2004

ITACS Annual Accountability Report: FY2004 Accomplishments and Challenges

Monterey, California. Naval Postgraduate School

ITACS
Information Technology and Communications Services
Naval Postgraduate School

ACCOUNTABILITY REPORT
FY 2004 ACCOMPLISHMENTS AND CHALLENGES

Every goal and strategy in the NPS Strategic Plan is dependent either directly or indirectly on Information Technology.

Introduction:

"Year of challenge" is an appropriate descriptor for the Information Technology and Communications Services (ITACS) department in FY2004. Implementation of the mandated Functionality Assessment resulted in significant changes in the structure and roles within the organization, and in movement of staff into new areas of responsibility. The personnel realignment commenced in January and was completed in April, with some of the physical moves yet to occur pending building renovation. Personnel actions to complete the staffing plan are still in progress, and full staffing of the organization is expected to be complete by the end of calendar year 2004.

Renovation of the east wing of Herrmann Hall necessitated planning a move of 26 ITACS staff members in the last quarter of calendar 2004. This, in turn, required a detailed space inventory be completed in order to document requirements for the transition.

Funding for ITACS was not authorized until second quarter of FY2004, resulting in higher costs in some areas. Certain funds from external sources were held until the fourth quarter, also causing significant changes to operational plans.

Linking IT investments with institutional priorities is imperative for responsible management of IT resources, and the NPS Strategic Plan, *A Vision to the Future,* is used as a general framework with which to evaluate IT priorities.

The IT Strategic Plan, *The Information Revolution: Planning for Institutional Change,* was adopted in 2003 and continues as a blueprint for annual operational planning. Five categories of recommendations were identified in the plan and are used to outline the following report: network infrastructure and services, academic services, administrative services, partnerships and outreach, and IT management. Information Systems Security has been highlighted with a separate section for the purposes of this report.

One of the recommendations in the IT Strategic Plan was the development of an annual accountability report which includes a summary of the past year's activities, revenues and

expenditures, a description of issues affecting progress, and suggested goals for the subsequent year. This report documents the progress that has been made in the past year in each of the core areas of information technology and communication services at the Naval Postgraduate School, and identifies some of the challenges that remain.

The Information Technology Task Force, the main advisory group on IT and communication issues at NPS, provides guidance on policy and planning. In that role, the ITTF reviews and suggests changes to the annual accountability report before it is distributed to the university community. A roster of IT Task Force members is enclosed at the end of this report.

NPS IT Fact Sheet:

The following statistics provide a picture of the scope of the NPS IT environment.

- Networks: 10 (4 classified)
- Accounts: 6,828
- Network attached systems: 4,700
- Software applications: 2,647
- Active phone lines: 500 digital, 100 VoIP, 2,400 analog
- ISDN video conference circuits: 161
- Audio conferencing ports: 24
- User data: 4 Terabytes
- Mainframe data: 110 Terabytes
- E-mail: 924 Gigabytes
- Internet traffic: 60 Gigabytes per day
- Web Services:
  - Extranet: Successful requests – 53,715,232 per day
  - Intranet: Successful requests – 81,866,976 per day
- NPS backup data: 66 Terabytes (100,000 CDs)
  - Disaster recovery

Organizational Structure:

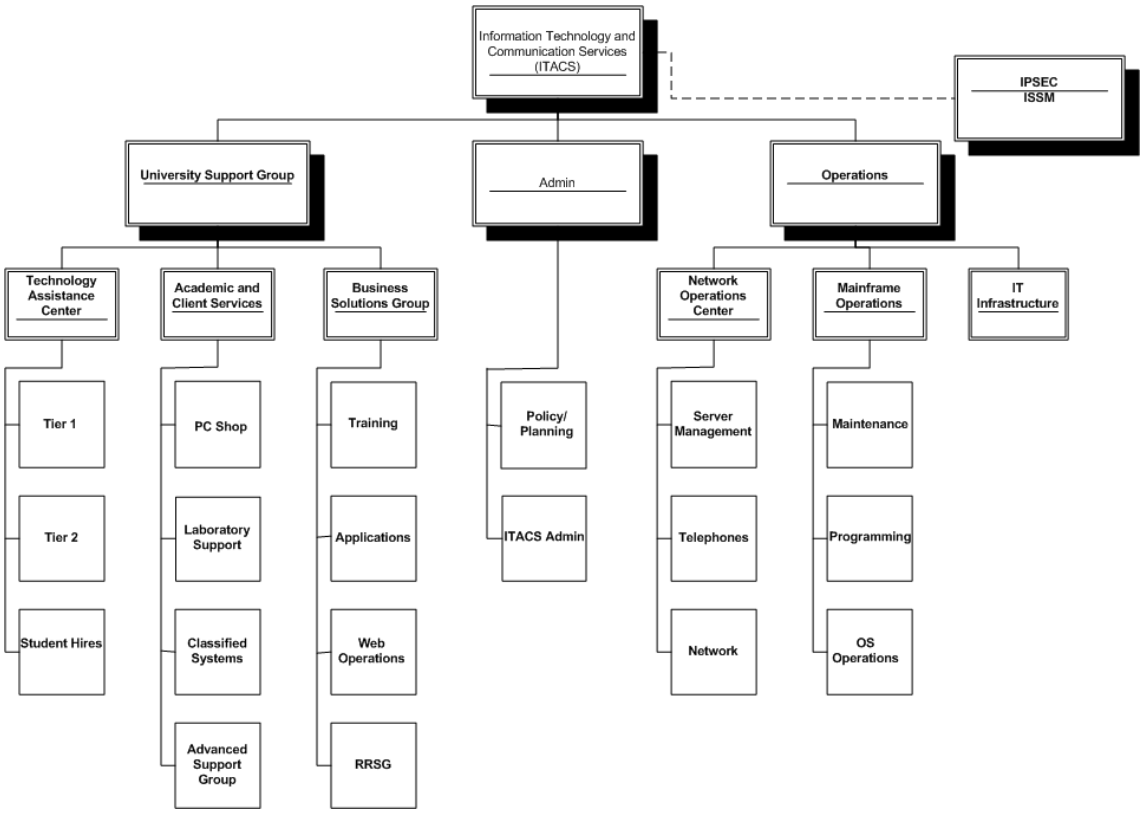

Figure 1

On 8 March 2004, ITACS completed implementation of the IT organization structure validated by the FA process.

- Technology Assistance Center (TAC) includes:
  - Tier 1 support for customers, which is the first line of support for all IT needs
  - Tier 2 support for customers, which provides the next level of support for all IT needs
- Academic and Client Services (ACS) includes:
  - PC Shop, receipt, imaging, and deployment of computers across campus
  - Laboratory Support, maintenance of all Learning Resource Centers and classrooms
  - Classified Systems Support, management of the Secure Computing Labs
  - Advanced Support, which provides high-level support across campus
- Business Solutions Group (BSG) includes:
  - Applications, which support both Commercial Off the Shelf (COTS) and locally developed applications, including E-mail, PYTHON, ETAC, etc.
  - Training, which provides free training for Microsoft Office applications
  - Web Operations, which develops and maintains Web sites and pages for NPS
- Network Operations Center (NOC) includes:
  - Server Management, installation, maintenance and updating of operating systems for campus servers

        - Performance and reliability are monitored
    - Telephones, installation and maintenance of equipment and services for all telecommunications on campus
    - Network, management of firewalls, ports and switches
        - Oversight of data and protocols into and across the campus on the network backbone
- Mainframe Operations includes:
    - Maintenance, updating, troubleshooting and repairing tape and disk devices in the machine room
    - Oversight of mainframe systems
    - Programming
    - Operating Systems, installation, maintenance and updating of mainframe operating systems
- IT Infrastructure:
    - Oversight of relevant physical plant (fiber and copper wire underground up to the jack in the wall)
    - Coordination of construction/remodeling projects across campus, setting requirements for the physical plant

Network Infrastructure and Services:

Network services are concerned with the protocols and data that traverse the physical infrastructure. Firewall management, ports and switches traffic control, monitoring and performance are all important aspects of network service. At NPS, "the network" also includes communication support, including trunking, international calls, interstate and intrastate telephone calls, maintenance add/moves/changes, calling cards, dial-in services, and telephone administration.

In collaboration with the City of Monterey, ITACS has completed the physical connection to the Institutional Network (I-Net) provided by the City. The I-Net fiber backbone provides NPS with a Gigabit connection to the state of California's higher education network, Corporation for Education Network Initiatives in California (CENIC) through a cooperative agreement with California State University, Monterey Bay. In addition to providing all California State Universities with Gigabit access to the backbone, CENIC provides all University of California campuses with 10 Gigabit access to a High Performance Research network with access to Internet2. Participation in the I-Net has permitted NPS to explore possible upgrade to the 10 Gigabit access consistent with the UC campuses.

The connection with the I-Net has also enabled establishment of the DoDNet connecting NPS to the local DoD assets: Defense Language Institute-Presidio of Monterey Foreign Language Center (DLI/POM-FLC), Defense Manpower Data Center (DMDC), Fleet Numerical Meteorology and Oceanography Center (FNMOC), Naval Research Laboratory (NRL), and the National Weather Service (NWS). This also gave NPS access to critical connection points on the Monterey Peninsula (i.e., AMP).

- DoDNet provides high-speed connectivity to the DoD activities and has replaced contracted T-1 service. Future cost avoidance will be in the tens of thousands of dollars

as each of the connecting facilities is able to shut down leased T-1 lines. These lines vary in cost from about $8,000 to $15,000 per year. These savings will be used to pay for the ongoing maintenance of the DoDNet as well as planning for its periodic refreshes and upgrades.

- Data transmission capabilities will increase at least ten-fold for each command, with some agencies achieving seventy times more than current rates of data transfer. DoDNet will greatly improve the ability of our local agencies to collaborate on operational, educational and research endeavors.

- Completion of most of the Educational Research Network (ERN) has also been accomplished this year. Migration of all services (e-mail, file shares and applications) will be completed early in calendar year 2005. This transition to operationalization of the .edu domain has been critical to the mission of NPS, and is a top priority of the IT Strategic Plan.

- Significant improvement in the infrastructure has been realized with the completion of the NPS fence project, which incorporates a buried conduit that is part of a 'spoke and ring' for the network backbone.
    - This conduit has enabled direct fiber connection to Oceanography's beach lab project and improved connectivity for the users working in this area, while enabling removal of an archaic and costly wireless link to the lab. The cost of the link was driven by staffing hours required to maintain it. Because of its low speed and old technology, the connection is often unreliable, requiring staff intervention.

    - The ring also provided ITACS the route required to provide in-house network and telecomm support to the new gatehouses, thus eliminating the cost of SBC service telephone service.

- Electronics and wiring for the Library SIPRNET connection were installed and will provide additional classified capability within the Library, when activated by DISA.

- The NPS telecommunications system was upgraded to replace the 30-year-old conference bridge hardware with new technology and capability. Additionally, the telephone system hardware was upgraded to allow in-house provisioning of ISDN (VTC) and T-1 circuits that will improve responsiveness, reliability and will avoid costs for the VTC Distance Learning program. Currently, adding access to a VTC adds cost. By upgrading the in-house system, we can now add access points without adding costs.

- ITACS completed a comprehensive audit of phone and network services, resulting in a usage tracking oversight process. In the assessment, staff were able to identify unnecessary network and phone lines, thereby reducing the operational costs of providing telecommunications and network services and being able to reallocate funds to the increased costs of long distance and other associated charges without requesting additional institutional funds.

Additional network services accomplishments include:

- Installed networked attached storage
  - Reduces server-based load for file services, software distribution, log file collection and group shares
  - Critical for improving stability/reliability of server environment
- Expanded back-up capability
- Installed ISDN capability for telephone system – increased speed of reconfiguration necessary for teleconferencing
- Installed PIX firewall on extranet for .mil
  - A security-based requirement
- Installed Netscreen firewall for .edu
- Rerouted Web traffic for .mil servers
- Completed external security audit by outside firm
- Provided direct support on technical issues to the
  - Standard Targeting and Acquisition Network project
  - NEMESIS wireless technology vulnerability assessment project
  - Cyber Risk Management Organization
  - FORCEnet
  - Consortium on the GRID
  - Global Information Grid (GIG) research group
- Worked with Office of Continuous Learning (OCL) to consolidate technical support within ITACS
- Worked with City of Monterey and CSUMB on I-Net and DoDNet
- NPS provided project management for Monterey Bay DoDNet joint project
- Increased NOC/telecommunications staff per validation through HRO workload analysis
- Published NAVPGSCOLINST 2000.1, Telecommunications Operations & Policy instruction
- Exploring Voice over IP (VoIP)

Mainframe operations: The mainframe operations unit provides reliable data processing, storage, and transmission. The continued long-standing support for DMDC was enhanced this year by several major upgrades that provide a significant additional capability to the DMDC mission. DMDC, a tenant organization of NPS, funded all upgrades.

- IBM Z800 mainframe was added to relieve the workload on the IBM 9672
- IBM 3494 Automated Tape Library was procured and installed
- Existing VM 390 Release 3.1 moved to the IBM Z800 mainframe
- Secure sockets added to both VM and MVS to secure Telnet

- Installed IBM ZVM software to run Linux Secure FTP
- Ordered an IBM Z890 processor to replace the IBM 9672; estimate installation by early December 2004
  - 64-bit architecture will provide faster throughput

NMCI: Over the course of the past year, a number of developments occurred having to do with NMCI participation. NPS representatives attended NMCI conferences, met with the NMCI Director, and hosted meetings at NPS with PMO staff members, NETC, EDS, USNA and NWC. NPS Provost Dick Elster appointed an NMCI Committee and charged

them with documenting NPS IT requirements and assessing NMCI within the framework of those requirements.

The VCNO and Director of NMCI asked that NPS work with USNA and the NWC to develop a common requirements document and to propose how the academic institutions might work together on technology issues. The three institutions formed the Navy Higher Education IT Consortium and met in March and June 2004 at NPS. A proposal was crafted by the CIOs of the three institutions and sent to the VCNO in August 2004.

Academic Applications and Services:

IT services that support the NPS education and research program include equipment acquisition, maintenance and repair/replacement services (hardware), software license acquisition and management, maintenance, patches and upgrades (software), and customer support. In addition to providing and maintaining hardware and software resources, the ACS division of University Support is responsible for supporting instructional technology, both local and remote.

Laboratories, "smart classrooms" and auditoriums, video-conferencing and online educational resources are part of the total learning experience for students. Technology in the classroom is integral to distance learning, continuous learning, and on-site learning experiences. ITACS provides faculty with facilities, resources and expertise to support virtual experiments, video-conferencing, and remote data and resource access capabilities for teaching. Education and training opportunities for non-local students in satellite campuses and at sea in remote locations are provided using the same skills.

Classroom technology and lab support are essential elements of education at NPS, and are therefore key services within the academic area. Classrooms must have the technology required by curriculum, faculty and students, and that technology must be maintained and kept current. Classroom technology issues must be integrated within a larger IT planning process to insure technical interoperability and compatibility, and to leverage resources to maximize efficiencies.

- Alumni Data Transfer
  - Quarterly export of PYTHON data for Alumni Office
- Dell Premier Page
  - Vehicle to make purchase of standard IT products easy and convenient
  - Enables better and faster service
  - AO designates were trained in use of the Web browse/purchase service
  - Streamlined purchase
  - Part of the push for campus standardization
- Continued evaluation of wireless pilot
- Installed a "security wall" for wireless network
- Classroom technology plan was updated and approved by IT Task Force (complete documentation available in separate report)
  - Expended $400K awarded by NETC to implement plan
  - Received $574,000 in annual funding from NETC
  - Director of Instructional Technology position established to

coordinate the classroom technology planning function

- Implementation of ERN (Educational Research Network) / .edu
  - E-mail addresses updated
  - Web presence at www.nps.edu unveiled
  - Procured major components needed (new e-mail servers, network storage appliances, etc.)
  - Transition of applications scheduled for December
  - No interruption of services to .mil customers
- Implemented Technology Assistance Center (TAC)
  - 3 new staff hired and trained per additional validation by HRO
  - IN-157 remodeled for workspace for Technology Assistance Center to better serve user community
  - Remedy (help desk) software upgraded and clients installed on desktops
  - Set up laptop service center for wireless access
- Laboratory Recapitalization (Lab Recap)
  - Created specifications and documents for bids
  - Managed acquisitions - $517K
  - Received, prepared and installed IT equipment
    - Over 200 workstations
    - Network printers
    - 11 servers
    - Network equipment
    - FEL Simulation Cluster – Systems Engineering
- Streaming Media initiative (with Information Sciences faculty and Homeland Security)
  - Building project plan
  - Technology research, design and vendor planning
  - Demonstration of streaming technology using available products
- Secure lab support
  - 2 billets validated and filled
  - STBL
  - SCIF
- SE Lab (GSEAS)
  - Technical specifications
  - Liaison to the contractor
  - Prepared software bill of materials
  - Estimated cost for AV, IT and design work and equipment
- Blackboard
  - Bi-monthly VTC with Blackboard management
  - CAC card integration review
  - Streaming and chat
  - Complete Tier 1 and Tier 2 support, including backup services
  - Co-authored a paper given at a conference in Durham, NC
  - Continued assessment of emerging learning management systems
- Coordinated NPS participation in the DoD/Navy Functional Area Manager (FAM) process
  - Reduced software titles/versions by 33%
- Continued consolidation of software licenses
  - Centrally managed
  - Properly sized
  - Cost savings of 50-70%
  - Academic institution Microsoft license agreement avoids cost of over $1 million annually
- Maintained software list on the NPS intranet site for reference
  - Prevents duplicate orders
  - Provides central point of reference
- DADMS coordination
  - Reduced total software titles/versions from 7900 to just over 2600
  - Administer permissions in DADMS database
  - Briefed NPS Chairs on the DADMS process
- Administer NMCI Seat information

- Used MIF and LANDesk data
- Consolidated reports for submission to the NMCI team and NETC

- Bulk E-mail Scripts
  - Continued maintenance of military, students, faculty, all hands, etc. bulk e-mail lists
  - Targeted e-mails administered for provost, deans, etc.
  - Created new scripts for campus surveys (Schieffelin Award, Customer Satisfaction Survey, HPC survey)
- Faculty Budgeting Data Reports
  - Export data from ETAC into PYTHON
  - Reports generated each pay period for Provost and Deans
- Schieffelin Award
  - Converted from paper to Web survey
  - Database analysis
  - Uses e-mail to launch survey and remind participants to vote
- Remedy Action Request System
  - Modified groups and categories to capture and route calls more efficiently
  - Weekly reports capture statistics to evaluate Service Level Agreement metrics

Administrative Services:

Administrative computing services are those essential technology functions that provide the foundation for support to most users. These core services include e-mail, word processing, file sharing, data backup and storage, and network access. Microsoft Office, DPAS property management, ETACS payroll processing, Web services, and computer account management also fall within enterprise administrative services. Purchase and configuration of new computer systems, as well as troubleshooting and repair of older systems support the entire user community. Data security, policy compliance, and response to DoD/Navy mandates are part of the enterprise services role within ITACS.

- Support for Institutional Research
  - Completed Web-based ITACS Customer Satisfaction Survey
  - NPS Fact Book updated
- Human Resources management Information System support
- Instituted IT Advances
  - ITACS USG staff peer training
  - Monthly meetings on various topics
- Developed plan to migrate Research Office documents to SharePoint server to reduce demands on e-mail system
- Implemented campus-wide telephone instruction that includes processes for:
  - Cell phones
  - Calling cards
  - Blackberry
- Web applications for managing NT accounts and Exchange mailboxes
  - Standardized monthly account deletion process
  - Defined new reports to assure data quality and error correction
  - Added nps.edu address for all users in support of the Education and Research Network project
  - Provided data to campus leaders from the NPS PYTHON database as requested (ad hoc queries)
- E-mail quotas instituted for new accounts
  - 100 Megabyte limit began in March 2004
  - Concerted effort to reduce e-mail storage size

- Systems monitoring and outage reporting enhanced
  - Proactive – automated alerts at predefined thresholds
  - Prevents outages
- E-mail policy drafted and approved
- Barracuda Spam Firewall installed in May 2004
  - Filtered an average 18,547 messages per day
  - Removed an average of 8,185 known spam message per day (44% of incoming mail)
  - Removed an average 497 viruses per day (2.7% of incoming mail)
  - Quarantined an average 1598 messages per day (8.6% of incoming mail) as 'questionable'
  - Filter is still being trained by user response to quarantined items
- LANDesk client management software deployed to enhance remote administration
  - Pushed updates to 2161 NPS computer systems
  - Automated fixes and patches to operating systems and applications
  - Completed migration to managed anti-virus technology
  - Full IAVA compliance
  - Reports on inventory and product numbers, including software licensing
  - Remote management and troubleshooting capability
  - Saved hundred of staff hours
  - Reduced overall support costs per client
- PKI and CAC cards implemented throughout campus
  - Readers installed on 1304 PCs
  - TAC continues to distribute USB card readers, CDs and instructions
  - All Ghost images now include DTS-PKI software
- Blackberry Enterprise Server
  - Redirects encrypted e-mail for Blackberry users
  - User PCs no longer required to run 24x7
  - Supports 28 users currently
- Remote Access via Citrix
  - Provides access to NPS network from remote sites
  - Used for mustering, SOFs for DL students
  - Consolidation planning for phones and PDAs
  - Tested video streaming, e-mail, calendaring and schedules
  - Selecting standard devices
- Pilot project testing (with SPAWAR) for expanded CAC capabilities
- NETg CDs
  - 840 training titles from NETC
  - Highlight problems with interface and ship-based IT regulations
  - Distributed at TAC
  - Solution to DADMS FAM
- Navy Knowledge Online – DON CIO
  - Coordinate NPS pages on NKO
  - Manage relationship with Task Force Web (similar to NKO process)
- Web Surveys
  - Student Assessment Survey
  - NPS MSEE Degree Program Faculty and Student surveys
  - NPS Voting Assistance Survey
  - Schieffelin Award survey
  - ITACS Customer Satisfaction Survey
- Provide reports for Provost/Academic Planning re faculty pay source, SOFs, teaching awards.
- Customer Support
  - Use Remedy to check for open calls
  - Follow up
  - Survey users on support provided
- Defined standard process for IT support for conferences at NPS
- Library coordination
  - HSDL technical lead
  - Follow-up actions from meetings are entered into Remedy for tracking

- Manage and maintain both internal and external NPS Web presence.
  - Support the Office of Instruction Web redesign project
  - Migrating .mil content
  - Adding new content to nps.edu
  - Implementing Content Management System (CMS) as interim to final automated solution
- Fielded Defense Travel System (DTS)
  - Replaced Travel Manager

Information Systems Security:

The Department of Defense (DoD) and Department of Navy (DON) policies require that all information systems shall maintain an appropriate level of confidentiality, integrity, authentication, non-repudiation and availability, while respecting balance between the importance and sensitivity of the information and the information assets. In support of these policies, NPS continues to certify systems and verify information assurance implementations. The following is a list of the major accomplishments in this area for FY04:

- Began implementation of the Information Assurance Plan for three networks
  - Completing the 4 phases of the certification and accreditation on each network
  - Writing the Systems Security Authorization Agreement (SSAA) for each network:
    - nps.navy.mil
    - nps.edu
    - DoDNet (for Monterey DoD institutions)
- Contracted with a security consultant for an external audit of our network
  - Provided verification of our processes and procedures
  - Identified areas of improvement
  - Assisted in focusing our budget planning for information assurance
- Worked with Network Security Group (NSG) to develop processes and action steps for responding to incidents and protecting our network, with the goal of streamlining processes into actionable steps in response to malicious activity
  - Successfully implemented a monitoring system that collects various monitoring inputs into a database that can be queried for reports
    - Identifies the details of a problem
    - Does trend analysis
    - Measures the effectiveness of the information assurance measures
  - Various tools within the Network Operations Center (NOC) and the NSG monitor all external and internal traffic
    - Allows alarms to be set and e-mail notifications of problems to be sent
    - Reduces response time for an incident
  - Vulnerability assessment is done weekly for all servers and clients using our IP address space
    - Provides verification that patches and updates are in place
    - Identifies systems that still need to be patched.
    - This is our Quality Assurance tool
  - The NSG and NOC have developed a process for profiling new virus activity
    - Used to detect infections on our network

        - Intrusion Detection System is used to provide notification of a suspected virus
        - The incident response team takes action to remove the system from the network
- Continued to meet the Navy's milestones for PKI implementation
    - As of September 2004 2,545 people have been issued Common Access Cards
    - Staff and faculty have card readers or keyboards installed on their systems and students have access to card readers in the Learning Resource Centers around campus
    - Web servers are configured to use Secure Socket Layer (SSL) with the DoD server certificates in support of the PKI enabled interface requirement
    - Established ongoing process for issuing new students, staff and faculty Common Access Cards and installing card readers
    - Established a pilot program with SPAWAR to implement the On-line Certificate Status Protocol (OCSP) server for the Certificate Revocation List (CRL) update, as well as test the cryptographic logon
        - Still being developed within the DoD and DON
- The Information Systems Security Manager continued working with the ITACS managers to ensure information assurance issues are reviewed and planned, starting from acquisition, through development and a during modifications or upgrades to an information system
- The ISSM and the CTO attended the first Designated Approving Authority Governance Board meeting at COMNAVNETWARCOM in Norfolk, VA
    - This board consists of Echelon II commands and provides input to IA policies and procedures as well as the security best practices for our DON information systems
- Malicious activity: the major forms of malicious activity this year were in the form of mass e-mail viruses, web-based worms and the increased use of web-based advertising ware and spy-ware. The multiple layers of defense implemented on our networks have provided excellent protection to our systems and our information.
- Virus/Worm remediation was institutionalized by ISSM monitoring, planning, and online client management tools ("push" for virus signatures, security patches, updates).
    - The managed anti-virus solution has been deployed to 2026 clients
    - New definition files can be pushed to these clients almost immediately
    - Enterprise servers and clients are patched regularly with critical patches identified for the operating system
    - NPS enterprise e-mail systems were not infected by any mass e-mailing viruses during 2004
    - IAVA Support
    - Coordinate Tiger Teams
    - Report on numbers and problem resolutions
- Information System Security Incidents for FY 2004: 15
    - 3 incidents involved new capabilities causing a system or service outage.
        - Systems administrator training has been renewed
        - Testing procedures have been put into place
    - 5 incidents involved individual systems being infected with viruses
        - Systems were taken off-line and fixed

- The network operation was not impacted
- 3 incidents were requests from NAVCIRT to investigate suspicious activity
  - No problems were found
- 3 incidents involved 9 individual systems being infected by a mass e-mail virus from the users' personal ISP e-mail account
  - Our anti-virus system on the clients caught the infections
- 1 incident involved a secure lab
  - Standard operating procedures were updated and awareness training provided for all users

Communication, Partnerships and Outreach:

Building partnerships with our DoD neighbors, other universities, city governments, corporations and the Navy chain of command continues to be a key element in aligning the efforts of ITACS to the strategic mission of the School and the Navy. Corporate partnerships have resulted in numerous Cooperative Research and Development Agreements (CRADA) that have furthered research conducted by faculty and students at NPS. Equipment grants, access to subject matter experts, and direct funding to support research proposals have resulted from these initiatives. Leveraging our resources in coordination with the priorities of the wider community has furthered ITACS' capabilities.

Current levels of service and access afforded to NPS researchers would not be economically feasible without the collaboration and cost sharing models our partnerships have enabled.

- Promulgated the IT Strategic Plan in both print and e-format
- Outreach to DON CIO, Dave Wennergren
  - Received reimbursable research funding for faculty research projects supporting DoN CIO Office priorities
- Coordinated Internet2 virtual conference at NPS
  - On-campus advertising, poster creation, invitations
  - Venue reservations, setup and technical testing
  - Organized the event
  - Follow-on editing of the Internet2 video
- Scheduled videoconferences with Dave Wennergren and his senior staff and NPS faculty leaders
- Hosted DON CIO visit in April 2004
- Information Technology coordination with RCI for housing for Ord Military Community
  - Gig Ethernet, wireless, fiber to the home included
- Monterey Bay Regional Training Consortium (MBRTC)
  - Founding member
  - Influenced education on the Monterey Peninsula
  - DoD and civilian
- Assisted in hosting celebration event for 50 years of computing at NPS
- Meeting with Library leadership monthly
  - Worked together on IT requirements for Homeland Security Digital Library
  - Worked together on plans for Technology Assistance Center
- Developing local DoD intranet applications with DMDC, NRL, FNMOC, and DLI. Agenda will include: IT security, IT professional staff training, disaster recovery and network attached storage

- Membership in Monterey Peninsula I-Net
  - Serve on Steering Committee
- Corporate visits, technology futures briefings, partnership cultivation:
  - Sun Microsystems: met with Greg Papadopoulos, Chief Technology Officer; Scott McNealy, CEO; John Gage, Chief Scientist
  - Foundry Networks: met with Bobby Johnson, CEO
  - Fujitsu: met with numerous executives
  - Oracle: met with regional vice president
  - Cisco: met with Archie Newell, Cisco area manager
  - Oblix: met with Gordon Eubanks, President
  - Stanford University: met with Chris Handley, CIO
  - UCSC: met with Robert Miller, VP for Research, to explore connectivity options
  - Sonoma State University: met with Dr. Reuben Arminana, President
  - George Mason University: hosted Dr. Joy Hughes, CIO
  - Monterey County: hosted Virgil Schwab, IT Director, for tours and meetings
  - Internet2: met with Michelle Pollak, Media Relations Manager
- Membership in Internet2, support for NPS faculty/student committee on Internet2-related research at NPS
- Worked with Institutional Advancement on support of Foundation activities, developing partnership with Foundry Networks, work with Gordon Eubanks (CEO Oblix Systems), Sun Microsystems relationship, promotion of NPS network enhancements and partnership with Monterey Peninsula I-Net
- Serve as member of Access Monterey Peninsula board of advisors
- Twice yearly meetings with deans and senior staffs about IT Strategic Plan progress and other IT-related issues
- Twice yearly meetings with department chairs and faculty groups about IT Strategic Plan progress and other IT-related issues
- Created Navy.edu CIO group
  - Hosted March and June 2004 meetings
- Entire ITACS management team attended EDUCAUSE annual conference
  - NPS and CSUMB CIOs gave presentation about the Monterey Peninsula I-Net
- CTO attended the annual Internet2 conference
- IR leadership attended the WASC annual conference
  - Gave presentation on the Community Impact Study
- ITACS leaders attended the CENIC Technical Advisory Meeting

Financial and General IT Management:

Accountability and responsiveness to institutional goals are the priorities of ITACS leaders. Substantial time and effort have been expended in implementation of the FA organization, training staff for new positions, and hiring additional personnel. Improvements in oversight reporting have been persistent throughout the year, with an emphasis on establishing baseline metrics for charting future progress. ITACS' first Customer Satisfaction Survey was fielded, with initial analysis of results completed in September. This is an important milestone, and something that was recommended in the IT Strategic Plan. The summary report can be found at http://intranet.nps.navy.mil/ITACS_intranet_submissions/ITSurvey_2004-10-04.pdf.

Administrative functions provide essential support for any organization. ITACS administrative support provides liaison with vendors, record-keeping, scheduling, purchase and other financial services. Contract records and general reporting are integral functions.

Financial management improvements have continued in FY04: executive management receives a monthly IT financial report of all operating funds by major expense categories. IT management meets and reviews actual to planned expenditures on a quarterly basis, and briefs NPS leadership on progress toward Strategic Plan goals as well as ongoing operations.

- Implemented IT FA
- Space allocation planning required due to FA implementation
- Assigned professional trained (CPA certified) financial manager to oversee IT financial budgeting, management
- Monthly financial reports on ITACS
- Continued NMCI planning – attended NMCI Executive Committee Meeting in Washington, DC; NMCI Quarterly Conference; participated in NMCI Faculty Committee; bi-weekly conference calls
- Implemented campus-wide telephone instruction: cell phones, calling cards, etc.
- Developed annual reporting mechanism for accountability, review with NPS community, etc.
- Implemented IT Customer Satisfaction Survey in July 2004
- Completed MCSE training for 14 staff
- Completed GCCS/Linux training for 1 staff
- Completed Netscreen, firewall and VPN training for 3 staff
- Completed HR management training for 7 supervisors
- Completed project management training for entire management team

Funds Management:: "License Renewals and Maintenance" comprises the largest expense category, at 39% of the budget. Most software maintenance costs are increasing at an annual rate of greater than 20%. "Networks" is the second largest expense category, due to the high cost of equipment maintenance requiring a 24/7 response. The remaining categories comprise the last 30% of the FY04 budget execution, and include ".edu , DoDNet, I-Net & Internet2", "Functional Assessment Implementation", "Training", "Travel", "Supplies" and "Lifecycle" management expenses. (See Figure 2.)

The total ITACS operating budget for FY04 was $1.42 million.

The total ITACS labor budget was $4.25 million to support 73 full-time staff members.

In addition to the above, ITACS received $450,000 for the following project:

Initiative:	(000s)	Funding source:
Technology Assistance Center Renovation	$450	IMET

The following chart shows the FY04 use of operating funds by general category of expenditure:

FY04 Use of Operating Funds:

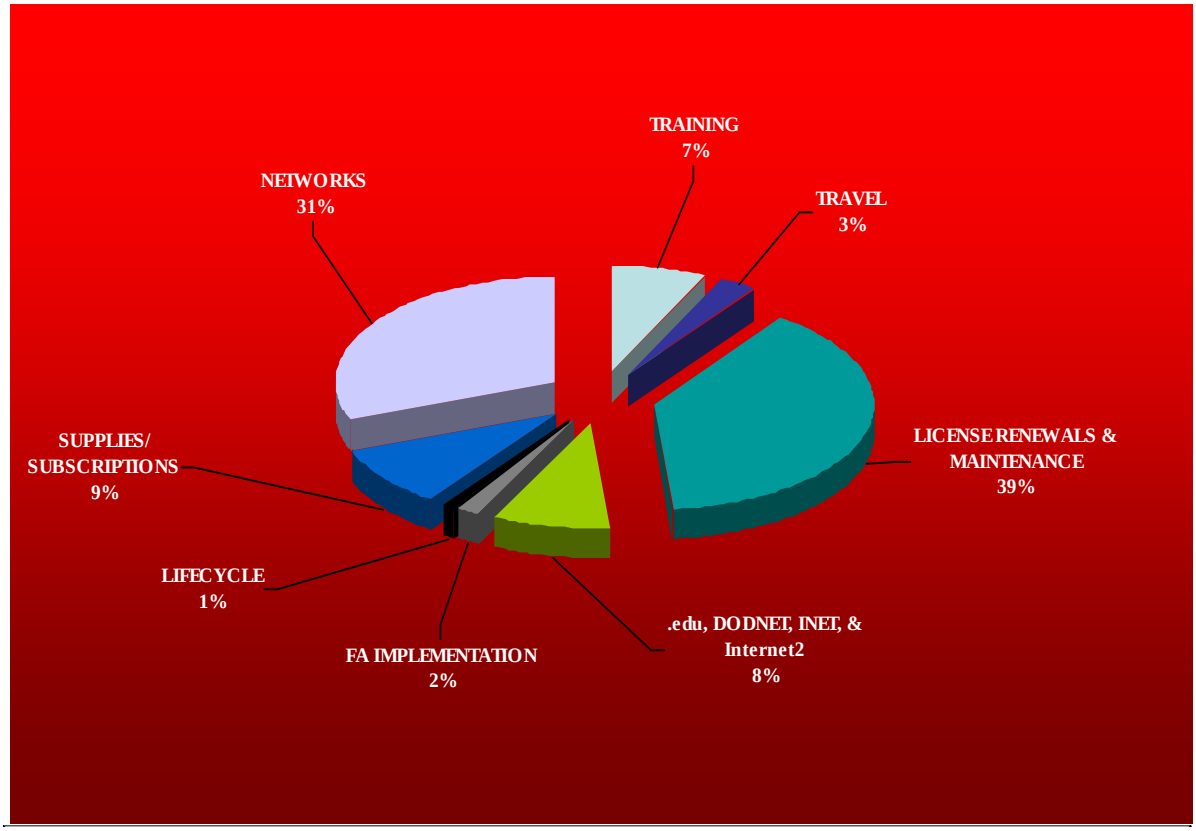

Figure 2

Return on Investment:

Return on investment (ROI) on information technology and communications services is often difficult to quantify. Efforts to do so vary substantially in terms of statistical significance and meaningful interpretation. In general, the more concrete the dependent variable (e.g. number of cars produced), the easier it is to correlate the investments in

technology with improved productivity, cost savings, etc. In the case of higher education, the improvement of educational quality is more challenging to document in discrete terms. However, in order to make the case for continued IT investments, it is important to demonstrate, to the extent it is possible, the positive impact of IT investments.

Investment in the telephone system. In-house telephone administration and services started in 2003, and the savings continue to accrue. Contract fees and line charges per year were avoided by bringing telecommunication services in-house, and response time for requests has been shortened significantly. Those cost savings were realized by central NPS administration on behalf of the entire university.

By bringing the two contractor positions in-house, NPS avoided $66K annually. These dollars will be used to offset increases in actual line and service charges by outside vendors. No additional funds will be requested for administration of the NPS telephone system.

Investment in human resources. Three new billets for the Technology Assistance Center (TAC) resulted in three new staff members coming on board a few months ago. These staff members have impressive educational and employment experience and are already providing technical depth to the overall TAC services so critical for quality service to our faculty, students, and staff.

Two new billets approved for the Network Operations Center (NOC) have resulted in better monitoring of network and server environments. This investment has also resulted in more detailed performance metric reporting which assists in technical forensics and implementation of prevention strategies.

Two new billets approved for support of secure computing have provided key support for the SCIF and STBL. System administration duties are now part of the larger ITACS administrative domain. As a result, training, back-up support, documentation, and system upgrades are all factored into the larger organizational planning.

Training for the ITACS staff continues at the $100,000 annual level as recommended in the IT Functionality Assessment and approved by NPS leadership. Technological currency is the cornerstone of building a well-trained, highly skilled team to provide expert customer service, responsible stewardship of IT investments, and intelligent recommendations for future plans. New full time employees are brought on board with training plans to bring them up to speed with a standard set of skills in the fastest time possible. Formal training as well as peer training have combined to upgrade the capabilities of the staff. At the end of September 2004, the call resolution rate was 91% for Tier 1 of the TAC, which was the highest rate of any ITACS group.

Remodeling of the old War Lab in IN-157 has transformed an unused, awkward space into work space for a dozen IT support staff. This renovation was part of a larger PW MILCON project. Having the ITACS staff geographically co-located will provide

better communication, improved peer interaction and skill-sharing, and will further improve both the quality of service and morale of the staff. It also enables evacuation from the East Wing of Herrmann Hall, which is scheduled for renovation.

Training costs for the past year have focused on new hires and on the certification of 14 other staff members as Microsoft Certified Software Engineers. This certification program assures NPS a high-caliber, highly-skilled corps of IT specialists. The negotiated cost of the training contract was 40% less than market price for comparable classes because of NPS' status as an academic institution and because a year's plan was presented to maximize economies of scale.

Investment in network infrastructure. DoDNet costs have been more than offset by recouping T-1 line costs that will no longer be needed. Data speeds will increase by as much as 70 times current speeds at less cost than previous leased line configurations. NPS leadership in this joint project has improved the cooperation among DoD organizations on the Monterey Peninsula, and enhanced our working relationship with the City of Monterey and California State University, Monterey Bay.

Investment in software. LANDesk, a remote administration tool, cost $168K for licensing. The tool has saved hundreds of staff hours, provided faster update service and increased security. Patching 2200 desktop systems with FY2004's 34 IAVAs (vulnerability alerts, bulletins or computer network defense task orders) would have required at least 15 minutes per desktop without the remote administration tool. With LANDesk, ITACS staff must physically visit only the problem systems and approximately 100 servers. The following statistics provide the scope of savings for these actions alone, figuring labor costs at $70 per hour:

IAVA	# of systems affected	# time per system	Savings
16 Microsoft-based	2200	15 minutes	$616,000
3 application-based	50	15 minutes	$ 2,625

Note: Remaining alerts had to be done manually or took negligible time to address.

The approximate savings in dollar terms was $618,625 not spent in labor to accomplish the IAVA task alone. This is a 368% return on investment. The additional benefit is the faster rate that these patches can be applied. Using off-peak time, after hours, the patches can be pushed to the systems. From a security perspective, applying these patches as quickly as possible reduces the threat to our network.

In the past year, five significant virus outbreaks hit NPS, but none impacted the operation of servers and the network, because of the effective layers of protection afforded by our security processes and tools. Individual computers were infected, but no data or enterprise services were impacted.

Investment in digital processes. In 1997, the Supply department had forty people responsible for procurement, receiving, and payment of items valued at $25,000 or less. To buy anything over $25,000 required handling by an outside agency. With use of current technology and software, and in partnership with the NPS Supply Department, most procurements are now done by department administrative staff, using a credit card. Purchases are accomplished at personnel cost savings of at least 50%, and local buying capabilities have been expanded to include purchases up to $100,000.

Improved efficiency was made possible by investments in technology and management of that technology by administrators in the purchasing area. Accountability is maintained by random audits on procurements as well as on travel expenditures.

Investment in spam filtering. The Barracuda Spam Firewall is the industry's highest rated spam filter, and yet was one of the lower cost devices on the market, at approximately $5,500. Installation of the Barracuda Spam Firewall has prevented nearly 63K viruses from entering the NPGS domain, has blocked over a million known spam messages, and has quarantined an additional 201K questionable messages. Filtering incoming e-mail has reduced storage space requirements on e-mail servers, and has eliminated the personnel time it would take to deal with these unwanted messages. Improved spam filtering has generated very positive response from faculty and staff at NPS. According to the Spam Calculator (http://www.barracudanetworks.com/resources/spam_cost.php), using our e-mail numbers and an average salary cost of $50K per year, cost avoidance for the last six months since the Barracuda was installed totals $104,844 in user productivity, storage and management costs.

Leveraging investments by working with other agencies, departments. ITACS has been able to attract funding from outside sources to assist in the development of the NPS IT environment:

- Partnership with Sun Microsystems resulted in a donation of $42K in equipment to the NPS Foundation and the Center for Information Security Research
- The High Performance Computing Committee developed a proposal for $108K to develop support HPC by NPS faculty and students. $100K was awarded by Dean of Research Leonard Ferrari
- Partnership with DON CIO resulted in funding of research proposals last year
- Partnership with NETC resulted in $574K for instructional technology purposes and implementation of the NPS Instructional Technology Plan
- Partnership with NETC resulted in $324K for ISDN capability on the NPS switch
- Partnership with OCL resulted in $127K initial investment in the Streaming Media project

Leveraging investments through best practices from other institutions. The following are not due to investments of dollars, but examples of improved practices that maximize use of IT investments:

- Established client pre-load image for systems – avoids costly one-by-one build of client systems and permits staff time to be redirected to direct customer service
- Reducing postage/mailing costs through electronic mail
- Automation of previously clerical functions (registration, grading, course evaluation surveys, faculty effort-reporting requirements, etc.)
- Improving contacts with other institutions to provide information about best practices, support for more informed decision-making, etc.
- Continuing efforts to consolidate software licenses – moved from 7,835 in December 2003 to 2,647 in 2004
- Continuing efforts to consolidate server systems – reduced by 80%
- Continuing to develop performance metrics for network, server environment, and customer service response
- Piloting streaming media initiative- working with stakeholders (Homeland Security, Library, Information Sciences, MOVES Institute, OCL) to develop institutional solution rather than every unit developing its own capabilities

Future Challenges:

IT requirements increase at an exponential rate. ITACS maintains an ongoing list of requests that are prioritized and managed with existing resources. Major emerging requirements are brought before the IT Task Force for review to ensure the university community has an opportunity to comment. Priorities are evaluated based on customer requirements, resource availability, consistency with strategic plan direction, institutional priorities, research about the most efficient way the issue can be addressed, and time sensitivity. The number of DoD and DON requirements is increasing at a much faster rate than experienced in the last ten years. Internet Protocol-version 6, Voice over IP, wireless policies, IT portfolio management, software reduction, server consolidation compliance – all are examples of major new requirements. Managing internal and external requirements with existing resources is a significant challenge.

The NPS fiber optic backbone network is aging, and has reached near total utilization. Very little fiber is in reserve for future new requirements. We need to begin replacing our campus backbone, which is also suffering from root and asphalt compression. This will involve planning for the DoD-mandated IPv6 transition, institutionalizing wireless, more piloting of VoIP, and upgrade to a higher speed backbone (10 Gigabit).

We must continue our support of the High Performance Computing Committee, hiring the technical HPC manager, working with the DoD HPC Modernization Program to receive training and support within the larger DoD HPC environment, partner with LLNL and FNMOC for resource-sharing, etc. Access to HPC continues to be at the center of a significant portion of the NPS research and education program – ITACS must assist with that access.

Goals to be met in the coming year include:

- Documentation of the NPS network environment
- Complete implementation of the .edu initiative
- Explore NPS membership in CENIC

- Conduct a 2nd annual customer satisfaction survey
- Expand life-cycle management to more areas within NPS
- Continue efforts to complete Information Assurance plan implementation
- Complete classroom technology and physical status inventory and report to leadership
- Work with the Navy Higher Education IT Consortium to make progress on a program of joint initiatives
- Continue to assist Institutional Advancement with web redesign project
- Complete ITACS space inventory and report to leadership
- Continue to support PYTHON development: online registration for OCL, PYTHON functionality for CIVINS, CEE, CCMR, DRMI, Alumni
- Develop a disaster recovery plan (include off-site management)
- Continue partnerships/outreach activities with City of Monterey, CSUMB, DoD local assets, EDUCAUSE, DoN CIO, NETWARCOM, NETC, Internet2, CENIC
- Emphasize core competencies and continuing education for IT staff professional development.
- Complete PKI implementation
- Continue updating ITACS policies
- Make case for extended TAC hours
- Expand ITACS communications efforts
- Continue expansion of network attached storage
- Assist with NPS digitization initiative
- Continue replacement of telephone instruments
- Complete ITACS code of ethics
- Annualize an external security audit

IT Directory:

Information Technology and Communications Systems (ITACS) Managers	
Christine Cermak	Executive Director of Information Resources and Command Information Officer
Tom Halwachs	Command Technology Officer
Hank Hankins	Director of Operations
Joe LoPiccolo	Director of University Support Group
[To Be Determined]	Director, ITACS Administration
Terri Brutzman	Information Systems Security Manager
Todd Pugh	Special Assistant to the CIO; Director of Corporate Relations; Program Manager, NMCI
[To Be Determined]	Director of Institutional Research

IT Task Force:

Alex Bordetsky, Information Science	Hank Hankins, ITACS
Doug Brinkley, GSBPP	Dick Harkins, Physics
Don Brutzman, Information Science	Jeff Knorr, Electrical Engineering
Terri Brutzman, ISSM	Joe LoPiccolo, ITACS
Christine Cermak, CIO	Julie McClean, Oceanography
To be determined, OCL	Rudy Panholzer, Space Systems
Peter Denning, Computer Science	Terry Pierce, SIGS
Douglas Fouts, Electrical Engineering	Todd Pugh, ITACS
Lillian Gassie, Library	Jack Shisheido, Deputy CFO
Tom Halwachs, ITACS	Susan Matusiak, Information Professional Community
Tracy Hammond, Instructional Technology	
Robert Koyak, Operations Research	To be determined, Student representative