2015 Annual Accountability Report

Monterey, California. Naval Postgraduate School

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Computers have “become a kind of universal technology.”

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Naval Postgraduate School

Mission Statement

The mission of the Naval Postgraduate School is to provide relevant and unique advanced education and research programs to increase the combat effectiveness of commissioned officers of the Naval Service to enhance the security of the United States. In support of the foregoing, and to sustain academic excellence, NPS and the DON foster and encourage a program of relevant and meritorious research which both supports the needs of Navy and Department of Defense while building the intellectual capital of Naval Postgraduate School faculty.

Information Technology And Communications Services (ITACS)

Mission Statement

Provide technology and communications support for the NPS core mission of teaching, research, and service to the Navy and Department of Defense, and to provide voice, video, and data infrastructure as mission-critical enablers of innovation and experimentation within the educational enterprise.
In fiscal year 2015, ITACS faced many opportunities to grow our campus IT infrastructure at a time when we were challenged with diminishing staff resources. 2015 afforded ITACS the opportunity to face these challenges head on and continue to provide and grow the capabilities that our campus demands. Annually, this report is published to account for the decisions made and the actions taken to support and grow these capabilities.

In 2015, we focused on security as a cornerstone, and performance as a benchmark, to improve the usability of our services. This is evidenced by the transition to the new enterprise Web Content Management System “LifeRay,” the acquisition and planning of the campus-wide network infrastructure upgrade, the addition of the Vulnerability Remediation Asset Manager (VRAM) in Cybersecurity, and the greatly improved lab and classroom automated re-image process. Additionally, ITACS worked to improve the audio-visual technologies of our classrooms and auditoria, and acquired cloud storage services to expand and grow our capability reach.

Sourcing the tools to succeed, we aim to strengthen our catalog of services offered, reinvest in cost-saving measures, and reinforce flexibility and agility to deliver our goal of usability. It is imperative that our services are out in front of mission requirements.

This publication should inspire reflection on the road we universally share, at this time in 2015. We are in the fortunate position to share this road with great company. Thank you for taking this opportunity to review our Annual Accountability Report.

Joseph R. LoPiccolo, Chief Information Officer
Increasing the Pace

The NPS supercomputer is named Hamming. The computer is named after the internationally renowned mathematician Richard Hamming, who was a Professor of Mathematics at NPS from 1976 until his death in 1998. The supercomputer is used by faculty and students at NPS who require enormous amounts of computing power to solve a wide variety of problems. The presence of this computer on campus has also been instrumental in the recruitment of several faculty members who must have this type of equipment in order to perform their research and teaching duties.

Over time, the use of this computing resource has become increasingly advantageous to NPS as evidenced by HPC usage metrics. The number of supercomputing users has more than doubled since 2013 and dozens of student theses have been produced using Hamming.

Traditional HPC

“Traditional” HPC can be thought of as “number crunching” / “supercomputers”. These are computers with many CPUs. NPS has a “traditional” HPC system called Hamming, that has over 3,000 CPU cores. The computation done on Hamming over the last year would have taken over 150 years to perform on a typical laptop. Hamming is used for both teaching and research. Example of problems solved by Hamming include: weather forecasting, helicopter rotor design, detonation modeling, and polar ice prediction.
Big Data

In FY15, NPS was awarded nearly $1M to procure hardware for a Big Data computer system. As noted above, Hamming has thousands of CPUs that are typically used to solve complicated mathematical equations, and can be thought of as “bringing data to CPUs”. Big Data problems, however, are typically problems that deal with huge datasets with a lot of variety. In these types of problems, we “bring the CPUs to the data”. The NPS Big Data system only consists of 168 CPU cores (in contrast to the thousands on Hamming), but has a 1.5 petabyte disk storage system (1.5 petabytes = 1500 terabytes). Fast input/output (reading and writing to disks) on these types of systems is much more important than computing power.

Examples of Big Data problems that we touch every day are the huge volumes of data that are analyzed in real time by email and social media providers. Think about how Google or Yahoo analyze email and web surfing history to come up with purchase recommendations. Another example would be how Facebook determines what stories are trending. Every day, computer users globally produce over 520 trillion words, which is about 20 times the number of words contained in the books in the Library of Congress.

The commercial sector (e.g. Google, and social media companies, as well as retailers such as Walmart) have taken the lead in Big Data initiatives, and DoD and Navy have been lagging. However, with the addition of this new hardware at NPS, there are many applications that will benefit. An example is the analysis (historical and in real-time) of cybersecurity log files from thousands of computers operated on DoD networks. This type of analysis can help us to better detect when our networks are under attack. Other research that is underway will use Big Data techniques to analyze photographic imagery (artificial intelligence) and perform sentiment analysis on real-time feeds of Twitter data.

Data Forensics

In 2012, a research group in the Computer Science Department used Hamming to perform data forensics research (searching for words and phrases in very large datasets). At the outset, the research group typically ran their model on their own equipment for over 30 days to get their results. After moving their code to Hamming (and investing in some additional specialized hardware), they reduced their run times down to less than 4 hours. Their sponsor has continued to fund their research due in part to the quick run times of their computer code.

Receiving the DARTS award for our ‘Grace’ data analysis cluster allows NPS to perform in-house education on topics of critical importance to the USN and DOD that we previously could only discuss theoretically. Additionally, this new capability has successfully opened doors for sponsors that are eager for basic research in large-scale data science.”

-M. Kolsch, Faculty, Computer Science
Throughout FY15 the NPS cybersecurity team continued to conduct operations to ensure the confidentiality, integrity and availability of NPS networks and the data that resides on them. Some of the more noteworthy accomplishments throughout FY15 included the completion of a formal assessment and authorization of the Monterey Educational (MEDU) Network which resulted in the granting of a full Authority to Operate (ATO) from the Navy Operational Designated Approving Authority (ODAA).

The cybersecurity team also migrated from the Online Compliance and Reporting System (OCRS) to the Vulnerability Remediation and Asset Management (VRAM) System. This new tool will help in achieving information assurance compliance requirements and will also provide awareness of NPS compliance status at higher Navy echelons.

**Highlight on Symantec Anti-virus**

Symantec Anti-virus is a commercial anti-virus solution which tracks and quarantines malicious software. Symantec has blocked nearly 9,500 unique instances of malware over the past four years at NPS. The implementation of this tool results in a safer computing environment for NPS faculty, staff, and students by preventing workstation infections.

**Network Layers of Defense (Scanning/Probing)**

1. Adversary initiates scanning / probing of NPS network.
2. Malicious activity detected by sensors alert sent to Cybersecurity team.
3. Scanning blocked by blocking known, malicious Internet addresses.
4. Malicious activity detected by sensors that alert the Cybersecurity team.
5. Vulnerability Management protects against successful exploitation.
6. Anti-virus alerts and blocks activity based on pre-defined rules.
7. Trained users report suspicious activity to the Cybersecurity team.

**FY15 Statistics**

- Malware Blocked by Symantec (preventing workstation infections): 1,985
- Number of spam email blocked by Barracuda: 8,899,848
- Total cost savings to NPS due to using SPAM firewall: $770,807
- Critical Patches Applied to the network: >150
Also, as a group the ITACS team vetted and resolved nearly 200 configuration control board (CCB) requests to ensure the integrity and continued security of NPS networks and systems while at the same time balancing the requirements of academic mission.

In addition to these proactive measures, the ITACS team used their incident response processes and procedures to respond to more than 200 incidents in FY15 and addressed nearly 2000 abuse issues. Additionally, more than 150 critical patches were applied to the systems. Updating NPS systems with critical patches ensures software vulnerabilities are not available to exploit.

Technical controls were also heavily relied upon with nearly 2400 infections being identified and blocked by anti-virus. These measures prevented malicious code from modifying NPS systems and adversaries from gaining a foothold in our network. More than 8.8 million SPAM messages were blocked by our spam filters on the DREN and ERN. The Barracuda mail filter alone thwarted several targeted spearphishing attacks on NPS and saved hundreds of hours of labor that would have been required to respond to the attacks had they successfully penetrated the network. Spam not only ties up critical resources (both personnel and technical), but it can be an avenue for introducing malicious code into our networks. It is therefore critical to prevent these SPAM messages.

**Cybersecurity Training**

Realizing that the NPS customer is one of the most critical aspects of a cyber defense strategy, the cybersecurity team continued its practice of conducting live, all hands cybersecurity training in King Hall. Between June and August of 2015, more than 1,000 customers attended the training, which was specifically tailored for NPS personnel. Feedback was extremely positive with many customers expressing their appreciation for the “personal touch” that highlighted cybersecurity lessons learned from events directly aimed at NPS networks and users.

Cybersecurity is responsible for securing the networks and data on campus, including computer network defense and monitoring, antivirus and vulnerability, operating systems and application patch management, and certification and accreditation of networks and applications. Staff provide the tools and technologies to find, protect, and react to the unauthorized disclosure of sensitive/privacy data on NPS networks, liaises with third parties throughout the DOD, DON, the greater academic community and state and local government organizations to maintain currency with the latest cybersecurity and privacy policies, guidelines, threats and vulnerabilities; to deliver relevant and timely trainings to the campus user population; and to collaborate with faculty and students on cybersecurity-relevant research topics.
A Platform for Advanced Research

Classified Computing Programs provide staff and infrastructure to support the operations of the university's five classified networks. Leveraging the expertise found in ITACS’ other functional areas, Classified Computing Programs supports the classroom, computer labs, secure video teleconferencing, distance learning, conferences, and seminars in the Sensitive Compartmented Information Facility (SCIF), Systems Technology Battle Lab (STBL), the Dudley Knox Library, Watkins Hall, and in various campus auditoria and lecture halls.

The Classified Computing Programs (CCP) team completed two significant milestones this fiscal year with direct impact on the research and teaching mission of NPS. The CCP together with other members of ITACS, the Dudley Knox Library (DKL) Restricted Resource (RRS) team and closely supported by the NPS security manager received from the Fleet Cyber Command / U.S. Tenth Fleet Navy Authorizing Officer (NAO) for both the two suite Secure Video Teleconference (SVTC) system and the Systems Technology Battle Lab (STBL) a three year Authority To Operate (ATO). Subsequently, the Defense Information Systems Agency (DISA) issued three year Authority To Connect (ATC) to the Department of Defense Information Network (DoDIN) letters for the SVTC and STBL.
The ATO process is a rigorous validation of system alignment with DoD and DoN cybersecurity policy and requirements which ensures they are properly and securely maintained and operated, and meet the necessary standards to be able to connect to the DoDIN.

The STBL VTC suites are regularly used by NPS faculty and staff and are often used by other area commands. The SVTC suites are averaging over 34 sessions per quarter for flag level meetings, collaborative research, and faculty and student interaction with DoD organizations worldwide. They are important infrastructure in support of the NPS teaching and research mission.

Just a few months after completing the SVTC ATO, the CCP team was fully immersed in the work to complete the more complex task of earning an ATO for the STBL network.

The team demonstrated the STBL’s compliance with security requirements to the Navy’s Certifying Authority (CA) at NETWARCOM which certified to the NAO that the STBL was in fact in a proper security posture with appropriate levels of protection in place and fully functional. With the CA certification and NPS’s comprehensive test plan and results package, operational documents and drawings, the NAO conducted a thorough assessment of the STBL and concurred in its suitability for operation on the DoDIN.

The STBL network and spaces are in continuous use throughout the academic year by the faculty, staff, and students as they conduct classes, engage in research, host conferences, have meetings, and conduct symposia. The University’s role within the DoD and the educational community is enriched by providing teaching and research opportunities within the classified environment.
Developing the Future

The Naval Postgraduate School’s Information Technology and Communications Services’ Development and Operations Team provides the full scope of core IT services, starting with the server hardware, network cabling, and datacenter management, moving on to the management, maintenance, and operation of systems to provide IT resources to our customers throughout campus and the world. The team behind the services includes system administrators, network engineers, infrastructure managers, telecommunication specialists, and developers, all working to ensure that the systems you rely upon are available when you need them.

VM Farm Upgrade and Migration

ITACS acquired a new set of servers to be deployed as the enterprise virtual server farm, and completed deployment of those servers over the summer of 2015. Servers make available our network resources here at NPS. These new servers provide 95% more CPU, 287% more memory, and 10Gbps network connectivity to the farm, resulting in the ability to continue to meet the schools' demand for virtual servers on the infrastructure.

NPS operates 80% of its servers as virtual machines. A virtual machine offers advantages over physical servers, ranging from:

- **total cost of ownership per server** (much lower to not have to buy a physical server each time you have a workload requiring that it be hosted on a server),

- **stability of systems running on a virtual farm** (server failure results in virtual servers migrating between physical hosts, rather than going offline), and

- **ease of management** (the entire virtual server ‘farm’ can be managed from a single control panel). The new hardware has more resources, enabling it to run more virtual servers, and comes with updated tools for the management of the NPS farm.
Network Upgrade: 100G and Brocade

ITACS is setting the course ahead in making high speed networking available to faculty, students, and staff on campus. Partnering with our internet service provider, the Corporation for Education Network Innovation in California (CENIC), NPS is bringing 100Gbps connectivity to campus. This will enable the use and research of distributed computing, and future proof the commodity use of off-campus resources for years to come.

In order to handle the increase in bandwidth and cybersecurity risks associated with this increase, ITACS has acquired Palo Alto Networks Next Generation Firewalls for its networks. These firewalls, called next generation for their shift in how security is applied, will provide the ability to secure the network based not only upon address and type of communication, but also the contents of those communications. Thus ITACS will be able to provide more access to sites around the internet while keeping students, faculty, and staff safe from malicious activity.

Through the Navy POM16 process, ITACS has contracted for and acquired a refresh of network electronics. Fundamentally, all network electronics (routers and switches) are being replaced with modern versions. Behind that, the new equipment has new features, bringing Software Defined Networking (SDN) to campus. SDN unifies the control of the network to a standards driven set of controls, allowing network engineers and specialized software to drive configuration of the network in real time based upon network conditions. The initial rollout of the equipment will maintain conventional network operations, and then SDN applications will be identified and applied over time to minimize disruption to customers. This will be a game changer for research and education in FY16 and the years to come.

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DevOps works to ensure the systems you rely upon are available when you need them.
Intranet / Internet Web Presence: Liferay Transition

The goalposts have been set for a complete transition of the Intranet and external www.nps.edu websites to the new enterprise Content Management System (CMS) Liferay in early FY16. Even after persistent progress by a team of dedicated individuals in FY15, there is still work to be done. An analysis was conducted in September 2015 which identified 39 sites that still need to be migrated. By forging critical relationships, the past year has yielded a key lesson. Above all else, a focus on content is important.

Two separate organizations reduced the number of pages they maintain by as much as 80%, with better usability than ever before.

Liferay will help to modernize the NPS web presence. Its features make it an excellent fit for NPS. This tool has been carefully selected to provide the NPS customer a host of new capabilities, and a better experience for the viewer.

There are many advantages to Liferay. These include:

1. Timeliness. More often than not, time is of the essence when delivering a message. Liferay enables customers to publish immediately as opposed to a scheduled or delayed publication.

2. Customizability. This new system is customizable from an application standpoint, being built with open source.

3. Improved Usability. Liferay affords the customer a preview function which ensures the end product meets expectations and fits the desired objective. A number of other tools, useful design components, and integrations make the system easier to work with.

4. Interoperability. Perhaps most importantly, sites developed in Liferay respond optimally to a larger variety of devices, whether driven by Windows, Android, or iOS.

Success will be had through adaptability, diligence, and a recognition of the prominent role of the web in present-day communication. A fully successful transition is within reach and targeted for FY16.
Naval Research Topic Portal

Working with the Research and Sponsored Programs Office, the DevOps team has created a web application for the distribution of potential research topics to the campus, the starting point for a workflow that will track research (and funding) from end-to-end. This application will work in conjunction with Kuali Coeus, a research administration application scheduled for release at NPS in 2016.

Server Operating System Update

DevOps sysadmins have completed the configuration of servers compliant with DoD requirements for configuration and security, and began rolling out Red Hat Enterprise Linux 7 and Windows Server 2012 servers to meet new requirements. Both of these operating systems represent significant changes to the inner workings of key components of the enterprise and will displace our older operating systems (Red Hat Enterprise Linux 5 and Windows Server 2003) as we modernize our server farm to ensure security and compliance as systems reach end-of-life.

Kanban at ITACS

Kanban is a project management tool used to visualize workflow, limit work-in-progress, and ultimately pull value through a system. The study of manufacturing practices has allowed software developers and other knowledge workers to better manage task efficiency. The Kanban philosophy encourages working smarter, not harder.

The entire ITACS community was offered the opportunity to train and participate in enriching Kanban Workshops led by NPS’ own Kanban specialists/enthusiasts during the months of June and July. Teams were encouraged to identify opportunities to adopt and apply Kanban to their own products and workflows.

A number of methodologies were introduced. For instance, by establishing clear end goals and milestones, it becomes easier to stay on course and track progress along the way. Tools are deployed to easily gauge the health of any given system at-a-glance. Another workflow optimization is derived through the analysis of cycle time. In order to minimize cycle time, or the time it takes a task to flow through all the stages of work to completion, teams should be flexible enough to pull together to get over a given obstacle. In Kanban, the responsibility for product delivery is shared. When teams work together, a larger, more diverse skill set can be applied to any given problem or bottleneck. Also introduced was the strategy to focus a team’s energy and resources on fewer tasks at hand. Efforts thus penetrate more deeply into a problem, and more work is delivered at a faster rate.

These ideas make intuitive sense when placed into the context of an adverse physical environment, like a boat taking on water. The problem is clearly framed, the work to be done is evident, and priorities quickly fall into place. Knowledge work, however, tends to demand a greater level of measured focus for maintaining the right course. Kanban provides a framework for applying that focus.
Technology and Learning

Consistent with the NPS mission, the Educational Technology Department provides faculty, staff, and student’s cutting-edge technology, outstanding support services and extraordinary facilities to achieve their educational and operational goals.

The department integrates and supports the technology in 14 computer labs, 10 VTC/Video Tele-Education suites, 75 smart classrooms, five auditoria, and 20 conference facilities and is responsible for training faculty in the use of the technologies in all of NPS’s learning spaces.

The Educational Technology Department’s Collaborative Learning Environment (consisting of Sakai, Collaborate, live video-streaming, on-demand class recordings, and on-campus podcasting) coupled with the progressive audio visual and video tele-education infrastructure, has led to NPS’s extremely successful distance learning program.

NPS’ Executive Briefing Center

During Winter Quarter of FY15, a gooseneck condenser microphone was installed at each of the 18 table positions at the Executive Briefing Center (EBC). This microphone, the 18” Shure MX418C, eliminates background noise and resists interference from mobile phones and other nearby wireless devices. This modest enhancement refreshes the EBC’s capabilities, making the space better suited to host NPS’ most highly-regarded visitors.

The EBC fits a unique niche at NPS, as a smart executive level presentation facility, first opening its doors in 2012. Previously, roundtable meeting space was only possible at NPS in a much-reduced capacity. The EBC boasts a modern AV and VTC system with hideaway screen & projection system. Over the course of FY15, A/V specialists supported 80 events in this venue.
Streaming Media: Bridging the Distance

A live video feed can significantly increase viewership for NPS-hosted events. Educational Technologies staff enabled video streaming for over thirty events in 2015. Examples include Mandatory Training Sessions, Special Guest Lectures, thought-provoking Brown Bag Seminars, and various Engineering Colloquia. In addition, the NPS Graduation Ceremony is streamed live each quarter, resulting in a wider audience and greater exposure. 3,103 friends, colleagues, and family members benefited from this service over the past year. A remarkably international audience tunes in, hailing from Sweden, Germany, and South Korea, to name a few countries.

In some of our VTC/E classrooms, we capture classes and this content is then utilized by students for refresh & review. This is a very important capability for our international student population (30%). For many, English is a second language. Faculty peer review is another application of this technology.

Large Venue Support

Audiovisual (A/V) specialists supported 427 events in FY15, one quarter of those being at either the EBC (Executive Briefing Center) or NPS’ largest auditorium, King Hall. On a daily basis, A/V specialists expertly guide and support the customer through orientation, preparation, and event execution. A/V aspires to efficiently and effectively provide the highest level of customer support. Preparation is underway for a high-definition upgrade to projector technology in King Hall in FY16.

VTC in 2015

NPS faculty, staff, and students can remotely participate in conferences, stay connected with colleagues at peer institutions, and even collaborate on projects using NPS Video Conferencing (VTC) services. By choosing VTC over travel, customers forego airfare, lodging, and local transportation-related costs. Over the years, technology has drastically improved. In 2015, Video Teleconferencing was enlivened by HD (High Definition) video, crystal-clear sound, and highly-configurable workspaces. VTC operators supported 5,614 hours in FY15, which is equivalent to 2.7 full-time staff members’ time.

NPS’ CLE

Sakai is NPS’ Collaborative Learning Environment (CLE), designed to support the learning and research activities of the Naval Postgraduate School. To support academics, Sakai provides a central portal for course announcements, syllabus, and gradebook, effectively reducing the administrative overhead for faculty and students. In FY15, there were over 6,000 customers at NPS. In the past 5 years, the customer base has grown 40%. The number of sites (courses and projects) hosted on Sakai continues to steadily increase, reaching 9,308 sites at the end of FY15. Sakai is a cost-effective, customizable tool with a great assortment of features and a flexible application layout.
KFS Customizations

Kuali Financial System (KFS) is NPS’ financial management system. Integral to the control of funding at NPS, KFS gives a user-friendly robust set of tools to those responsible for monitoring and handling NPS’ financial resources. Being a community-source application, KFS is especially suited to keep pace with new changes in higher education, business requirements, and burgeoning technology demands.

At the core of KFS’ functionality is an electronic document system programmed to flow through the various stages of approval from administrative to financial and acquisition. ITACS worked with the Comptroller Department in FY15 to deploy enhancements to the application and enable the integration of a newer version from 4.1.2 to 5.0.2. Work on the update is still in progress. Additionally, there has been a lifecycle replacement of the reporting software and underlying server in 2015, which continues to streamline the ability for customers to view KFS reports.
Kuali Coeus Soft Launch

A large component of the NPS mission is sponsored research and education. A promising milestone in the area of sponsored programs administration was reached with the soft launch of Kuali Coeus (KC) on 3 August 2015. KC is an open source research administration application. Once in place, Coeus is intended to centralize and simplify the grant and research administration process, to allow better information reporting, report tracking, and award management. New efficiencies are anticipated across the entire administrative process, designed to improve the flow of research dollars from federal funding agencies to the faculty researcher. Accompanying these improvements, Kuali Coeus will closely integrate with NPS’ current financial management and accounting system, Kuali Financial System (KFS). The resulting uniformity should contribute to familiarity and ease of adoption for the institution.

This soft launch was the result of a long-term, combined team effort. Two teams oversee the development and the handling of Kuali Coeus at NPS: the KC Functional and Technical Teams. These teams work in concert to plan for and refine KC for institution-wide adoption. “Planning and teamwork are critical for the success of this endeavor,” said Pires, Deputy CIO for Plans and Projects at ITACS. “The time and energy invested by these teams is valued beyond simple written recognition... the reward to the campus will be far-reaching and long-lasting.”

Currently, the Research Sponsored Programs Office (RSPO) is processing all funded FY16 proposals using KC in conjunction with their Microsoft Access proposal tracking system. This will ensure that all needs are met, both financial and reporting, as well as enable their staff to become proficient in the use of the new system. RSPO hopes to work with NPS faculty and staff in the near future to fully launch this application to the entire campus.

In FY15, ITACS partnered with the RSPO to customize KC for NPS’ needs. The open source design of Kuali Coeus makes this customization possible, meaning the software, written in Java programming language, is freely available for use and modification.
Resource Management

Resource Management fully supports all operational areas within ITACS in budget, procurement, contracts and some Human Resource (HR) services. Resource Management oversees space, personnel, equipment and finance. In addition, Resource Management supports ITACS in areas of training, travel, and communications.

The mission of ITACS Resource Management is dedication to the highest quality of customer service delivered with a sense of warmth, friendliness, excellence, and integrity.

Resource Management is committed to providing a stable work environment with equal opportunity for learning and personal growth. Creativity and innovation are encouraged for improving the effectiveness of ITACS. Above all, employees will be provided the same concern, respect, and caring attitude within the organization that they are expected to share externally with every customer.

**FY15 ITACS EXPENDITURES**

Provides the summary of the distribution of ITACS non-labor dollars. The “Other” category includes supplies, administrative costs, and non-IT expenditures for the operation of the department.

**FY15 Statistics**

Dollar Amount Purchased on Micro Purchase Credit Cards: **$62,552**

Position Descriptions
Re-written: **16**

KFS Documents Processed: **445**

Conference Room Utilization (Meetings Held):
In-162: **258** In-264: **357**

**Military Staffing**

Military staff is valued for their exemplary professionalism, specialized knowledge, and genuine representation of the service component of ITACS’ core values. Tour of duty is normally between 2-4 years.

TAC: 6
Classified Computing: 3
DevOps: 1
Educational Technologies: 1
Cybersecurity: 1

**Size of ITACS Departments**

**Number of Civilian Employees**

- DevOps: 19
- TAC: 12
- Educational Technologies: 6
- Resource Management: 5
- Cybersecurity: 3
- Classified Computing: 3
- CIO/Deputy CIO: 2
- High Performance Computing: 1
- Plans and Projects: 1

This graph displays a 27% reduction in civilian staffing numbers from July 2013 to present. Effective management of personnel resources is critical in response to this significant challenge.

This graph compares the number of civilian employees across different departments, highlighting the reduction in staffing from July 2013 to the present, showing a 27% decrease. It illustrates the importance of effective management in response to this significant challenge.

This graph provides a visual summary of the distribution of ITACS non-labor dollars, with the “Other” category including supplies, administrative costs, and non-IT expenditures for the operation of the department.
Supporting the Workforce

The overall ITACS organization, comprised of seven operational areas and one support area, is characterized by a broad pool of talented and experienced employees. In FY15, ITACS’ civilian workforce had 999 combined years of government experience. As a whole, ITACS staff is charged with significant responsibility; operational staff member oversight can be as high as $1.25 million in equipment. ITACS’ workforce is highly specialized; a large number of employees hold IT credentials such as Security +, Linux +, Certified Information Systems Security Professional (CISSP), and Microsoft Certified Professional (MCP).

To support this critical resource, in FY15, $142,756 was spent on training and travel related costs. Critical competencies were honed at Red Hat, Kuali, and Supercomputing conferences. Peer engagement occurred at the Liferay and Navy Higher Education Conference. Investment into our personnel provides returns in technical know-how, professionalism, and enhanced problem solving and innovation through higher job satisfaction.

NPS Mobile Device Training

By leveraging wireless communication technology, customers are afforded greater productivity, connectivity, and convenience. ITACS enables voice, data, and text services on NPS-issued cellular phones and devices for authorized NPS faculty and staff. Customers can avail themselves of the cutting-edge network and broad coverage of two of the leading U.S. mobile carriers.

During Academic Enrichment Week in March, ITACS offered a series of mobile device workshops outlining plan basics and offering helpful tips like how to check data usage. Customers were introduced to various aspects of mobile security including encryption, vulnerabilities involving unsecured Wi-Fi hotspots, and what to do in the event of a lost or stolen device. Also outlined were the standard procedures for embarking on international travel with a mobile device.

The training could not have come at a better time, as technology has advanced significantly in this realm. According to Telecommunications Specialist Hafemeister, “The last two years have seen some real changes... (mobile devices) are just computers that you can talk on, if you can think of it that way.” To conclude the training, carrier representatives were available for questions and answers, lending a uniquely informed perspective. Training continues to be a critical component for ITACS as it contributes to an informed customer base, and plays a large part in the successful administration of the mobile device program at NPS.

FYE15 Distribution of Training Dollars by ITACS Organizational Units

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<th>Organizational Unit</th>
<th>Percentage</th>
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<tr>
<td>DevOps</td>
<td>5%</td>
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<tr>
<td>TAC</td>
<td>14%</td>
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<tr>
<td>CyberSecurity</td>
<td>31%</td>
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<td>Plans &amp; Projects</td>
<td>1%</td>
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<td>High Performance Computing</td>
<td>4%</td>
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<td>Classified Computing</td>
<td>4%</td>
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<td>Educational Technologies</td>
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ITACS Tech News

The Technology News, or “Tech News” is a capable contender for the best way to stay connected with ITACS. In FY15, Tech News was a monthly newsletter assembled by the Resource Management Department that highlighted important projects and events occurring at ITACS. Featured articles covered the gamut of newsworthy technology-related facts and subject matter. The Tech News subscriber could study biographies on highly trained IT specialists or view a calendar of upcoming scheduled IT Maintenance. Engaging facts offered an enhanced understanding of ITACS. For example, March’s edition covered a 12% increase in customers assisted at the TAC from exactly one year prior.

The Tech News audience in FY15 was more exposed to and informed about best practices on securing a social media presence, strategies to handle unwanted junk email, current Phishing email advisories, specialty research services, available tools to safely transmit Personally Identifiable Information (PII), connecting to the campus remotely, and tips for tax season. Pick up a copy today at the Dudley Knox Library. Better yet, find it online by searching for technews on the ITACS wiki.
Consistent, Timely Service

The NPS’ Technology Assistance Center (TAC) is the primary means of IT support for students, staff and faculty. The TAC receives, prioritizes, and handles a high call volume of IT trouble tickets daily.

Top Five Call Categories:

During the month of December 2014, the top five categories of calls for the TAC were related to:

⇒ Account Administration
⇒ Software
⇒ Hardware
⇒ Network
⇒ Web

In FY15, 73% of TAC trouble tickets were closed in the first day.

Optimizing Your Software Portfolio

Enterprise and academic software provide the means to complete a given task at NPS, whether it be a graduate thesis, a research proposal, or simply responding to an email.

More than 60 software packages comprise NPS’ enterprise software collection. 29 packages are already deployed on the standard NPS operating system image. This robust offering is specifically tailored to meet business and productivity needs at NPS. Optional enterprise software packages, including Project Management, HTML editing, and Mac applications can be found through the NPS Downloadable Software Library. To streamline installation, a subset are also itemized on the self-help portal, the LanDesk launchpad. NPS’ suite of enterprise software is curated by the TAC with a sharp eye for value, applicability, and customer needs.

Academic software at NPS spans the fields of Space Systems, Math/Engineering, Operations Research, Computer Science, and Business Systems. Dozens of academic site licenses are managed by the TAC on behalf of NPS. For instance, Matlab, a technical computing environment distributed by MathWorks, has been activated on over 1,400 computers across campus. Matlab is leveraged by a number of curricula at NPS, including Systems Engineering, Applied Mathematics, and Electrical and Computer Engineering. Academic Software has become increasingly centralized in order to leverage NPS buying power. This trend will increase into FY16.

Considerable energy is invested into sustaining a comprehensive software portfolio for use by NPS faculty, staff, and students.

OnTheHub: Self-Download Portal

OnTheHub is a webstore offering a plethora of software packages specially geared for academic institutions. OnTheHub is highly utilized at NPS, cumulating more than 2,000 downloads per year. This can be visualized as one download for every business hour over the course of each year. Over 200 applications are available for self-download through the DreamSpark Premium and VMware Academic Programs. Customers can find popular Windows operating systems, a broad offering of server-specific software, and a diverse set of statistical, design, and business applications. The majority of software packages are available at a great discount - projected savings exceed $25K for one popular software package alone, VMware Fusion. ITACS passes on significant savings to the customer through this self-download program.
Lab and Classroom Re-Image

Every year during the Summer and Winter breaks, the PC Shop re-images the ITACS managed computer labs and classrooms across campus with an updated image that has all new and up to date software to prepare for the new quarter. In the past, this typically required the PC Shop technicians to visit each lab and physically touch each and every computer. The old way required two to four PC Shop technicians and a two day closure of each lab. During the 2015 Summer break the PC Shop was able to re-image the computer labs remotely by pushing the new image across the network overnight. The technicians did not need to visit each lab and each lab was only down for two hours during the push. With this new technique, the PC Shop will not be limited to the quarter breaks to re-image labs. If necessary, it can be done overnight or on the weekends in the middle of a quarter and not interfere with students, staff or faculty.

New Student Orientation

For newly arriving students, academic preparation should be the priority. Learning the ins and outs of NPS technology services should be easy – more akin a ski resort’s green circle than a black diamond. Not to mention, first navigating NPS’ century-old-plus historic setting can be a challenge unto itself.

Every academic quarter, the Technology Assistance Center (TAC) provides a guided tour of services to new students led by IT specialists from the TAC. The goal is to offer students additional direction on how to best leverage technology to achieve their educational goals.

From first-hand knowledge, IT specialists point out the perils and hurdles facing the fledgling NPS scholar. Specialists relate a number of tips and tricks for smooth IT operation. Account lockout is covered addressing the cause and how to be prepared and ultimately avoid the inconvenience. From hardware and software recommendations to a plethora of useful URLs and available software – the TAC sets out to ensure new NPS students are adequately prepared for a rigorous academic routine.

Transition to JIRA Help Desk

In July 2015, the Technology Assistance Center stopped using the old eHelpdesk ticketing system and started using a new ticketing system called JIRA. For now, it should be a fairly transparent change to the students, staff, and faculty. Tickets will still be automatically generated from emails and voicemails we receive as before. The only difference the TAC customer should see is when they get email updates on their ticket, it will be coming from the new JIRA system rather than the eHelpdesk system. JIRA allows for better tracking of tickets between ITACS groups and allows us to follow the proper workflow of tickets as they get processed and moved from one ITACS group to another as needed. In the near future, JIRA Service Desk will be implemented, which the customer will be able to use and have more interactivity with their tickets and the possibility of resolving their own issue before creating a ticket. Stay tuned for that in 2016.
“Teams came together to determine ways in which efficiencies and economies of scale could be realized with shared services.”

Information Technology Task Force

The Information Technology Task Force (ITTF) provides an open forum for the review of NPS’ Information Technology strategic decision-making. The ITTF provides guidance and input to the Chief Information Officer (CIO) and Director of ITACS in the development and annual update of the NPS ITACS strategic plan. This includes review of the annual budget, operational plan, resource plan, network development plan, the annual accountability report, and campus-wide Information Technology and Communications policies. The membership includes a cross-section of NPS Schools, Departments, and special appointments.

HPC Advisory Panel

Given its interdisciplinary nature, supercomputing at NPS is governed in consultation with a panel of NPS faculty. These experts in supercomputing work to create a “roadmap” that determines how to best augment the computing power of the NPS Supercomputer Hamming applied to NPS mission needs. The panel includes members from Operations Research, Computer Science, Applied Mathematics, and Meteorology and meetings are typically held once per quarter.

Web Advisory Board

The Web Advisory Board is comprised of a group of representatives throughout NPS who seek to advance the mission of the university by recommending policies, procedures, and guidelines regarding web-related issues. The board will act as a facilitator, fostering communication, education, collaboration, and a sense of community among those involved with or are interested in online communication at the Naval Postgraduate School.

Network Configuration Control Board

The CCB is the official mechanism for controlling the configuration of the networks in place at NPS. As such, the CCB will manage the integrity of the networks’ configurations over their life cycle. The NPS networks includes everything inside the border routers on both the .mil network as well as the .edu network. In addition to the network devices, firewalls, routers and switches, the CCB will oversee the operational efficiency of the network as well as maintain an appropriate information assurance posture in accordance with statutory requirements and acceptable practices.
Navy Higher Education IT Consortium

The three peer institutions of the Naval Higher Education Information Technology Consortium (NHEITC); the Naval Postgraduate School (NPS), the Naval War College (NWC), and the United States Naval Academy (USNA) have had a 12 year collaboration to enhance the consortium’s employment of Information Technology (IT) towards meeting the mission needs of the three member institutions.

Classified Computing Committee

The Classified Computing Committee, composed of experienced faculty and staff from many of the academic disciplines, is deeply involved in classified teaching and research. The committee acts in an oversight and advisory capacity in the management of classified computing services by setting priority for the allocation of resources, ensuring alignment of proposed projects with the NPS mission, and providing a campus-wide collaboration for NPS’ classified computing program.

Spotlight on: NHEITC

There has been no time more critical for collaboration, innovation, and strategic planning amongst Information Technology (IT) leadership. Chief Information Officer (CIO) representatives from NPS, the Naval War College, and the Naval Academy (known as the Navy Higher Education IT Consortium, NHEITC) held their annual meeting to discuss best practices, identify new opportunities for growth, and explore potential synergies. This year, however, was a little different. Invitations were extended to each school’s respective Librarians, Comptrollers and Contracting Officers. This inclusive approach was intended to be a catalyst for a truly cross-functional team to address IT opportunities at the Schools at the direction of the Vice CNO, ADM Howard, who chairs the Navy’s Advanced Education Review Board (AERB).

From an educational standpoint, every point in a Navy Officer’s educational career was represented at the table: undergraduate, graduate, and professional education. In a resource and budget-constrained environment, the simple act of comparing and contrasting IT practices reaped definite rewards. Topics included cybersecurity, communications, project management, organizational effectiveness, and budgetary efficiencies. Above all else, the most consistent theme was how IT can best enable our students and faculty in their educational and research requirements. In summary, leadership from Navy higher education demonstrated that teamwork and peer engagement continue to play a large part in steering a well-functioning educational IT enterprise.