VOLUME 3, NO. 2

February 2011

RESEARCH AT NPS

A bedizened robot ready for March 31st's "Robots in the Roses" open house.

At the direction of the Secretary of the Navy, NPS has established the **Consortium for Robotics and Unmanned Systems Education and Research** (CRUSER) to serve as a vehicle for aligning currently disparate research efforts and integrating academic courses across disciplinary boundaries.

CRUSER's vision is to provide a collaborative environment for educational and research endeavors across the Navy and Marine Corps. The consortium seeks to align internal and external efforts by facilitating collaboration, providing a portal for exchange among researchers and educators with common interests, and supporting directed programs of operational experimentation.

CRUSER will facilitate naval research interests in unmanned systems and robotics and inject this focus into joint and naval field experiments, exercises, and war games, and host experimental and educational events, web spaces, and networking and collaborative environments.

With the needs of the Navy and the USMC at its core, CRUSER will refine existing courses and design new academic programs, a critical service that highlights the educational mission of NPS.

CRUSER will take a broad systems and holistic approach to issues relating to unmanned systems research and employment, from technical to ethical, concept generation to experimentation. Manning requirements, human-systems integration, information processing and display, training, logistics, acquisition, development, C2 architectures, legal issues, and autonomy versus mission risk are a sample of topics for research, in addition to technical research areas for these systems.

All are invited to CRUSER's open house on Thursday, 31 March, from 1500 to 1800 in the Hermann Hall rose garden. Find out what's going on in robotics, meet faculty, and discover how to align thesis work with NPS robotic research. You'll be able to view demonstrations, sign up for potential travel opportunities, participate in a precision paper-airplane flying contest, and enter to win CRUSER Bucks for Trident Room discounts. For information visit CRUSER online at: http://www.nps.edu/research/CRUSER/

BROWN-BAG SEMINAR SERIES

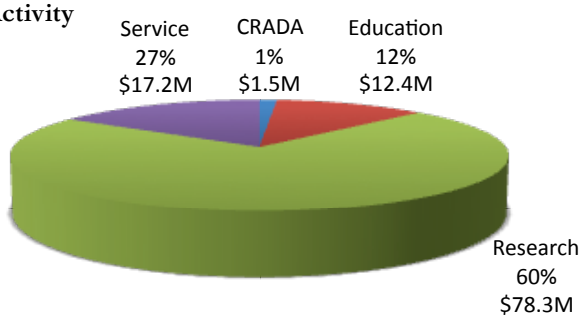
WA-302, 1200-1300

- Wednesday, 16 March: Working with Industry
- Wednesday, 13 April: Research Initiation Program
- Wednesday, 11 May: Research Safety

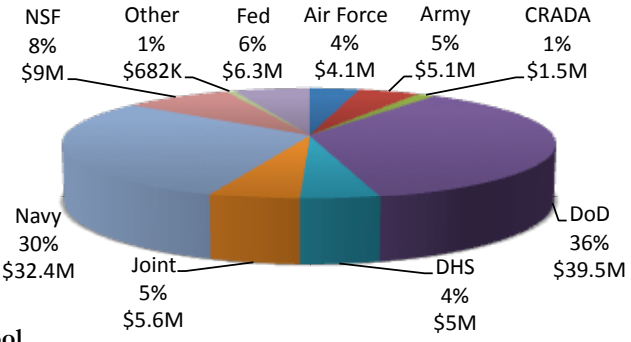
SPONSORED PROGRAMS STATUS, FEBRUARY 2010

FUNDS AVAILABLE: $109.3M

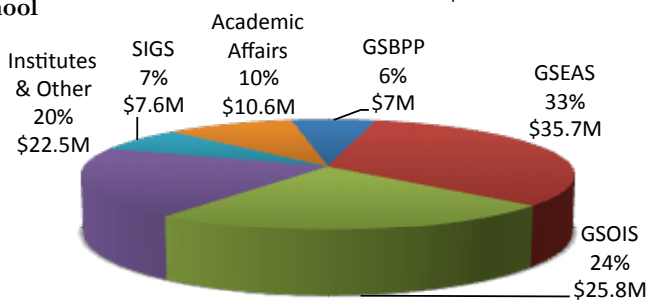
By Type of Activity



By Sponsor



By School



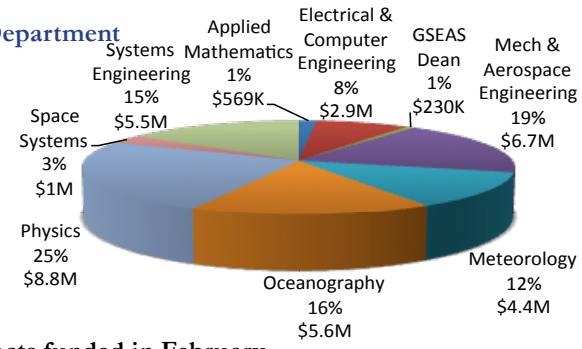
Research and Sponsored Programs Office (RSPO)
Office of the Vice President and Dean of Research
Naval Postgraduate School

Danielle Kuska, Director
Research and Sponsored Programs Office
research@nps.edu

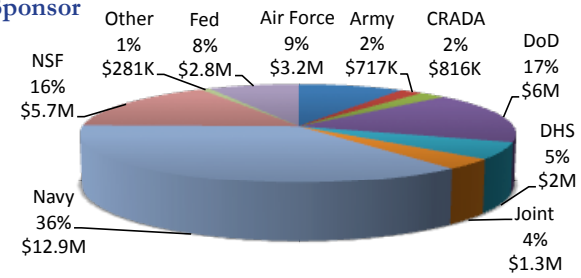
Graduate School of Engineering and Applied Sciences

Funds available to date: $35.7M

By Department



By Sponsor



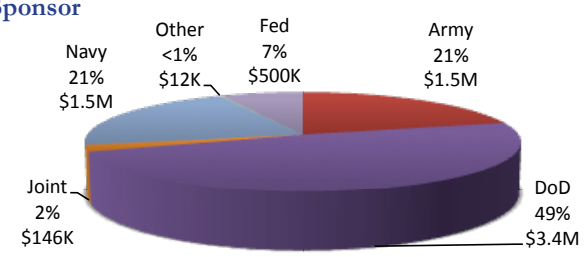
Projects funded in February

- Analysis of Passive Low-Resolution Imagery Techniques, *Frank Kragh, ECE* (SAF)
- Configurable Fault-Tolerant Architectures for Reliable Space-Based Computing, *Hersch Loomis, ECE (*SAF)
- Geolocation of Mobile Devices, *John McEachen, ECE* (SAF)
- 4G LTE/Wimax Signal Identification and Classification Using Cyclostationary Characteristics, *John McEachen, ECE* (SAF)
- Radiation Tolerant ASIC & VLSI Devices for Space-Based Systems, *Sherif Michael, ECE* (SAF)
- On-Orbit System ID and Maneuver for Flexible Spacecraft, *Brij Agrawal, MAE* (NRO)
- Key Technologies for Space Telescopes, *Brij Agrawal, MAE* (NRO)
- Spacecraft Adaptive Pointing Control, *Brij Agrawal, MAE* (NRO)
- Microstructure/Processing/Property Relationships in FSP of NiAl Bronze, *Sarath Menon, MAE* (ONR)
- Underwater Crack Repairs in Hy80 Structural Steel by Friction Stir Welding, *Sarath Menon, MAE* (ONR)
- Guidance and Control of a Spacecraft with Robotic Manipulators, *Marcello Romano, MAE* (NRO)
- Fast Multi-Targeting Microprocessor, *Mike Ross, MAE* (NRO)
- Talon Dark Mirror, *Mike Ross, MAE (*Space Innovation and Development Center)
- Exploiting Environmental Intel in Persistent Surveillance Missions, *Peter Guest, MR* (NRO)
- Ceiling and Visibility Prediction, *Josh Hacker, MR* (UCAR)
- Probabilistic Ceiling and Visibility Predictions for Air Force Weather Agency, *Josh Hacker, MR* (NCAR)
- Modeling Wind–Wave Evolution, *Tom Herbers, OC* (ONR)
- Fish-School Models to Simulate Bio Clutter, *Mike Jones, OC* (ONR)
- Morphology and Hydrodynamics Below Arctic Sea Ice in the Vicinity of a Pressure Ridge Keel, *Tim Stanton, OC* (ONR)
- Orthotropic Wave-Spreading, *Bob Hixson, PH* (ONR)
- High Sensitive THZ Camera for Space Situation Awareness, *Gamani Karunasiri, PH* (NRO)
- MW-Class FEL Injector Technology Validation, *John Lewellen, PH* (High-Energy Laser Joint Technology Office)
- Longitudinal Space Charge, *John Lewellen, PH* (AFRL)
- Support to NSG for AGI/ONIR, *Chris Olsen, PH* (NGIA)
- Advanced M&S Curriculum, *Gene Paulo, SE* (Army M&S Directorate)
NPSAT 1 Satellite Support, *Rudy Panholzer, SP* (SAF)

Graduate School of Business and Public Policy

Funds available to date: $7M

By Sponsor



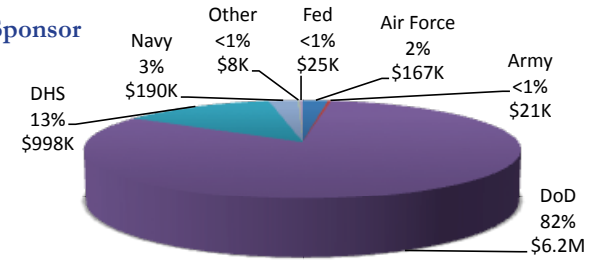
Projects funded in February

- Acquisition Program Course MN3362, *John Dillard, GSBPP* (NUWC)
- Defense Technology and Systems Program, *Tom Lutz, GSBPP* (Acquisition Support Center)
- Foreign Military Surcharge, *Keith Snider, GSBPP* (DSCA)
- NAVSEA Chair of Acquisition and Research Program, *Keith Snider, GSBPP (NAVSEA)*
- Acquisition and Research Program Chair, *Keith Snider, GSBPP (*PEO–Ships)

School of International Graduate Studies

Funds available to date: $7.6M

By Sponsor



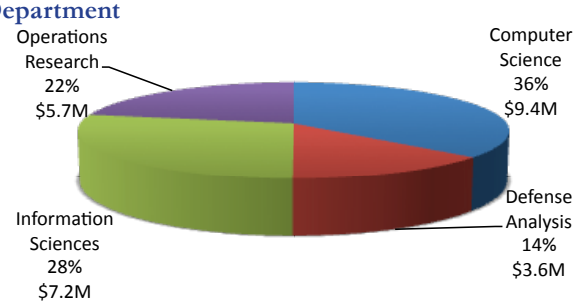
Project funded in February:

- Deterring Violent Extremist Organizations, *Jeff Knopf, NS* (OSD)

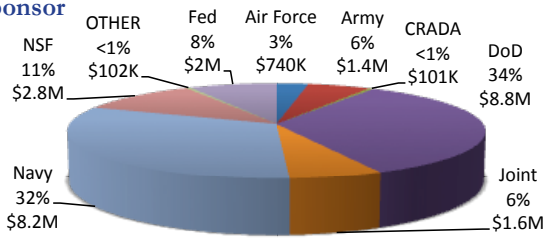
Graduate School of Operational and Information Sciences

Funds available to date: $25.8M

By Department



By Sponsor



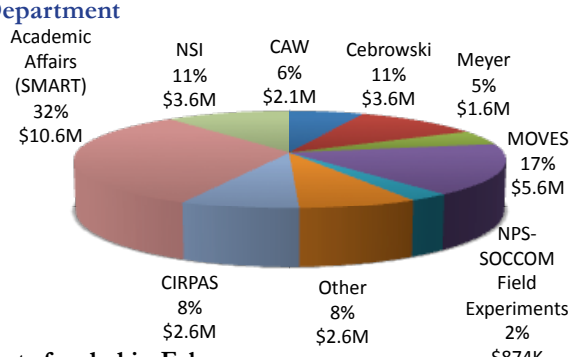
Projects funded in February

- Transport-Layer ID of Botnets and Malicious Traffic, *Robert Beverly, CS* (Cisco Systems, Inc.)
- Navy Certifier Program Special Offering, *Karen Burke, CS* (NSWC–Dahlgren and Hueneme)
- Malware Analysis Short Course, *Chis Eagle, CS* (NSA)
- Automated Media Exploitation, *Simson Garfinkel, CS* (DIA)
- Language Evidence for Social Goals, *Craig Martell, CS* (U Maryland)
- Fusing Temporal, Geospatial, Relational Data, *Sean Everton, DA* (TRAC–Monterey)
- HUMINT in the Cultural Geography Model, *Heather Gregg, DA* (TRAC–Monterey)
- Trident Warrior Sea Trial Support, *Shelley Gallup, IS* (US Fleet Forces Command)
- Adaptable Information Flow for C2, *Sue Hutchins, IS* (ONR)
- Persistent Tracking and Surveillance, *Alex Bordetsky, IS* (DHS)
- Social–Cultural Behavior Modeling, *Jeff Appleget, OR* (ONR)
- Navy ERT, *Jeff Appleget, OR* (Army Center for Analysis)
- T-Craft Program, *Gary Horne, OR* (NSWC–Dahlgren)
- Experiments for Operational Test of the Aegis Modernization Program, *Pat Jacobs, OR* (NAVSEA)
- Marine Air Ground Task Force Tactical Warfare Simulation, *Tom Lucas, OR* (MCSC)
- Improving Fire-Support Team, *Tom Lucas, OR* (ONR)
- Counter-IED Analytical Support, *Tom Lucas, OR* (JIEDDO)
- Human System Integration Training for 711th HPW/HP Staff *Larry Shattuck, OR* (USAF High Performance Wing)

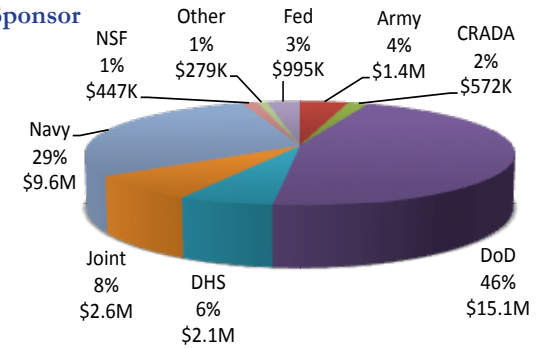
Research and Education Institutes, Centers, and Other

Funds available to date: $33.1M

By Department



By Sponsor



Projects funded in February

- Monterey County Pelican Surveillance, *Bob Bluth, CIRPAS* (DHS)
- Independently Powered C3 for Monterey County First Responders, *Chuck Kimzey, NSI* (DHS)
- Video Management Architecture, *Chuck Kimzey, NSI* (DHS)
  Field Information Support Tool, *Chuck Kimzey, NSI* (DHS)
- Radio Frequency Identification to Support JWAC, *Alan Jaeger, CAW* (NELO)
- Leveraging ITunes Ecosystem to Modernize Navy C2 Systems, *Warren Yu, Cebrowski* (NWSC–Pacific)
- Undersea Warfare Research Support, *Jerry Ellis, Meyer* (NAVSEA)
- Chair, Undersea Warfare Program, *Jerry Ellis, Meyer* (NAVSEA)
- ASW Certificate, *Daphne Kapolka, Meyer* (CNO, NAVSEA)
- Technical Director Support, *Don Brutzman, USWAG* (NAVSEA)
- Modeling Irregular Warfare Conflict for Combatant Commanders, *Chris Darken, MOVES* (TRAC–Monterey)
- Vignette Creation Tool for Language Training, *CDR Joe Sullivan, USN* (DLI)
- Field Experimentation for Special Operations S&T, *Alex Bordetsky, Ray Buettner, Vladimir Dobrokhodov* (USSOCOM)
- Optimal Employment of Early Warning Detection Sensors, *Ray Buettner* (NAWC–Weapons)
- Sentry UAS Assessment and Flight Test, *Bob Bluth, CIRPAS* (USA O&T)
- Calwater Field Experiment/Exercise, *Bob Bluth, CIRPAS (DoE)*

COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENTS (CRADAS)

Title: Defending Independent Infrastructure Systems
Partner: University of Texas at Austin
PI: Kevin Wood, Department of Operations Research
Summary: Collaborators will develop new theory, models and algorithms for optimal design or retrofit of interdependent infrastructure systems, with the objective of making those systems more resilient to kinetic and other types of weapons of mass destruction (WMD) attacks. "System" refers here to a collection of interdependent infrastructure systems; "defense" implies any action that reduces the vulnerability of a system, or improves it resilience to attack, e.g., improving security (hardening), adding redundant system components, reducing repair times. "WMD attack" normally means a coordinated attack on a set of system components, using kinetic devices, designed to disrupt system operations.

INTERAGENCY AGREEMENT (IA)

Partner: United State Coast Guard, Research and Development Center
PI: Ted Lewis, Department of Computer Science
Summary: The agreement outlines the general terms and conditions regarding the technical and other support services that NPS/CHDS anticipate providing to the Coast Guard.

Looking Back.... Where are they now?

The "Research Initiation" Class of 1992 includes Distinguished Professor **Young Kwon**, MAE, department chairs **Jeff Paduan** (oceanography) and **Carlos Borges** (applied math), Dean **Jim Wirtz** (SIGS), Associate Dean of Research **Doug Fouts,** and Assistant Secretary of Defense for Homeland Defense and Americas' Security Affairs **Paul Stockton**.

EDUCATION PARTNERSHIP AGREEMENT (EPA)

Partner: Virginia Polytechnic Institute and State University
NPS POC: Kevin Smith, NPS East Outreach
Summary: The EPA is established to promote education and professional projects for each participant's mutual advantage and to forge a cooperative relationship and service mission of each party.

LETTER OF ACCORD

Partner: Defense Research and Development Organization (DRDO), Government of India
PI: Sivaguru Sritharan, Graduate School of Engineering and Applied Sciences
Summary: Exploring potential activities between DRDO and NPS. The parties intend to explore a full range of potential scholarly collaboration such as the organization of certificates, colloquia, seminars, conferences, degree programs, faculty and student exchanges and cooperative research projects.

PATENT APPLICATIONS

"Filed-Ionization Based Electrical Space Ion Thruster Using a Permeable Substrate," Navy Case No. 20100003. Inventors: **Oscar Biblarz, Marcello Romano**, Department of Mechanical and Aerospace Engineering

"Superpositional Control of Integrated Circuit Processing," Navy Case No. 99131. Inventors: **Timothy E. Levin, Theodore D. Huffmire, Cynthia E. Irvine, Thuy D. Nguyen,** Department of Computer Science

"Data Compression Methods," Navy Case No. 20090009, Inventors: **Pathamadai Sankar**, Department of Information Sciences, **Leonard Ferrari,** Provost and Academic Dean

TECHNICAL REPORTS PUBLISHED

NPS-GSBPP-09-018	Lean Six Sigma in Healthcare: Combating the Military's Escalating Pharmacy Costs	K. Kang, U. Apte
NPS-GSBPP-09-031	Transition Costs from a Program Manager's Perspective	D. Angelis, J. Dillard, R. Franck
NPS-GSBPP-09-036	Advanced Capability Builds: Portfolio Optimization, Selection and Prioritization, Risk Simulation, KVA, and Strategic Real Options Analysis	J. Mun, T. Housel
NPS-GSBPP-09-037	Market Dominance, Efficiency, Innovation, and Globalization: A Case Study of the Tanker Competition between Boeing and Northrop Grumman/EADS	*N. Hensel*
NPS-GSBPP-09-039	Contract Management Process Maturity: Empirical Analysis of Organizational Assessments	R. Rendon
NPS-IS-10-007	Empire Challenge 2010 Spiral Test of L-3 Communication's Net-Tactical Communication System and Follow-on JBAIIC Experimentation and Participation in Empire Challenge 2010 (EC10)	N. Irvine, B. Roeting, D. Crissman, C. Hart, J. Jensen
NPS-OR-11-001	Net Warrior C3 Conflict Experiment: Measuring the Effect of Battlefield Awareness in Small Units	C. Smith
NPS-OR-11-002	Assessing Tradeoffs in Mobile Ad-Hoc Network Deployment: A Case Study in Ground Soldier Mobile System	D. Alderson, E. Craparo, LT W. Fry, USN

Technical reports may be obtained at http://www.nps.edu/Research/TechReports.html