

Alternative Funding Strategies for Electronic Commerce Projects



**Robert H. Smith School of Business
University of Maryland**

Management Consulting Project Team

Amit Chandok
Kristi Miller
Alison Otis
Erich Parker
Tira Robinson
Siddharth Shah

Faculty Advisor: Dr. Jonathan Palmer

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Executive Summary

The continuing emergence of the Internet, and related advances in communications technology, provide a unique opportunity to greatly improve the delivery of government information and services. Emerging technology presents a challenge to fundamentally rethink existing processes. Numerous government agencies have made great strides in implementing new business models, but other agencies languish with barely developed or incompatible information technology (IT) infrastructure systems. To date, significant attention has not been paid to a coherent, government-wide IT policy. As a result, a divergent collection of largely isolated, agency-specific electronic government programs has been undertaken.

Funding has remained one of the most important impediments to implementing Federal government electronic commerce (e-commerce) projects. The conventional funding mechanisms, like the budget appropriation process, move very slowly compared to the pace of rapidly changing technology. Consequently, agencies have resorted to creating innovative funding approaches in order to ‘work-around’ the existing funding process.

Agencies are exploring a number of approaches to provide funding for their electronic commerce projects. The approaches identified and evaluated during the course of this research project, and described in detail in the report, include:

- Budget Appropriation
- Working Capital Funds
- Innovation Fund
- Fee for Service/Franchising
- Rebate Funds
- Capital Funds
- Share-in-Savings/Self-Funding
- Public-Private Partnerships
- CIO Czar
- Hybrid Approach

The track records of these funding strategies have been mixed. The single most important factor behind the success of any of these strategies is having strong top-level support. Implementation of e-commerce projects, especially the required innovative funding approaches, requires changes in the conventional way of doing business. In the absence of strong top-level support, the resistance to change that is inherent in most organizations would stifle these initiatives.

Similarly, ownership of a project is of great importance. Every initiative must have an individual champion, otherwise it is at risk of losing momentum quickly through neglect. However, the mere presence of a designated leader may not, in itself, be sufficient, as the leadership’s credibility with all of the project’s stakeholders is also essential. This is particularly so when considering multi-agency coordination and private sector participation. Strong leadership can be in vain if all the participants are not committed to the cause.

Before adopting a particular funding strategy, agencies should consider the following practical issues:

- **Agency Technology Maturity.** Determining the agency's current state of technological sophistication is crucial. For example, an agency without proper IT infrastructure in place should not attempt to implement complex Web-based transactions. If implementing a project requiring multi-agency coordination, such an agency could limit the success of the entire group.
- **Stage in Project Lifecycle.** The nature of the project may alter the choice of funding strategy. One-time funds, like "Capital Funding" or an "Innovation Fund", may be ideal for the pilot phase of a project, but are not appropriate for mature production systems which need continuous funds for maintenance and operations.
- **Degree of Required Inter-Organizational Collaboration.** Assessing the degree of coordination required among the participating agencies is critical. For example, the success of the "Public-Private Partnership" model, involving multiple agencies and multiple private parties, requires a high degree of coordination.

To date, most agencies focus internally when considering IT projects. Thus, even if individual agencies become successful in implementing electronic commerce projects, their uncoordinated programs are likely to result in a maze of different systems that businesses and citizens must navigate. It is important for the government to take advantage of the current opportunity to present a single face to all users, and this requires cross-agency leadership. Such government-wide leadership would ensure standardization, a common look and feel, and interoperability among different government systems.

Hence, the goal is two-fold: First, all agencies must quickly be brought to a base level of infrastructure maturity so that all stand to benefit from, and contribute to, commonly developed systems. Second, the Federal government must design a process which encourages and rewards agencies for recognizing the common elements that their IT and electronic commerce objectives share with other agencies' plans. The establishment of this overarching decision making process will bring convergence to what has been a highly scattered process.

Private industry has recognized the fundamental importance of elevating the CIO position to the highest levels of management. Only at this level can the CIO have the necessary authority and visibility to successfully impact the government's IT development. However, a government CIO 'Czar' alone cannot achieve the necessary progress. An advisory panel, responsible for both technical and funding recommendations to this CIO, is an essential part of a successful strategy.

This national CIO position and its associated advisory board could be structured in several different ways including the model used for the Federal Reserve Board, an expansion of the existing CIO Council's role, or the creation of a new Cabinet level post. Regardless of the

structure chosen, the national CIO position must have the funding and decision-making authority to develop and implement government-wide IT policy. A national CIO board, headed by a Chair- or Chief-CIO, can bring focus, discipline, and coherence to the government's electronic commerce programs.

Recent studies, noted in this report, have similarly concluded that a strong, central, and highly placed national CIO position is required. This report not only supports the call for a national CIO, but also delineates the current funding environment and provides a structure for evaluating the applicability of available funding strategies under a variety of circumstances. This will provide a starting point for Federal agencies to appraise their own status and to understand which strategies are appropriate.

The greatest benefit of a more rational, disciplined approach to government electronic commerce funding will accrue to the citizens who interact with government every day.

Background

A New Economy

In recent years, advances in telecommunications, computing, and the Internet have drastically transformed the way we live. With the advent of the Internet, the private sector has completely reengineered the way it does business. New technologies have not only made it possible to achieve greater efficiencies and service levels within traditional businesses, but they have also allowed completely new business models to develop. Electronic commerce now enables businesses and consumers to interact directly and complete transactions on-line. The need for intermediaries has been reduced, while the opportunity for new markets and alternative value-added services and products has been expanded.

Today, consumers can complete most everything on-line—from grocery shopping to applying for a mortgage. The Internet has exponentially increased the speed and convenience of doing business because it is open 24 hours a day, seven days a week (24/7) and consumers never have to leave the comfort of their homes or offices. In addition, the Internet has radically altered consumer expectations for quality and efficient service.

The revolution in the private sector has also impacted citizen expectations of government services. Now, more than ever before, people expect and demand better, more cost-effective, and convenient services from their government. In contrast to the progress made by the private sector, the public sector has been slow to transform the way it conducts business. The introduction of the Internet and electronic commerce has challenged all levels of government to determine how they can effectively leverage new technologies to provide better and more efficient services to citizens. Although agencies have taken large steps towards using new technologies to modernize their businesses, much more must be done at all levels of government.

The bottom line is clear: To meet its customers' expectations, government must find a way to incorporate the advanced telecommunications and information technologies that the private sector has been able to leverage so well. The 'Digital Divide' exists between the public and private sectors, as well as between population groups.

The Challenge

Perhaps the most challenging aspects of effectively implementing new technologies is coordination and funding. Traditionally the Federal government has operated with a "stove-pipe" structure under which each agency operates independently of other government agencies. This approach is supported and enhanced by the congressional committee configuration and the budget structure. Congress typically focuses its oversight on individual agencies, allocating funding on an agency by agency basis. Relatively little attention has been paid to strategic planning or to directing e-commerce programs for the Federal government overall.

With no structure in place for an enterprise-wide approach to government, opportunities to fund or coordinate multi-agency initiatives are limited. Agencies continue to operate under this same "stove-pipe" mentality in their daily operations. They usually focus on their narrowly defined missions, without regard to the greater needs of the government as a whole. Often agencies

support projects that compete for funding against similar projects in other agencies. Agencies that have implemented new technologies have traditionally done so independently of other agencies, typically requesting funding through annual budget appropriation.

Although some government-wide contracts have been established, such as the General Services Administration supply schedule, they do little to facilitate extensive inter-agency collaboration. For the most part, agencies use contracts for their own projects, independent of other agencies.

Those agencies that have collaborated on projects have often used a “pass the hat” approach.¹ In general, this model is implemented when one agency takes the lead and funds are contributed by participating agencies. The *ad hoc* nature of this funding strategy makes it unsuitable because it fails to provide a steady stream of funding for ongoing projects. But it may work for pilot projects in which only a discrete amount of money is needed. Although this model has proven useful in many cases, it does not provide a disciplined, coordinated government-wide IT policy.

Clearly the Federal government needs to find alternative approaches to fund and coordinate its effort to enhance government services through technology. Traditional funding strategies are insufficient to pilot the transformation.

Finding Alternative Funding Strategies

To assist in identifying and evaluating innovative funding strategies for government-wide e-commerce projects, the GSA Office of Electronic Commerce (OEC) contracted with an MBA consulting team from the Robert H. Smith School of Business at the University of Maryland. OEC is a Federal government office that was established “to promote and nurture government-wide electronic commerce projects.”² OEC asked the consulting team to investigate alternative funding approaches that have been used by governments and other organizations. To accomplish the end goal of the project—delivering recommendations on funding strategies which could be implemented in other areas of Federal government—the consulting team was encouraged to interview key government officials, as well as examine the current government IT situation.

The MBA team conducted thirty-two interviews, gathering knowledge from experienced players within Federal government, state government, and various private and not-for-profit organizations. The purpose of the interviews was to understand the problems with current funding mechanisms, identify funding strategies that had been successful, and determine how those strategies could be introduced or further put to advantage for government-wide e-commerce projects. A complete interview list is provided in Appendix A.

Web-sites, legislation, and policy papers were reviewed, as well as previous reports on similar issues faced by organizations internal and external to the Federal government, to help the team understand the Federal government environment and its use of existing funding strategies. The interviews and document review assisted the team in determining some of the factors that are required for specific funding strategies and the obstacles that might prevent their successful implementation.

Once this information was collected, the team developed an analytical framework through which each funding strategy was evaluated. The framework attempts to evaluate each strategy based on

the level of an agency's technology maturity, the phase of the project (pilot or production), and the level of inter-agency collaboration required by the project. Each strategy is then evaluated to determine its most appropriate application.

The Report

The report is designed as a reference tool for Federal agencies seeking innovative funding approaches for various types of information technology projects. In addition, the report provides a final recommendation for the Federal government's approach to future government-wide technology projects. While no funding strategy is right for all types of projects, this report attempts to help the user determine those strategies that would best fit a particular situation.

The structure of this report includes:

- Funding Strategies
- Evaluation of Funding Strategies
- Recommendations
- Conclusion

The Funding Strategies chapter describes the ten individual funding strategies researched as part of this project. For each strategy, the report includes a brief summary of how the strategy works, a case study, critical success factors, advantages of that particular funding strategy, and obstacles to implementing the funding mechanism.

In the Evaluation of Funding Strategies chapter each funding strategy is examined to determine how it is best used depending upon three practical considerations: the level of the agency's technology infrastructure, whether the project is in the pilot or production stage, and how much collaboration among agencies is required.

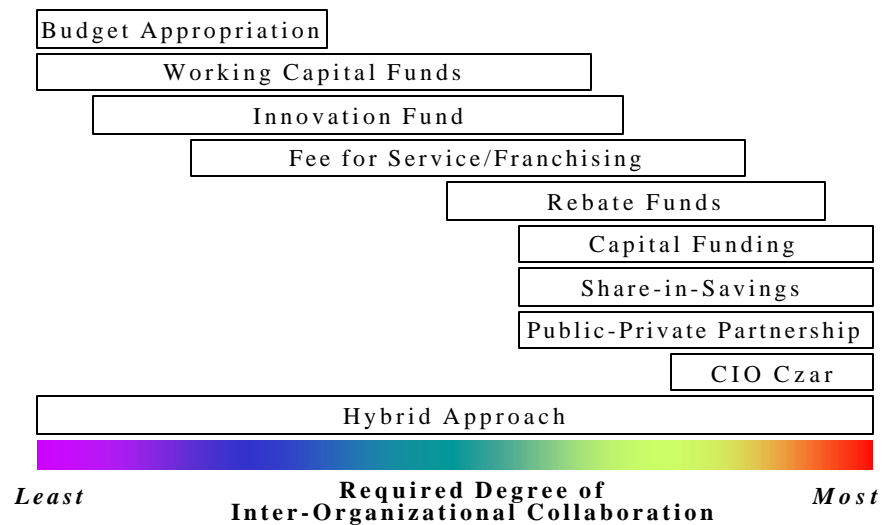
The final chapter provides recommendations on the use of these funding strategies and recommends an organizational structure to fund, coordinate, and implement an enterprise-wide approach to technology within the Federal government.

Funding Strategies

This chapter examines ten funding strategies used for information technology projects including:

- Budget Appropriation
- Working Capital Funds
- Innovation Fund
- Fee for Service/Franchising Model
- Rebate Funds
- Capital Funding
- Share-in-Savings/Self-Funding
- Public-Private Partnerships
- CIO Czar Model
- Hybrid Approach

Each strategy provides a unique funding mechanism for government projects with varying levels of inter-organizational coordination. The exhibit provided below assigns these ten funding strategies along a continuum from the least required amount of inter-organizational collaboration for successful implementation to the most required collaboration.



The continuum organizes this chapter and provides a tool for evaluating the strategies in subsequent chapters. Placement of these strategies along two other dimensions, agency technological maturity and project lifecycle stage, is discussed in the following chapter. The following pages examine the individual funding strategies in more detail. Each section includes:

- Placement on the Collaboration Continuum
- Description
- Case Study
- Critical Success Factors
- Advantages
- Obstacles to Implementation

Budget Appropriation

Description

The budget appropriation process is the conventional funding strategy for the Federal government. Each year, the Federal government raises and spends more than \$1.5 trillion through this budget process. In general, this process is widely regarded as complex and time-consuming. It is seen as “an arcane set of activities often suffused with controversy, frustration, and delay.” These characteristics of the process are attributable to various factors, including the vast scope and complexity of Federal activities.³

As agencies formulate their budgets, they maintain continuing contact with the Office of Management and Budget (OMB) examiners assigned to them. These contacts provide agencies with guidance in preparing their budgets and also enable them to alert OMB to any needs or problems that may lay ahead. Agency requests are submitted to OMB in late summer or early fall. OMB staff, in consultation with the President and his aides, review these requests and develops the President’s budget from them. The President submits the final budget to Congress for its review, modification, and approval. The Budget and Accounting Act of 1921 bars agencies from submitting their budget requests directly to Congress.⁴

Critical Success Factors

The funding of inter-agency projects via the budget appropriation process requires:

- Lead agency responsibility
- Top-level support
- Planned annual budget

To successfully use this method of funding, a designated lead agency must seek the required additional funding. Most likely, the lead agency would be the agency to which the project is closely linked in mission. This submitted budget request must have support from the President and Congress, as well as agency leadership, otherwise the proposal would never be approved. Efforts to submit the request must be completed within the planned cycle and can contain few last-minute revisions. If approved for funding, the requesting agency must assume responsibility for the outcomes of the project. If failure occurs, the lead agency will likely be required to explain because it was awarded the funding.

Advantages

The budget appropriation funding model has some advantages:

- Uses standard operating procedures of the Federal government
- Evokes necessary support
- Provides checks and balances

Because the Federal government uses the budget appropriation model to fund most government activities, it is widely understood and therefore can be used easily. Since the process requires multiple levels of approval before it is complete, it must also elicit support at all levels,

ultimately making approval of the project funding more likely. In addition, the budget appropriation system uses the checks and balances fundamental to the U.S. government to ensure government funds are appropriately spent.

Obstacles

The major obstacles of the budget appropriation process include:

- Time-consuming nature
- Agency competition over limited funds
- Limitations to multi-agency coordination

The budget appropriation process is rather slow and tedious. Preparation of the budget typically begins in the spring (or earlier) each year, at least nine months before the budget is submitted to Congress, about 17 months before the start of the fiscal year to which it pertains, and about 29 months before the close of the relevant fiscal year. Such long lead times mean an agency must begin preparing its budget for the succeeding year before it has received final approval of its budget appropriation for the coming fiscal year. As a result, agency budgets are prepared with a great deal of uncertainty about economic conditions, presidential policies, and congressional actions. This lengthy cycle makes it difficult to use the budget appropriation process to fund cutting edge technology projects that require fast action.

Limited amounts of discretionary funding also means many projects will fail to receive any funding. This structure leads to inter-agency and sometimes intra-agency competition as they attempt to convince OMB and Congress that their projects deserve funding.

In addition, the budget appropriation process provides funds on an agency-specific basis. Congressional committee oversight and OMB budget allocation maintain an agency-specific approach. That is, the focus is only on individual agencies and not horizontally across the government. The result is that there are few opportunities for agencies to work together to fund common initiatives.⁵

Working Capital Funds

Description

Working capital funds are an outgrowth of the difficulties agencies face in matching spending requirements to the budget process. In many cases working capital funds are used to bridge fiscal year boundaries, or to fund projects for which an urgent need has arisen, making it impossible to obtain funding through the lengthy budget appropriation process. The funds used to establish a working capital fund may come from direct appropriation or from otherwise uncommitted funds.

Typically, operations that receive financing from the working capital fund are expected to reimburse the fund on a fee-for-service basis. This arrangement allows the working capital fund to continue to support projects on an on-going basis without further appropriations.

Case Study – Environmental Protection Agency⁶

The Environmental Protection Agency's National Technology Services Division (NTSD) owns and operates the EPA's Public Access World Wide Web servers under the auspices of the agency's working capital fund. In order for an EPA office to create and maintain a Web-site, and to place information on the agency's Web servers, it must order support subscription from NTSD. These subscription fees are reimbursed to the working capital fund to support further NTSD projects. In this sense the EPA's working capital fund operates as a fee-for-service reimbursable fund and allows for rapid action in meeting the agency's Web needs.

Case Study – Department of Energy⁷

In 1997 the Department of Energy's working capital fund was set up to provide a cost-based billing structure for administrative services, including IT support, payroll, etc., to the various DOE programs. Services are provided on a fee-for-service basis and these fees are returned to the working capital fund. By centralizing and rationalizing the management of these administrative support functions, DOE has realized greater efficiencies and an increased awareness of administrative support costs. In addition, the working capital fund structure allows for greater flexibility in meeting the needs of all DOE programs for this type of support. As demand for these functions increases it can be easily scaled up.

Case Study – Department of Agriculture⁸

The National Information Technology Center (NITC), part of the United States Department of Agriculture's (USDA) Office of the Chief Information Officer, offers an example of a multi-agency application of the working capital fund strategy to technology projects. The NITC provides services and technology to support the USDA and its sub-units, the Federal Aviation Administration, and other government clients. Mainframe computing services are funded from USDA's working capital fund operates on a fee-for-service basis with fees reimbursed to the fund. Mainframe operating costs are recovered only through usage fees for each service and fees for the resource usage of each customer. The USDA has found that demand for the NITC's computing services has grown because of the increased value associated with the greater economies of scale that centralized, shared services can achieve relative to similar resources distributed agency by agency.

Critical Success Factors

Critical success factors key to the working capital funds model are:

- Top-level support
- Agency technological maturity

Working capital funds have proven quite useful in many government settings. As with most strategies, strong top-level support is critical in order to overcome the organizational culture of resistance to change. Also important is the ability of an agency to recognize the need for a new way of doing business, and to identify the appropriateness of the working capital fund approach to satisfy that need. In the examples shown above, the working capital fund approach allowed for not only greater access to technology support services, but also for greater recognition of the costs associated with providing those services.

As with many funding strategies, the technological maturity of the agency is of great importance when undertaking the working capital fund strategy to pursue technology projects. Without the proper level of technological sophistication and the credibility that goes with it, the working capital fund approach may not succeed. Agencies attempting to use this strategy for technology projects beyond their level of readiness will find that the fee-for-service structure will not support continued fund operation.

Advantages

The working capital fund has several advantages since it:

- Crosses fiscal year boundaries
- Continues internal self-funding
- Fosters competition

The major advantage of the working capital fund approach is its ability to fund projects that provide service across fiscal year boundaries. In addition, since this strategy usually includes aspects of a fee-for-service approach, it thrusts participants into a competitive environment in which only those that genuinely provide value-added services survive, resulting in greater efficiency and lower costs to all users.

Obstacles

Some identified obstacles with this model include:

- Agency resistance to change
- Congressional resistance

The primary obstacle to implementation of the working capital fund approach to funding technology projects is agency resistance to change. Since many organizations do not perceive any problems with the way they currently do business, it can be difficult to introduce new methods, even under innovative strategies like working capital funds.

Even if support is gained internally, Congressional approval for working capital funds may prove difficult. The use of working capital funds does not require the same level of congressional oversight that projects funded through the normal appropriations process require. Thus Congress has some concern that the funds may be spent unwisely.

Innovation Fund

Description

A government innovation fund operates very much like a venture capital firm from the private sector. In general, an agency or board that reviews agency applications for available funding to pilot new project ideas oversees the fund.⁹ Based on established evaluation criteria, the board selects projects to fund. In many cases the projects are chosen based upon the savings they are expected to generate. Projects of great significance can also be selected even if they are not expected to provide any monetary rewards. Both single-agency or multi-agency projects are possible under this model.

The fund is created either by charging an existing revenue stream or by direct appropriation. A certain percentage of this incoming revenue is set aside to create the fund. Payouts from these funds can take the form of either loans or grants to the requesting agency depending on the fund's structure.

Case study – GITS IT Innovation Fund¹⁰

The Federal government's Information Technology (IT) Innovation Fund was created in FY 1995 from a one percent surcharge on the FTS2000 long distance telecommunications program's annual income. In addition to this source, the participating agencies were encouraged to provide supplementary funds and were expected to absorb overhead costs such as office space. The IT Innovation Fund was established to provide seed capital for government-wide IT initiatives (i.e. useful to the state and Federal level) and projects that serviced the public. The projects were expected to begin paying back the seed money within two years of receipt and provide replenishment to the fund where feasible.

A joint committee representing the Interagency Management Council and the Government Information Technology Services (GITS) Board was formed to oversee the fund. This committee reviewed and approved projects that were to be funded from the various proposals submitted by different agencies. OMB served as an advisor and GSA provided administrative and program management support. Each project proposal was evaluated on criteria such as expected benefits, innovativeness, multi agency application, and potential plan for repayment.

Critical Success Factors

The factors that need to be in place for the creation and use of an innovation fund include:

- Identification of initial funding source
- Top-level support
- Credibility of oversight management

The success of this funding strategy revolves around the selection of a viable revenue stream that can be tapped. It is very likely that there will be some resistance towards redirecting any funding stream for this purpose as happened in the case of FTS 2000. As a result top-level support is all the more important here. The applicant agencies must also trust and support the committee overseeing the fund. Hence it is crucial to have competent and credible people on the committee.

Advantages

The innovation fund model includes three key advantages:

- Provides constant source of funds
- May be scaled up
- Fosters competition

If implemented correctly, the innovation fund can be self-funding, providing a constant source of money for IT projects. As a result, this funding mechanism can be institutionalized better than other *ad hoc* strategies. Though the focus of this strategy is to finance pilot projects, continuous availability of funds means that large IT projects can be financed through this funding mechanism. As funding is awarded on a competitive basis, the model provides for a more efficient utilization of funds.

Obstacles

The principle obstacle in creating an innovation fund is resistance to revenue diversion. In regard to the charge on an existing revenue stream, concerned parties may object. In the case of the GITS IT Innovation Fund, GSA stopped charging FTS 2000 revenue as they feared that agencies would leave the FTS 2000 program because of the one-percent fee added.

Fee for Service/Franchising Model

Description

The “fee for service” or “franchising” model involves the establishment of a business or support unit that provides services internally to its own agency, as well as other government agencies for a set fee. This “fee” can be either a flat rate or a percentage of the total costs of the service. The total revenue generated from the fees supports the infrastructure and administrative costs of the unit providing the service. Most appropriate for administrative services which cross all government agencies, the fee for service model creates economies of scale for services that are repetitious and would require substantial expenditure of resources for multiple agencies. The business unit may compete against other internal and external competitors to provide services to other agencies, ensuring the service is as efficient and inexpensive as possible.

The concept of franchising has been recognized by the National Performance Review (NPR) as a mechanism for adopting “good business practices” within government. Functions performed government wide including payroll, personnel, finance, and facility management are recognized as areas that have increasingly been provided via this model. Other services such as information technology and quality management have been identified as future areas of opportunity for this model.¹¹

Case Study – Division of Payment Management, DHHS¹²

The Division of Payment Management (DPM) in the Department of Health and Human Services (DHHS) is an example of a fee for service model that is serving multiple agencies using an electronic commerce approach to its service delivery. DPM serves as the payments manager between grant making agencies and recipients for a flat fee based on the number of open grants. The costs are most often paid from the administrative funding associated with grant programs and are substantially less than the costs associated with operating independent systems. Due to its service structure, DPM is fully self-sustaining and does not require direct appropriation.

The development of DPM has progressed since the early 1970s when it was the single source of payments for all of the National Institutes of Health (NIH). In 1975 the office was moved to the DHHS Office of the Secretary and began serving other DHHS agencies and in 1989 it began serving outside agencies. Prompted by an appeal from grant recipients to the Office of Management and Budget (OMB) to simplify the grant payment system that varied drastically from agency to agency, an OMB led taskforce was formed, bringing all grant-making agencies to the table. This group presented a series of recommendations to the Chief Financial Officer’s (CFO) Council. In June 1998 an agreement was reached by the CFO Council to create a standardized payment system. This system would be administered by three agencies, the U.S. Department of Treasury, Department of Defense, and DPM in DHHS. All agencies were to move from their proprietary systems to one of the three agencies’ systems by October 2002.

To date, eleven agencies are using the grants payment service offered by DPM and four others will soon start. Today, over \$159 billion of grant funding, which represents 75% of total Federal grant dollars, are electronically paid through DPM. Using an Internet-based program, grantees can now check the status of their accounts, request and return funds, as well as report cash

transactions. The benefits of the program include reductions in errors from written reports and requests, and greater accessibility.¹³

Critical Success Factors

Critical success factors of this model include:

- Top-level support
- Internally developed core competencies within the agency
- Identified revenue streams that are reimbursable, competitive, and conducted within government-wide principles and criteria¹⁴

Without top-level backing, there may never be enough motivation to adopt the fee for service model. For example, agreement to standardize the payment systems of various grant-making agencies would not have been achieved without top-level interest. The leadership of OMB brought the convening authority to have this issue addressed by the CFO Council. In addition, this funding model requires that an agency be prepared to provide a value-added service to other agencies. DPM was ready to provide the grant payment service through its development within DHHS. Lastly, to become a viable servicing unit, revenue streams must accompany services. Competition among agencies and the private sector stimulates the need for quality and efficiency of services. This model requires the support of the various agencies along with a commitment to use the services offered by the competing offices.

Advantages

The fee for service/franchising model provides three primary advantages:

- Identifies and builds on existing governmental strengths
- Increases the economies of scale through cross-servicing of agencies
- Promotes competition, leading to higher levels of quality at better prices

The fee for service/franchising model allows agencies that are efficiently and effectively performing services and/or functions to leverage this strength throughout the government by selling the service to other agencies. This type of service allows the government to build on its strengths and generate greater cost savings. For example, if an agency has developed a state-of-the-art payroll system it is more cost effective for other agencies to use this system than to develop their own. Because these servicing agencies compete for contracts against other agencies and private sector organizations, they have incentives to improve their services and find ways to be more efficient. By doing so the agency hopes to retain or win more contracts.

Obstacles¹⁵

Several obstacles must be addressed for the fee for service model to be effective, including the following:

- Current governmental structure restrictions
- No incentives for success
- Parent agency's self-concept of mission

Under current law, agencies that generate a profit from the fees charged for services are significantly restricted in their use of the funds. Thus there is some disincentive to provide the service to other agencies since little financial benefit can be gained. Although there may be cost savings to the government as a whole, and thus the service is in the best interest of the government, there is little financial incentive for agencies to adopt the model. In fact, few incentives exist to succeed at this model. Finally, an agency may not seek the responsibility of providing service to other agencies because the agency views the work as detached from its mission.

Rebate Funds

Description

Rebate Funds are often viewed as “free money” because they come from outside entities and cannot be traced back to a specific budgetary line item. Sources of these funds typically include a contractually agreed upon percentage of a sale that is refunded by the vendor to the government. Because this money is not part of any appropriation process, it has offered greater flexibility as a source of funds for pilot projects. Rebate funds can be tied to one agency or several agencies.

Rebate funds can also be combined with other funding strategies. For instance, in many self-funding models, there is a rebate clause. If a target revenue level is reached, the private-side partner rebates an additional percentage of the money to the government agency.

Case Study- Smart Card¹⁶

The “Smart Pay” Government Credit Card program, in affiliation with a few major banks, allows government employees greater freedom and speed in making small purchases (purchases \$2500 and under). A percentage of total purchase dollars is rebated back to the government from the credit card issuer. In essence, the government is rewarded for making its purchases through this private channel. The money is often refunded to the individual bureaus and offices that generated the charges. These funds are distributed or spent depending on the needs of the respective organizations.

Critical Success Factors

Rebate funds require:

- Coordination between agencies
- Top-level support

Because the dollar amounts refunded to individual offices and bureaus can be quite small, funding projects may require the participation of several offices, bureaus, or divisions to achieve a critical mass. This strategy demands agreement among the participants as to how the funds are allocated. The agency that receives the rebates and the agencies that generated the rebates must agree on ownership and stewardship of the money and the nature of the project which receives it.

Advantages

The primary advantages of rebate funds are:

- “Free money”
- Flexibility of Use

The burden of rebate identification and processing is handled by the private sector. Because these funds cannot be clearly traced to a specific appropriation, there are fewer restrictions on their use. Therefore, these funds are ideal sources for rapidly evolving technology projects.

Obstacles

Obstacles to the successful use of rebate funds are:

- Ownership issues
- Negative perceptions

The primary problem with rebate funds has been disagreement over ownership of the rebates. Do all agencies share equally in the rebate pool? Or should the funds be distributed on a percentage basis, with the agencies, bureaus, and offices receiving their share proportional to the amount they charged? Or if one agency receives the aggregate rebate, can it retain the funds and unilaterally determine their use and appropriate the money as it sees fit?

A secondary problem is the perception by Congress that “free money” is often wasted by the agencies because it does not fall under the same oversight guidelines as other funds. The budget appropriation process is designed to target funding to “appropriate” uses that serve the citizens. While there is little debate on whether the projects getting the funds are worthwhile or not, there is an ever-present concern that, because the money is unregulated, measures should be enacted to assure more accountability.

Capital Funding

Description

Capital funding is a common financing tool. Governments have long used bonds to fund capital projects such as new schools, roads, and other infrastructure development. Increasingly states are using this same capital funding strategy to support their information technology projects. Under this model, capital funds are used for a specific technology project until it is operational. At that time, maintenance funds are usually appropriated through the operational budget. Typically one central agency or department will oversee the administration of the bond, as well as the appropriation and oversight of the funds and their specific projects.

Case Study – Commonwealth of Massachusetts¹⁷

The Commonwealth of Massachusetts has used the capital funding model to finance large IT projects for the state government. The Commonwealth's Information Technology Division (ITD) oversees the bonds, taking primary responsibility for management and allocation of the funds.

The Commonwealth permits ITD to allocate an estimated \$49 million from the bond proceeds each year to specific projects. During the budgeting process, ITD meets with the various agencies and departments to review their technology plans and funding needs, and establish priorities for the state's information technology projects. Once these priorities have been established ITD prepares a capital spending plan which is then sent to the state legislature for review and comment.

If the state legislature does not object to the capital spending plan, ITD starts fund allocation at the beginning of the fiscal year. The allocation is not transferred to the agency responsible for each project in its entirety, rather the money is sent in periodic allotments determined by ITD and the respective agency. The State Treasurer repays the bonds from the general fund.

Critical Success Factors

For the capital funding model to succeed, several elements must be in place including:

- Top-level support
- Public backing
- Standard policies
- Repayment plan

Top-level support from the executive and legislative branches of the government ensures that the project is taken seriously and will be monitored. Without the support, the project is unlikely to receive the attention it needs to be successful, and the public will undoubtedly withdraw its support for the funding mechanism. In addition, the government must establish policies for the management, use, and repayment of the bonds. These policies will make certain that the funds are used appropriately and are sound investment opportunities for the public.

Advantages

Some advantages in the capital funding model include:

- Coordinated decision making
- Facilitates multi-agency projects
- Unified technology vision

The greatest advantage provided by this funding strategy is the fact that it provides for some common oversight of IT projects throughout the government. In addition to providing another source of funds for technology projects, this strategy also facilitates coordination and communication among various agencies and departments. Since one agency or unit manages the funds and develops the capital spending plan, that agency has the ability to facilitate agency coordination on similar proposed projects. In addition, this agency can also facilitate one technology vision for the entire organization because it controls the funds needed to realize that vision.

Obstacles

The obstacles that may prohibit the application of the capital funding model include:

- Repayment method
- Fund management
- Agency competition

Many factors may prevent the capital model from succeeding. One, governments must determine how they will repay the funds generated from the bond issuance. Consequently, alternative funding streams must be found in the long-run. In addition, legislative support of the model must be generated to allow this type of bond issuance to take place at all.

Once the bonds are approved, the actual coordination and allocation of the funding presents another obstacle. Governments must determine how they will manage the bonds to ensure they are appropriately spending the funds. If a centralized body controls the funding, the government also faces the challenge of gathering buy-in from the individual entities seeking the funding.

Moreover, multiple agencies must still compete for the funding to some extent since the funds are limited. The agencies must also be willing to collaborate with each other to make this model work.

Share-in-Savings/Self-Funding

Description

The share-in-savings/self-funding model is a type of performance based contracting that places maximum risk on the contractor. This unique funding mechanism allows the government to pay a private contractor (in part or in total) from the savings or new revenue generated by the project. The contractors typically provide the initial funding for the project under the agreement that they will be paid a percentage of the savings or new revenue streams at a specified time or period. In most cases, the government provides no initial funding of the project, but does contribute significant oversight in the development and tracking of savings and revenues.

Case Study – National Information Consortium¹⁸

The National Information Consortium (NIC) is a private firm that has provided portals for nine states using a variation of the share-in-savings funding strategy. In most cases, the states served by NIC issued a request for proposal (RFP) identifying the transactions they wished to put on-line using electronic commerce. NIC provided the initial capital funding to develop the portal including all hardware, software, and personnel costs. Although the majority of the services provided on the portal are free to citizens, several services, such as business licensing, charge fees. These fees can take the form of either an annual subscription or a usage-based fee. NIC then receives a percentage of these fees as stipulated by the contract with the state.

Under this model the state retains control of all its data and back-end systems. NIC develops the interface between the Web-site logged onto by the user and the state's databases where the information is stored.

The state typically appoints an oversight board to regulate the actions of NIC. This board makes decisions on what services will be provided on-line and in what order they will be implemented. The board verifies that the portal reflects the overall vision and strategy of the state and takes responsibility for determining what information should be made available to the public, and what should remain private. The board also approves the fee structures for the portal. The make-up of the board varies by state. Typically, it includes elected officials, government employees, and representatives from the private sector. In some cases, the NIC network manager for the state portal is also on the board.

These contracts are often three to five years in length. During this time frame the vendor has sufficient time to recoup its costs and earn some profit without having to charge exorbitant fees to customers. At the end of the contract, the state may re-bid it or extend it, depending on the procurement guidelines of the state.

Case Study – California Franchise Tax Board¹⁹

In 1993 the State of California Franchise Tax Board entered into a shared revenue contract with American Management Systems (AMS) to develop a new collection system to collect back taxes from businesses and corporations. Under this contract, AMS received a percentage of the back taxes collected as payment. The contract was a success. AMS developed their system in 11

months and state collections totaled \$42.6 million in the first year, almost six times the expected collections from the new system of \$7.4 million.

Critical Success Factors

Several elements must be in place in order for the share-in-savings model to be effective including:

- Specific historical data on costs or revenues
- Method for determining the costs savings or revenues generated from the project
- Mechanism in place “to approve, capture, control, monitor, report on, and share the revenues or ‘savings’ generated”²⁰
- Top-level support

Baseline information must be documented at the outset in order to accurately determine and quantify the savings or revenue specifically generated from the project or system. In addition the method of calculating these savings or revenues must be clearly articulated within the RFP before the contract is awarded and should be restated during contract negotiation so that all parties involved can agree before making substantial investments. Contract management must include a mechanism through which the revenues or savings generated are approved, recorded, managed, overseen, reported, and shared or distributed among the appropriate stakeholders in the project. Without these three pieces in place ahead of time, there is likely to be much disagreement on the exact quantity of savings or revenue resulting from the project. Finally, because this model has not been used extensively, it requires top-level support to be accepted.

Advantages

The share-in-savings/self-funding model offers many advantages to the government including:

- Reduction of initial capital costs
- Leverage of limited funds
- Contractor accountability and reduction of risk to the government

Using the share-in-savings model allows the government to avoid the large up-front capital costs usually incurred when implementing a new system. Instead the vendor incurs most if not all of these costs. Consequently the government may reallocate the funds it would have used on the project to other valuable projects. In addition, this model increases accountability by ensuring the contractor’s system or project will deliver or they will not get paid, greatly reducing the risk to the government.

Obstacles

Despite the advantages of the share-in-savings model, there are several obstacles that must be overcome for the model to succeed including:

- Agency buy-in
- Control of the project
- Support from private sector

This method of contracting has only been used on a limited scale within the Federal government. Perhaps the most recognized use of this mechanism is the Department of Energy's Energy Management Program which used this method for funding energy efficiency contracts for buildings.²¹ In 1996 the Clinger-Cohen Act gave the Federal government the authority to use this mechanism, on a demonstration basis for IT projects. To date there have been no takers, however. There is some concern that agencies find it difficult to develop mechanisms to quantify the baseline savings or revenues. This issue must be dealt with before any agencies can proceed with this contracting and funding mechanism.

Another important issue is the question of governmental control within this type of funding mechanism. If vendors are to be paid by the savings or revenue generated by the project they will want to pursue it under their own guidelines to ensure the largest reward possible. Moreover, once the system is developed there is some question as to how ownership will be determined. For example, when a contractor creates a portal for a state, who owns that portal? At what point does it become property of the state? If the state chooses not to extend its contract with the initial vendor how will the maintenance of the portal be transitioned to a new vendor? All of these questions must be answered before a project is undertaken in order to avoid lengthy and costly disputes.

In addition there are some questions as to how many private vendors are able and willing to operate under such a contract. Small businesses could be shut out of such contracts, as they are unlikely to have the funds to cover up-front costs. This problem may have to be addressed prior to a wide spread adoption of share-in-savings.

Public-Private Partnerships

Description

The public-private partnership model involves the development of a non-profit entity that creates a forum by which the public and private sides can meet essentially as peers. While individual firms do not form partnerships with government agencies, a non-profit consortium facilitates communication between the private and public sides of the partnership. The role of the consortium is to identify and invite private sector participants who exhibit a certain level of commitment to the project. Their commitment is essential to make this project work. In addition, the consortium serves as the project manager for projects. A consortium may be formed for a single project, then disbanded following project completion, or may remain for a longer term, assembling multiple teams and addressing multiple pilot projects. The latter has significant advantages because it retains hard-won institutional knowledge and builds credibility by establishing a track record of successful projects.

On the government side, the partnership may involve one or multiple agencies. When more than one agency is involved, coordination between the agencies is vitally important. A critical element for this side of the partnership is the presence of top-level support for the proposed project. This leadership is necessary in order to establish the credibility that will help to bring together quality participants and enable the government to deliver its portion of the project.

The non-profit entity is at the center of the project and manages the agreements made by both the private and public participants. Multiple options for funding of this type of partnership are possible, but usually include funding and/or resource commitments from both sides. In many cases, resources include people, hardware, and software, in addition to dollars, and are often held and tracked by the non-profit entity. Agreements may stipulate that systems and software developed are deemed to be non-proprietary and can be used by all members of the consortium.

Case Study – Catalog Interoperability Project

The Catalog Interoperability Project is a partnership endeavor between several Federal agencies and CommerceNet, a non-profit consortium of private high-tech firms. This experience provides an excellent example of a successful implementation of the public-private partnership model. Private sector participants in CommerceNet include Lexmark, PartNet, Saqqara, V-One, American Management Systems, Office Depot, Oracle, PricewaterhouseCoopers, SAIC, and Digital Commerce Corp., among others. These firms contribute technical expertise, personnel, and computer hardware in support of the project. The project goal is to provide user-transparent interoperability among numerous electronic catalogs across an Internet interface.

The final product envisions Federal employees with purchasing authority having the ability to search for and purchase items from multiple electronic catalogs; owned by both government agencies and private sector organizations, each developed to different standards. Phase I succeeded in demonstrating that a single interface could be used to query multiple, differently structured catalogs and present a coherent result, regardless of the differences among catalog databases. This ability allows individual agencies and vendors to structure their catalogs to suit their differing needs, and at the same time to participate in a common government-wide

searchable catalog system. Phase II, currently underway, will address scalability, payment processing, and security issues. Phase II will involve more than \$600,000 in private sector investment.

In this project GSA is taking the role of lead agency and partnering with National Aeronautics and Space Administration (NASA), the Department of Defense (DOD), and the Department of Commerce's National Institute of Standards and Technology (NIST). Participating agencies have provided funding, personnel, and computer hardware, as well as access to their electronic catalogs, in support of Phase I of this pilot project. Additional agencies, including Veteran's Administration (VA), National Institutes of Health (NIH), and the Environmental Protection Agency (EPA) have expressed interest in participating in Phase II.

Critical Success Factors

Public-private partnerships require several factors including the following:

- Leadership by public-sector "Champion"
- Top-level support
- Participant commitment
- Agency technological maturity

The leadership of a public agency "Champion," an individual usually associated with the lead agency, is critical in attracting support from both the public and private sides. The level of commitment that this individual exhibits can be influential in establishing the credibility of the project with the private firms, and in garnering support from other interested agencies. Lack of this top-level leadership will lead to increased coordination, accountability, and commitment difficulties as the project progresses.

The selection of participants, from the public and private sectors, can greatly influence the chances of project success. On the public side, technological readiness to benefit from the project is a crucial factor, as is compatibility of the expected final product with each agency's mission. On the private side, the key factor is commitment to the project. It is the role of the private-side consortium to evaluate firms for suitability to the proposed project.

Advantages

Advantages to using the public-private partnership model include:

- Private side gains experience in working with government
- Government gains private-sector expertise and support

The individual firms that form the private side of this partnership model enjoy multiple benefits from this arrangement. These benefits include increased exposure to and understanding of government processes, enhanced visibility as a participant, and opportunities to demonstrate their technological capabilities. Participation in the partnership may also increase the likelihood of a firm's involvement in follow-on projects.

The consortium of firms, as an independent entity, benefits through credibility gained as an aggregator of talent and ideas. This standing as an intermediary to the partnership can be leveraged to pursue further projects. As the consortium builds credibility through initial successes, private firms will increasingly desire to participate and public agencies will come to view the consortium as a source of innovation.

The public side of the partnership benefits from access to a wide range of ideas and technologies not otherwise readily available. By partnering with a consortium of private firms, the public agencies achieve broader exposure to available technologies and are not tied to any individual firm's methodologies, as would be the case if the project were conducted under a contracting arrangement.

Obstacles

The following obstacles should be considered in implementing the public-private partnership model:

- Multi-agency coordination
- Cultural differences

The primary obstacle to this model is the difficulty in establishing coordination among participating agencies such that all agencies are adequately represented. Closely related to this obstacle is the need to clearly appoint both a lead agency and a champion within that agency, such that all participants agree on the leadership structure.

Differences in bureaucratic temperament and pace of change between the public and private sides may be a source of friction. The hierarchical nature of the Federal government does not facilitate flexible decision-making sometimes creating slow commitment and slow delivery. The private sector, especially the high technology companies, move at a much faster pace. The consortium must play a critical role in balancing out these differences.

CIO Czar Model

Description

The CIO Czar model represents an organizational, and perhaps cultural, change through the creation of a new office, whose focus is a horizontal view of IT development within government. This organization will serve to coordinate resources for enterprise-wide IT projects within the Federal government. This model would unify the design of agency information systems reducing current interoperability problems and allowing greater efficiencies of scale to be realized. The newly created office would perhaps manage an appropriated fund to sponsor and coordinate project management across various agencies and set government-wide IT standards. An appointed CIO Czar would lead this office and would work in partnership with the existing CIO council to evaluate, select, and fund projects.

Support for the adoption of this model is spreading. In a report released March 2000, the Democratic Leadership Council's Progressive Policy Institute recommended the creation of a Federal government-wide CIO Czar position report directly to the President.²² It further recommends a \$500 million annual budget to fund cross-agency electronic government projects, maintain oversight, and develop uniformity among government IT programs. Senators Lieberman (CN) and Turner (TX) have announced support for the idea and plan to submit legislation to create the position.²³

A report published by the General Accounting Office also supports the need for a CIO Czar.²⁴ Their report summarizes the experiences of three state governments and three private companies in establishing a central CIO office and finds that the CIO position must be raised to peer status with the highest levels of government management. Absent this standing, CIO issues, including a coherent electronic government policy, will not receive appropriate attention. Currently, many Federal agencies do not include the CIO in the executive business decision-making processes. David McClure, a GAO associate director testified before the House subcommittee on Government Management, Information and Technology that information management is still often treated as a technical support function rather than a strategic asset.²⁵

In contrast, states are taking a more progressive stand in this area. A recent survey released in February 2000 by the National Association of State Information Resource Executives found that CIOs are increasingly having an elevated role in government with 27 now reporting directly to their governors, up from eight in 1996.²⁶

Case Study -Y2K

The Y2K Czar was commonly described as the reason behind the success of the Federal government's readiness and response efforts coordinated prior to the arrival of January 1, 2000. With the impending approach of Y2K and its unknown effects on government-wide IT systems, Y2K Czar, John Kotzen was appointed to coordinate the needed programming within all agencies. In this arrangement the Czar had only a limited budget and no mandate authority over agencies, but rather coached and developed efficient ways of sharing information across agencies. The Czar had the convening ability to bring to the table members of both the public and private sectors to address this IT issue, a feat that was unprecedented.

Critical Success Factors

There are several factors, must accompany the CIO Czar model including:

- Strong leadership and credibility
- Sense of crisis
- Top-level support

Presence of a “Czar” or a strong leader with a vision is the key to successful implementation of this strategy. The Czar would act as a facilitator between various agencies, centralize project management, have high visibility, must have a sense of the overall picture across agencies and should aim for long term improvements of the systems.

Further, the heightened urgency to solve the Y2K bug brought about cooperation that is rarely seen in the IT community. A similar sense of urgency is needed to prioritize electronic commerce projects. At present, building up an IT infrastructure seems to have a higher priority in the government than electronic commerce. This model is replicable to electronic commerce projects, however, provided there is a high level support.

Advantages

The advantages of the CIO Czar Model include:

- Strong leadership
- Coherent planning of complex projects
- Creation of a format for uniform standard setting

The primary advantage of this funding model is that it provides leadership for projects that are government-wide. In addition, this model allows for centralized planning and coordination of potentially complex IT projects. Projects that involve either a single agency or multiple agencies require greater levels of project management and decision making that can create deadlocks without leadership. This strength of leadership provides an overall sense of direction and "big picture planning" ability that is lacking in other models.

Currently, each of the Federal agencies function autonomously and has selected its own architecture and platforms from which to operate its IT activities. The placement of a CIO Czar, having the authority to set standards, would have positive effects. An agreed upon architecture would eliminate the interoperability problems which can be a costly stumbling block to surmount in developing electronic commerce projects.

Obstacles

Potential obstacles to implementation include:

- Appropriate selection of the Czar
- Facilitating agreement of priorities
- Current culture within the Federal government

The primary obstacle to this model is the appropriate selection for the Czar. This position is vital to the agency infrastructure and ultimately the electronic delivery of government services. The selected individual must have the appropriate mix of technical ability and political savvy to manage the competing demands of citizens, private industry, political appointees, civil servants and elected officials. Next they must also facilitate the development of standards and priorities and have the fortitude to hold agencies accountable. For this model to work, the Czar must also have the trust of all participants and must be capable of making difficult decisions between competing project proposals.

The Czar will have to battle heavily against the status quo. Agencies which have long operated independently in developing IT solutions will be unlikely to support what they will view as another oversight entity. Similarly, the structures of Congress and OMB that have supported “stove piping” may balk against the idea, insisting that this office infringes upon the missions of agencies. Lastly, because other Czar models have been implemented without the appropriate funding and authority, a newly appointed Czar may feel powerless and saddled with a monumental task.

Hybrid Approach

Description

Any of the strategies described above can be merged to create a hybrid approach where funding from multiple sources is provided for a specific project. Although a number of opportunities exist, the hybrid model is probably most likely to be used successfully if its component strategies are used to fund the individual phases of a project. For example, an agency may receive funding for a project's pilot phase from an innovation fund, use capital funding to implement the full-scale system, and maintain the system with funds received from the general budget appropriation process.

Case Study – In-Q-Tel²⁷

Recognizing that it was no longer at the cutting edge of technology, the Central Intelligence Agency (CIA) was appropriated funds by Congress to establish a private, nonprofit corporation, In-Q-Tel. Operating like a venture capital fund, In-Q-Tel is somewhat of a variation on an innovation fund. In-Q-Tel's mission is to invest in high-tech start-up companies that will develop technology to benefit the CIA's operations. It is intended to help the CIA regain its status as the leader in technology and help it find answers to its technology problems. Eventually In-Q-Tel will become self-funded (like the Self-Funding Public-Private Partnership Model described above) as its assets appreciate. In total, this particular hybrid strategy uses three of the models identified previously: budget appropriation, innovation fund, and the self-funding public-private partnership models.

Critical Success Factors

Factors critical to the success of the hybrid funding model will include the critical success factors identified for each component model when used on its own. In addition, the hybrid model must have:

- Strong management
- Clearly identified project segments

A strong manager is required to oversee and administer the various sources of funding effectively. Having multiple sources of funding complicates the project even further requiring diligent oversight. Moreover, the project must have clearly identified segments so that funding can be allocated to a specific portion of the project easily and managed appropriately.

Advantages

The advantage to a hybrid approach is that the project is not entirely dependent on one source of funding. Although the elimination of one element may disable the project entirely, it is also possible that if one funding stream was no longer available, the other models used could be leveraged to make up for the lost funding. In most cases, the advantages offered by the individual models themselves would also apply to the hybrid approach.

Obstacles

The hybrid funding mechanism would include most if not all of the obstacles of the individual funding mechanisms that compose it. It may also be difficult to gain approval for such a unique and potentially complex approach. Certainly a project with several different funding mechanisms would also be far more complex to manage.

Evaluation of Funding Strategies

This chapter evaluates the funding strategies identified above and provides recommendations for their implementation. Although each strategy offers a viable option for funding technology projects, it may not be the right choice for all situations. The success or failure of a particular funding strategy will depend upon a number of factors including:

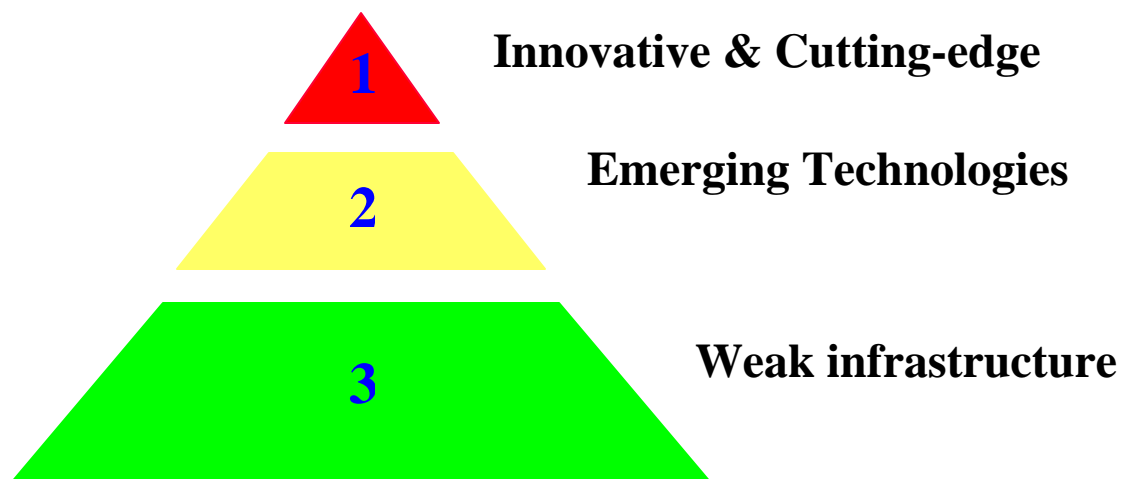
- Agency Technology Maturity
- Stage of Project Lifecycle
- Degree of Required Inter-Organizational Collaboration

Undoubtedly, many other issues will impact how well a particular funding strategy will work; however, the factors specifically noted here are certainly three of the most critical areas that must be considered when choosing one funding strategy over another. Therefore, this report evaluates the usefulness of each of the funding strategies in terms of these three factors. Specifically, it considers which funding strategies will work best under various levels of technology maturity, different stages of the project lifecycle, and varying degrees of collaboration among organizations.

Agency Technological Maturity

The maturity level of an agency's technological infrastructure will significantly influence the effectiveness of a particular funding strategy. For example, an agency with limited technological capabilities may have a difficult time finding a private sector company to implement an electronic commerce project under the self-funding public-private partnership model. It is unlikely that any private company will want to take such a risk with an organization that does not yet have the proper infrastructure to support electronic commerce.

The technological maturity of Federal government agencies varies significantly. Although some agencies are highly advanced, others do not have the infrastructure required to support electronic commerce. According to a study from the Progressive Policy Institute, some State Department employees work with as many as three computer systems at once because of interoperability problems.²⁸ Other agencies are still managing issues of multiple incompatible e-mail systems, making internal electronic communication almost impossible.²⁹ In this report, agencies are considered to fall into three broad categories of technological maturity, as shown below:



Segmenting agencies by their utilization of technology would be a large and arduous process and is outside of the scope of this project. Broad classifications are used in an effort to organize an agency's level of technological maturity. Using these definitions, agencies can be roughly classified in three ways:

- **Weak Infrastructure.** Various and incompatible e-mail systems; full or partial access by a limited number of employees to the Internet and Intranets; generally have static Web-sites for the agency with no utilization of Web-based transactions
- **Emerging Technologies.** Internally unified e-mail systems; full or partial access by most employees to the Internet and Intranets; generally have static/informational Web-sites for the agency; limited involvement with Web-based transactions within the agency, primarily for external patrons
- **Innovative and Cutting-Edge Technologies.** Internally unified e-mail systems; complete access by all employees to the Internet and Intranets; actively involved in Web-based transactions throughout the agency for many internal and external relationships

Recommendations for funding strategies based on various levels of technology maturity are provided below.



Weak Infrastructure

Agencies in this category are likely to focus most of their technology efforts on developing the infrastructure needed to support electronic commerce. They will not be spearheading multi-agency initiatives or strategic systems projects because they do not have the building blocks in place to do so. Thus the most successful funding mechanisms will be those that require the least multi-organizational collaboration and a stable source of funds with which to complete their technology projects. While many of the funding models identified may be used to fund technology infrastructure projects, an agency should look for strategies that can provide a significant infusion of investment including:

- Budget Appropriation
- Working Capital Funds

These funding strategies require limited multi-organization coordination, if any at all, and provide a discrete source of funding. As a result, they work well for projects that have a clearly defined scope and focus, such as single-agency infrastructure projects.

Although the budget appropriation process is lengthy, it allows an agency to easily allocate funding for a specific project from its general appropriation. Since budget appropriation is the mechanism used to fund most government services, it is the most direct and accessible method of funding a project.

The advantage of using working capital funds to agencies that are just building their technological capacity lies in the ability to bridge funds across fiscal year boundaries. Thus, this approach can provide for a more even flow of funding for the volatile early stages of IT projects which often take more than one year to complete. Since the budget appropriation process does

not permit agencies to easily budget for multiple years, the working capital funds model can be a sound alternative.

Emerging Technologies

Agencies in this category have established the basic technical infrastructure needed to begin exploring e-commerce opportunities. At this point, they are positioned to look at other agencies to learn from their projects, and perhaps to partner with them on larger scale projects. These agencies will undertake more innovative projects that may benefit multiple agencies. The projects will be on a much smaller scale than those undertaken by agencies with cutting-edge technologies already in place, however. Again, while many funding models might well apply, the most applicable funding strategies for agencies in this category will be:

- Innovation Fund
- Capital Funding Model

Both the innovation fund and the capital funding model will provide the opportunity to fund projects spanning several agencies. The innovation fund will typically support projects that are more strategic and forward thinking than basic infrastructure projects. As a result, this model would work best for agencies at the emerging technologies level that are trying to advance their technology further. The capital funding model offers a similar opportunity. Under this model funding is allocated from a central agency looking for projects that benefit multiple agencies and fulfill the government-wide IT vision. Thus, it is best suited for advanced but relatively conservative projects that span multiple agencies.

Innovative and Cutting Edge

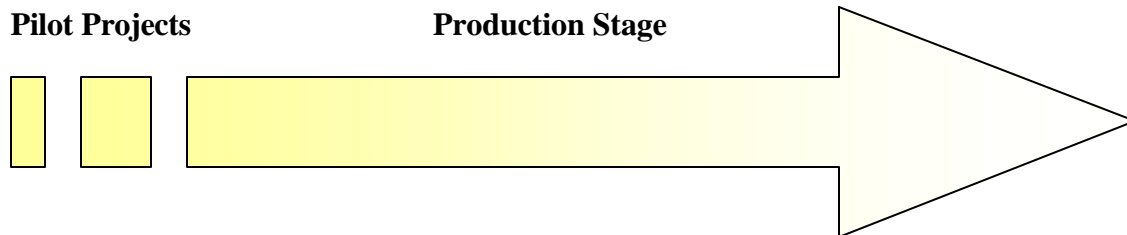
Agencies with cutting edge technology are best positioned to lead and assist other agencies at lower levels of technology maturity. They are also prepared to take on more strategic projects that may reinvent traditional operations. While they may use many different funding mechanisms, those that are most appropriate include:

- Share-in-Savings/Self-Funding Model
- Public-Private Partnership Model
- Hybrid Approach

Agencies with a relatively high degree of technological maturity are well positioned to partner with private sector organizations on larger, more strategic systems projects either using the share-in-savings model or the public-private partnership model. Such agencies will be able to quickly capitalize on the state-of-the-art systems that the private sector can bring to the project. The more strategic the nature of the projects, the more likely they will result in savings or new revenue streams necessary for the share-in-savings/self-funding public-private partnership model to work. In addition, these agencies are more likely to find a private partner willing to share the risk of the project with them.

Because of their technological maturity these agencies may be best suited to employ the hybrid approach as well. This model is complex in nature and would require an agency with experience in implementing technology projects successfully.

Stage in Project Lifecycle



Electronic commerce projects are often tested in a pilot phase before full-scale design and production begins. Pilot phases are simply small-scale productions of the project and are used to better determine the feasibility and potential benefits of a full-scale production. If the pilot phase is deemed successful, the project may be adopted and the production phase is initiated. The funding structure for these separate stages is very different, however.

Pilot Project

Pilots require a one-time initial investment, smaller than the full-scale project. Because this investment is less than and more discrete than funding for the production phase, funding strategies most suitable for pilots are:

- Budget Appropriation
- Innovation Fund
- Capital Funding
- Public Private Partnerships

These strategies work well for pilot projects because they provide a discrete, although limited, source of funds. Since pilot projects are usually shorter in duration, however, these funds offer a viable option.

Innovation funds are typically established to provide funding for pilot projects to promote the trial and testing of new ideas. Capital funding could also be used to support pilot projects. Both models offer a significant source of funding. However, since they do not necessarily have continuous revenue streams to replenish the fund, they are not ordinarily intended to support the ongoing expenses that would be incurred during the production phase. Thus, they are best suited for pilot projects.

The Public-Private partnership may also offer an opportunity for a private company to provide up-front funding on a pilot project for the public sector. If that project is successful, the public sector organization can then enter the production phase with the vendor using alternative funding models.

Production Stage

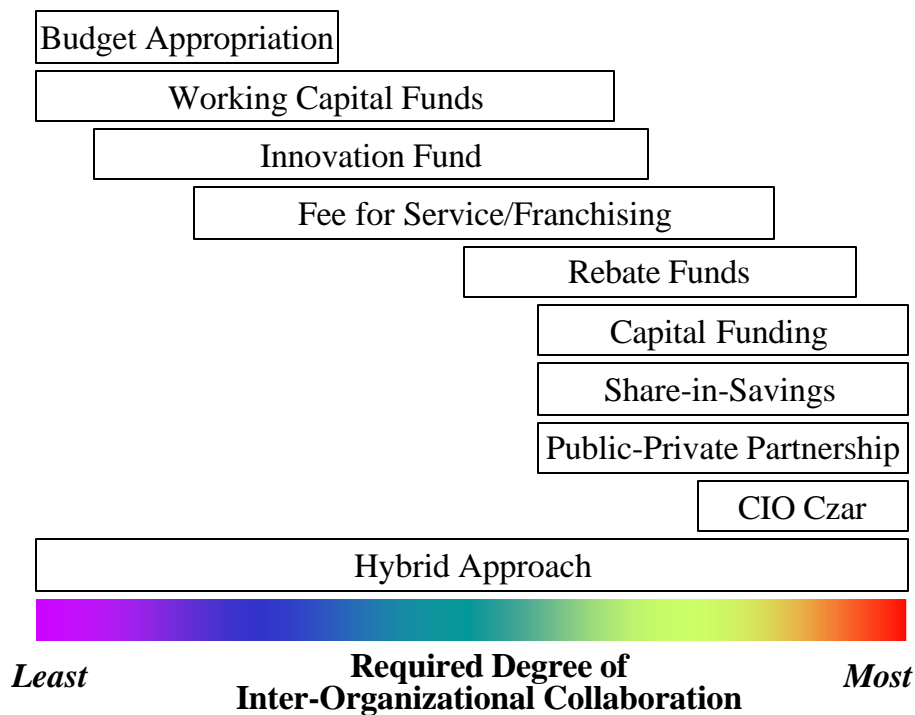
The production stage not only includes development of the full-scale system but also the maintenance of the system. Consequently, a stable, continuous source of funding is required to pay the maintenance expenses, as well as any unexpected costs incurred in the development of the system. Although other strategies may work, the following funding strategies will likely work best for these types of projects:

- Rebate Funds
- Fee for Service/Franchising Model
- Share-in-Savings/Self-Funding Model

Each of these funding strategies offers some opportunity for initial as well as on-going funding for the project. Rebate funds provide continuous revenue streams for technology projects assuming the agency or agencies continue to use the mechanism that provides the rebates. Under the fee for service/franchising model, revenue is received as long as the agency continues to provide services for the fees. The self-funding model requires up-front investment from the private sector partner, but little or no investment from the public sector. The fees generated from the project provide ongoing funding for the project for maintenance and vendor payment.

Degree of Required Inter-Organizational Collaboration

The funding strategy selected for a project will also determine the level of coordination among government agencies and/or private sector partners. This report categorizes the ten funding strategies identified in the previous chapter along a continuum from the least coordination required to the most coordination required as shown below.



Least Required Degree of Inter-Organizational Collaboration

At the far left of the continuum lie funding strategies that require little collaboration among multiple organizations to generate funding including:

- Budget Appropriation
- Working Capital Fund

Both the budget appropriation model and the working capital model require little if any collaboration among agencies on a particular project. A single agency may request funding for a project directly from Congress through its agency budget appropriation. It does not have to involve any other agencies or private sector organizations for funding. The working capital model allows an agency to allocate funding to a specific fund for its own purposes. No other organization has to provide funding or be involved with the project. This strategy is appropriate for agencies requiring funds for intra-agency IT projects, such as the EPA and DOE examples cited, in which the beneficiaries of the funded IT project are all within the sponsoring agency.

Most Required Degree of Inter-Organizational Collaboration

At the far right of the continuum lie funding strategies that require some coordination with either other government agencies or private sector organizations including:

- Rebate Funds
- Capital Funding
- Share-in-Savings/Self-Funding Model
- Public-Private Partnership Model
- CIO Czar Model

Rebate funds require some coordination with the private sector vendor providing the rebates. They may or may not require inter-agency collaboration, however, depending on the structure of the rebates and the nature of the projects funded. For example, if one central agency collects all rebates generated, then individual agencies will have to request the funds for specific projects from this central unit. If the rebates are instead returned to the individual agencies generating the rebates, multi-agency coordination required.

In general, the capital funding model requires one agency or entity to oversee and manage the funds generated from the bond issuance. This entity then designates the funds to specific projects as appropriate. Normally this agency ensures that all technology projects undertaken fit within its strategic vision. This agency also facilitates collaboration among agencies with similar project goals. These projects may be completed by one agency or by many agencies in collaboration. In either case, the agency must at least work with this oversight body to obtain funding for a specific project. The CIO Czar model provides a similar structure in that it requires an agency or a group of agencies to seek funding from a centralized body that controls funds set-aside for IT projects. Under the share-in-savings/self-funding model and the public-private partnership model, an agency must work with a private sector partner to secure funding.

At the center of the continuum lie strategies that require a lesser degree of collaboration including:

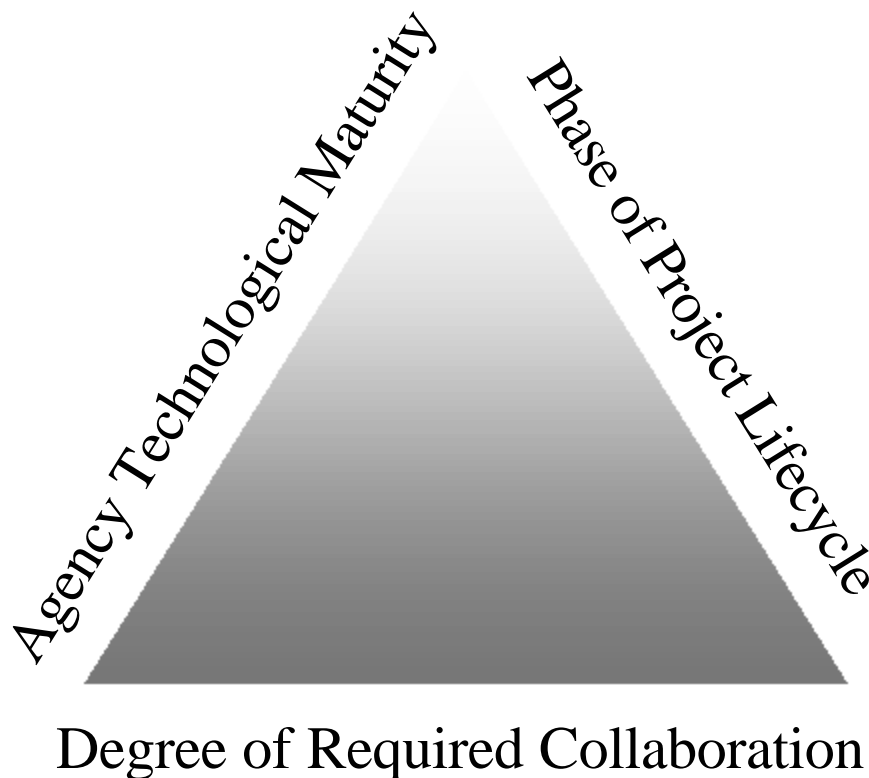
- Innovation Fund
- Fee for Service/Franchising Model

An innovation fund is similar to the capital funding model in that it requires an agency to apply to the oversight board of the fund. The oversight board does not necessarily facilitate collaboration among agencies or develop one vision for the technological infrastructure of the government. Instead it typically evaluates projects based upon their individual merits. Therefore, it requires only minimal collaboration.

The fee for service/franchising model also requires some collaboration among agencies. An agency that provides a service must work with other agencies to sell the service and then to ensure that it meets the needs of the agency being served. There is little need for extensive collaboration beyond that, however.

Finally, the hybrid approach falls across the entire range of the continuum depending on the combination of funding strategies chosen.

The three dimensions, as outlined above, together form a structure with which funding strategies can be analyzed. The appropriateness of any particular strategy, under a given set of conditions, can thus be evaluated and compared to other available strategies.



Recommendations

To a large extent, the approaches discussed in this report represent successful attempts to ‘work-around’ a process that does not adequately address funding for these types of high-paced, high-risk projects. This has particularly been the case when more than one agency is involved.

The evaluation presented in the previous chapter describes, along several practical dimensions, how these existing funding strategies can best be applied under various circumstances. However, despite the usefulness of such guidelines, the underlying funding process remains an obstacle, rather than an aid, in the pursuit of a rational procedure for funding multi-agency or government-wide IT projects. Federal government IT and e-commerce projects, with some notable exceptions, are designed, funded and implemented by individual agencies, with little or no inter-agency coordination. With few incentives for agencies to work together, and numerous funding structures that keep them apart, it is no wonder that the current variety of strategies has evolved.

In addition, the fundamental ability of agencies to undertake electronic commerce initiatives varies widely. These differences derive from the agencies’ level of technological maturity. While some agencies are at a quite advanced level, and thus able to undertake complex, advanced projects, others are still grappling with basic infrastructure issues. In order to gain the maximum benefit from investment in technology programs, it is imperative that all Federal agencies be quickly brought to a common, advanced level of technological readiness. As long as individual agencies continue to pursue a divergent set of IT architectures, under widely varying levels of technological maturity, through a ‘work-around’ set of funding strategies, the goal of implementing a unified government-wide IT policy structure, or presenting ‘the one face of government’ using electronic commerce, will not be realized.

Thus, the goal moving forward is three-fold:

1. All agencies must quickly be brought to a common, high level of infrastructure maturity so that all stand to benefit from, and contribute to, commonly developed systems.
2. Priority must be given to evaluating the many existing agency projects that have been developed through a successful pilot phase, and identifying those with the greatest promise of providing multi-agency benefits, for production-stage funding.
3. Continued priority must be placed on evaluating emerging technologies and processes for their potential government-wide benefits, and targeted funding of the most promising of these in the form of pilot projects.

In order to accomplish these goals, the Federal government must design a process which is able to :

- Identify current best practices among agencies and encourage their broader use
- Encourage and reward agencies for recognizing the common elements that their IT and e-commerce objectives share with other agencies' plans
- Provide overarching decision making support, taking into consideration the technical and funding requirements of all agencies

As noted elsewhere in this report, several investigators have recently argued in favor of the establishment of a 'National CIO' position, with oversight responsibility and funding authority, for government-wide IT programs. However, an independent National CIO, along the lines of the 'Y2K Czar', cannot alone achieve the necessary progress. An advisory panel, one which makes both technical and funding recommendations to this CIO, is an essential part of any future system. A primary consideration in envisioning the structure of such a panel is that of political independence. Some independence from the usual political cycles would be desirable in order for the panel to concentrate on strategic and technical issues. However, a panel too far removed from the political realities might be ignored by important stakeholders, and thus rendered ineffective.

There are several existing panels that provide examples of how such a National CIO and its associated advisory board could be structured. The Federal Reserve Board, with national representation and a strong chair position, has brought credibility, accountability and increased stability to U.S. financial systems. While probably not ideally suited to the CIO Board concept, the Federal Reserve Board structure has the qualities of independence, authority and accountability that are desirable in this new structure. Similarly, a National CIO Board, headed by a Chair- or Chief-CIO, has the potential, through its own authority and credibility, to bring focus and discipline to the government's implementation of fast changing IT and electronic commerce technologies. By making the Chair of this CIO Board an appointed position, with congressional approval and a six-year term, the political struggles associated with multi-agency coordination should be greatly reduced. To further isolate the operations of this Board from day-to-day political consideration, its existence might initially be limited to twelve years, or two six-year leadership terms, after which time the continued necessity of such a board should be re-evaluated.

The existing CIO Council provides perhaps the best model from which this National CIO Board could be constructed. By reducing the number of members of this panel, and electing or appointing a chairperson from among the membership, the CIO Council could quickly be transformed into the desired decision making body. The reduction in number of seats on the panel to perhaps twelve, made up of both permanent and rotating seats, is necessary in order to minimize deliberation time-lags and the risk of factions developing. Larger agencies would retain perhaps half to two-thirds of the permanent seats, while smaller agencies would achieve representation through rotating membership. This model has the potential to achieve both the independence and the authority necessary to be successful.

A third model envisions the National CIO position as a Cabinet level office, with the Cabinet member's staff acting as the board of advisors. While this structure would provide significant visibility and authority to the role, it lacks independence from political pressures. This approach also risks giving the appearance of increasing government's bureaucracy, rather than its efficiency.

Regardless of the eventual structure, the National CIO position must be supported with the funding and decision-making authority to develop and implement government-wide IT policies. Without these elements, the structure would become simply an advisory body likely to be averted as agencies continue to pursue their own individual strategies for technology. Funding mechanisms used for this model could include one or more of the strategies evaluated in the previous chapter. New funding approaches may also be developed as a result of this coordination model.

In addition, in order to achieve the maximum advantage from this Chief-CIO role, candidates for this position should be drawn from both inside and outside of the government. Members of the advisory board, or other government agency CIOs, would be obvious candidates for the Chair position, and would be likely to bring valuable insider knowledge and insights that come with government experience. However, the commercial technology industry, although it changes rapidly and unpredictably, has produced a number of visionaries who could serve the nation as a whole if appointed to this position.

The greatest benefit of this more rational, disciplined approach will accrue to the citizens who interact with government every day. There is potential for significant financial savings in reducing the redundancy inherent in the current way of doing business, as well as for increased efficiencies in delivery of services to the citizens whom it is the government's mission to serve.

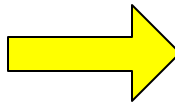
Conclusion

Recent and ongoing innovations in communications and other technologies have permanently changed the way businesses and governments operate. There is no longer a debate over whether or not government should go “digital.” The question now is: *How can government harness these emerging technologies?* The government faces a unique opportunity to fundamentally redesign the way it delivers services to citizens. By seizing this opportunity, government can greatly improve efficiency and convenience in the delivery of information and services, and, perhaps more importantly, it can dramatically improve the public’s perception of government.

To date, advances in the Federal government’s technology have largely been fragmented, with individual agencies having no systematic motivation to work together. The government’s traditional funding mechanisms have proven inadequate to support a coherent IT policy, forcing agencies to develop innovative techniques to circumvent existing processes. In most cases, agencies have sought to apply new technologies individually, with little effort given to multi-agency collaboration. This funding atmosphere has resulted in a divergent process, producing a maze of different systems throughout the government that offer varying levels of service and little interoperability.

This fragmented process of funding and coordinating IT projects cannot continue if the government is to succeed in leveraging new technologies to transform the way it does business. Although the funding strategies used in the past may be serviceable if implemented under the right circumstances, they must be applied within a unified vision of IT for the Federal government as a whole. Only a centralized, broadly responsible and accountable decision making board, one that considers the technical and funding requirements of all agencies, can provide the necessary leadership and vision to bring convergence to the government’s IT programs and successfully address the current opportunities.

<u>Current Status</u>	<u>The Goal</u>
<ul style="list-style-type: none"> ▪ Uneven Infrastructure ▪ Fragmented Projects ▪ Stove-piped Processes ▪ Redundancies & Waste ▪ Work-around funding strategies ▪ Different Faces 	<ul style="list-style-type: none"> Common Infrastructure Unified Oversight & Direction Incentives for Collaboration Leveraging Common Interests & Abilities Unified Funding Processes One Common Face



Appendix A – Interviews

Angeloni, Louis. Chief Financial Officer. Executive Office of Administration and Finance, Information Technology Division. Commonwealth of Massachusetts. Personal Interview conducted by Alison Otis on March 22, 2000.

Balutis, Alan. Deputy Chief Information Officer. U.S. Department of Commerce. Personal Interview conducted by Tira Robinson and Siddharth Shah on March 30, 2000.

Bradford, Harry. Director. Division of Payment Management, U.S. Department of Health and Human Services. Personal Interview conducted by Tira Robinson on March 21, 2000.

Erwin, F. Deane. Program Manager. Dimensions International, Inc., Electronic Commerce Resource Center. Personal Interview conducted by Amit Chandok and Erich Parker on April 20, 2000.

Femino, Mickey. Director. Office of Smart Card Initiatives, Information Technology Integration, Federal Technology Services. U.S. General Services Administration. Personal Interview conducted by Kristi Miller and Erich Parker on March 9, 2000, with Nancy Potter in observation.

Glaser, Gerry. National Science Foundation. Telephone Interview conducted by Erich Parker on April 20, 2000.

Grant, Paul D. Office of the Department of Defense Chief Information Officer. Personal Interview conducted by Amit Chandok and Kristi Miller on April 26, 2000, with Ken Glasser, DOD Analyst, in observation.

Grove, Jeffrey H. Staff Director. Committee on Science, Subcommittee on Technology. U.S. House of Representatives. Personal Interview conducted by Kristi Miller and Alison Otis on April 19, 2000, with Matthew Ryan in attendance.

Guttman, Barbara. Information Technology Laboratory, National Institute of Standards and Technology. Personal Interview conducted by Kristi Miller and Alison Otis on February 28, 2000.

Jaeger, Diana L. Director. Office of Policy for Extramural Research Administration, National Institutes of Health. Personal Interview conducted by Kristi Miller and Alison Otis on April 17, 2000.

Kappleman, Leon. College of Business Administration, University of North Texas. Telephone Interview conducted by project team on April 11, 2000.

Kelly, Jack. Office of Management and Budget. Personal Interview conducted by Kristi Miller and Siddharth Shah on March 27, 2000, with Nancy Potter in attendance.

Kelly, Ron. Executive Director. Regulatory Information Service Center, U.S. General Services Administration. Personal Interview conducted by Alison Otis and Siddharth Shah on March 10, 2000.

Keohane, Ron. Senior Advisor. Electronic Commerce Working Group, Office of the Vice President. Personal Interview conducted by Amit Chandok and Alison Otis on March 10, 2000.

Kimmel-Frantz, Joan. Personal Interview conducted by Amit Chandok and Erich Parker on April 13, 2000, with Charles Nethaway in attendance.

LaPierre, Kara. National Information Consortium. Telephone Interview conducted by Alison Otis and Tira Robinson on March 8, 2000.

Lenoir, Brandon. National Electronic Commerce Coordinating Council. Telephone Interview conducted by Alison Otis on April 5, 2000.

Leshner, R. Schuyler. Director. Office of Financial Management, Deputy Chief Financial Officer. Office of the Secretary, U.S. Department of the Interior. Personal Interview conducted by Kristi Miller and Erich Parker on March 9, 2000.

Nethaway, Charles D. Deputy Director. National Business Center, U.S. Department of the Interior. Personal Interview conducted by Amit Chandok and Erich Parker on April 13, 2000, with Joan Kimmel-Franz in attendance.

Pauli, Jim. Personal Interview conducted by project team on April 25, 2000.

Parsons, Ron. CommerceNet. Telephone Interview conducted by Amit Chandok and Siddharth Shah on April 14, 2000.

Phillips, Elizabeth. U.S. Department of Health and Human Services. Personal Interview conducted by Tira Robinson and Siddharth Shah on March 13, 2000.

Potter, Nancy. U.S. General Services Administration. Personal Interview conducted by Kristi Miller and Erich Parker on March 9, 2000, with Mickey Femino in attendance.

Potter, Nancy. U.S. General Services Administration. Personal Interview conducted by Kristi Miller and Siddharth Shah on March 27, 2000 with Jack Kelly in attendance.

Ryan, Matthew D., Senior Policy Director. Committee on Government Reform, U.S. House of Representatives. Personal Interview conducted by Kristi Miller and Alison Otis on April 19, 2000, with Jeffrey Grove in attendance.

Shaw, Dennis. Patent and Trade Office, U.S. Department of Commerce. Personal Interview conducted by Kristi Miller and Erich Parker on March 10, 2000.

Sindelar, John. Chief of Staff, Office of Government-Wide Policy. U.S. General Services Administration. Personal Interview conducted by Tira Robinson and Siddharth Shah on March 30, 2000.

Slocum, Patricia D. Senior Evaluator. Accounting and Information Management Division, U.S. General Accounting Office. Personal Interview conducted by Kristi Miller and Tira Robinson on March 10, 2000.

Stack, Thomas. Maximus. Personal Interview conducted by Kristi Miller and Tira Robinson on April 3, 2000.

Stepka, Ken. National Aeronautics and Space Administration. Personal Interview conducted by Amit Chandok and Kristi Miller on February 28, 2000.

Sturm, Robert. Vice President, Business Development. National Information Consortium. eFed Inc. Personal Interview conducted by Amit Chandok and Kristi Miller on April 26, 2000.

Williams, J.D. State Controller of Idaho. Telephone Interview conducted by project team on April 18, 2000.

Appendix B – References

Other Suggested Readings

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- O’hara, Colleen and Diane Frank, “CIO Czar Concept Gains Momentum” Federal Computer Week, Washington, DC, March 27, 2000.
- Thibodeau, Patrick, “GAO: Federal CIOs Need More Power” Computerworld, Washington, DC, April 27, 2000.
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- US Department of Health and Human Services, Program Support Center, Financial Management Center, Division of Payments Management, Quick Draw, Newsletter, Rockville, MD, April 1999.
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