

**Center for Information Technology
FY 2002-2003 Business Plan and Strategic Vision**

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Center for Information Technology

FY 2002-2003 Business Plan and Strategic Vision

Introduction and Overview

The NIH Chief Information Officer (CIO) is responsible for the central management of information technology at the NIH. By working together to lay the groundwork for corporate IT and making possible the smooth transition of technology from one generation to the next, the CIO, the Institute and Center CIOs and the CIT serve important roles as the NIH continues to uncover new knowledge to help achieve better health for everyone. This corporate vision of the future sets and builds upon a baseline for ensuring that the NIH's information technology supports and enhances those functions that are necessary to meet the NIH mission.

The historical budget mechanisms at the NIH, the Service and Supply Fund (SSF) and the Management Fund (MF), were created to fund two different types of operations. The corporate vision for IT at NIH requires funding mechanisms that can reflect the dynamic changes in IT—for example, the migration to distributed computing and advances in networking—and is based on several operating principles.

Operating Principles
Activities such as mandated policy functions, CIT management and overhead costs, research and development (R&D) and pre-production services will be paid for through the MF. The SSF is primarily used for production-level services and for those needs the ICs choose to fill through CIT.
SSF activities should be the major component of CIT charges as compared to MF.
There are three mandated SSF activities: telecommunications, networking, and ADB/Data Warehouse functions. The Data Center, although mandated by the DHHS 1996 Data Center consolidation initiative, is self-supporting via service center operations.
SSF charges for production activities should accurately reflect their cost drivers. MF should not be used to supplement production services.
MF start-up costs for R&D activities should move to fee-for-service/cost recovery when services become production level.
Currently the NIH census is used when SSF assessments are made, unless there are more appropriate and practical measures.
Assessed activities will be migrated to a unit-pricing model as part of a long-term business strategy.

In line with these operating principles, CIT's budget request is divided into two categories:

- 1) SSF mandated services (assessments) and MF activities, and
- 2) SSF service center activities.

Mandated activities are those activities that the Center must do in order to fulfill CIO/NIH IT requirements. Service center activities are those activities for which the individual ICs choose to engage CIT as the service provider.

Background

In March 1998, NIH's first CIO was appointed to provide central leadership, policy, and guidance for information technology (IT) and related functions. At the same time, CIT was established by merging the Division of Computer Research and Technology, the Office of Information Resources Management/OD, and the Office of Telecommunications Management/ORS. CIT's mission is to provide, coordinate, and manage information technology and to advance computational bioscience at the NIH.

The CIO's overarching goals for IT at NIH are two-fold:

- **Strengthening IT management across the NIH.**
- **Providing stewardship of enterprise IT applications at the NIH.**

CIT aims to support these goals by providing every NIH researcher and administrator easy access to the information technology tools, resources and education they need to do their work at any time. In addition, the Center's long-term objectives are:

- **Providing a utility-like IT infrastructure that is reliable, secure, ubiquitous and economical.**
- **Advancing computational bioscience for the NIH Intramural Research Program.**

CIT provides a vast array of IT services to the NIH community in support of these goals and objectives: networking, data center computing, enterprise applications development and support, computational bioscience and scientific computing, telecommunications, user support and training, among others. CIT also provides staff support to the CIO, and performs the policy and oversight functions required by that role. CIT finances these services through the NIH Service and Supply Fund (SSF) and Management Fund (MF). Within the SSF, CIT is mandated to provide certain services to NIH and other customers, while others are completely fee-for-service and are only charged to customers upon their initiation of the service. This document provides further detail on the diversity and the magnitude of our services.

Strategic Planning

Working together, CIT's five divisions—the Division of Computational Bioscience, the Division of Computer System Services, the Division of Customer Support, the Division of Enterprise and Custom Applications, and the Division of Network Systems and Telecommunications—and the Office of the Deputy CIO help to achieve the Center's broader goals.

CIT develops and provides the NIH backbone computer networking facilities, and supports, guides, and assists other NIH components in local area networking. The Center provides professional programming services and computational and data processing facilities to meet NIH program needs; operates and maintains the NIH Computer Center; designs and develops software; and provides extensive customer support, training courses and seminars, and documentation for computer and network users. The Center serves as the central systems analysis, design, and programming resource for data processing and database projects relating to scientific, technical, management, and administrative data. Guidance and support are provided to scientists and administrators throughout NIH in the effective use of personal computers (PCs), workstations, local area networks (LANs), and associated automation technologies. CIT helps to coordinate, integrate, and standardize the vast array of computer services available throughout all of the organizations comprising NIH. The Center also serves as a scientific and technological resource for other parts of the Department of Health and Human Services (DHHS) and for other Federal organizations with biomedical, statistical, and administrative computing needs.

The Center promotes the application of High-Performance Computing and Communication to biomedical problems, including image processing, structural biology, protein folding, database searching, gene linkage analysis, and computational chemistry, using some of the most advanced, massively parallel scalable computing. Computing technology is applied to research problems involving macromolecular structure representation and modeling, and protein and DNA sequence analysis.

The CIT staff develops computer-based systems for laboratory and clinical applications, conducts computer science and engineering research and development, and consults and collaborates in computational, statistical, and mathematical aspects of data analysis. They support software systems to perform these analyses, and conduct research in statistics and mathematics with applications to biomedicine.

As part of a separate and distinct role, the Center supports staff in the Office of the Deputy Chief Information Officer (ODCIO) in order to develop a strong program for the management of NIH's IT resources that meets the mission of NIH, the needs of the user community, and Federal requirements. This includes putting processes in place to ensure the confidentiality, integrity, and availability of automated information; ensure that NIH's IT management program remains current with Federal requirements; and develop policies and guidelines that are responsive to the NIH mission.

Over the past year, CIT senior management held several strategic assessments to examine the Center's programs, align them with NIH's needs and CIO/Department mandates, and ensure that the Center offers superior service to its customers. Additionally, the Center engaged the services

of a consulting firm to provide an analysis of our business and cost recovery practices. We are currently following this analysis with benchmarking and unit pricing reviews of several major program areas.

Areas of Emphasis

The Director, CIT, has outlined the following areas as critical areas of emphasis if NIH is to continue enhancing its management of IT. The emphasis placed on these activities does not necessarily lessen the importance of other activities that are core to the CIT mission. Targeted funding of these priorities will increase the rate at which the long-term vision of corporate IT at NIH becomes a reality.

Areas of Emphasis
<p>Infrastructure. One of the highest priorities for the Director, CIT, is the creation, support, and continuous modernization of the Information Technology “public utility.” This can best be accomplished by providing secure networking and telecommunications connections and support for all staff at the NIH; encouraging the use of a suite of standard desktop software; providing a corporate e-mail platform across the NIH; providing a modern, cost-effective data center to meet the NIH Enterprise needs, and expanding network capabilities to take advantage of new technologies (e.g., video to the desktop).</p>
<p>Security. Advances in IT are also leading to increased computer security vulnerabilities and incidents. ODCIO ensures that security policies are in place and that assistance is available so that CIT and the ICs can respond to computer security threats. CIT systems and security administrators implement and enforce security policies and practices for the network and for supported computing systems.</p>
<p>Enterprise IT Systems Partnerships. Enterprise systems are IT systems with a broadly based magnitude or influence, and are expected to be used widely. They are typically funded centrally through funds assessed from the ICs. NIH has three system areas: administrative systems, grants management systems, and clinical information systems. CIT partners with the functional managers of these systems, taking an important leadership role to enhance and standardize the process by which enterprise systems are developed, supported, and maintained at NIH.</p>
<p>CIT Relocation. CIT received initial funds in FY2001 for relocation and consolidation in an off-campus site. For FY2002, additional funds are necessary to implement the planned relocation to the Fernwood Building. The dual advantages of the move are the synergy of working relationships among co-located CIT staff and the freeing of valuable space for the Intramural Research Program (IRP) to allow greater co-location of computational bioscience activity on campus. During this first phase, the CIT Division of Computational Bioscience will remain on-campus due to its need for close collaboration with the IRP. The Data Center will remain in the Building 12 complex for now, with possible relocation considered for FY2003-04.</p>

Sources of Funds

CIT operates within the authority of two separate funds: the NIH Service and Supply Fund (SSF) and the Management Fund (MF).

The SSF, a no-year revolving working capital fund, is primarily used for production-level services. Charges are allocated to users in two ways: usage-based services and assessment-based services. Some examples of CIT usage-based services are:

- Data Center (e.g., mainframe computing, database support, and application and database servers)
- Applications Development (e.g., programming services, applications development and support)
- User Support Services (e.g., specialized IT support; Software Distribution Project).

CIT has three assessed activities within the SSF, all of which are mandated activities and all of which are distributed according to a surrogate for usage:

- Network (e.g., security, design and maintain infrastructure), distributed by census
- Telecommunications (e.g., infrastructure management, telecommunication services), distributed by the number of telephone lines per IC
- ADB/Data Warehouse, distributed in equal parts—half by census and half by the number of documents processed.

The MF is used for mandated activities such as policy functions, CIT management and overhead costs, R&D and pre-production services, and services that benefit the broad community. Those CIT services funded by the MF include:

- Computational Bioscience (e.g., molecular biology, biostatistical analysis and biomedical imaging)
- Office of the Deputy CIO (e.g., investment review, security, IT policy)
- Scientific Computing Services (e.g., Helix, high performance computing)
- Overhead (e.g., CIT management, rent, utilities, centrally funded projects).

Budget Plans

As in the past, CIT's business plan addresses SSF assessments, SSF fee-based services, and MF separately. The FY2002 and FY2003 proposed budgets are developed in accordance with the Funding Advisory Review Board (FARB) guidance. The FY2002 base level makes adjustments to the FY2001 budget for non-recurring expenditures and indexed costs such as personnel and on-going contract support. In addition to the base level, one or more increment levels are given, reflecting requests for funding in excess of base, arranged in order of priority. *Increment One generally reflects expenses or improvements that are essential to sustain current service levels, address CIT's role in attaining success in new enterprise system development, or address administrative or legislative mandates. Lower priority increments deal with meeting increasing user expectations and enabling NIH to take advantage of advancing technology.*

FY 2002 Budget Plan

SSF Assessed Activity

The total CIT SSF Assessment request is \$43 million at the FY2002 Base level, \$47 million at the Increment One level, \$48 million at the Increment Two level, and \$48 at the Increment Three level. Due to increasing use of IT resources by the NIH community, funding at Increment One is essential to sustain current service levels. Highlighted below are the activities CIT plans to undertake at each funding level.

SSF Assessed Activity FY2002 Base Funding Level
At the FY2002 Base level CIT would maintain its current level of operations, with no provision for increased capacity to sustain service levels in the face of escalating usage. Also there would be no provision for new functionality or growth in services or support. <p style="text-align: right;">\$43,200,343</p>

SSF Assessed Activity FY2002 Increment 1 Funding Level
<ul style="list-style-type: none">• Expand capacity of the Internet connection and NIHnet backbone to handle the 30% per year growth in utilization. This will include upgrading the NIHnet backbone, increasing Internet access capacity, and providing Virtual Private Network capability to accommodate high speed access from remote locations, extending network access and dial tone to newly occupied buildings.• Aggressively increase network security capabilities to keep pace with the greatly increasing number and severity of virus and intrusion threats. This includes purchase, installation and customization of a tool to correlate attacks originating from multiple sources i.e. real secure, virus wall, firewalls, and security scanners. These attacks are currently spread across all intrusion detection sources.• Fund telecommunications and network infrastructure to extend network access and dial tone to newly occupied buildings, to accommodate NIH growth and churn, and to keep pace with campus building construction and with relocation of NIH staff to other Montgomery County sites.• Provide fault tolerance and increased storage capacity for the Central Email Service thereby ensuring the level of reliability reflective of NIH's increasing reliance on email for the conduct of business.• Implement and populate the network and telecommunications infrastructure database developed in FY2001 to enable effective maintenance, management, and tracking of network and telecommunications cable and fiber. <p>Increment One Cost: \$3,560,000 Cumulative Cost: \$46,760,343</p>

**SSF Assessed Activity
FY2002 Increment 2 Funding Level**

- Devise a wireless networking strategy across NIH that complies with established standards. Conduct a pilot project oriented toward giving NIH an integrated NIH-wide wireless data network. Conduct a pilot project leading to a campus-wide wireless voice infrastructure that integrates cell and desk telephone service, allowing users a single telephone number for both telephones and unlimited use of the cell telephone at a flat rate in the coverage area.
- Expand Central Email Service to accommodate rapidly increasing reliance on wireless (Blackberry) email services, and to add functionality to incorporate new online conferencing and secure instant messaging services.
- Enhance CIT Customer Services across all service areas to accommodate expanding services and increased user base.

Increment Two Cost: \$1,180,000

Cumulative Cost: \$47,940,343

**SSF Assessed Activity
FY2002 Increment 3 Funding Level**

- Expand networking capabilities by upgrading video distribution capabilities, accomodating increasing numbers of archived video events, and addressing NIH community expectations for two-way video conferencing.
- Enhance network R&D capabilities to investigate the applicability of new technologies to the NIH environment.

Increment Three Cost: \$450,000

Cumulative Cost: \$48,390,343

Management Fund

The total CIT Management Fund request is \$29 million at the FY2002 Base level, \$37 million at the Increment One level, \$38 million at the Increment Two level, and \$39 million at the Increment Three level. Although the base funding level will continue CIT activities at current levels, we believe that funding at Increment One is essential to provide adequate stewardship of emerging enterprise systems, to address expanding IT security, management and policy mandates, and to provide the CIO with the resources to deal with unexpected security events, legislative inquiries, and OS/OIRM policy proposals.

**Management Fund
FY2002 Base Funding Level**

At the FY2002 Base level CIT would maintain its current level of operations, but with no provision for essential increases in attention to administration and legislative mandates, security issues, and stewardship of enterprise systems.

\$29,335,000

**Management Fund
FY2002 Increment 1 Funding Level**

- Second half of the relocation and consolidation of CIT to an off campus facility, including overlapping period during which rent will be paid for new space prior to CIT vacating the current space.

TOTAL RELOCATION COSTS: \$5,000,000

- Conduct research and development to provide necessary common services spanning the major Enterprise Systems. Develop common services layer architecture for enterprise systems. Examples include PKI security, directory services, portal technologies, and single sign-on capabilities.
- Begin preliminary planning for enterprise information integration across the enterprise systems by investigating the interrelationships among the enterprise systems and devising business intelligence and knowledge management strategies.
- Provide the required levels of IT investment review and management.
 - Implement the IT investment management system developed in FY2001.
 - Expand the scope of IT investment reviews to provide appropriate stewardship of NIH enterprise systems and to respond to the expectations of DHHS and OMB.
- Expand CIO support to ICs for IT security.
 - Increase Incidence Response Team (IRT) support due to the increasing rate of security incidents.
 - Address requirements of the Government Information Security Reform Act (GISRA) passed in October of 2000.
- Expand CIT support for high performance scientific computing by expanding existing cluster computing environment to address increased usage by NIH intramural research program staff.
- Provide a CIO/CIT Director's contingency reserve to address emerging issues with critical impact to NIH. Potential examples include cyber terrorism, high performance scientific computing, and unforeseen DHHS and Congressional requirements.

TOTAL INITIATIVES COST: \$2,800,000

Increment One Costs: \$7,800,000

Cumulative Cost: \$37,135,000

**Management Fund
FY2002 Increment 2 Funding Level**

- Develop methodologies and templates to assist ICs with investment reviews, risk assessments, audits, and other activities mandated by Department, OMB, or legislative requirements.
- Modernize and enhance general purpose scientific computing capabilities provided by CIT for the Intramural Research Program.
- Expand capacity of the NIH Homepage by upgrading the server. The upgrade is necessary due to the popularity of the NIH web page, one of the most frequently accessed government web pages.
- Improve CIT's ability to meet existing and projected NIH requirements through better strategic business planning, including creation of a Strategic Business Council, new outreach efforts, and intensive internal investment review training and processes.
- Enhance customer service, beginning an outsourced program of quality assurance, and improving training.

Increment Two Cost: \$1,010,000

Cumulative Cost: \$38,145,000

**Management Fund
FY2002 Increment 3 Funding Level**

- Initiate planning for the relocation of the Data Center to a new off-campus location. The BoG recommended that the FARB coordinate funding for data center relocation with the Facilities Planning Advisory Committee (FPAC).

Increment Three Cost: \$500,000

Cumulative Cost: \$38,645,000

SSF Service Center Activity

The Service Center activity in the SSF requires a total of \$61 million in obligational authority at the base level and \$70 million through the Increment Three level. Increment One costs are \$7 million and include CIT support for Enterprise Systems providing necessary capacity for NBS and EHRP, a phase-in of seat management, costs for the antivirus software management service, and upgrades to replace aging data center equipment. Increment Two consists of \$2 million for additional data center upgrades.

The total request represents an increase of \$9 million over the \$61 million in FY2001 and is a request for obligational authority only. That is, expenditures will be made only to the extent they can be supported by revenues received. The requested \$70 million obligational authority will enable the Center to provide the level of service that our customers have requested.

FY 2003 Budget Plan

SSF Assessed Activity

The total CIT SSF Assessment request is \$47 million at the FY2003 Base level, \$52 million at the Increment One level, \$54 million at the Increment Two level, and \$54 at the Increment Three level. Due to increasing use of IT resources by the NIH community, funding at Increment One is essential to sustain current service levels. Highlighted below are the activities CIT plans to undertake at each funding level.

SSF Assessed Activity FY2003 Base Funding Level
<p>At the FY2003 Base level CIT would maintain its current level of operations, with no provision for increased capacity to sustain service levels in the face of escalating usage. Also there would be no provision for new functionality or growth in services or support.</p> <p style="text-align: right;">\$46,550,500</p>

SSF Assessed Activity FY2003 Increment 1 Funding Level
<ul style="list-style-type: none">• Accommodate increases in Network usage and track necessary technological changes.• Increase Network security as needed to meet increased virus and intrusion threats.• Fund telecommunications and network infrastructure growth to accommodate NIH growth and churn resulting from new buildings and new off-campus facilities.• Develop and begin implementation of the necessary common services spanning the major Enterprise Systems as identified in FY2002.• Begin development of improved business intelligence capabilities for enterprise systems.• Maintain and update the network and telecommunications infrastructure database developed in FY2001 and populated in FY2002 to enable effective maintenance and tracking of network and telecommunications cable and fiber. <p>Increment One Cost: \$5,750,000 Cumulative Cost: \$52,300,500</p>

**SSF Assessed Activity
FY2003 Increment 2 Funding Level**

- Support increased IC use of in-building wireless communications and provide in-building wireless capabilities for CIT service providers.
- Increase customer support services due to new NIH and CIT initiatives.
- Replace the existing paging system with one that provides alphanumeric capability, a web interface, and increased ease of support.

Increment Two Cost: \$1,350,000

Cumulative Cost: \$53,650,500

**SSF Assessed Activity
FY2003 Increment 3 Funding Level**

- Provide expanded network capabilities based on emerging technologies and increasing NIH expectations.

Increment Three Cost: \$650,000

Cumulative Cost: \$54,300,500

Management Fund

The total CIT Management Fund request is \$33 million at the FY2003 Base level, \$35 million at the Increment One, and \$40 million at the Increment Two level. Although the base funding level will continue CIT activities at current levels, we believe that funding at Increment One is essential to provide adequate stewardship of emerging enterprise systems, to address expanding IT security, management and policy mandates, and to provide the CIO with the resources to deal with unexpected security events, legislative inquiries, and OS/OIRM policy proposals.

**Management Fund
FY2003 Base Funding Level**

At the FY2003 Base level CIT would maintain its current level of operations, but with no provision for essential increases in attention to administration and legislative mandates, security issues, and stewardship of enterprise systems.

\$32,801,313

**Management Fund
FY2003 Increment 1 Funding Level**

- Develop common services spanning the major Enterprise Systems.
- Expand CIO support to ICs to comply with the requirements of the CCA (Clinger Cohen Act) for IT management.
 - Increase the number of investment reviews to address the existing backlog and to bring NIH into compliance with CCA.
 - Make necessary improvements to the NIH IT Investment Management System.
- Increase security improvements to meet the requirements for critical infrastructure protection against increasing levels of virus and intrusion threats. Expand CIO support to ICs for review and implementation of improved IT security.
- Provide a CIO/CIT Director's contingency reserve to address emerging issues with critical impact to NIH. Potential examples include cyber terrorism, high performance scientific computing, and unforeseen DHHS and Congressional requirements.

Increment One Cost: \$1,800,000

Cumulative Cost: \$34,601,313

**Management Fund
FY2003 Increment 2 Funding Level**

- Relocate the Data Center to a new off-campus facility, freeing needed on-campus space for NIH use.

Increment Two Cost: \$5,000,000

Cumulative Cost: \$39,601,313

SSF Service Center Activity

The Service Center activity in the SSF requires a total of \$70 million in obligational authority at the base level and \$75 million through the Increment Two level. The Increment One costs are \$4 million and include increased customer support for expanded customer usage, implementation of seat management, CIT support for Enterprise Systems providing necessary capacity for NBS and EHRP, and upgrades to replace aging data center equipment. Increment Two consists of \$0.4 million for application re-hosting services.

The Increment Two level is a request for obligational authority only. That is, expenditures will be made only to the extent they can be supported by revenues received. The requested \$75 million obligational authority will enable the Center to provide the level of service that our customers have requested.

Conclusion

The Center for Information Technology (CIT) FY 2002-2003 Business Plan and Strategic Vision reflects a comprehensive, corporate vision for IT at NIH. The implementation of this business plan and strategic vision requires appropriate funding levels that can truly reflect the dynamic changes in IT - and successfully realize the CIO's fundamental goals for IT at NIH: strengthening IT management across the NIH, and providing stewardship of enterprise IT applications at the NIH.