

*A Report by a Panel of the*

**NATIONAL ACADEMY OF  
PUBLIC ADMINISTRATION**

*for the U.S. Department of Agriculture, Forest Service*

**January 2006**

**REVIEW OF THE DECISION TO DEPLOY  
THE NEW USDA FOREST SERVICE  
GRANTS AND AGREEMENTS  
SOFTWARE MODULE  
THROUGH THE USDA I-WEB**



## **ABOUT THE ACADEMY**

The National Academy of Public Administration is the preeminent independent, non-profit organization for public governance. Established in 1967 and chartered by Congress, the Academy has become an independent source of trusted advice for every branch and level of government, Congressional committees and civic organizations. The Academy works constructively with government agencies to improve their performance and management through problem solving, objective research, comprehensive analysis, strategic plans, and connecting people and ideas. The Academy is led by its elected membership of more than 600 distinguished Fellows.

*A Report by a Panel of the*

**NATIONAL ACADEMY OF  
PUBLIC ADMINISTRATION**

*for the U.S. Department of Agriculture, Forest Service*

**January 2006**

**REVIEW OF THE DECISION TO DEPLOY  
THE NEW USDA FOREST SERVICE  
GRANTS AND AGREEMENTS  
SOFTWARE MODULE  
THROUGH THE USDA I-WEB**

**Panel**

Franklin S. Reeder, Chair\*

Sharon S. Dawes\*

Patrick J. Kelly

Nancy A. Potok\*

*\*Academy Fellow*

## **Officers of the Academy**

**Valerie A. Lemmie**, *Chair of the Board*  
**G. Edward DeSeve**, *Vice Chair*  
**C. Morgan Kinghorn**, *President*  
**Franklin S. Reeder**, *Secretary*  
**Howard M. Messner**, *Treasurer*

## **Project Staff**

**J. William Gadsby**,\* *Responsible Staff Officer*  
**Bruce D. McDowell**,\* *Project Director*  
**William E. Damon**, *Project Advisor*  
**Charles Hulick**, *Senior Project Advisor*  
**Al Burman**, *President, Jefferson Consulting*  
**Jennifer Palazzolo**, *Senior Consultant, Jefferson Consulting*  
**Jose Uribe**, *Research Associate*

---

The views expressed in this report are those of the Panel. They do not necessarily reflect the views of the Academy as an institution.

National Academy of Public Administration  
1100 New York Avenue, N.W.  
Suite 1090 East  
Washington, D.C. 20005  
[www.napawash.org](http://www.napawash.org)

First published January 2006

Printed in the United States of America  
ISBN 1-57744-127-3

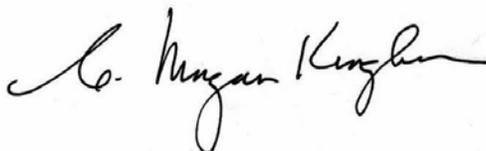
Academy Project Number: 2082-000

## FOREWORD

Like other federal agencies, the Forest Service is facing pressures to clean up its financial books and save money by automating many of its administrative processes. Both forces came together last year to cause the Forest Service to make a series of long overdue but rapid decisions to automate its Grants and Agreements process, imbed standard financial controls in it, and deploy it using a new web-based data center. These steps were accomplished within a few months. Although the achievement was a considerable testament to the Forest Service's technical prowess, deployment did not go as smoothly as expected.

In the aftermath of this experience, the Deputy Chief for Business Operations asked the Academy to review the decision process and recommend how it might be improved. This report, prepared between November 2005 and January 2006, provides the Academy Panel's assessment, findings and recommendations. The Academy is pleased to have provided this assistance, which I believe the Forest Service will find to be of significant value as it moves ahead with many similar reforms in the future.

Many thanks are due to the Academy Panel and staff for this intensive short-term effort, and to the Forest Service for providing open access to the people and documents needed to perform it. We enjoyed full cooperation from everyone involved, for which we are very appreciative. We believe the advice contained in this report is consistent with the President's Management Agenda and will assist the Forest Service to respond effectively to the forces of change that it most certainly will continue to encounter.



C. Morgan Kinghorn  
President  
National Academy of Public Administration



**TABLE OF CONTENTS**

FOREWORD ..... iii

ACRONYMS ..... vii

INTRODUCTION .....1

BACKGROUND .....6

EVENTS LEADING UP TO THE DECISION TO DEPLOY G&A ON I-WEB .....7

    Need to Modify G&A Application to Obtain Clean Financial Audit.....7

    Other Application Development Projects that Influenced Deployment of G&A.....8

    Technical Approval Process .....9

    Software Application Development Requirements .....10

FACTORS CONTRIBUTING TO DEFICIENCIES IN PERFORMANCE AND  
ACCEPTANCE OF THE I-WEB/GRANTS AND AGREEMENTS APPLICATION .....10

    Application Design, Development and Testing.....10

    Business Process Changes .....11

    Network Performance Problems.....13

    IRM Advice on Decision to Stand-up I-Web/INFRA in May 2005.....14

PANEL FINDINGS .....14

PANEL RECOMMENDATIONS .....19

**APPENDICES**

Appendix A. Panel and Staff .....25

Appendix B. Forest Service Interviewees.....29

Appendix C. Implementation of NIH Business System: Key Lessons Learned.....31

Appendix D. Unanticipated Shifts in NIH Administrative Workloads .....39

**FIGURES AND TABLES**

Table 1: USDA-FS FY05 National Grants and Agreements by Instrument Type .....4

Figure 1: Forest Service Automation Process.....5

Figure 2: Decision Process: Hosting the New G&A Process on I-Web in 2005 .....18



## ACRONYMS

<b>AD</b>	Assistant Station Director
<b>ASC</b>	Albuquerque Service Center
<b>B&amp;F</b>	Budget and Finance
<b>CAE</b>	Common Application Environment
<b>CIO</b>	Chief Information Officer
<b>CFO</b>	Chief Financial Officer
<b>CPAIS</b>	Corporate Property and Accounting Information System (USDA)
<b>CPIC</b>	Capital Planning and Investment Control
<b>DRF</b>	Deputy Regional Forester
<b>EAB</b>	Enterprise Architecture Board
<b>FFIS</b>	Foundation Financial Information System (Forest Service)
<b>FS</b>	Forest Service, U.S. Department of Agriculture
<b>G&amp;A</b>	Grants and Agreements
<b>GEB</b>	Geospatial Executive Board
<b>INFRA</b>	An integrated suite of Forest Service software applications and databases
<b>IRB</b>	Information Resources Board
<b>IRM</b>	Information Resource Management (the Forest Service's primary information infrastructure office)
<b>ISO</b>	Information Solutions Organization ( a Forest Service MEO)
<b>IT</b>	Information Technology
<b>I-TIPS</b>	Information Technology Investment Portfolio System
<b>I-Web</b>	Integrated Web (a USDA-operated website that links multiple users to multiple software applications and automated databases)
<b>MEO</b>	Most Efficient Organization (the term used in OMB Circular A-76 for a new governmental unit that provides commercial-type services when the government wins in the Competitive Sourcing bidding process)
<b>NFS</b>	National Forest System
<b>NIH</b>	National Institutes of Health

<b>NITC</b>	National Information Technology Center (a USDA automated server center in Kansas City)
<b>OEA</b>	Office of Enterprise Architecture
<b>OMB</b>	U.S. Office of Management and Budget
<b>OPS</b>	Deputy Chief of Business Operations
<b>R&amp;D</b>	Research and Development
<b>ROSS</b>	Resource Ordering and Status System
<b>S&amp;PF</b>	State and Private Forestry
<b>USDA</b>	U. S. Department of Agriculture

**REVIEW OF THE USDA FOREST SERVICE  
DECISION TO DEPLOY THE NEW FOREST SERVICE GRANTS AND  
AGREEMENTS SOFTWARE MODULE THROUGH THE USDA I-WEB**

**INTRODUCTION**

For several years, the Forest Service has had a hard time getting a clean audit of its financial books. In 1999, the Academy prepared a report for the Forest Service on that and related subjects. The 1999 report recommended several steps the Forest Service should take to improve its financial management situation. But, that task presented a multiyear challenge that was still being addressed in early 2005. Transitioning from an outmoded accounting system to a modern one capable of meeting current standards for funds control and modern management reporting was at the core of this challenge.

The U.S. Forest Service is a huge and complex organization with a very challenging mission. So, cleaning up its finances is not a trivial task. The agency, in fact is one of the largest land management agencies in the world. It has stewardship responsibilities for over 193 million acres of National Forests and Grasslands in the United States. It operates from about 1800 employee locations in 44 states, plus Puerto Rico and the Virgin Islands, and runs 19 Job Corps centers. The stewardship of these lands takes place on 126 National Forests and 13 National Grasslands organized into nine geographic regions. The Forest Service also administers the largest forestry research organization in the world, organized into seven Research Stations and a Wood Products Laboratory; and it provides technical and financial assistance to numerous state and private forestry agencies. To manage all these resources, the Forest Service has an annual budget of over four billion dollars.

The Grants and Agreements (G&A) program of the Forest Service represents a critical part of the Forest Service business. There are currently over 22,600 Grants and Agreements in effect between the Forest Service and its cooperators. The Forest Service contribution to these Grants and Agreements is over \$522,000,000, and the cooperators contributions are almost \$467,000,000. The total value of agency and cooperator resources committed to this program is just short of one billion dollars. Table 1 on page 3 provides the details of this (G&A) activity.

Accounting for this large and important program was still a “material weakness” in the Agency’s most recent audit, and there was strong pressure from OMB and the Department to address this problem. The then-existing G&A accounting system did not incorporate standard management controls—such as requiring separation of grant-approval authority from grant negotiation and management responsibilities.

The Forest Service Chief Financial Officer (CFO) was committed to centralizing and fully automating the old process, and introducing standard management controls. The capability to develop the software to accomplish this goal was available in the Engineering Office of the National Forest System (NFS) program, but the Forest Service system architecture in place at that time was not capable of meeting all the requirements of the new software and its associated web access needs. Therefore, other alternative system platforms were investigated and an

appropriate hosting data center was identified at a USDA facility in Kansas City. The Kansas City facility could be adapted to link the Forest Service G&A data to the Forest Service's central financial management system (FFIS) and it could also provide access to INFRA real property software used by USDA. This confluence of capabilities was assembled by the Forest Service CFO to address part of the agency's long-standing audit problem.

The G&A program people in the Forest Service Acquisition Office (a large core business function) were brought in to work with the NFS Engineering people in developing the new software required. Since USDA had placed a moratorium on further system development work in Grants and Agreements, it was necessary to get a waiver from USDA to proceed with the development of the new G&A software. This waiver of the normal procedures was granted, and the new system was approved—even though several serious risks had been identified by then. When the system was rolled out agency-wide in August 2005, it did not work well and was not well received by its users.

The organizational relationships just described are depicted schematically in Figure 1—to provide a visual sense of the major and minor players involved in the three major “sectors” of activity that were crucial to success of the enterprise.

The Forest Service Information Resources Management (IRM) Office and the Information Solutions Organization (ISO) units responsible for the IT Infrastructure reside close to this sequence of activities, but were not central to it.

The Academy was requested to study these events and the decision process that produced them, with a view to avoiding similar problems in the future. This study began on November 10, 2005 and was completed on January 31, 2006. It is based primarily on interviews with the Forest Service personnel principally involved in making the decision being studied. A list of the people interviewed is provided in Appendix B.

The Panel's report describes how the new G&A system roll-out was decided on, and how each of the significant players was involved. It may be viewed as a quick-response “after-action report” on the decision-making process. Since the purpose of this report is to help the Forest Service to avoid similar problems in the future, this report contains recommendations.

Many other federal agencies have experienced significant disappointments and false starts when establishing new automated systems. This activity has been found to require careful planning and preparation to ensure success. The Academy Panel emphasizes these widely recognized lessons in this report.

One of the recommendations is to consider using a change-management program to facilitate major system implementations like this one in the future. An example drawn from recent Academy work with NIH is provided in Appendix C for purposes of more fully describing the nature of this recommendation.

This report is submitted by the National Academy of Public Administration Panel on the Forest Service MEO in accordance with USDA Forest Service Purchase Order # AG-3187-P-06-0022.

This report addresses the following topics:

- Background required for understanding the assignment
- The Panel's assessment of events leading up to the Forest Service decision to implement a new business process and software application despite advice from the Forest Service's Information Resource Management staff to delay implementation.
- Factors contributing to poor performance and poor field acceptance of the Grants and Agreements application on I-Web

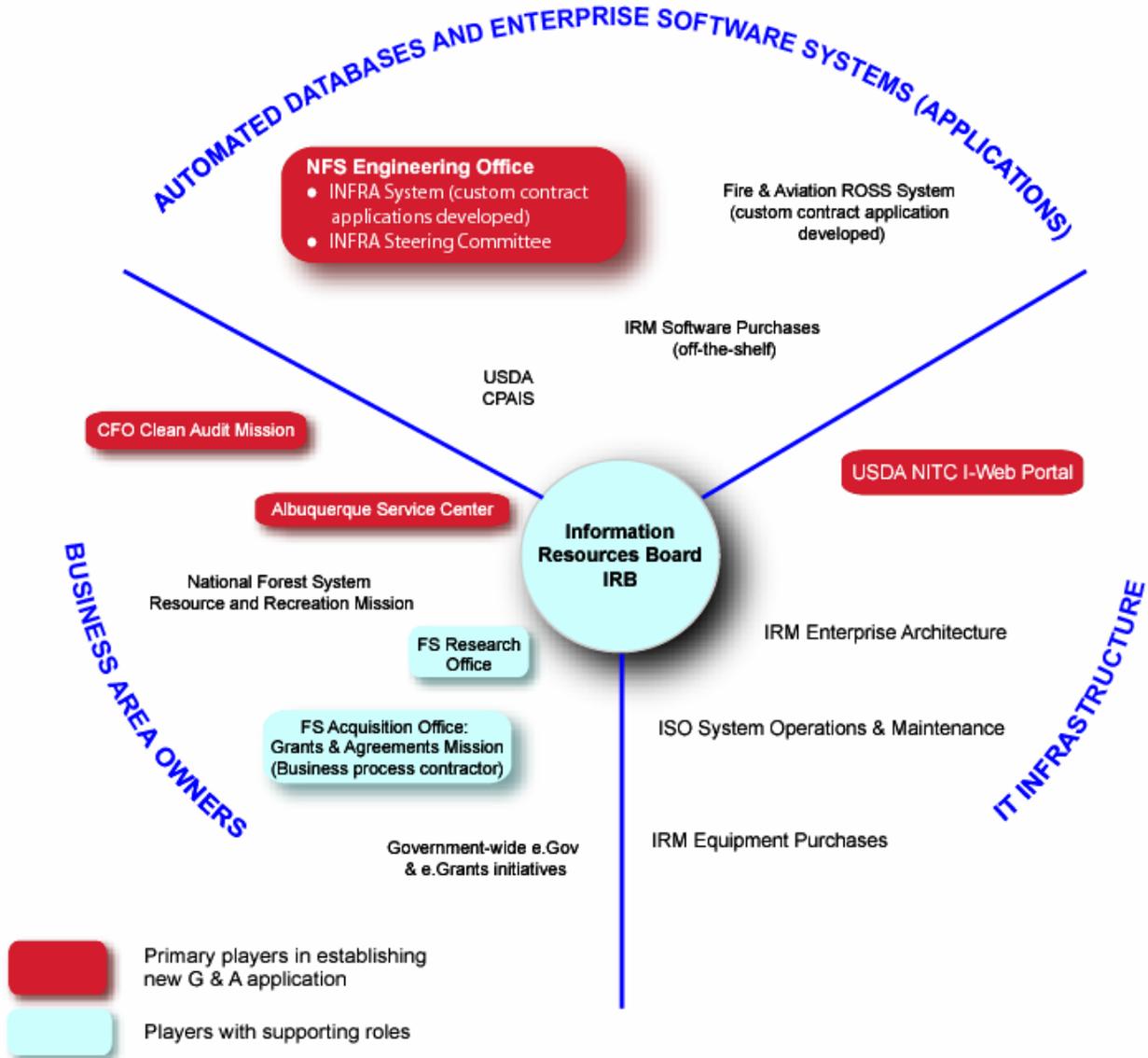
**TABLE 1. USDA-FS FY05 National Grants and Agreements by Instrument Type**

(All Actions included)

<b>INSTRUMENT TYPE</b>	<b>MODS COUNT</b>	<b>NEW G&amp;A COUNT</b>	<b>TOTAL G&amp;A COUNT</b>	<b>FS CONTRIBUTIONS</b>	<b>PARTNER CONTRIBUTIONS</b>	<b>TOTAL VALUE</b>
Challenge Cost Share Agreement	1,278	445	1,723	\$18,340,068.70	\$19,575,905.50	\$37,915,974.20
Collection Agreement	2,324	1,146	3,470	\$7,285,595.50	\$43,824,695.70	\$51,110,291.20
Cooperative Agreement	1,344	364	1,708	\$27,585,146.30	\$12,509,032.10	\$40,094,178.40
Cooperative Research and Development Agreement	82	9	91	\$0.00	\$1,017,822.00	\$1,017,822.00
Cost Reimbursable Agreement	151	69	220	\$12,380,405.10	\$442,463.00	\$12,822,868.10
Domestic Grant	2,715	875	3,590	\$350,192,207.80	\$212,497,092.00	\$562,689,299.80
Fire Agreement	494	166	660	\$2,698,884.00	\$799,681.40	\$3,498,565.40
Interagency and Intra-agency Agreement	3,177	1,515	4,692	\$61,613,587.30	\$134,418,156.20	\$196,031,743.50
International Cooperative Agreement	31	10	41	\$421,166.00	\$82,342.00	\$503,508.00
International Grant	24	8	32	\$536,555.00	\$457,461.00	\$994,016.00
Joint Venture Agreement	816	239	1,055	\$14,781,390.50	\$7,033,338.90	\$21,814,729.40
Law Enforcement Agreement	610	150	760	\$5,059,454.60	\$184,376.00	\$5,243,830.60
Memorandum of Understanding	2,223	363	2,586	\$106,633.70	\$0.00	\$106,633.70
Participating Agreement	974	620	1,594	\$18,758,563.50	\$13,296,498.00	\$32,055,061.50
Region/Station/Area Master Memorandum of Understanding	19	1	20	\$0.00	\$0.00	\$0.00
Roads Agreement	240	62	302	\$2,279,727.80	\$662,320.40	\$2,942,048.30
Service-wide Master Memorandum of Understanding	65	5	70	\$0.00	\$0.00	\$0.00
<b>Grand Total</b>	<b>16,567</b>	<b>6,047</b>	<b>22,614</b>	<b>\$522,039,385.80</b>	<b>\$446,801,184.20</b>	<b>\$968,840,570.10</b>

Source: IWEB Database, data consolidation date: 12/20/2005.

**FIGURE 1  
FOREST SERVICE AUTOMATION PROCESS**



- Recommendations to strengthen the Forest Service decision-making processes to avoid similar adverse outcomes when the Forest Service implements additional large, complex automated systems, building on the work that has been accomplished to date.

While this report focuses on the challenges that the Forest Service encountered during the initial rollout of the G&A software on the I-Web, it is important to acknowledge that important successes also resulted from this effort. The Forest Service now has a computing platform from which it will be able to deploy a wide range of web-enabled applications, and has also learned

lessons in this deployment that are expected to be very valuable in helping to avoid similar problems in the future.

It is also important to note that, in the end, as is often the case with the Forest Service, extraordinary efforts by hundreds of dedicated employees made this system work in spite of the many challenges it faced. The Forest Service has long had a reputation as a “can-do” agency, and this experience confirmed that reputation. Everyone NAPA interviewed was focused on doing the best they could to help the agency succeed in carrying out its complex and often difficult mission. The employees of the agency, from the INFRA Staff to the IRM Staff to the employees in the field, deserve credit for persistence and dedication to mission accomplishment even when things did not go as well as everyone hoped they would.

## **BACKGROUND**

In late May of 2005, the Forest Service launched an integrated web-hosting environment known as I-Web (Integrated Web) at the USDA National Information Technology Center in Kansas City. I-Web is a web portal for hosting a wide variety of applications. This takes an important step toward the goal of an Integrated Business Environment that will provide a means of linking together the widely distributed activities of the Forest Service. Eventually, it is intended to host a large number of USDA and Forest Service web-enabled applications.

The first major module launched under this new, more efficient and effective operating environment was a Forest Service module known as *Grants and Agreements (G&A)*. The G&A module is used to input data about Grants and Agreements with Forest Service cooperators after the agency and its cooperators have reached agreement on the details about specific projects that the agency and the cooperator will jointly carry out. The G&A module includes linkages to the agency’s financial and accounting systems in order to ensure that the monies received and expended via these federal-aid programs are properly paid and accounted for.

The launch of this module did not go well. There were significant performance problems from the very beginning. Even before the deployment of I-Web and the Grants and Agreements module, the agency network had limited bandwidth and widespread congestion. These network problems resulted in very poor response times that became particularly pronounced as the day progressed and as more and more users attempted to log on and use the system. Complaints from the field were frequent and reflected an almost universal view that the field was being required to use a module whose response times were unacceptably slow.

As a result of the network congestion, the ability of the new system to feed information into the agency’s financial and accounting systems was compromised. Users either could not log on at all or else found that, if they did log on, the response times were so slow as to prohibit them from entering data into the system. In addition, the system implemented new business processes which required the user community to perform various data entry functions in ways that the users were not accustomed to.

A number of costly and time-consuming mitigation measures had to be employed almost as soon as the application was launched in order to assist the field units in getting their G&A mission accomplished. The inability of the users to enter data into the new system became especially problematic from a financial management standpoint. The end result was that hundreds of thousands or even millions of dollars of financial obligations could not be properly input into the financial system through I-Web. This failure would create major problems in the agency's attempt to obtain a clean financial audit at the end of the fiscal year. The problem became so acute that the agency was forced to allow direct input of obligations data by field units into the national financial and accounting system. (Normally any input of obligation data goes through application front-end software that does extensive error checking before allowing obligation data to be recorded in the central financial and accounting system.)

These extraordinary mitigation efforts appear to have been successful, but the costs were very high, and field users' confidence in the ability of the national office of the Forest Service to deploy national applications suffered greatly.

As a result, the Deputy Chief of Business Operations for the Forest Service asked the Academy to review how the agency got itself into a position where senior managers felt they had no alternative other than to deploy a software application that they belatedly came to understand had a high risk of encountering problems during its initial deployment.

## **EVENTS LEADING UP TO THE DECISION TO DEPLOY G&A ON I-WEB**

### ***Need to modify G&A Application to Obtain Clean Financial Audit***

In October of 2004, the Chief Financial Officer (CFO) of the Forest Service determined that the Grants and Agreements application currently in use had to be modified in order to address serious financial audit deficiencies that had led to the G&A application being identified as a material weakness in the agency's ongoing attempts to obtain, and sustain, clean financial audits. To overcome this material weakness, the agency contracted with BearingPoint Corporation to analyze the Grants and Agreements business processes. After completion of their analysis, BearingPoint was to provide detailed application development specifications laying out the requirements a revised Grants and Agreements application would have to meet.

Since the G&A application was one of some twenty-two components of a system that began as an agency asset management application known as INFRA, the CFO contacted the INFRA Project Manager to set up a meeting to discuss whether or not the INFRA development team could make the changes to the G&A application that were essential if the agency was to get a clean financial audit. The INFRA Project Manager, in turn, contacted the Acquisition Management Staff's Grants and Agreements Branch and invited them to also participate in the meeting. (The business responsibility for processing Grants and Agreements in the Forest Service rests with the Acquisition Management Staff.)

The outcome of that meeting was a decision that the INFRA Project Team would modify the G&A application to incorporate the necessary changes using the development specifications provided by BearingPoint.

### ***Other Application Development Projects that Influenced Deployment of G&A***

INFRA was initially deployed in 1993 using client/server architecture to track asset management for the Forest Service. There were separate INFRA databases at every National Forest and Research Station (over 130 locations). Periodically those databases would be replicated to a central INFRA database in order for the Washington Office to be able to run consolidated national reports.

As network technology improved, and as the challenges and inefficiencies of maintaining a client/server application on hundreds of servers and thousands of desktops became more evident, it was decided that the INFRA application would have to be centralized nationally, and eventually, web-enabled as well. In addition, the INFRA architecture would have to be centralized to meet IRM requirements to migrate the entire agency from over 130 data centers to 10 data centers. However, the early plans to move to 10 data centers have evolved into a plan to establish perhaps no more than three data centers nationally in order to capture more network efficiencies. The actual number of data centers that will be established, and the location of those data centers, has still not been finalized.

This server consolidation will have a major impact on how the INFRA system functions. As a result, this announced server consolidation was regarded by the Forest Service Engineering staff as a major factor in the need to move quickly to establish a platform where INFRA could be both centralized and web-enabled. Accordingly, in May of 2004, INFRA notified IRM that they were planning to both centralize and web-enable INFRA by September of 2005.

Normally IRM is responsible for the agency's system architecture. However, it could not provide this server consolidation capability in this timeframe because the need to centralize and web-enable INFRA came at the same time that IRM was undergoing a major transformation as a result of winning a competitive sourcing bid to supply computer support and services to the Forest Service. IRM was transitioning from its old organization into a world where the Most Efficient Organization that won the competitive sourcing bid would be responsible for providing most of the services INFRA needed. In addition to the IRM/ISO inability to meet INFRA's need for new servers, INFRA was concerned that, since its systems work very closely with USDA on real property applications, INFRA needed to ensure that they had a systems platform that was compatible with the system infrastructure used for the USDA CPAIS (Real Property) system.

In mid-2004, therefore, INFRA began negotiating with the USDA National Information Technology Center to set up an agreement whereby NITC would purchase, house, and maintain new servers for INFRA.

### ***Technical Approval Process***

The Forest Service Manual requires that any unit in the Forest Service that wishes to acquire hardware and software resources that are not included in the agency's standard information architecture must obtain technical approval from the Director of IRM<sup>1</sup>, who is also the agency's Chief Information Officer (CIO). The CIO has the authority and responsibility to oversee the procurement, installation, management, support, and updates of the Forest Service's corporate information technology architecture.

The Forest Service Manual also states that:

A number of constraints and federally prescribed procedures apply to the acquisition of information technology (IT) hardware, software, maintenance, supplies, and related services from sources outside the Forest Service.

1. All IT acquisitions that are not compliant with the existing Forest Service Enterprise Architecture technical reference model (FSM 6615.1) require a technical approval.

In addition, any IT acquisitions that exceed \$25,000 require a waiver from USDA. Annually, the Forest Service submits a request for waivers for all IT acquisitions or major application development and/or maintenance projects that are expected to exceed the \$25,000 threshold. For FY 2005, for example, the Forest Service asked for, and received, a waiver for upgrades to INFRA in the amount of slightly over \$8,000,000.

The cost of the hardware and software upgrades required to implement both the I-Web portal and the Grants and Agreements application were approximately \$1,000,000, according to interviews with senior managers associated with the project. Since this amount was well within the amount already approved by USDA for upgrades to INFRA, it was not necessary to seek additional approval for the hardware and software costs associated with this upgrade. However, USDA did institute a freeze on updates to Grants and Agreements software in February of 2004, so it was necessary for the Forest Service to obtain a waiver allowing them to proceed with the upgrades to the Grants and Agreement application. This waiver was received in April of 2005.

In addition, even though the Forest Service did not need to go to USDA for approval of the hardware and software upgrades (other than the specific application instance mentioned above), the Forest Service Manual does require that application proponents obtain technical approval from the CIO for acquisition of hardware, software, and related services that are not compliant with the existing Forest Service Enterprise Architecture. Accordingly, INFRA asked for and received the approval of the CIO to enter into an agreement with the National Information Technology Center at Kansas City whereby NITC would purchase and operate the necessary hardware for the implementation of INFRA under an I-Web portal.

Interviews with IRM Staff indicated that, although the CIO did approve the agreement with NITC, IRM had then, and continues to have, considerable concern about agency projects such as

---

<sup>1</sup> See FSM 6610.43, paragraph 2.

INFRA that are based on negotiated agreements with NITC to set up system architecture components outside of the agency's own internal system architecture. Too many different players within the Forest Service are negotiating independently with outside service providers for data centers and for back-up facilities, without any clear idea of what the finished "system" architecture will look like or what it will cost.

### ***Software Application Development Requirements***

The Forest Service guidance related to the management and development of computer software applications is contained in Forest Service Manual 6620. Additionally, much more detailed guidance for application developers is contained in Forest Service Handbook 6609.13.

However, both of these documents are very outdated and do not reflect either the technical or managerial environment in the Forest Service today. Forest Service Manual 6620 was effective June 1, 1990, and Forest Service Handbook 6609.13 was effective September 3, 1991. Both the technology and the philosophy of application development has evolved in very different directions from where the industry was fourteen years ago.

In addition, there is no enforcement mechanism to ensure that Forest Service staffs comply with these requirements, nor are there any audits conducted to ascertain the degree of compliance with them.

Auditors have noted these deficiencies and have required the Forest Service to remedy them. A schedule is in place to do so.

Meanwhile, newer requirements, such as the requirements for Certification and Accreditation of new applications, and the Capital Planning Investment Controls do impose substantial documentation requirements on the software development community within the agency. In many ways, these new requirements provide more of an enforcement mechanism for sound application development than existed previously.

## **FACTORS CONTRIBUTING TO DEFICIENCIES IN PERFORMANCE AND ACCEPTANCE OF THE I-WEB/GRANTS AND AGREEMENTS APPLICATION**

### ***Application Design, Development and Testing***

Prior to beginning development of the revised G&A application, BearingPoint Corporation was tasked to analyze the Grants and Agreements business processes, including the need for financial management controls, and to develop a set of programming specifications that would be used to guide the software development process. BearingPoint representatives met with individuals involved in the Grants and Agreements process at all levels of the organization and incorporated their thoughts and suggestions into the resulting specifications.

The INFRA development staff made a conscientious effort to test the G&A software application (and the I-Web portal to it via INFRA). Three separate rounds of testing were completed, in

March, April, and May of 2005 for these limited portions of the new system. However interviews with IRM staff confirmed that the agency does not have an adequate pre-production testing environment or the tools and expertise needed to meet the needs of application development projects on hand to adequately test systems that will have such widespread impacts on the agency network. The highly important telecommunications network and the data input capabilities of Forest Service field units via the network were not adequately tested.

### ***Business Process Changes***

Prior to 2002, there was no centralized Grants and Agreements application in the Forest Service. In fact, there was no system at all to track Grants and Agreements as separate and distinct entities. The agency therefore had great difficulty compiling service-wide data about Grants and Agreements.

Accordingly, in 2002, a Grants and Agreements application was added to INFRA, and field units were directed to input data about all their Grants and Agreements into this system. However, this application, while it did gather basic data about Grants and Agreements, and did facilitate some national reporting on them, was not designed to meet the needs of the financial and accounting systems, and did not have the capability of establishing and maintaining the kind of audit trails necessary for clean financial audits.

The result of the BearingPoint analysis of the business processes for handling Grants and Agreements included incorporating a major change in how the Grants and Agreements processes were done in the field. This analysis was conducted in consultation with Forest Service field personnel.

Prior to 2004, there was no need for the proponents or approvers of a Grant or Agreement to actually sit down at a computer and input data or approve certain steps in the G&A processes. The person responsible for negotiating a Grant or Agreement typically would work with the cooperator to establish the purpose and objectives of the Grant or Agreement, and would typically negotiate with the cooperator things like what each agency would provide as resources; and what actions each agency would take to carry out the assisted project. Once those details were worked out with the cooperator, the proponent would typically take the Grant or Agreement to a G&A specialist in their own unit who would make sure the basic rules and regulations were followed correctly in setting up the project funding. Then, the required specialist would assign a number to the Grant or Agreement and enter the required information into the INFRA database. Subsequently this documentation would be forwarded to a person in the Financial Management office who would ensure that the necessary financial obligations were entered into the agency's fiscal systems using Financial Management software.

In October of 2004, therefore, there were only about 150 – 200 Grants and Agreements specialists who needed access to the INFRA database to enter Grants and Agreements information. There were many more people involved in the processes of establishing Grants and Agreements, including initiating, negotiating, developing, and approving those instruments, but the rest of the people involved in the process had no need to access the Grants and Agreements software.

Once the new application, including the required separation of roles, went into effect, the number of personnel who had to actually log onto the Grants and Agreements application grew from about 200 people to somewhere between 10,000 and 20,000 people. (The Washington Office alone went from five employees needing access to over 300.) Every employee who could approve a Grant or Agreement now had to have access to this software, with the proper roles and responsibilities assigned to them.

USDA's e-authentication system was used to authenticate that users were in fact authorized to access the I-Web portal, and users also had to have individual roles and rights granted by an INFRA User Management Application in order to enter or edit data. Field units who previously might have had one person who needed access to Grants and Agreements applications now found themselves with many more people who had to use a computer to carry out some part of the Grants and Agreements business processes. Needless to say, the administrative tasks associated with establishing the proper access for these new users, both under the e-authentication process and thru the Grants and Agreement User Management Application, were substantial.

Training of both the old user community and the vastly expanded new user community was also a major challenge for the Forest Service. Every individual who was going to be using the new Grants and Agreements application was required to take training (web-based) before that individual could be given access to the new system.

Therefore, the Grants and Agreements business process managers had a very short time in which to design, develop, test, and distribute training materials on the new Grants and Agreements application to the field. The business process managers used a "train the trainer" approach that is used extensively in the Forest Service. Web-based training materials had to be developed for the Grants and Agreements application. Once the web-based training materials were available, key Grants and Agreements personnel from each Region, Station, and the Northeast Area had to be provided training in the use of the new software. Those individuals then had to go back to their respective units and train the individuals on their units (or arrange for those individuals to take the web-based training on their own.) Again, this problem was greatly compounded by the short time available, since coding of the new application could not begin until the USDA waiver allowing development work on Grants and Agreements was received in the spring of 2005. This left the business process people with less than two months to meet this complex training and change-management challenge. Although training resources were made available, there was not sufficient time to significantly modify the behavior of many employees in the field.

In addition, it soon became apparent that those units who had not done a thorough job on inputting Grants and Agreements data into the old system were going to have much more difficulty with the new system. For one thing, they were now going to have to input data for all the Grants and Agreements that they had not yet entered, and they were going to have to do it using a system with very slow response time.

Overall, there was a general consensus within the user community that the entire migration to the new Grants and Agreements application was too rushed. They felt that six months was not nearly enough time for analysis, design, and testing of this complex and vital new software

system. Six months was certainly not enough time for that plus the training and implementation activities required throughout the Forest Service, and it certainly did not provide sufficient time to put in place appropriate change management processes and procedures.

By December 2005, the system was functioning reasonably well, given that this is a low period of activity in the Grants and Agreements program. However, there is continuing dialogue between Acquisition Management and Financial Management over who is responsible for verification of vendor codes. The original understanding of Acquisition Management's Grants and Agreements specialists was that Financial Management would be responsible for verifying the vendor codes used in the system. Financial Management wants the field users to be responsible for verifying the vendor codes; the field users are not familiar with vendor codes and feel that should be done by Financial Management.

### ***Network Performance Problems***

Interviews with both IRM staff and INFRA staff indicated that the Forest Service has known for some time that it has serious deficiencies in its telecommunications network, especially in what is referred to as "the last mile," or the connection between the end users in remote field offices and the rest of the network. The network used by the Forest Service is poorly designed for use in a web-based environment. The data lines from Ranger Districts typically do not go directly to the Internet, but rather to servers in Forest Supervisor's Offices; and the data lines from the Forest Supervisor's Offices go to servers in the Regional Offices; and their data lines typically go to agency servers before they get to the Internet. These multiple hops cause significant network problems, especially when an agency is trying to move to web-enabled applications that will be used by thousands of users, or even tens of thousands.

The Forest Service IRM Staff is currently working with USDA Staff to redesign this network, but actual implementation of the third phase of this long term effort (which is the phase that will address "the last mile" problem, at least down to the level of the Forest Supervisor's offices) will not take place until at least March 2007.

As a result, the Forest Service knew that they were likely to encounter significant network performance problems as soon as they implemented Grants and Agreements on I-Web. In anticipation of this problem, however, both INFRA and the IRM staff worked to develop a contingency plan that would at least enable critical mission work to be done, albeit in somewhat inconvenient locations and times. People might have to drive long distances to get to a location where they could enter data into the system with reasonable response times; and they also might have to stagger the hours when users could access the system (with East Coast users logging on in the morning; mid-USA users in mid-Day; and West Coast users late in the day.)

### ***IRM Advice on Decision to Stand-up I-Web/INFRA in May 2005***

Interviews with IRM Staff indicate that, after a careful and thorough review of the plans to stand-up the Grants and Agreements Application on I-Web in late May of 2005, the IRM staff recommended to the INFRA Steering Committee that they delay the stand-up until at least December 2005. The INFRA Steering Committee, however, decided that the risks and costs of

not going forward were too great and that the agency had no realistic alternative to moving forward and do all that the agency could do to achieve the desired clean audit. As the network challenges in implementing I-Web became clearer, the Director of Forest Management decided to delay bringing the Timber Information Manager (TIM) application online until a later date.

The CIO directed the IRM Staff to provide full support and assistance to the stand-up of I-Web and INFRA once the decision was made to go forward.

## **PANEL FINDINGS**

Based on the foregoing interview results, the Panel found that the following major factors led to the decision to deploy the new Grants and Agreements process through I-Web before all of the necessary system components were ready to support it:

1. The initial decision-making process to stand-up Grants and Agreements was primarily driven by a desire to take every measure possible to address potential material weaknesses in the agency's financial audit. Financial accountability has been a major challenge for the Forest Service for several years. Only through extraordinary labor-intensive efforts, typically at the end of the Fiscal Year, has the agency been able to obtain clean financial audits. The desire to do everything possible to get a clean financial audit led to decisions that had a clear bias toward implementing further system automation and process improvements, even when there were substantial known risks with going forward.
2. The importance of completing the telecommunications network improvements (that were underway) before implement the web-based system was not adequately considered, nor was the need to more fully prepare field units to operate the new system. Although software tests were performed on the new process, tests of real-life network and human-factors data input capabilities were not performed. The Forest Service does not currently possess the capability to perform these more comprehensive system tests.
3. Once the Deputy Chief for Business Operations assigned the responsibility for the deployment of Grants and Agreements on I-Web to the INFRA staff, the progress of that undertaking was not monitored in sufficient detail for the Deputy Chief to be fully apprised of the costs and the risks of the overall undertaking. As a result, the Deputy Chief was surprised in April of 2005 to find that the agency had no real alternative to rolling out a system which their own technical advisors in the IRM Staff indicated was likely to encounter very significant problems, especially from a network standpoint.
4. There was not adequate discussion of the impacts of the proposed business process changes early enough in the decision process. For example, there was insufficient discussion of the radical change in the number of employees who would now have to access the computer system to carry out their responsibilities in the Grants and Agreements process. Had the senior management officials involved been more fully aware in the beginning of the total costs of the investments necessary to stand-up I-Web

and Grants and Agreements in May of 2005, and especially of the risks associated with this decision, it is possible that they might well have insisted on conducting a more rigorous search for alternative ways to get through 2005 with a clean financial audit in the Grants and Agreements area. In particular, alternatives might have been explored in the business process redesign to reduce the number of people needing computer access.

5. The transitional challenges resulting from the implementation of the competitive sourcing outcomes contributed significantly to the inability of the IRM Staff to implement the planned data center consolidation and get more deeply involved in the broader enterprise architecture issues being raised in a timely manner.
6. The current decision-making process centered in the Information Resources Board (IRB) does not adequately raise broad system architecture issues unless new investments would be required. In the (G&A) case, adequate funds were already available, so budget issues and broader operational issues were not raised. The Board's composition seems appropriate for considering broader issues but the Panel found that its charter is not broad enough and the materials prepared for its consideration come from a variety of primary sources that do not always provide adequate scope and context to support objective decision-making on broad, strategic issues. The primary role of the Forest Service's existing IRB focuses almost exclusively on investment decisions regarding individual technology projects. The Board consists of senior managers in the Forest Service and is made up as follows:
  - a. Primary Members:
    - ❑ Deputy Chief of Business Operations (OPS), Chair.
    - ❑ One Associate Deputy Chief from each of the other Deputy Areas--Budget and Finance (B&F), National Forest System (NFS), Research and Development (R&D), State and Private Forestry (S&PF)--to be appointed by the respective Deputy Chief.
    - ❑ One Station Director, to be appointed by the Deputy Chief for Research and Development.
    - ❑ One Regional Forester, to be appointed by the Deputy Chief for National Forest Systems.
    - ❑ Chief Information Officer (CIO), Executive Secretary. As such, the CIO serves as a primary member of the Board as well as the Executive Secretary and provides general support for the Board's information, deliberation, and communications needs.
  - b. Alternate Members:
    - ❑ Associate Deputy Chief for Business Operations, Alternate Chair.
    - ❑ One named WO Staff Director to be appointed by each of the Associate Deputy Chief Board Members (for B&F, NFS, R&D, S&PF).
    - ❑ One Assistant Station Director (AD) representing a different Research Station to be appointed by the Station Director Board Member.

- ❑ One Deputy Regional Forester (DRF) representing a different Region to be appointed by the Regional Forester Board Member.
  - ❑ Deputy Director for Information Resources Management, Alternate Executive Secretary.
- c. Ex Officio members: The Board at its discretion may name non-voting Ex Officio Members to represent information issues that cross Agency or Deputy Area lines of responsibility and might not otherwise be represented sufficiently by the voting Board members. Current Ex Officio Members include:
- ❑ Chair, FS Geospatial Executive Board (GEB).  
The composition of this board appears to adequately represent all the Forest Service business lines, IT infrastructure units, and software/database providers.

The IRB evaluates new proposals, ongoing projects, and operational systems to create a FS information resources portfolio that best supports the agency mission and program delivery process. The Board provides guidance and management direction on those projects considered critical to agency business needs. The IRB provides overall agency leadership toward implementing the capital planning and investment control process for information resources, as described in OMB Circulars A-11 and A-130, USDA's CPIC Guide, and FS Information Resources Investment Management policy, FSM 6608 (pending revision). Specific IRB responsibilities are to:

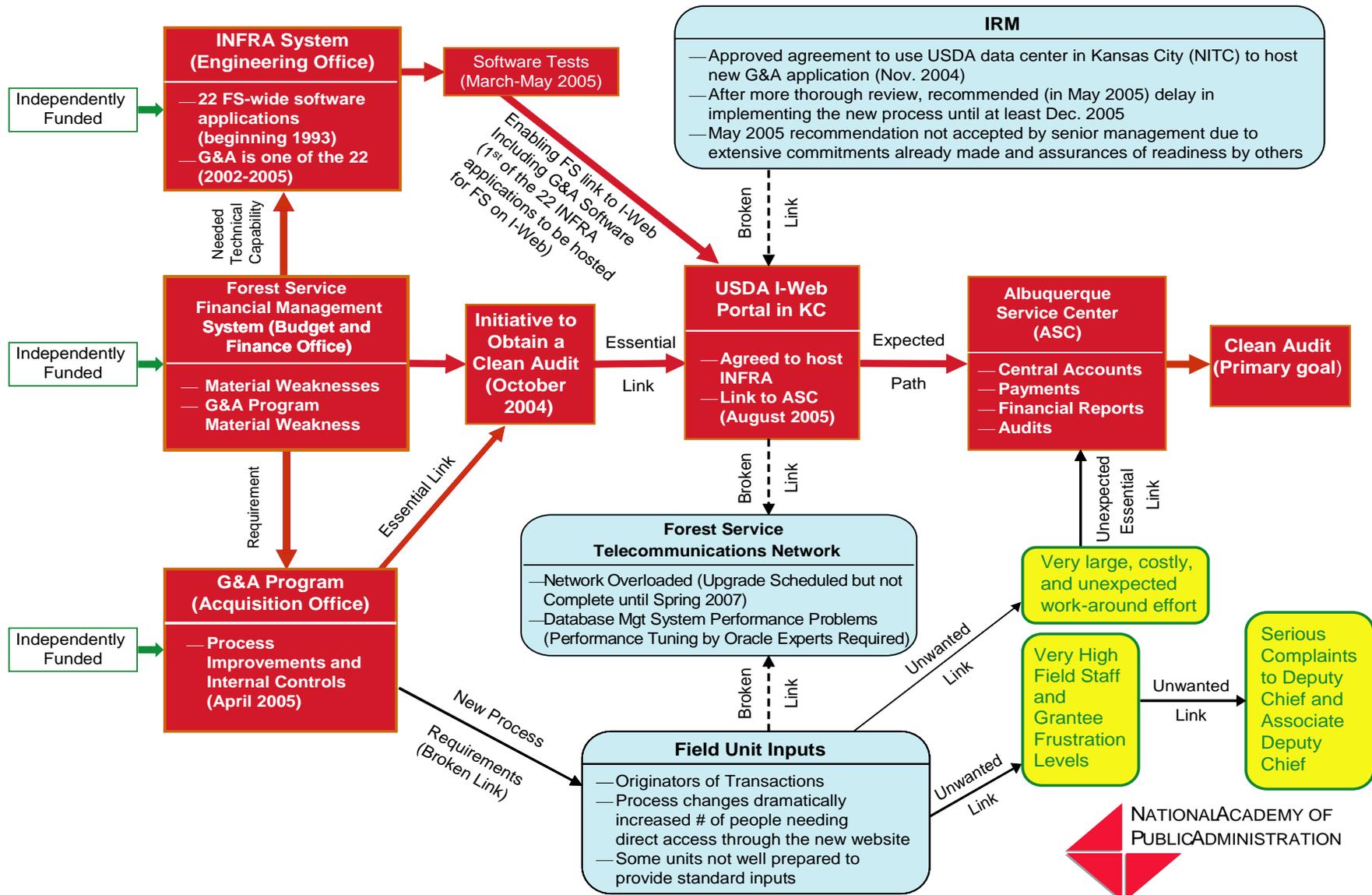
- a. Guide the development and management of the FS portfolio of information resources investments such that it maximizes benefits to the agency while mitigating the risk. The FS IR portfolio comprises all investments reported through the Information Technology Investment Portfolio System (I-TIPS), including major information acquisition and manipulation projects.
- b. Provide guidance for the development of proposals and for the management of IR projects, systems, and portfolios.
- c. Evaluate how well IR investments are meeting cost, schedule, performance, and other objectives based on information provided by the CIO from in-progress reviews of selected projects within the portfolio, and recommends adjustments, as appropriate.
- d. Prioritize investment proposals and recommends national IR investments for funding from the WO budget to the Executive Team as part of the agency's program planning and budgeting process.
- e. Evaluate progress of the agency's CPIC process and IRB oversight annually, and adjusts as necessary to improve effectiveness and efficiency.

The Board does not play a major role in the management of on-going software development projects, nor does it play a key role in developing an agency-wide Information Technology Strategic Planning Process. This limitation has prevented the IRB from performing the fuller role that the Forest Service needs it to play.

7. The Forest Service does not currently have a clearly recognized IT strategic plan and vision designed to coordinate the activities of the many disparate players in this highly dispersed area of activity. Instead of having an obvious place to go to get the IT upgrades he needed to overcome a material weakness in the accounting system, the CFO had to shop around to pull together the particular capabilities and resources he needed. The CIO and the IRB were not central players in meeting this need. Part of the reason was that the CIO's organization was in transition because of an A-76 Competitive Sourcing decision to consolidate and completely reorganize, reinvent, and re-staff the overall IT Infrastructure function.
8. Although the Forest Service achieved its goal of a clean audit, it paid a high price in negative business impacts, especially in the field units. Organizational and business process risk factors associated with dramatic changes in Grants and Agreements operations were inadequately identified, assessed, and communicated. As one result, implementation required extensive work-arounds and generated high levels of employee and grantee frustration.

Figure 2 provides a flow chart showing the many different parties involved in this decision, how and when the events unfolded, and the results. The "bold" elements flowing through the center of the chart were the main drivers of the decision. The "broken" links with IRM, the telecommunications network, and the line organizations in the field show the main deficiencies in the decision-making process. The shaded boxes in the lower right corner show the undesirable results that occurred.

**FIGURE 2**  
**DECISION PROCESS: HOSTING THE NEW G&A PROCESS ON I-WEB IN 2005**



January 26, 2006

## PANEL RECOMMENDATIONS

The findings from this case clearly show, once again, that major IT decisions can be risky. Increasingly, organizations and individuals are becoming dependent on computers, the networks to which they are attached, and the software systems that provide the means to perform the vital functions for which they are responsible. Grants and Agreements is a very big function in the Forest Service. It involves not only the achievement of national goals, but also the desires and goals of thousands of individual state, local, and private cooperators. But this function depends, in turn, on the existence of an adequately sized IT infrastructure within the Forest Service that is available with flawless reliability every hour of every day throughout the year.

That adds up to a lot of disparate capabilities that need to come together seamlessly in order to meet the needs of many different people and organizations. The very multiplicity of elements in this case made it inherently risky—and deserving of extraordinary care and attention to ensure that the IT system is able to operate as what Professor Karl Weick calls a High Reliability Organization (HRO).<sup>2</sup>

The history of federal IT systems—large and small—is strewn with disappointment and worse, so there has been plenty of advice to go slow, consult the users and service providers, carefully integrate the many separate parts of new systems, and then test them thoroughly before implementing them. What Prof. Weick has found in his extensive studies of highly risky enterprises—ranging from aircraft carriers, to nuclear reactors, to wildfires—is that successful organizations that live with high risks day-in-and-day-out become extremely sensitive to the environment within which they are operating. And they do not dwell on their success. Instead, they pay special attention to what can go wrong and how they can keep it from going wrong. They rely a lot on the people who are closest to their critical problem areas to take immediate corrective actions, but top management remains ready to step in and assist rapid responses to keep small problems from becoming big. They also stress learning from every serious incident that occurs how to avoid it in the future. Weick calls this being “mindful” of their risks.

This I-Web case is not the first major IT system upgrade to run into significant problems in the Forest Service and USDA. Other recent system installations that have not gone smoothly include new acquisition and travel systems. So, I-Web looked to many employees like another new system out of the same mold—at least as it affected the users. And more are in the wings—a new, drastically different e-mail system and a new human resources system are next in line, and many more are waiting behind them. One could not fault the average Forest Service employee or cooperator for beginning to believe that they have been chosen as the guinea pigs for testing these new systems live in the field.

The Panel believes that this I-Web case illustrates a general process problem—not just a problem with a specific decision. Responsibilities for developing and deploying new IT systems are divided among so many different players that a continuation of this pattern of problem-plagued automation projects can be expected if the decision process is not fixed to bring these divided

---

<sup>2</sup> Karl E. Weick and Kathleen M. Sutcliffe, *Managing the Unexpected: Assuring High Performance in an Age of Complexity*. San Francisco: Jossey Bass, 2001.

responsibilities together much more effectively. Some of the players are responsible for program missions, some for administrative processes, some for software development, and some for the IT infrastructure on which the other parts of the system run. But, no one is really empowered to bring these pieces together so they can work together smoothly and provide IT system innovations and operations with increasingly higher degrees of efficiency, effectiveness, and reliability. The current charters of the Forest Service CIO and the IRB are not adequate to this task.

To address this situation, the Panel believes that the following four recommendations should be implemented. They are designed to transform the Forest Service IT operations into the equivalent of an HRO.

**RECOMMENDATION 1: The Forest Service should establish clear responsibility for designing and integrating a comprehensive agency-wide IT strategic plan, supported by updated and enforceable policy and procedures manuals.**

As stated earlier, the CIO's organization was in transition because of an A-76 Competitive Sourcing decision to consolidate and completely reorganize, reinvent, and re-staff the overall IT Infrastructure function. One might argue that the I-Web decision might have been made differently if it weren't for this awkward timing. However, the Panel's findings indicate that the IT "infrastructure" issues (essentially the network and hardware parts of the system) addressed by the A-76 decision are only part of the overall system, and that it is still not clear how the mission-driven software development efforts and operational training needs of the field personnel who will use the new systems are to be coordinated. These three major sectors of responsibility were not well coordinated in the I-Web case the Academy examined.

Responsibility needs to be firmly fixed within the Forest Service so that everyone will know where to go to initiate a new system requirement and have it satisfied in a manner that coordinates all three sectors of responsibility. In addition, needed authority should be provided to ensure that IT infrastructure, software, and human factors are designed to work together seamlessly, are tested realistically as a unified system, and are deployed only after the organizational units and personnel affected have been properly prepared to operate the new system.

The current acting CIO (who is also the Director of IRM) and the Director of Engineering in the National Forest System (where INFRA is housed) have agreed that the Forest Service needs an Integrated Business Environment (IBE), which would address issues like this. And they have chartered an IBE Team to begin working on it. The Panel believes that this initiative is a step in the right direction, and should be supported. All alternatives developed by the IBE Team should address governance, performance, and service requirements.

This IBE will establish the Forest Service system architecture that will provide the foundation upon which the agency's IT strategic plan will be based. New IT infrastructure and mission driven software systems would be required to be consistent with the strategic plan, and future IT funding, design, and/or deployment decisions would also have to be consistent with the plan.

Revised and updated policy and procedures manuals, with enforcement mechanisms, should underpin the IBE.

**RECOMMENDATION 2: The Forest Service should expand the scope of responsibilities of the Information Resource Board to include developing the IT strategic plan, setting priorities, and taking the specific steps needed to effectively implement the approved plan. IRB should be provided a small dedicated staff to prepare its agenda and to ensure follow-up on its decisions.**

Recognizing the wide diversity of responsibilities and needs for IT services that are dispersed throughout the Forest Service, IT systems developers and implementers will need widespread advice, support, and customer acceptance to be successful. The IRB should be better positioned to serve this purpose. The IRB's composition appears appropriate for considering these broader issues, but the Panel found that its charter is not broad enough and the materials prepared for its consideration are not broadly enough conceived to provide adequate scope and context to support objective decision-making that takes into account system-wide risks, benefits, and interdependencies.

**RECOMMENDATION 3: The Forest Service should ensure that a comprehensive business process analysis and design process is used for system redesign and reengineering efforts. In addition, the Forest Service should establish a robust system-testing capability that can simulate and validate the workability of new automated systems before they are deployed into the field.**

Systems testing should encompass much more than software testing. As this I-Web case showed, network capabilities, and human factors in the field offices are equally important elements of a smoothly functioning system. This broader type of testing is obviously more challenging, and the Forest Service does not currently possess the capability to accomplish it. However, it is vital to ensuring improved performance, less mission disruption, and greater field acceptance of new systems. The ability to simulate field conditions should be considered as part of this new testing protocol. The IBE Team has begun considering such a capability, and one of the follow-on projects it is considering is a "corporate application lifecycle methodology." This initiative should be encouraged.

Both the analysis of the business processes and the testing and evaluation of new systems should include the assessment of risks and benefits provided by knowledgeable subject-matter experts and a first-rate technical staff. This information must be available to advise senior managers of the risks and benefits of the actions they are promoting in an environment that encourages free and open exchange of objective information and competing views on a timely basis. Only then will senior managers be assured that they are making decisions with all the relevant facts in front of them. The long-term strategic planning framework promoted in developing the IT strategic plan will encourage this thoughtful approach and reduce the tendency to surface major issues late in the decision process when they are clouded by urgent mission demands.

**RECOMMENDATION 4: The Forest Service should adopt and require the use of a project management process for software development projects. Many models exist for such a process. The process adopted should include formal project reviews with clearly defined go/no-go decision points that incorporate appropriate criteria and clear identification of the level of the organization responsible for required go/no-go decisions.**

The Forest Service currently does not have a formal project management process for application development projects that is used consistently across all projects and, when project management procedures or techniques are used, they often are not used at the highest levels of the agency. The decisions at those levels are too often made in a less formal and less structured environment than is necessary for projects of this magnitude. Potential check-offs on the go/no-go list might include consistency with the strategic plan and IT investment program, business owner concurrences, software system tests completed, server capability certification, telecommunications network capacity certification, assessment of risks, contingency plans, change-management program planned and implemented, and other relevant factors essential for a successful new-system deployment. Such a formal process should be used at various stages of system planning, design, development, and deployment to make sure that all essential factors are being considered throughout the lifecycle of the initiative.

**RECOMMENDATION 5: The Forest Service should make change-management resources available to the whole agency, and mandate their use where appropriate, to help smooth transitions from old ways of doing business to new ways.**

The IT changes involved in this I-Web case were tied to internal mission needs and government-wide initiatives that can be expected to continue to buffet Forest Service management for many years. Each such change has the potential to cause significant disruption within the agency if it is not given careful attention. Employees' careers are at stake, training is needed to qualify employees for new assignments, new organizational units need to find space and equipment, not all the work being done by the people in jobs that are consolidated follows those people to their new jobs, and so on. The communications and services provided to help bridge these disruptions—while maintaining mission performance—have been found to be vital in other agencies. And, the Forest Service has begun to recognize this need as well.

What is not yet commonly recognized is that the federal government is now in a long-term era of very considerable change in the way it does business, and that many agencies probably need a permanent change-management unit specially trained and resourced to plan for and smooth the process. Each change, now, tends to be treated on its own terms. Some training is provided here to take care of a particular change while no training is provided over there for an equally great change because no one thought of it. And, some special HR or acquisition services are provided over there for one change, but are not available to accommodate another change. And, the work "left behind" from a consolidation is labeled as a disallowed "shadow government," while the people left behind go nuts trying to cope with it.

These are serious issues that need well considered attention. Some agencies have responded to such needs, and have some experience to share. The Academy's current work at the National Institutes of Health (NIH) illustrates the types of lessons that are being learned about change-

management. Appendix C summarizes the change-management process used by NIH to smooth the multi-year migration from a decades-old financial management system to a new commercial system, and Appendix D summarizes the work left behind by a long series of administrative restructurings. In the financial management case, the change-management services were made available only for that particular change, so when changes were occasioned by A-76, NIH had to set up a separate “transition office.” Now NIH is considering joining these units into a single one available to serve any changes that come along within the entire agency. The NIH “work left behind” study reinforced this broadened approach to change-management by showing that it was not so much the changes from any single administrative restructuring that was the problem, but the cumulative effect of multiple consolidations in similar timeframes. Much of the workload shift to remaining personnel was legitimate and burdensome, so efforts are being made to accommodate it.

The Panel believes that the Forest Service will find it increasingly important to institutionalize its knowledge and experience with change management to deal with a continuing flow of work on these matters. This institutionalization process should be considered part of the Forest Service’s commitment to continuous improvement.



PANEL AND STAFF

PANEL

**Franklin S. Reeder**, *Chair\**—President, The Reeder Group. Former Director, Office of Administration, The White House. Former positions with the U.S. Office of Management and Budget: Deputy Associate Director for Veterans Affairs and Personnel; Assistant Director for General Management and Deputy Assistant Director; Chief, Information Policy Branch and Deputy Chief; Policy Analyst; Chief, Systems Development Branch. Former Deputy Director, House Information Systems, and Committee Staff, Committee on House Administration, U.S. House of Representatives. Former positions with the U.S. Department of the Treasury and the U.S. Department of Defense focusing on information technology and systems.

**Sharon S. Dawes\***—Positions with the University at Albany, State University of New York: Director, Center for Technology in Government; Associate Professor, Department of Public Administration and Policy; Adjunct Professor, Information Science Doctoral Program. Former positions with the Rockefeller Institute of Government: Executive Director, Forum for Information Resource Management, State of New York; Executive Fellow and Study Director, New York in the Year 2000. Former positions with the New York State Department of Social Services: Associate Commissioner, Division of Income Maintenance; Assistant Director of Management Planning; Project Management Specialist; Data Manager.

**Patrick J. Kelly**—President, PJ Kelly Consulting; Former U.S. Forest Service positions including Assistant Director, National Fire and Aviation Program; Regional Aviation Officer, Pacific Northwest Region; Air Center Manager, Redmond, Oregon.

**Nancy A. Potok\***—Managing Associate, McManis & Monsalve Associates; Acting Director, Economics, Labor and Population Department, National Opinion Research; Acting Vice President and Director, New Immigrant Survey, National Opinion Research Center. Former Principal Associate Director and Chief Financial Officer, Associate Director for Administration/Controller, Bureau of the Census; Deputy Assistant Director for Finance and Budget, Administrative Office of the U.S. Courts; Budget Examiner, Office of Management and Budget; Presidential Management Intern, U.S. Department of Transportation; Staff, Senate Transportation Appropriation Subcommittee.

\* *Academy Fellow*

STAFF

**J. William Gadsby,\*** *Responsible Staff Officer.* Fellow of the Academy and Vice President of Academy Studies. Former Senior Executive Service; Director, Government Business Operations Issues, Federal Management Issues, and Intergovernmental Issues, U.S. General Accounting Office; Assistant Director, Financial Management Branch, U.S. Office of Management and Budget.

**Bruce D. McDowell,\*** *Project Director.* Fellow of the Academy and President, Intergovernmental Management Associates. Has directed ten Academy studies and participated in several others over the past nine years. Former positions with U.S. Advisory Commission on Intergovernmental Relations: Director of Government Policy Research; Executive Assistant to the Executive Director. Former Director, Governmental Studies, National Council on Public Works Improvement. Former positions with the Metropolitan Washington Council of Governments: Director, Regional Management Information Service; Assistant Director, Regional Planning; Director, Program Coordination.

**William E. Damon,** *Senior Project Advisor.* Private consultant. Former Deputy Incident Commander/Database Design and Implementation Specialist/Plans Section Chief, 2005 North Carolina Storm Recovery Incident Command Team. Formerly with the U.S. Forest Service from 1977 to 2005 in a variety of Managerial and Technical Positions including Acting Director of Information Systems for the Forest Service, 1989, Deputy Forest Supervisor, Idaho Panhandle National Forest and Forest Supervisor for the George Washington and Jefferson National Forests.

**Charles V. Hulick,** *Senior Project Advisor.* Private consultant. Has participated in several Academy studies over the past ten years; project lead for *Containing Wildland Fire Costs: Improving Equipment and Services Acquisition.* Former positions at Federal Supply Service, U.S. General Services Administration: Assistant Commissioner for Quality and Contract Management, Assistant Commissioner for Procurement, Director of Acquisition Planning.

**Al Burman,** *President, Jefferson Solutions.* Fellow of the Academy. Has held various policy positions in the Office of Management and Budget (OMB) and the Office of the Secretary of Defense. Former Administrator for Federal Procurement Policy, and Chief of the Air Force Branch in OMB's National Security Division. Various positions in OMB's National Security Division and Special Assistant to the Director of Defense Education in the Office of the Secretary of Defense. Fellow and Member of the Board of Advisors of the National Contract Management Association, Principal of the Council for Excellence in Government, Director of the Procurement Round Table, and an Honorary Member of the National Defense Industrial Association.

**Jennifer Palazzolo,** *Manager, Jefferson Consulting Group.* Expertise in the areas of organizational change management, acquisition reform, and competitive sourcing. Has conducted research and analysis on projects for the Departments of Defense, Navy, Veterans Affairs, and Commerce, as well as the U.S. Agency for International Development, Federal

---

\* *Academy Fellow*

## APPENDIX A

Aviation Administration, General Services Administration, the Department of Energy and Small Business Administration. Ms. Palazzolo has a Master of Public Policy degree from the University of Michigan, and a BA in history and journalism from Purdue University.

**Jose N. Uribe**, *Research Associate*. Former Graduate Research Intern for Georgetown University's President, John J. DeGioia. Former Information Officer at the Baha'i World Center's Office of Social and Economic Development. Master of Public Policy, Georgetown University; B.A. in Economics from McGill University in Montreal, Canada.



**FOREST SERVICE INTERVIEWEES**

Chris Pyron,\* *Deputy Chief, Business Operations*

Jesse King, *Associate Deputy Chief of Business Operations/Chief Financial Officer, and Chair, INFRA Steering Committee*

Joan Golden, *Acting Chief Information Officer*

John King, *Assistant Director of IRM for System Architecture*

Vaughn Stokes, *Director of Engineering, and Member, INFRA Steering Committee*

Chuck Myers, *Regional Forester, Region 8, Former Member, INFRA Steering Committee*

Tah Yang, *INFRA Program Manager*

Michael Cummings, *Software Portfolio Manager, National Forest Systems*

Janet Lockhart, *Branch Director of Acquisition Management for Grants and Agreements*

Teresa Jones, *Grants and Agreements Specialist, Washington Office, USDA FS*

Bill Helin, *Deputy Area Budget Coordinator, Business Operations, USDA FS*

Anne Zimmermann, *Director, Wildlife, Fish, and Rare Plants*

---

\* Retired December 2005



## IMPLEMENTATION OF NIH BUSINESS SYSTEM: KEY LESSONS LEARNED

### EXECUTIVE SUMMARY

The new NIH Business System (NBS) seeks to combine the latest technology with proven best business practices and, as such, represents a fundamental change to NIH's administrative support functions. The Academy has not been involved in NBS implementation and has not reviewed that project. Accordingly, the information presented in this appendix focuses primarily on NBS as it relates to ARAC, especially in terms of lessons about communication and change management.

### NBS Goals and Accomplishments

NIH chose the commercial-off-the-shelf Oracle software package to replace its 20-year-old outmoded Administrative Data Base. The expectation was that the Oracle system would be brought online with minimal revisions. However, because the system did not support government functions as well as originally expected, the timeline for implementation was significantly extended, and the NBS project team put considerable effort into identifying and making necessary modifications to the system.

Largely due to the decision to postpone deployment until the system could be modified and fully tested, the first two of six modules were deployed in September and October 2003, respectively, in accordance with the revised deployment schedule. The NBS Project Office was on track to deploy most of the remaining modules in 2006, but reduced appropriations have delayed scheduled deployment until at least 2007.

### Lessons Demonstrated by the NBS Experience

NBS officials point to two key lessons: (1) do not proceed until you are ready, and (2) an organization cannot have too much communication. An important factor in NBS's progress was the attention paid to communication and change management. The change-management team worked in concert with the technical teams to ensure that change management and "people issues" were considered along with technical ones.

Although deployment of the first two modules was a major accomplishment for the agency, it was not without some problems. The NBS project team has benefited from a formal, self-assessment of its experience with the first two modules. Some of the key lessons learned, and areas where improvements were being made, include:

- Users of the system must understand that they own the system and must be given—and must accept—a role in system design and development.
- Change agents can be used throughout the organization to support transition and ensure information is communicated throughout the agency.
- Training needs to be mandatory and needs to make clear the relationship between the new systems and the old and new business processes.

- System deployment is only the beginning of implementation.

## **INTRODUCTION**

NBS is one of the three major restructuring initiatives ongoing in NIH, along with competitive sourcing activities under the Office of Management and Budget Circular A-76 and ARAC. The purpose of NBS is to enhance NIH's administrative support to its biomedical research mission and to replace aging legacy computer support systems. It seeks to combine the latest technology with proven best business practices and, as such, represents a fundamental change to NIH's administrative support functions.

NIH's experience with ARAC has been tied closely to its experience with NBS. NBS directly relates to four of the eight ARAC functional areas: its new automated systems support (or will support) Acquisition, Facilities, and Finance, as well as the travel administration function of the Grants most efficient organization. More broadly, the concurrent implementation of the three major initiatives has implications for the success of each of them. Finally, the lessons the NBS project team identified in many ways mirror, and confirm, those learned directly from the ARAC experience.

The Academy has not been involved in NBS implementation and has not reviewed that project. So, the information presented in this appendix focuses primarily on NBS as it relates to ARAC, especially in terms of lessons about communication and change management. It is based largely on information obtained anecdotally as the Academy worked with the ARAC initiatives, but also from review of briefing materials and interviews with the Director of the NBS Project Office and the officials responsible for NBS's communication and change-management programs.

## **NBS PROGRESS AND STATUS**

The NBS Project Office was officially established in May of 2001, after almost two years of preparation. During that time, NIH conducted requirements studies and chose the commercial-off-the-shelf Oracle software package to replace the 20-year-old outmoded Administrative Data Base. The expectation was that the Oracle system would be brought online with minimal revisions. NBS has six primary modules: finance/budget, travel, real and personal property, acquisition, supply management, and service and supply fund. The key advantage of the Oracle system is that it integrates these modules and provides superior report-generating capabilities. In addition, technically proficient staff and consultants are more readily available to maintain and operate the new system than the outdated legacy system.

The systems integration contractor was brought on board in early 2001 shortly before the NBS Project Office was established. Under the original deployment schedule, the first modules were to be deployed in late 2002, and all six modules were to be deployed by the middle of 2004. However, the Oracle system did not support government functions as well as originally expected—a lesson many government agencies were learning at the same time. Consequently the timeline for implementation was significantly extended, and the NBS project team put

considerable effort into identifying and making the necessary modifications to the system. New timelines were established, with the first two modules—travel and finance/budget—to be deployed in the fall of 2003, and the others pushed back until 2006 or later. Simultaneously with development of NBS, the NBS Project Office was cooperating with the NIH team working to create a new integrated database—nVision—to replace NIH’s old “data warehouse” (the Automated Data Base). nVision will contain data to support NBS and to provide the basis for periodic and ad hoc reports in support of performance assessment and internal management controls.

***Do not proceed until you are ready.***

Largely due to the decision to postpone deployment until the system could be modified and fully tested, the first two modules were deployed in September and October 2003, respectively, in accordance with the revised deployment schedule. NBS officials pointed to this as their most important overall lesson or best practice, one they found to be echoed over and over again at organizations they looked to as benchmarks: do not proceed until you are ready. And being ready means not only having the software ready, but having the organization ready to accept and use it effectively.

The NBS Project Office was on track toward a goal of deploying three of the remaining modules in 2006, but, because of unexpected reductions in appropriations for fiscal year 2006, they have postponed deployment until at least 2007.

**COMMUNICATION AND CHANGE-MANAGEMENT EFFORTS**

An important factor in NBS’s progress was the extensive attention paid to communication and change management; an explicit change-management effort, with a dedicated core staff, is essential to the success of major systems deployment. A staff of ten (four NIH employees and six contract employees) has supported development and implementation of communication and change-

***...an explicit change-management effort, with a dedicated core staff, is essential to the success of major systems deployment.***

***This change-management team worked in concert with the technical teams to ensure that “people issues” were considered along with technical ones...***

management plans, along with many related analyses and activities. This change-management team worked in concert with the technical teams to ensure that “people issues” were considered along with technical ones, such as data conversion, in designing and deploying the system modules. Their work was consistent with activities and approaches widely recognized as necessary for successfully implementing change, especially in large organizations.

The NBS project team defines change management as an integrated approach to transitioning employees into a new way of accomplishing work. They prepared an extensive change-management plan that involves five inter-related activities:

- **Communications:** The communication plan is directed to all types of stakeholders—keeping them informed, ensuring two-way communication, and modifying the message and approach to the needs of different audiences.
- **Workforce transition:** Key activities include a Critical Implementation Issues Summary and “role-mapping”—to identify the “as is” and “will be” roles of specific positions with regard to system execution.
- **Training:** Training is provided to ensure that staff have the skills necessary to use the system.
- **Evaluation:** Data, customer surveys, and other ongoing assessment tools are used to help determine the success of communications, change management, and workforce preparation.
- **Lessons learned:** A one-time, formal assessment is conducted after the transition to identify improvements needed in the change-management process before the next module is installed.

Some of the key change-management activities performed by the NBS project team were:

- Preparing a stakeholder analysis to identify which employees would be affected and how, and to identify which communication strategies would work best with each group
- Conducting role-mapping to identify how staff functions would change once the new systems were deployed
- Providing extensive training to staff responsible for using the new systems

*The NBS project team benefited from a formal self-assessment of its experience with the first two modules.*

Deployment of the first two modules was a major accomplishment for the agency. But it was not without some problems. The NBS project team benefited from a formal self-assessment of its experience with the first two modules. The following sections describe some of the key changes the

team has made in response to lessons identified from that experience. One major lesson underlies all of these efforts: an organization cannot have too much communication, and leadership needs to play a role in directing that communication.

*...an organization cannot have too much communication...*

### Preparing the Agency for Change

The commercial-off-the-shelf software is designed to encompass best business practices from the business sector. As a result, agency processes must be changed to effectively use the software. This, in turn, often results in significant changes to individuals’ responsibilities. NBS officials believe that the agency as a whole (many in management, as well as staff) did not fully comprehend the process changes that would need to occur. The NBS project team has improved its approach to focus on ensuring that the new system supports process changes that enhance completion of the functional tasks, and on communicating those changes better so they will enjoy greater acceptance.

Stakeholder ownership and input

The NBS project team was seeking to more effectively use stakeholder input to foster ownership by those who will use the system. The team used a wide variety of groups, for example, teams of technical experts, teams focused on processes, and advisory committees of high level Office of the Director (OD) and Institute and Center (IC) officials, to obtain advice from, and to communicate to, the community about NBS decisions. But officials believe more should be done to ensure that the organizations responsible for the functions supported by NBS “take ownership” of the process and system. They have learned that users of the system need to understand that they own the system, and they must be given—and must accept—a role in system design and approval. For future modules, the NBS project team has worked to define better the roles and responsibilities of the “owners” of the system and to obtain and use their input more effectively.

*...users of the system need to understand that they own the system, and they must be given—and must accept—a role in system design and approval.*

One important step to getting offices to take ownership is the creation of an Acceptance Board and Acceptance Team for each functional module, with members representing the OD and IC offices that are responsible for operating and using the system. These groups have been given a role beyond “advising.” The Acceptance Board, among other things, verifies that process designs meet business requirements, approves acceptance criteria, and formally accepts the specific NBS module. The Acceptance Team is comprised of end users who are actively involved in system design, including participating in development and validation of the detailed system design and of test scenarios, and then running acceptance tests. The expectation is twofold that: (1) these, and other steps, will better ensure that the systems and processes work together to support the administrative functions, and (2) these groups will become active change agents supporting, rather than merely acquiescing to, the new systems.

*A formal “acceptance” process is needed to get things right before implementation begins.*

A formal “acceptance” process is needed to get things right before implementation begins. The NBS project team is also working with the owners of the processes and systems to understand existing problems better. Not only will problems in the existing processes (such as bad data and slow input) not be

fixed by implementing new automated systems, but those problems will cause difficulties that may appear to be caused by the new systems. The NBS project team is working with the functional owners of the new modules to identify and correct these problems before new systems are deployed.

Use of change agents

NBS officials believe change agents can be more effectively used to support transitions and ensure that information will be communicated throughout the agency. The responsibilities of the many players involved in the change-management process always included communicating with affected stakeholders and the community as a whole. For the future modules, however,

*...change agents can be more effectively used to support transitions and ensure that information will be communicated throughout the agency.*

Implementation Teams and “IC/OD Advocates,” appointed by IC/OD leaders, will perform system advocacy and serve as points of contact to interface with the NBS project team on activities such as “role mapping” and data conversion. Among other responsibilities, these advocates will be responsible for communicating about NBS through the entire IC/OD. During earlier efforts, the NBS project team learned that internal communications were weak in many ICs, and information did not always get passed down from those involved in NBS to the rest of the organization. As discussed later, the advocates also have a key role in coordinating training.

### Preparing the Staff for Change

Training is a crucial component of change management, ensuring that end users clearly understand what changes are coming and what the changes will mean for them personally. Changes have been made to better ensure that all staff receive needed training. The NBS officials believe staff and IC/OD leadership did not take training seriously enough for the first two modules. One possible factor they cited was, again, the lack of understanding of how much processes would be changed by the new software systems. They also noted that the NBS Project Office did not have the authority to require training or to hold staff accountable for having the necessary training and skills to effectively use the system. This was a problem in the early modules, since many staff were initially unable to run the systems by themselves.

*Training in the new system will be mandatory for anyone who will use it.*

As a result, new requirements have been established for future training efforts. Training in the new system will be mandatory for anyone who will use it. Users will have one opportunity to receive free NBS-provided training, after which their organizations will have to pay for it on a fee-for-service basis.

Also, the IC/OD advocates will be responsible for certifying that their organizations meet minimum conditions for training and implementation, including that the entire organization is properly informed about systems coming online and required training has been received. Any individual not certified as having completed the required training will be barred from using the new system.

Also, the NBS project team’s approach to training was being revised to improve staff members’ understanding of how the new systems relate to changed business processes. Training will put the new systems into a context of the old and the new processes so staff can clearly understand exactly how what they did in the past will change and how the system supports the new approach.

*...training was being revised to improve staff members’ understanding of how the new systems relate to changed business processes.*

### Providing Post-Deployment Support

System deployment is only the beginning of implementation. NBS officials emphasized that their role does not end once the systems are deployed. Among other things, they sponsored post-deployment user meetings and provided post-deployment hands-on help. For example, the NBS project team was expanding the role of Help-Points-of-Contact (HPOCs)—end users who can help as on-site mentors to assist staff to use the new systems effectively. HPOCs also may be

*System deployment is only the beginning of implementation.*

important in identifying modifications necessary to keep or get systems running effectively. These HPOCs will be brought on board earlier and will be more thoroughly trained in their support functions than for the first two modules.

### **Other Changes**

The above sections only briefly highlight the lessons learned and changes being made. The NBS project team was continuing to improve and refine its approach in other ways. Some of the other ongoing efforts include:

- Developing clear role-mapping instructions and starting role-mapping earlier
- Fitting communication methods to the audience, telling each only what it needs to know, when it needs to know it—to avoid information overload and confusion
- Ensuring communication is in “plain language” and as brief as possible, while still getting needed information across
- Considering different training venues, such as on-site in an IC



**UNANTICIPATED SHIFTS IN NIH ADMINISTRATIVE WORKLOADS**

*Technical Paper by the Staff of the*

**NATIONAL ACADEMY OF  
PUBLIC ADMINISTRATION**

*For the Deputy Director for Management,  
National Institutes of Health*

**September 2005**

**UNANTICIPATED SHIFTS IN NIH  
ADMINISTRATIVE WORKLOADS**

**Academy Staff**

**Bruce McDowell**, *Project Director*

**Robert Sauer**, *Study Director*

**Bonnie Malkin**, *Senior Advisor*

**Joseph Mitchell**, *Senior Research Analyst*

**Alejandro Mares**, *Research Associate*

**Martha S. Ditmeyer**, *Senior Administrative Specialist*

**SUMMARY:  
UNANTICIPATED SHIFTS IN NIH ADMINISTRATIVE WORKLOADS**

**ADMINISTRATIVE CHANGES ARE SHIFTING WORK TO ADMINISTRATIVE OFFICERS**

Over the last four years, change has been the order of the day for administrative services at the National Institutes of Health (NIH). It has been precipitated by many factors. Some change is the direct result of NIH initiatives, such as the Director’s Roadmap and the NIH Business System (NBS) initiative. Other change is driven by the President’s Management Agenda (including the A-76 competitive sourcing program), and more is driven by various initiatives under the “One HHS” initiative that included consolidation of many administrative services. The varied purposes of these changes included the desire to shift resources from administration to science, improve efficiency and effectiveness, and, in some cases, establish greater oversight in functions with perceived problems.

These changes are touching everyone working at NIH. However, one group was thought to be affected more than others—the Administrative Officers (AOs). So, it was not surprising when a group of AOs suggested to the NIH Deputy Director for Management (DDM) that there had been a dramatic, cumulative impact on the AOs as a result of all of the administrative changes that were occurring. The demands being placed on them had increased significantly.

The DDM realized there had not been any systematic examination of these impacts, and asked the National Academy of Public Administration (the Academy) to examine the impact of the administrative changes on the AOs, including:

- An inventory of the changes that have increased AO workloads
- A listing of specific tasks for each of these change areas
- An indication of how these new tasks have changed the qualifications for the AO positions
- An indication of how the AOs were coping with the added duties

**PURPOSE OF THIS REPORT**

This report describes a survey conducted in response to the AOs’ request to find out more about the cumulative effects of administrative changes on their workloads. It also describes a supplemental survey of executive officers (EOs) and science directors (SDs) in the 27 individual Institutes and Centers (ICs) that constitute NIH. The EOs and SDs do some similar tasks to the AOs, who report to them. So, EOs and SDs are exposed to many of the same workload shifts that affect AOs.

## **ADMINISTRATIVE OFFICERS LINK SCIENTISTS TO ADMINISTRATIVE SERVICES**

At the NIH, AOs (GS 341 job series) are the primary interface between the scientific staff of the Institutes and Centers (ICs) and NIH administrative specialists—human resources, Equal Employment Opportunity (EEO), facilities management, budget, grants, contracts, and others—who have authority for each of the areas of administration.

To understand this essential nexus between science and administration, it is important to understand the basic role of the AO at NIH. The agency attracts high quality medical and scientific staff to carry out its mission through world-class intramural and extramural research programs. To meet these goals, 28,000 people earn their living at NIH on any given day. Approximately 65 percent are regular federal employees and 35 percent are contract employees and numerous other categories of non-FTE employment, including visiting fellows. These people carry out their missions in millions of square feet of laboratory and office space, and they require various support services to successfully contribute their expertise to NIH research goals.

Support for NIH workers is provided by administrative specialists who are experts in their field. In this environment, expert medical and scientific staff must work with experts in administrative disciplines to purchase supplies, promote employees, renovate space, complete travel expense reimbursement vouchers, and perform other administrative tasks.

The AO position evolved to support mission-critical scientific tasks and connect scientific experts to administrative experts. The fundamental responsibility of an AO is to bridge the needs of their organizations with the legal and procedural administrative requirements of laws and regulations, and to help scientists navigate the bureaucracy to implement their mission in a timely manner.

The AO's role varies depending on whether the AO is serving an intramural or an extramural program, a large or small IC, or some other constituency. AO roles also change depending on the "on-site" availability of the administrative specialists who have authority to provide various administrative services. When the HR functions were decentralized to the ICs, and the ICs could staff that function to meet their own needs, the central HR responsibilities and those of the AOs were diminished. The AO's HR role ebbed and flowed, depending on a variety of factors mentioned above. The one constant, however, is that when something non-scientific needs to be accomplished and no one knows where to turn, they call an AO. Most AOs have earned a reputation for their ability to make things happen. The AO community has become the essential lynchpin in moving the NIH mission forward, regardless of whatever administrative changes have occurred.

## **ADMINISTRATIVE AREAS WHERE WORKLOADS ARE SHIFTING**

The Academy worked with the Co-Chairs of the Intramural AO (IAO) group and the Extramural AO (EAO) group (the Co-Chairs) to plan and implement this effort. The group identified 18 administrative areas in which AO workloads had changed or are anticipated to change. Brief summaries of the 18 areas are presented in alphabetical order in Box 1.

**Box 1: Administrative Areas in Which Workloads Are Shifting**

- **A-76 MEO (DEAS):** implementing the most efficient organization (MEO) that was established to handle the receipt and processing of research grant applications following an OMB Circular A-76 competition.
- **A-76 Studies:** the identification of all functions and individuals associated with the functions considered to be subject to the A-76 competition, development and pursuit of competitive proposals, and the implementation and maintenance of the Commercial Activities Tracking System (CATS) inventory.
- **Acquisitions:** all activities related to the purchase of supplies, equipment, and services, e.g., procurement, use of purchase cards, etc.
- **Budget—administration:** all of the administrative work typical of a budget office.
- **Budget—new systems:** learning and using the new automated systems supporting the budget function.
- **Director’s Roadmap:** a variety of new budget formulation and execution responsibilities associated with the crosscutting research mission areas identified by the NIH Director’s strategy.
- **EEO:** the functions left behind in the ICs after EEO staff and functions were consolidated into a central office.
- **Ethics:** the increased oversight on ethics-related issues at NIH to tighten up compliance and reduce abuses of the rules.
- **Finance:** most of the transactional processing of, and accounting for, disbursements of funds using new software systems.
- **HR new and frequently changing administrative processes and procedures** related to the review and approval of GS 14 and 15 positions, advertising vacancies, changing Title 42 pay settings, and other matters.
- **HR new software:** the six new HR related systems introduced NIH-wide over the past few years.
- **HR work returned without resources:** the work, both HR related and non-HR related that the HR specialists used to handle in the ICs but no longer perform in the consolidated organization.
- **Visiting Program:** the HR support services for foreign scientists with five years or fewer of post-doctoral research experience.
- **Information Technology:** a cross-cutting area that includes all of the IT consolidation efforts implemented across NIH, such as help desks, e-mail systems, and network monitoring.
- **Management Controls:** a cross-cutting area covering new controls that NIH and the Department are imposing to increase oversight of administrative functions and reduce losses and risks.
- **Space Management:** the work associated with leasing, managing, and renovating space.
- **Travel—administrative clearances:** the work surrounding additional clearance requirements imposed as a result of terrorism and other concerns.
- **Travel new systems (GELCO):** learning and using the automated GELCO system for the preparation and approval of travel orders and vouchers.

## **DESIGN OF THE TWO SURVEYS**

Because so many of the AOs were potentially affected by these administrative changes, the Co-Chairs and the Academy agreed to survey everyone at NIH (other than executive officers) classified in the GS 341 series. In addition, the Academy added others from the NIH community who were doing AO work, but who were not classified in the GS 341 series. The total population surveyed was 440 employees. This is believed to account for all NIH staff engaged in administrative officer work at that time. Since this survey covered the whole universe, no statistical analysis of sampling error was needed.

The survey instrument, designed specifically for this task, was made available to this group online to get their perspectives on the areas increasing their workload, the coping techniques they used to deal with the increased work, the specific tasks they are responsible for, and the impact these changes have had on the qualifications needed to perform their jobs. The survey also asked for demographic information regarding the work environment of the responding AO—including the IC they work in, mission of the areas they service, size of population served, and years of experience—to determine if these demographics affected the responses to the survey questions.

The respondents were also given three open-ended questions:

- Please describe how the qualifications for your job have changed.
- Please explain the effect each of these areas (the top five) has had on your workload.
- Do you have any suggestions for how to reduce your workload?

A similar, but somewhat shorter, survey was designed in consultation with representatives of EOs and SDs, and was administered to all 27 of both types of these officers in the ICs shortly after the AO survey was completed. Results of the EO/SD survey are presented following results of the AO survey.

## **AO SURVEY RESPONSE RATES WERE HIGH AND REPRESENTATIVE**

The 70-percent response rate to the AO survey was outstanding. A brief summary of the major demographic findings follows:

- The scope of AO responsibilities varies, depending on the ICs in which the AO works.
- The areas of work that respondents most frequently identified as one of their responsibilities are: HR work returned, new HR administrative procedures, new HR software, new travel system, budget administration, budget systems, acquisitions, and new travel administrative clearances.
- The areas of work that respondents *most* frequently identified as “not one of their responsibilities” are: Director’s Roadmap (possibly impacting only higher level staff), A-

## APPENDIX D

76 MEO (clearly focused on the extramural staff), A-76 studies (just getting started in certain areas), and EEO (traditionally not an administrative officer function, although this may change as a result of the recent consolidation of the EEO staffs being implemented at the time of the survey).

- All ICs except one are definitely represented in the response pool, but 11 respondents failed to identify their IC so it is possible all are included.
- The response rate for ICs closely parallels their representation in the NIH AO population.
- The majority of respondents identified themselves as AOs (58 percent), followed by Supervisory AOs (19 percent), and Principal AOs (12 percent). The remaining 11 percent identified themselves as “other,” reporting a variety of different organizational titles: e.g., management analyst, deputy ARC manager, deputy executive officer, etc.
- Fifty-nine percent of the respondents worked in an intramural environment, 43 percent in an extramural environment, and 13 percent in the Office of the Director (OD). (Forty percent of the respondents worked in more than one environment, which accounts for the total equaling more than 100 percent.)
- AOs reported serving anywhere from 25 or fewer people (4.6 percent) to more than 500 (3.5 percent). The majority of respondents (51.4 percent) with the title of administrative officer served from 26 to 100 people.
- On average, IAOs serve more people (76-100) than the EAOs (51-75). The median response for IAOs also was higher (101-125) than EAOs (76-100).
- The AO community is a very experienced workforce. Eighty-six percent of the AO community has a minimum of 6 years of administrative experience, and 27 percent have more than 16 years of experience.
- As a group, the Principal AOs appear to be the most experienced in the AO community (89.1 percent have more than 11 years of administrative experience compared with 75 percent of the Supervisory AOs and 68.8 percent of the AOs).

Taken together, this information suggests that the survey response rate is not only representative of the IC population of AOs, it is also representative of all of the major factors that together distinguish the various AO working environments. The data suggest that the AOs reside in a variety of work environments, so care must be taken not to over-generalize from the information presented in this report. Therefore, most of the data collected are examined against these demographic variables to determine how, if at all, the variables influence AO responses to the survey.

## AO SURVEY FINDINGS

The survey responses provided ample information to answer the DDM's questions concerning: areas causing increasing workload, coping techniques being used, specific tasks involved, and impact on qualifications. The open-ended question responses provided a wealth of additional information about impacts on programs and people, and suggestions for improvements. A summary of survey results follows.

### Administrative Areas Causing Most Additional Work for AOs

- **The survey confirmed a significant shift in workload burden to the AO community at NIH as a direct result of the major administrative changes that have occurred in the past few years. AO workloads have increased and the nature of the work, as well as the qualifications to perform it successfully, have changed.**
- All 18 of the administrative areas have caused increases in workload to some positions in the AO community.
- The number of AOs reporting workload increases varies by administrative area, from 45 (Director's Roadmap) to 221 (HR work returned to the IC).
- The mode (most frequently occurring) responses revealed workloads were increasing in nine administrative areas:
  1. A-76 MEO
  2. A-76 studies
  3. Ethics
  4. HR returned to IC without resources
  5. HR new software
  6. HR new administrative processes
  7. Management controls
  8. Travel new systems
  9. Travel administrative clearance
- With the exception of the moderate effects described below, the demographic characteristics had little effect on how the respondents answered the "increased workload" question.
  - The institute that the respondents serve had a moderate effect on their assessment of workload across all nine areas.
  - The mission a respondent serves (intramural, extramural, Office of the Director, or mixed) had a moderate effect on their assessment of A-76 MEO workload.
  - Size of the population served and years of administrative experience at NIH both had a moderate effect on respondents' assessment of ethics workload.

- Organizational role (level of job responsibility) had a moderate effect on HR work returned to the IC and new travel systems.
- When identifying the areas most responsible for causing an increase in workload, the AOs, the Principal AOs, and the Supervisory AOs all agreed on the top four sources: HR work returned to the ICs; new HR systems, new HR procedures and processes, and new travel systems.
- Ethics was the next highest area identified by the Principal AOs and the Supervisory AOs, while “travel administrative clearances” was the next highest for the AOs.
- Sixty-one percent of EAOs reported the A-76 MEO as contributing to their increased workload, compared to only 5.2 percent of the IAOs.
- The mode response of “workload stayed the same” was found in eight areas:
  1. Acquisition
  2. Budget administration
  3. Budget new systems
  4. EEO
  5. Finance
  6. Visiting program
  7. Information Technology
  8. Space management
- Differences in demographics had some “moderate” or less significant effects on responses in these eight areas, as presented in Appendix D.

The timing of this survey likely contributed to the survey responses in several areas. The fact that several of the administrative change areas were only recently accomplished (EEO and IT) and several more are scheduled to be implemented in the near future (acquisitions, budget—new systems (UFMS), space management (MEO implementation)), suggest that the full impact of these changes on the AO community has yet to occur.

### **Coping Techniques Being Used**

Respondents who indicated there had been increases in workload were asked to indicate how they were coping with this added burden, selecting one or more from the following: compensated overtime, uncompensated overtime, postponing other work, lowering the quality of other work, reassigning work to others, absorbing the additional work by improving their own efficiency, and “other” (the respondent was then asked to specify what these were). Responses indicate that:

- **The two top mechanisms reported for dealing with additional work are “postponing other work” and “uncompensated overtime.”**

- All of the other coping mechanisms are reported being used throughout the ICs, but to a lesser extent.
- The least-reported coping mechanism is “compensated overtime.”

When examining the responses across all 18 of the change areas, similar patterns emerge:

- The most prevalent coping mechanisms reported by AOs for all 18 administrative areas were “postponing other work” and “uncompensated overtime.”
- The proportion of respondents identifying “eliminate/delay other work” ranged from 38 percent (Director’s Roadmap) to 61 percent (for new automated systems in both HR and Travel.)
- The proportion of respondents identifying “uncompensated overtime” ranged from 35 percent (IT) to 86 percent (HR work returned to the ICs).
- Compensated overtime is the least often used technique, with the range among administrative areas from zero for IT to 7.4 percent for acquisitions.

### **Impact of New Work on AO Qualifications**

The majority of respondents (55.6 percent) said that the additional workload had an impact on the qualifications for their job; 29.6 percent said it did not, and 14.8 percent did not answer. Of those who responded to the question, 65 percent believed the changes have impacted job qualifications; 35 percent believed they had not.

### **Responses to Open-ended Questions Expand on Survey Findings**

The open-ended questions allowed survey respondents to provide comments and details to identify the specific added tasks for each of the administrative areas reported to have the most impact on increasing workload. These areas include: HR work returned to the ICs; HR new automated systems; HR new administrative procedures; travel new systems; travel administrative clearances; ethics; and A-76 MEO (DEAS). The detailed reports provided in Appendix C [of the *Administrative Workloads* report] include brief summaries of the voluminous comments received from the survey respondents—including those which identified the new specific tasks involved, some of the perceived effects of this added burden, and some suggestions for dealing with the added workloads.

### **Four Main Patterns Provide Insight into Impact of Change on AOs**

The Academy study team observed four main patterns with some possible cause-and-effect relationships between types of changes and the types of potential impacts on the AO community. These four patterns, which are discussed below, provide insights concerning the nature of administrative changes and how they have or may affect the AO community.

Consolidations: The NIH consolidations (HR work returned, IT, EEO, DEAS, and space management) have or may in the future take administrative specialists out of the ICs, making them less accessible to the AOs or other IC staff (due in some cases to their new location), and may result in reduced numbers of specialists. AOs report that these consolidations have:

- Blurred the division of responsibilities between the ICs and central offices.
- Caused AOs to take on administrative tasks left behind when administrative specialists were relocated.
- Left unclear, in many cases, how and by whom the work should be handled.
- Added to confusion by seldom communicating a systematic and clear message about division of responsibilities in the consolidated organizations and the ICs.

These reported effects appear to have occurred with the HR and DEAS consolidation efforts. The EEO consolidation was just beginning at the time of this study and there had been serious attempts to ensure that some of the difficulties of the HR and DEAS consolidations were avoided. (Note: At the time of this review the Acquisitions consolidation was still in the planning stages and the management involved was also attempting to avoid these aspects of the prior consolidations.)

New Administrative Systems: In a short period of time, numerous new automated systems—such as Travel, HR, Grant Processing, and Budget—were implemented throughout NIH. The AOs report that many of the new systems increased their workload as well as that of the scientific and program staff. From their perspective, implementation would proceed more smoothly if AOs and/or their supervisors were more involved in the design of the systems and if more rigorous testing were performed prior to deployment. In the AOs’ opinion, this would minimize the amount of time needed to master the use of the new programs.

Increased Oversight and Control, and New Top-Down Initiatives: The new initiatives and requirements introduced over the last few years are reported by AOs to reflect a top-down management philosophy that stresses efficiency, accountability, and quick results. Eight of the 18 administrative areas covered in this report fell into this category, including: management controls, travel clearances, ethics, HR visiting program, HR new procedures, finance, A-76 studies, and the Director’s Roadmap. To the AOs, these areas represent new, additional work that differs from the added work of consolidations and new administrative systems—which simply represented different ways of doing prior work. In these new areas, the work itself is new. For example, the nature of the clearance requirements for the visiting program was changed significantly as a result of the 9/11/01 terrorist attacks. The requirements for DHHS clearances of both domestic and international travel have added more reviews throughout NIH and at the DHHS level, as part of the “One HHS” initiative.

With many of these changes, the AO community has been called on to:

- Research and learn new rules, regulations, and policies that have been implemented
- Get involved in NIH mission/program work in the areas of ethics, the Director's Roadmap, and A-76 studies
- Become knowledgeable about the legal and policy requirements and the programmatic implications of approval and disapproval decisions, so they can advise program officials
- Provide management analysis, including collecting data, analyzing it, and reporting their findings to higher authorities

Crosscutting Impacts on Managerial Responsibilities and Qualifications: The AOs also report assuming additional managerial and leadership tasks along with new managerial skills needed to “make things happen,” such as:

- Negotiating for administrative services for their IC with staff in other organizations not reporting to their IC
- Multi-tasking and often juggling competing program priorities
- Trying to do more with less
- Helping to manage conflicts that arise in their work environment
- Handling aspects of the contracting process, including assuming project officer responsibilities for contract services to assist the ICs

To cope with these new tasks, the AOs identified additional qualifications that they believe are now necessary to successfully accomplish AO work. These were described by AO comments such as:

- To be an AO you must have many traits to succeed: Patience; versatility; knowledge of everything, or at least know where you can go to get the information; and the ability to create a network of resources, analyze information and interpret policy, and be detail-oriented and a forward positive thinker.
- We must continually use analytical, organizational, and managerial skills to handle situations that are much more complex.
- We have to have greater expertise in connecting the dots to make things happen, and there is an increased need for communication skills and flexibility.

- Due to increased responsibilities and the need to multi-task at a faster pace, the position of AO requires someone who can quickly grasp new policies and procedures and integrate them into his or her daily work schedule.
- If you are not hugely persistent or intuitive, it is easy to accept an incorrect response and proceed in the wrong way.

The Academy study team recognizes that a much more detailed analysis would be necessary to make conclusive findings in this area. It is instructive however, to recognize and attempt to incorporate this kind of information as feedback on past changes as well as for future decisions based on the widespread input received in this survey.

### **A SUPPLEMENTAL SURVEY VALIDATES THE AO SURVEY**

The responses from the supplemental EO/SD survey strongly support and expand on those from the AO survey. The EOs/SDs provided an IC-wide perspective on which IC staff have had to assume increased work and how the administrative changes have otherwise affected the ICs. They also confirmed AO responses concerning coping techniques.

- The EOs/SDs reported that the AO workload has increased more than any other positions in the ICs. In addition, out of the four top administrative areas that EOs/SDs reported as having increased workload the most in ICs, they identified AOs as being the most affected in three of the areas – HR work returned, HR new software, and A-76 MEO – and as the third most impacted job series in the fourth area – ethics.
- The EOs/SDs also reported that the administrative changes have slowed down and lowered the quality of services, damaged staff morale, worsened customer service, and made management more difficult.
- The administrative areas that EOs/SDs most frequently identified as having negative effects on the ICs are HR work returned, HR new software, ethics, A-76 MEO, and A-76 studies. Not surprisingly, these are the areas that EOs/SDs also ranked highest in increasing workload in their ICs.
- Few respondents reported positive effects of any of the administrative changes.
- The EOs/SDs also reported information about other groups of employees who are taking on added workloads in these administrative areas. The respondents most frequently identified the following groups of employees as having their workload increased: EOs, supervisors (non-scientific), supervisors (scientific), support staff, extramural scientists, and SDs. Due to the broad impact of all ten administrative areas on these groups and the frequency of being identified, these are likely the types of employees, after the AOs, who have assumed the most work in these administrative areas.

## SUGGESTIONS FOR EASING THE IMPACTS OF NEW WORK

Responses from both surveys suggest that the AOs are the NIH employees who have been most impacted by the increased workload in the ICs. The Academy team found a doubling of the rate of turnover of AOs leaving NIH through retirements or otherwise during the height of all these administrative changes.

The AOs also offered positive suggestions for change, including the following general suggestions about planning for administrative changes:

- There should be a deliberate and thorough review of the current division of administrative responsibilities and the new division of responsibilities. This review should produce clear instructions and guidance on how things will be different, including processes, procedures, and staff responsibilities. Representatives of all affected staff should contribute to this review. When staff receive additional duties, it should be clear which duties they are no longer expected to do or can give lower priority.
- When technically feasible, new administrative programs, processes, and systems should be pilot-tested at least once prior to full implementation, and more times if kinks need to be worked out. This will provide an opportunity to work out problems and make revisions to ensure the end goal of the change is achieved.
- All staff affected by the changes should receive appropriate and timely training. In addition, it is important that they have the necessary tools to implement the change, including instructions, guidance, regulations, and forms.
- A complete assessment of the qualifications needed to assume new responsibilities should be carried out prior to making changes.
- Management should ensure that the administrative changes are clearly communicated to all affected staff.

The respondents recognized that the level of advanced planning that they recommend will require additional resources. While this report is not intended to quantify the impacts of these changes, such quantifications clearly will be needed in the future. The Academy study team suggests the following two examples of potential starting points for future resource analysis.

1. **The new consolidated HR environment.** According to data collected for a separate Academy study, NIH employed approximately 450 FTEs in the ICs and in the OD to provide HR services before the consolidation. Since consolidation, most of those same functions and services are being performed in the Office of Human Resources (OHR) under a DHHS-imposed FTE ceiling of 256 FTEs. This significant reduction in HR personnel may be related to the fact that the survey respondents identified three HR change areas among the top five areas that have increased their workloads.

- 2. Relationship of the growing service area for AOs.** The second area is the growth in the overall NIH employee population. It is important to recognize that the AO community provides services and support to everyone in its work area, including FTE employees as well as non-FTE employees and contractors. The NIH census indicates that the growth in the number of contract employees grew from 3,348 to 5,978 (a 79 percent increase), a far greater growth in service population than that of the general NIH workforce.

This rate of growth for population served, coupled with the added workloads from the administrative changes, has had a significant impact on AO resources. The degree of impact, however, may vary by IC and is something to consider.

## **ACADEMY OBSERVATIONS**

As a result of this study, the Academy staff study team offers the following observations.

- Due to the nature of the AO position in ICs, it is reasonable to predict that whenever there is a significant change in administrative practice, policy, or procedure, the AO community resources will be impacted.
- Change designed to improve efficiency and reduce cost often increases costs during the transition process.
- It would appear that the volume of change that has occurred in administrative areas at NIH in such a short period of time may have exceeded the NIH and AO community's capacity to absorb the changes effectively. The impact may be adversely affecting the NIH Mission.
- Better planning and preparation could improve the implementation and acceptance of future administrative changes.
- For future changes in NIH administrative programs, transitions would be smoother and more likely to meet the transition goals if there is a systematic pre-transition review.