



## DEAN'S UPDATE

14 October 2005

Dear Colleagues,

With BRAC more or less behind us, the Research Office will be pursuing a number of relationships and programs that we believe will greatly benefit NPS, DON, DOD and the nation. You may have heard something of these initiatives, but feedback leads me to believe that a monthly update from the Dean of Research, briefly describing the status of these initiatives as well as other topics of interest to the NPS community, would be useful. Your requests for clarifications and topics of discussion for the Dean's Update are most welcome; please feel free to respond to me by email. This month's update describes our growing relationship with UC Santa Barbara and Lawrence Livermore Laboratory and the DOD-OSD SMART scholarship program.

— Leonard Ferrari, Associate Provost and Dean of Research, NPS

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### NPS-UCSB-LLNL PROGRAM, "ISTANS"

NPS, University of California at Santa Barbara, and Lawrence Livermore National Labs recently signed a memorandum of understanding to cooperate in graduate education and research in support of national security, science, and technology. The MOU "establishes a collaborative framework to advance the academic and scientific capabilities of the participating institutions in service to national security."

More specifically, NPS, UCSB, and LLNL have agreed on the formation of a new multi-party Institute for Science, Technology, and National Security (ISTANS). This unique coalition will bring together the best in national security and defense research with graduate academic and educational processes to solve pressing national-security issues. US civilian students will have greater opportunity to study defense technologies and national-security policy under the auspices of the new institute, which the partners intend to establish by the end of calendar year 2005. Research will be performed at NPS (Monterey), UCSB (Santa Barbara), and LLNL (Livermore, CA) in science, technology, and political science. Initial areas of interest include:

- Information assurance and security
- Computing technology and information management
- Biotechnologies
- Optics and lasers

- Nanotechnology
- Materials
- Sensors
- Operations analysis
- Modeling and simulation
- Systems engineering
- Wireless communication networks/DSP
- Cyber security
- Chemical-bio defense
- Weapons technology
- Counter-proliferation analysis and planning
- Radar
- Regional studies

ISTANS will house several existing NPS programs, including Dave Netzer's tactical-network-topology program, the growing maritime-domain-protection program under Frank Shoup (Meyers Institute), and the COASTS project under Jim Ehler (IS) and Brian Steckler (IS). The UCSB sensors-and-networks project from the UCSB ECE department will also play a major role in the new institute and Alex Bordetsky's new CENETIX center (IS) and CIRPAS will be affiliates.

NPS and LLNL have already developed collaborations in homeland security; energetic materials; space; information operations; national security/counter-proliferation (CAPS); modeling, simulation, and analysis/exercises and experiments; C4ISR; lasers; sensors/UAVs; high-performance com-



puting; and METOC. ISTANS will provide mechanisms for further project development in these areas as well as for expanded collaborations with UCSB faculty. We will be working over the next two months to formalize an ops plan for ISTANS.

## THE SMART PROGRAM

The Director of Defense Research and Engineering (DDR&E) and the Assistant Secretary of Navy for Manpower and Reserve Affairs (ASN [MR&A]) have appointed NPS as executive agent (EA) for the Science, Mathematics, and Research for Transformation (SMART) defense-education program. The goal is to increase the development, recruitment, and retention of individuals with knowledge, skills, and abilities in science, mathematics, and engineering critical to the DOD. SMART will provide financial assistance (tuition, room and board, educational expenses, and a salary) for US citizens who enter S&E degree programs in areas critical to the DOD technical workforce (similar to the list of ISTANS areas of interest). This is a scholarship-for-service program: students funded by SMART must agree to work in a DOD laboratory or agency for a given period upon completion of their studies. The executive agent will manage the program, to include selection of students and academic areas of interest, in collaboration with the directors of labs and agencies. Students seeking graduate degrees under SMART may decide to pursue their studies at NPS, but are not under obligation to do so. In FY 06 we expect that SMART will be funded at the \$10M to \$20M level. The Associate Dean of Research, Peter Purdue, is the EA's program executive for SMART.

## RECENT 09 INVESTMENTS AND SUPPORT

### Evaluation of Performance-Based Logistics

Last year, the Research Office provided seed funds to the GSBPP acquisition program (Snider and Greene) to create a "virtual university organization" to work on acquisition research. Performance-based logistics (PBL) is an alternative logistics support solution that transfers inventory management, technical support, and the supply-chain function to a provider who guarantees a level of performance at the same or reduced cost. Instead of buying spares, repairs, tools, and data in individual transactions, the method in a PBL arrangement is to buy a predetermined level of availability that meets the warfighter's objectives. In conjunction with the University of Maryland, the researchers are providing recommendations, with supporting analyses, for changes in law, regulation, policy,

or operation that will be made when supported by the research. The contractor will provide research to examine, analyze, and evaluate the performance of PBL efforts. RADM Greene (USN, ret.) and professor Snider are discussing continuation of the project with OSD-ATL. Dr. Nancy Spruill, Director of Acquisition Resources and Analysis for the Undersecretary of Defense for Acquisition and Technology, will be here next week to discuss details with Snider and Greene.

### Hastily Formed Networks

The Cebrowski Institute (CI) has received seed funds to start a research program in hastily formed networks (HFN), a coinage by Peter Denning (CS) to describe groups that form quickly in response to urgent needs. Representing diverse organizations and cultures, not necessarily sharing mission goals, they must collaborate to achieve critical objectives by means of rapidly formed technical and social networks. HFNs have proven invaluable in disaster-relief communications in past months. Brian Steckler aided humanitarian efforts following the tsunami of 2004 and Hurricane Katrina. Peter Denning is leading research activities in CI, which will formalize development of new network constructs.



*Tsunami-stricken areas of Thailand benefitted from rescue HFNs*



*Tsunami damage. Photo by Brian Steckler*

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## COASTS Progress

A NPS faculty/student team is strengthening communications in the global war on terrorism via the ability to rapidly field flexible, wireless, ad-hoc mobile networks to remote destinations in cooperation with Pacific Theater nations. The inaugural partner for the project (dubbed the Coalition Operational Area Surveillance and Targeting System, or COASTS), is the Royal Thai government and armed forces, Thailand being one of the longest standing and most important U.S. treaty partners in Asia. COASTS' mission is to develop and jointly test relatively low-cost, state-of-the-art, unclassified, wireless, unattended air-and-ground-sensor networks, providing real-time, sensor-to-shooter information for tactical and remote command-and-control. Exploited technologies include shared-situational-awareness software, wearable computing devices, persistent surveillance capabilities, lighter-than-air vehicles, advanced sensor suites, hastily formed networks, ultra-wideband enablers, GPS tracking technology, GPS-denied tracing devices, and a variety of unmanned aerial vehicles.

## IEVAP Developments

NPS has completed phase one of the Iraqi Enrollment via Voice Authentication project (IEVAP), an OSD-sponsored research project studying the feasibility of speaker-verification technology in support of GWOT security requirements. IEVAP will contribute towards employment of speech technologies in coalition military operations by developing a pilot proof-of-concept system that integrates speaker verification and automated speech recognition in a mobile platform.

With the assistance of Nuance Communications, Inc. and the Defense Language Institute, NPS has led the effort to develop a bilingual speech application (English and Jordanian-Arabic) to demonstrate the viability of speaker-verification technology at the Baghdad Central Correction Facility (formerly known as Abu Ghraib). Additionally, NPS tested accuracy claims of Nuance's speaker-verification application, looking at 68 speaker enrollments and 411 speaker verification attempts; a single data-point analysis yielded a system accuracy of 95.87%. NPS is preparing for the next phase of IEVAP and will also test the Nuance technology using the Iraqi-Arabic language.

## Research Equipment Recapitalization

The Dean of Research supports a research recapitalization program. The purpose of this program is to provide the "tools of the trade" that are not easily funded through a sponsored project. Funds for the program are a combi-

nation of indirect and NPS Institutionally Funded Research. In FY05, \$475,000 was invested. The Research Board reviews submissions from faculty and prioritizes the requests. It is expected that FY06 funding will be at least equal to that available in FY05. A call for proposals will be going out in January.

Recipients of this year's awards include:

MOVES	Motion-capture facility
Cebrowski	Fly-away kits and HFN additions
GSBPP	Compustat financial database SDC Platinum financial database ProQuest financial database
GSOIS	In-circuit emulator, high-robustness separation kernel development
GSEAS	Vector spectrum analyzer and software Distributed antenna system prototype Hardware collection platforms Vacuum-processing, thermal-cycling chamber Acoustic modems Satellite control and data-acquisition system High-speed data server, storage Tethersonde system Balloon inflation shelter liner PCI complete server RDI Workhorse QuarterMaster Explosive chamber for rocket-propulsion lab Electric convection oven, robotic fabrication lab (RFL) Micro-air-vehicle autopilot system, RFL

## NEXT ISSUE:

- Maritime Domain Protection
- More on COASTS
- Singaporean Programs
- NPS Intel Program

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