | |
| E-Rulemaking<br>http://www.regulations.gov/ | "Allows citizens to easily access and participate in the rulemaking process. Improves the access to, and quality of, the rulemaking process for individuals, businesses, and other government entities while streamlining and increasing the efficiency of internal agency processes"<br>http://www.whitehouse.gov/omb/egov/gtob/rulemaking.htm |
| Expanding Electronic Tax Products for Business | "Reduces the number of tax-related forms that businesses must file, provides timely and accurate tax information to businesses, increases the availability of electronic tax filing, and models simplified federal and state tax employment laws"<br>http://www.whitehouse.gov/omb/egov/gtob/tax_filing.htm |
| International Trade Process Streaming<br>http://www.export.gov/ | "Makes it easy for Small and Medium Enterprises (SMEs) to obtain the information and documents needed to conduct business abroad"<br>http://www.whitehouse.gov/omb/egov/gtob/trade.htm |
| Federal Asset Sales<br>http://www.firstgov.gov/shopping/shopping.shtml | "Identify, recommend, and implement improvements for asset recovery and disposition, making it easier for agencies, businesses, and citizens to find and acquire/buy federal assets."<br>http://www.whitehouse.gov/omb/egov/gtob/asset.htm |

| | |
|---|---|
| Business Gateway<br>http://www.business.gov/ | "Reduces the burden on businesses by making it easy to find, understand, and comply (including submitting forms) with relevant laws and regulations at all levels of government"<br>http://www.whitehouse.gov/omb/egov/gtob/compliance.htm |
| Consolidated Health Informatics | "Adopts a portfolio of existing health information interoperability standards (health vocabulary and messaging) enabling all agencies in the federal health enterprise to "speak the same language" based on common enterprise-wide business and information technology architectures"<br>http://www.whitehouse.gov/omb/egov/gtob/health_informatics.htm |
| Government to Government | |
| Geospatial One-Stop<br>http://www.geo-one-stop.gov/ ;<br>http://www.geodata.gov/ | "Provides federal and state agencies with single point of access to map-related data enabling the sharing of existing data, and to identify potential partners for sharing the cost for future data purchases"<br>http://www.whitehouse.gov/omb/egov/gtog/geospatial.htm |
| Disaster Management<br>http://www.disasterhelp.gov/ | "Provide citizens and members of the emergency management community with a unified point of access to disaster preparedness, mitigation, response, and recovery information from across federal, state, and local government … Improve preparation, mitigation, response and recovery for all hazards through the development of interoperability standards that enable information sharing across the nation's emergency management community …."<br>http://www.whitehouse.gov/omb/egov/gtog/disaster.htm |
| SAFECOM<br>www.safecomprogram.gov | "Serves as the umbrella program within the Federal government to help local, tribal, State and Federal public safety agencies improve public safety response through more effective and efficient interoperable wireless communications."<br>http://www.whitehouse.gov/omb/egov/gtog/safecom.htm |
| E-Vital | "Establishes common electronic processes for Federal and State agencies to collect, process, analyze, verify and share vital statistics record information. Also promotes automating how deaths are registered with the states (Electronic Death Registration (EDR))."<br>http://www.whitehouse.gov/omb/egov/gtog/evital.htm |
| Grants.gov<br>http://www.grants.gov | "Creates a single portal for all federal grant customers to find, apply and ultimately manage grants on-line."<br>http://www.whitehouse.gov/omb/egov/gtog/egrants.htm |
| Internal Efficiency and Effectiveness | |
| E-Training | "Create a premier e-training environment that supports development of the Federal workforce through simplified and one-stop access to high quality e-training products and services …"<br>http://www.whitehouse.gov/omb/egov/internal/training.htm |
| Recruitment One-Stop | "Outsources delivery of USAJOBS Federal Employment Information System to provide state-of-the-art on-line recruitment services to job seekers including intuitive job searching, on-line resume submission, applicant data mining, and on-line feedback on status and eligibility."<br>http://www.whitehouse.gov/omb/egov/internal/recruit.htm |

| | |
|---|---|
| Enterprise HR Integration | "Streamlines and automates the electronic exchange of standardized HR data needed for creation of an official employee record across the Executive Branch. Provides comprehensive knowledge management workforce analysis, forecasting, and reporting across the Executive Branch for the strategic management of human capital." http://www.whitehouse.gov/omb/egov/internal/enterprise.htm |
| E-Clearance | "Streamlines and improves the quality of the current security clearance process" http://www.whitehouse.gov/omb/egov/internal/eclearance.htm |
| E-Payroll | "Consolidates 22 federal payroll systems to simplify and standardize federal human resources/payroll policies and procedures to better integrate payroll, human resources, and finance functions." http://www.whitehouse.gov/omb/egov/internal/epayroll.htm |
| E-Travel | "Provides a government-wide web-based service that applies world-class travel management practices to consolidate federal travel, minimize cost and produce superior customer satisfaction. The E-Travel Service will be commercially hosted ..." http://www.whitehouse.gov/omb/egov/internal/etravel.htm |
| Integrated Acquisition Environment<br>**www.BPN.gov**<br>**www.ContractDirectory.gov**<br>**www.EPLS.gov**<br>**www.FedBizOpps.gov**<br>**www.FedTeDS.gov**<br>**www.FPDS-NG.com**<br>**www.PPIRS.gov**<br>**www.WDOL.gov** | "Creates a secure business environment that will facilitate and support cost-effective acquisition of goods and services by agencies, while eliminating inefficiencies in the current acquisition environment." http://www.whitehouse.gov/omb/egov/internal/acquisition.htm |
| E-Records Management | "Provides policy guidance to help agencies better manage their electronic records ... Four major issue areas: Correspondence management, Enterprise-wide electronic records management, Electronic Information Management Standards, Transferring permanent records to NARA." http://www.whitehouse.gov/omb/egov/internal/records.htm |
| E-Authentication | |
| E-Authentication | "Minimizes the burden on businesses, public and government when obtaining services on-line by providing a secure infrastructure for on-line transactions, eliminating the need for separate processes for the verification of identity and electronic signatures" http://www.whitehouse.gov/omb/egov/ea/eauthentication.htm |

## ENDNOTES

[1] The technology enactment model and detailed case studies illustrating the challenges of institutional change may be found in J.E. Fountain, *Building the Virtual State: Information Technology and Institutional Change* (Brookings Institution Press, 2001). The present paper draws from the explanation of the technology enactment model in *Building the Virtual State* and presents new empirical research on current, major e-government initiatives in the U.S. central government.

[2] Many of these innovative developments are presented in the cases included in *Building the Virtual State*. See, for example, the cases concerning the development of the International Trade Data System, the U.S. Business Advisor, and battlefield management systems in the U.S. Army.

[3] This case is reported in detail in *Building the Virtual State*, chapter 10.

[4] In this conceptualization I draw from and extend a long line of theory and research in the sociology of technology, history of science, and social constructivist accounts of technological development. What is new in my approach is the synthesis of organizational and institutional influences, a focus on power and its distribution, and a focus on the dialectical tensions of operating between two dominant forms: bureaucracy and network.

[5] I am indebted to Professors Paul DiMaggio and Sharon Zukin for this typology of institutional arrangements.

[6] For further details see the initial press release describing the initiative at http://www.whitehouse.gov/omb/pubpress/2001-30.html and Executive Office of the President and OMB: "The President's Management Agenda," at http://www.whitehouse.gov/omb/budget/fy2002/mgmt.pdf.

[7] For further details see "The President's Management Agenda," p.24 http://www.whitehouse.gov/omb/budget/fy2002/mgmt.pdf.

[8] Quotation from *Federal Computer Week*, February 18, 2002: http://www.fcw.com/fcw/articles/2002/0218/cov-budget1-02-18-02.asp

[9] John Scofield, spokesman for the House Appropriations Committee, quoted in *Government Computer News*, February 9, 2004. See http://gcn.com/23_3/news/24892-1.html, accessed July 2, 2004.