September 2009

NAVAL
POSTGRADUATE
SCHOOL

The Meyer Institute at NPS

Dr. Paul Shebalin, Director
The *Wayne E. Meyer Institute of Systems Engineering*

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Wayne E. Meyer Institute of Systems Engineering – Founded 28 May 2002

Rear Admiral Wayne E. Meyer (1926 - 2009) is regarded as the "Father of AEGIS" for his 13 years of service as the AEGIS Weapon System Manager and later the founding project manager of the AEGIS Shipbuilding Project Office. He is the son of Mr. and Mrs. Eugene Meyer of Brunswick, Missouri, where he was born and raised. He retired from the U.S. Navy in 1985 as the Deputy Commander for Weapons and Combat Systems, Naval Sea Systems Command and Ordnance Officer of the Navy.

- www.answers.com

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Meyer Institute within NPS

- One of four NPS Institutes
- Reports to Dean of Research
- Six assigned faculty and two admin staff
- Participating faculty from across campus
- Visiting faculty from academia and industry
- Director assignment is for 3 years
  - SE Faculty / MI Director (50/50)
  - Primary NPS-wide SE **research** POC
  - Facilitate interdisciplinary projects across NPS
  - Receives guidance/funds from external and internal stakeholders/sponsors

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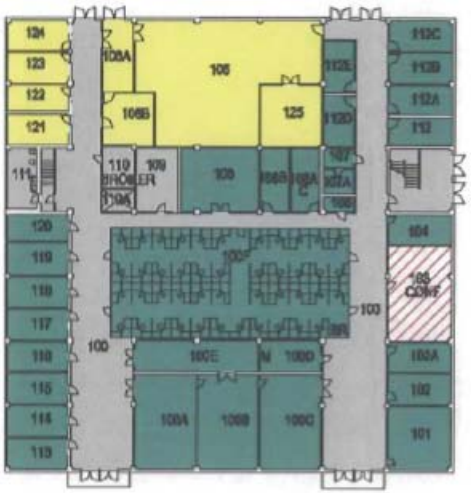
Mission

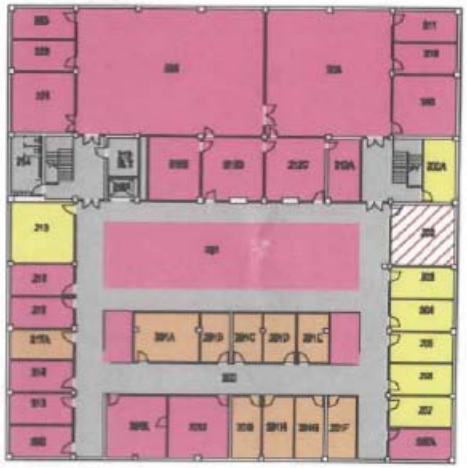
- The Meyer Institute provides NPS faculty and students with **relevant, tailored, and unique research opportunities** in systems engineering and designated warfare areas to support NPS graduate education that increases the combat effectiveness of U.S. and Allied armed forces and enhances the security of the United States.

Facilities and Material to Support SE Students and Interdisciplinary Projects

Bullard Hall
- Meyer Inst.
- SE Dept
- SSAG

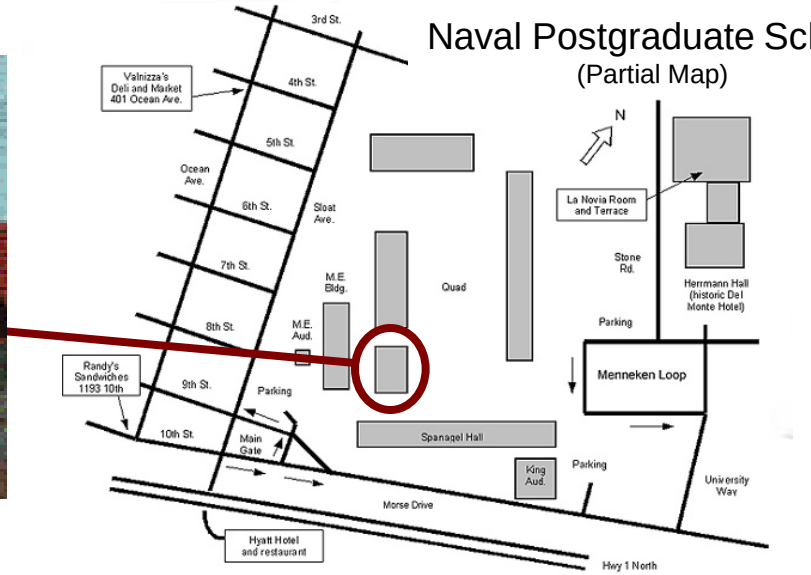


1ST FLOOR



2ND FLOOR

Naval Postgraduate School
(Partial Map)



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Meyer Institute Functions

- Establishes and conducts NPS-wide, interdisciplinary research programs for the Navy, DoD and other National Security customers.
- Fosters and encourages NPS faculty and students to apply their talents to answering the high-priority questions in defense systems science, technology, and engineering.
- Supports, facilitates and enables affiliated NPS faculty, visiting and adjunct faculty, and students to collaborate and conduct sponsored, interdisciplinary research and studies.
- Publicizes and shares the results of Meyer Institute-affiliated research.
- Provides a conduit to NPS faculty and students for defense contractor sponsored research.
- Supports the assigned Chair Professors – enables the Warfare Chairs and PEO-, Industry-, and other-sponsored Chair Professors to carry out their academic responsibilities.

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Meyer Institute Research Seminar Series

Speaker	Topic	Date	Joint
Edmond Jonckheere	Traffic Pattern Analysis in Negatively Curved Networks	November 13, 2008	
Barry Boehm	Integrating Systems and Software Engineering with the Incremental Commitment Model	November 20, 2008	Systems Engineering Department
Wolt Fabricky	System Design Evaluation: A Design Dependent Parameter Paradigm	February 3, 2009	Systems Engineering Department
Heinz Stoewer	Trends in Systems Engineering Education	February 5, 2009	Systems Engineering Department
Quyen Huynh	Computational Harmonic Analysis: Feature Extraction for Classification	March 5, 2009	Applied Math Department
Karl Astrom	Control—The Hidden Technology	March 30, 2009	Applied Math Department
Cihan H. Dagli	System of Systems Architecting: Can we design for desired systems behavior?	May 21, 2009	Systems Engineering Department

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Associated Chair Professors

- Chair, Undersea Warfare
  - RADM (Ret.) Jerry Ellis, USN
  - Director, NPS USW Research Center
- Chair, Expeditionary and Mine Warfare
  - RDML (Ret.) Rick Williams, USN
  - Assistant Director, NPS USW Research Center
- Other Chair Professors
  - In progress, TBD

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USW Research Center Functions

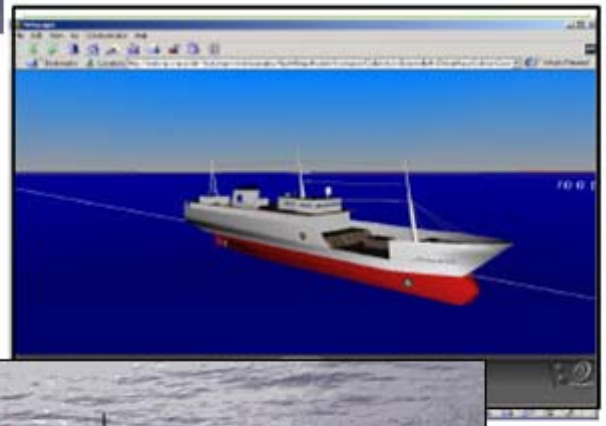
- Fostering education and research in Submarine Warfare, Anti-Submarine Warfare (ASW) and Mine Warfare (MIW)
  - Ongoing dialog with external sponsor for research topics and research proposals
  - NPS coordination of research and thesis topics with professors/advisors and students
  - Guidance and advice to the NPS USW Academic Committee on the content and management of the USW Curriculum

NAVAL POSTGRADUATE SCHOOL

USW Education and Research

Improving the USW Curriculum

Fostering USW Research



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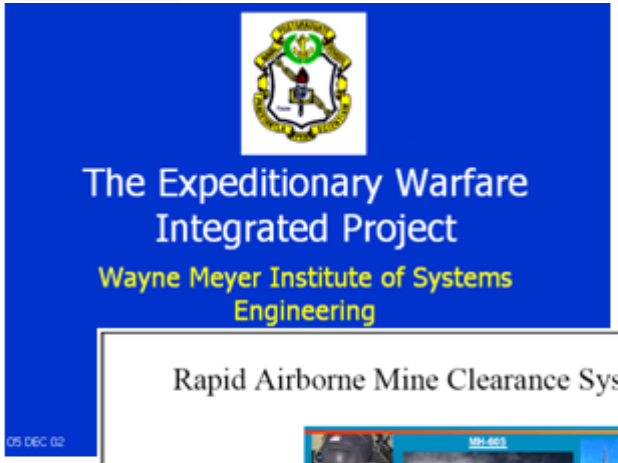
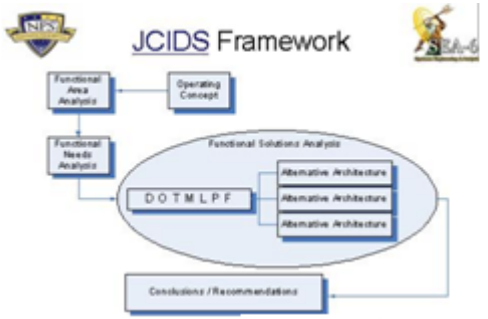
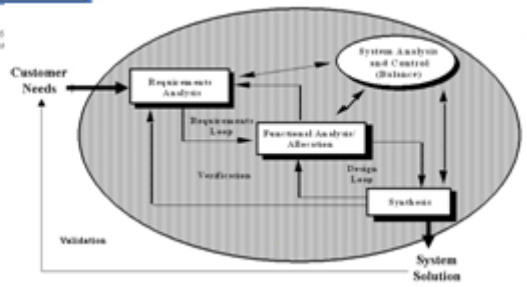
Expeditionary and Mine Warfare Capstone SEA Projects

2002 Expeditionary Warfare



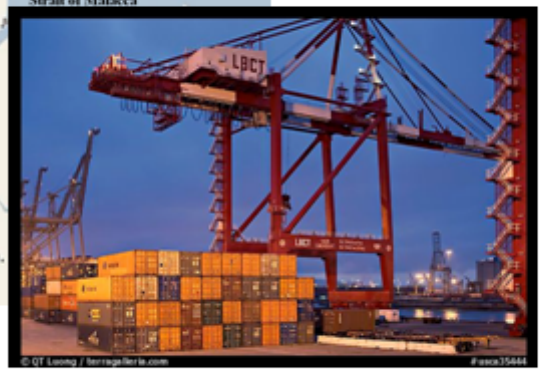




2003 Expeditionary Warfare Force Protection

2004 Joint Expeditionary Logistics

2007 Riverine Sustainment



2008 Maritime IEDs in Domestic Ports

Plus 10 years of METOC MIW Theses

SEA 14 BRIEFINGS (Dec 2008 – Jun 2009)

- **NMAWC (RDML Girrier plus about 20 NMAWC staff from San Diego & Corpus Christi)**
- **PEO, LMW (Deputy plus 3 from program offices)**
- **NSWC Panama City (8)**
- **CNMOC**
- **NFESC**
- **EODTECHDIV**
- **DHS S&T**
- **DHS S&T Advisory Board (Copy of full report and presentation slides for use in their tasking)**
- **DHS PEO C-IED (pre brief only)**
- **HSI (attended 2 presentations)**
- **CNA**
- **NDIA USW Conference MIW Session (about 65 attendees)**
- **N85B / N8F (plus staff)**
- **USCG S&T**
- **ONR C4I**
- **QINETIQ (3 – at request of DHS S&T Director of Research)**
- **NDIA Industry Study – significant** usage

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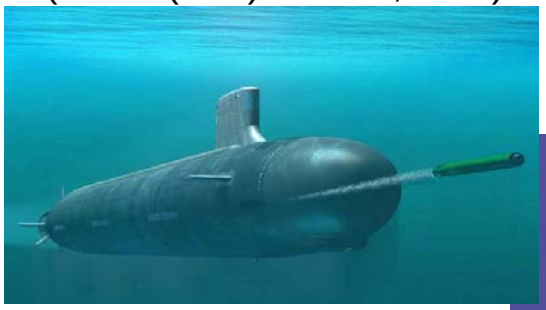
Other Current Meyer Institute Research Projects

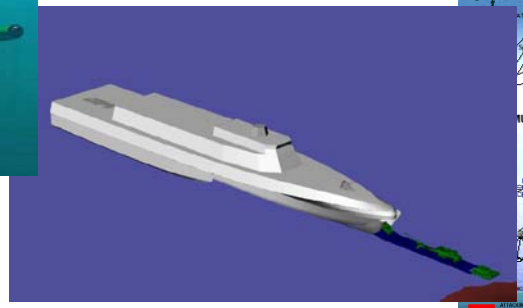
Underwater bomb trajectory prediction for mine clearance (Dr. P. C. Chu)

ASW Operational Scenario Simulation (CAPT (Ret.) J. Kline, USN)



http://www.militarypictures.info/submarines/Virginia_class_submarine.jpg.html

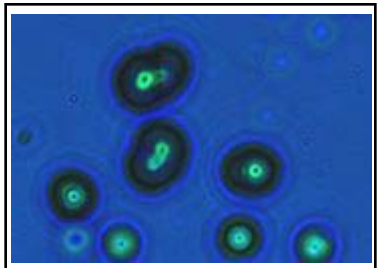
Navy Ship Design (Dr. F. Papoulias)



Network-Centric Enterprise Systems Engineering (Dr. P. Shebalin, Dr. R. Goshorn)

Exterior Insulation Technology (Dr. F. Marquis)

Condensed Matter Nuclear Science (Dr. Melich, Dr. Johnson, Dr. Hagelstein)



Pits in CR-39 from experiments at SSC San Diego. The pits have been interpreted as evidence of low-energy nuclear reactions. [Wikipedia]

Carbon Nano Tubes and Heat Transfer (Dr. Y. Kwon, Maj R. Pollack, USAF)

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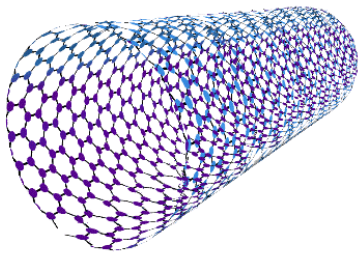
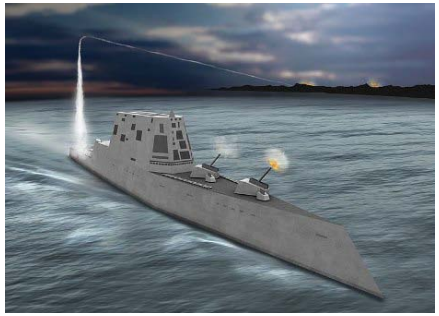
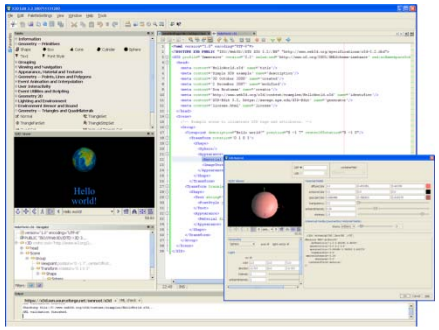


Electric Plant Modeling (Dr. G. Oriti, Dr. A. Julian)



http://www.weeklystandard.com/weblogs/TWSFP/SHIP_DD-X_Concept_Firing_lg.jpg

Open Source Tools for Modeling and Simulation (Dr. D. Brutzman)



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Meyer Institute Sponsored Projects

Education and Research → *Primarily Research*

$2.3 M - 2006

- FY06 Sponsored Projects

- CRITICAL EXPERIMENTS IN CONDENSED MATTER – DTRA
- DEPLOYABLE JOINT COMMAND CONTROL – NSWC PANAMA CITY
- DEVELOPMENT/VERIFICATION OF IMPACT – ONR
- LITTORAL OCEANOGRPHY FOR MINE WARFARE – NAVOCEANO
- MS IN SYS ENGINEERING (SPACE SYSTEMS FOCUS) – NPS*
- MSSE-MCTSSA-OTHERS – NPS*
- NAVY SHIP DESIGN – NGSS
- NPS CHAIR OF MINE WARFARE PROGRAM – PEO LMW
- NPS CHAIR OF UNDERSEA WARFARE PROGRAM – NUWC NPT
- NPS USW CURRICULUM DEVELOPMENT – NAVSEA*
- OCEANOGRAPHY FORCE/CAMPAIGN ANALYSIS ON USW – NAVOCEANO
- RED TEAM SPT FORCE/MARITIME SECURITY OPS – OUSD
- SAFETY & RISK-INFORMED DECISION-MAKING – NASA
- SATELLITE ALTIMETRY DATA ANALYSIS – SPAWAR
- SEM-PD21 – VARIOUS SPONSORS*
- TECH SURPRISES IN NUCLEAR PHYSICS – OSD
- UWMD - PROJECT NUMONKI II - 2005 – DARPA

*Education-related projects ($1.3M)

$1.0 M - 2007

- FY07 Sponsored Projects

- ATTRITION MODELS FOR UNMANNED SYSTEMS – NAVSEA
- CHINESE OCEANOGRAPHIC RESEARCH – ONR GLOBAL
- CRITICAL EXPERIMENTS IN CONDENSED MATTER NUCLEAR SCIENCE, PHASE I – DTRA
- DEPLOYABLE JOINT COMMAND CONTROL – NSWC PANAMA CITY
- IMPACT BURIAL PREDICTION – ONR
- NAVY SHIP DESIGN – NGSS
- NPS CHAIR OF MINE WARFARE PROGRAM – PEO LMW
- NPS CHAIR OF UNDERSEA WARFARE PROGRAM – NUWC NPT
- NPS UNDERSEA WARFARE PROGRAM-STUDENT THESIS – NUWC NPT
- NPS UNDERSEA WARFARE RESEARCH – OPNAV
- RED TEAM SPT FORCE/MARITIME SECURITY OPS – OUSD
- TECH SURPRISE IN NUCLEAR PHYSICS – OSD

$1.6 M - 2008

- FY08 Sponsored Projects

- ATTRITION MODELS FOR UNMANNED SYSTEMS – NAVSEA
- CHINESE OCEANOGRAPHIC RESEARCH – ONR GLOBAL
- CRITICAL EXPERIMENTS IN CONDENSED MATTER NUCLEAR SCIENCE, PHASE II – DTRA
- IMPACT BURIAL PREDICTION – ONR
- NAVY SHIP DESIGN – NGSS
- NPS CHAIR OF MINE WARFARE PROGRAM – PEO LMW
- NPS CHAIR OF UNDERSEA WARFARE PROGRAM – NUWC NPT
- NPS UNDERSEA WARFARE RESEARCH – OPNAV
- NET-CENTRIC ENTERPRISE SE RESEARCH – PEO EIS
- PORT SECURITY/ MIED RESEARCH – OSD
- NAVAL SIMULATION SYSTEM – ASW – ONR
- NAVY SHIP DESIGN – NORTHROP GRUMMAN

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Future Meyer Institute Research Areas

- Warfare Systems (Surface, C4ISR, …)
- Energy
- Follow-on SSBN/SSGN Launcher Technology
- Point Sur Ocean Acoustic Laboratory
- Collaborative Engagement Capability
- Enterprise Systems Engineering
- Systems Science
- Autonomous Agents and Multi-Agent Systems
- …

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Contact Information

- Dr. Paul Shebalin
- Director, Wayne E. Meyer Institute of Systems Engineering
- Phone: 831-656-1047
- Email: pshebali@nps.edu