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Maritime Domain Awareness: Interagency and Educational Collaborations

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Interim Dean of Research

The Nation's Premiere Defense Research University

Monterey, California
WWW.NPS.EDU

NPS Research carried out in:

- Four Graduate Schools
  - Engineering and Applied Sciences
  - Operational and Information Sciences
  - Business and Public Policy
  - School of International Graduate Studies
- Four Institutes
  - National Security Institute (UCSB, LLNL,…)
  - Modeling, Virtual Environments, and Simulation (MOVES)
  - Cebrowski: Innovation and Information Superiority
  - Meyer: Systems Engineering

MS/MDA Initiatives Include:

- **At Sea, In Port and Field Experimentation Programs**
  - **Networks, platforms, and op centers**
  - **Trades among tactics/operations (processes), technologies, and organizations**
- **Exploratory Research Programs**
- **Education and Red Cell Programs**

Emphasizes collaboration with other services, agencies, state and local governments, industry, and allies

Center for Asymmetric Warfare

- Recent transfer to NPS from NAVAIR
  - Remain at Pt. Mugu/Port Hueneme
  - Integrate into existing NPS field experimentation efforts
- Provides training, technology testing, and evaluation. CAW resources provide the foundation for developing tactics and techniques and evaluating the effects of asymmetric warfare (civilian law enforcement and first responders: terrorism).
- Sample events/exercises
  - Maritime Port Security Counter Terrorism Initiative North/Asymmetric Warfare Initiative North (Wash.)
  - Hawaii Emergency Preparedness Exercise
  - Waldo Responder (Maine)
  - Joint Task Force-Homeland Defense

USSOCOM-NPS Field Experimentation Cooperative – Maritime Security Component

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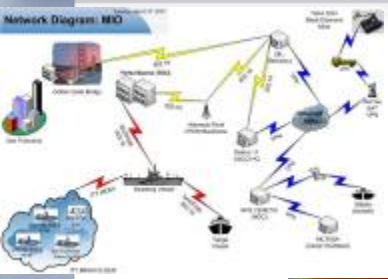
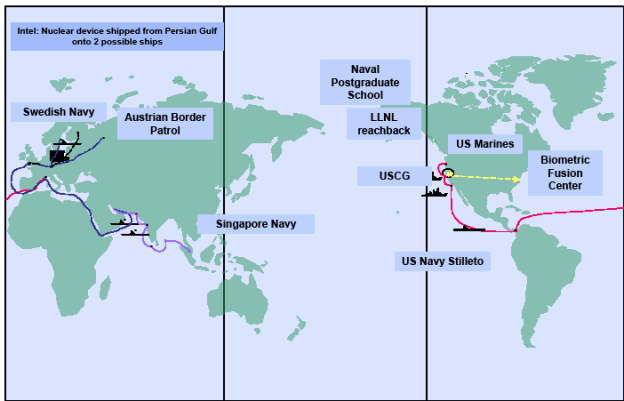


Objective

Evaluate the use of networks, advanced sensors, and collaborative technology for rapid Maritime Interdiction Operations (MIO), Port Security, and Riverine Operations; e.g. for MIO, the ability for a Boarding Party to rapidly set-up ship-to-ship communications that permit them to search for radiation and explosive sources and collect biometrics while maintaining network connectivity with C2 organizations, and collaborating with remotely located sensor experts, coalition partners, and first responders.

Example Technologies

- Innovative Wireless Networks and Sensors
- SATCOM on-the-Move and Orbital Ad-Hoc Networking
- Laser Communications
- Drive-by Radiation Detection
- Projectile-Based Wireless Links
- Networked USVs and UGVs
- Collaboration and Decision Making
- Situational Awareness
- IPv6
- Environmental Effects on Target Detection, Comms, and Plume Dispersion
- Forward Deployed Biometrics with Reach-Back



Cooperative Operations and Applied Science & Technology Studies (COASTS) Support for Maritime Security Operations

Key Participants

- USCG
- Office of the Secretary of Defense (Homeland Defense)
- U.S. Pacific Fleet (COMPACFLT)
- Office of Naval Research – Navy Reserve Program
- Royal Thai Armed Forces, Indonesian Navy, Malaysian Maritime Enforcement Agency (MMEA)
- Commercial Contractors/Vendors

Benefits to the Warfighter:

- Multi-national information sharing
- Hastily Formed Network (HFN) providing flexibility, durability and scalability in adverse environmental conditions
- Real-time, net-centric information management for improved Situational Awareness at local and remote C2 nodes (target ID, BDA, etc.)
- Evaluation of COTS technologies within a system-of-systems
- Security analysis & penetration testing (Red Team)
- Enhanced bi-directional high-bandwidth information sharing for boarding operations

Program Description:

Student Thesis R&D Field Test and Exercise Program:

- Wireless Mesh Networks and Wireless Long Haul Broadband Comms
- Enhanced Situational Awareness and 3-D Common Operational Picture
- Advanced ISR Systems
- Unmanned Vehicles – USVs and Maritime Mini-UAVs
- Wearable Computing Devices for MIO/EMIO
- Handheld Biometric Devices and Biometric Reachback
- Handheld Chemical/Biological/Nuclear Sensing Devices

Operational Areas of interest:

- MIO/EMIO
- Riverine Patrol / Security
- Counter Drug/Smuggling/Terrorism Operations/Transnational Crime
- Improved Maritime Domain Awareness

Key Events:

- CONUS Field Tests
- Thailand/Indonesia/Malaysia/Greece Field Tests
- Fleet Exercise Demonstrations (TALISMAN SABER/SEACAT)
- AFRICAN ENDEAVOR/COBRA GOLD

Milestones to Fielding Capability:

- COASTS-05/06/07 Lessons Learned incorporated in COASTS-08 plans
- System and Subsystem analysis and evaluation for military/law enforcement utility
- Development of Preliminary CONOPS, TTPs and Lessons Learned
- Real-world employment of high payoff systems and technologies
- Operationally focused research with experienced military personnel – short development-to-testing-to-deployment timeline (1-2 years)

Key Deliverables:

- COASTS Technology Demonstration to VIPs
- COASTS After Action Report & System Evaluation Reports
- Individual Technology Assessments
- Preliminary CONOPS & TTPs
- Deployment/Employment-Ready Technologies and Fly-Away Kits

Hastily Formed Network Experiments Humanitarian Missions

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Scenario: After the 2004 tsunami off Banda Aceh the USNS Mercy Hospital Ship had almost no ship-to-shore communications between medical staff and crew going ashore, beyond a handful of satellite phones. In Summer 2006 and 2007 NPS deployed NPS faculty/students on the Mercy and Comfort HA/DR and Humanitarian Operations outreach cruises in SE Asia and Central/South America to conduct research and support these operational missions.

Current NPS research now includes integration of push-to-talk radio communications (800 Mhz, 900 Mhz, HF, UHF, etc), portable/temporary cellular communications, alternative power sources versus fossil fuel (solar, wind, etc), and viable software applications for Humanitarian Assistance/Disaster Relief.

Benefits to Operations:

- NPS deployed Hastily Formed Networks gear and flyway kits in several locations while these ships performed humanitarian missions
- Provided opportunity to both learn from and demonstrate the utility, challenges and options possible with HFN's in remote areas of the world.
- Patient tracking system experiments with Defense Manpower Data Center/OSD

Objectives :

- To demonstrate and operate Hastily Formed Networks (HFNs), portable/mobile technologies inc 802.11 (WLAN), 802.16 (WIMAX), broadband VSAT satellite Internet reachback, Voice over IP, & and comms applications packaged together to form a Flyway Kit (FLAK).
- Provide capabilities to deploy to provide/operate ship-to-shore wireless communications using FLAKs as part of a mobile adaptive hastily formed network
- NPS coord w/ PACOM, COMPACFLT, NAVNETWARCOM, SPAWAR, US Navy South, USSOUTHCOM, Navy Medical Command
- Experiments with emerging patient tracking systems currently not in place for Mercy or Comfort Hospital Ships
- Integration of Non-combatant Evacuation Operations (NEO) Tracking System with HFN's overseas and in CONUS.

Key Participants:

Naval Postgraduate School ---Brian Steckler
USPACOM,COMPACFLT, US Navy South, USSOUTHCOM
DMDC

Milestones to Fielding Capability:

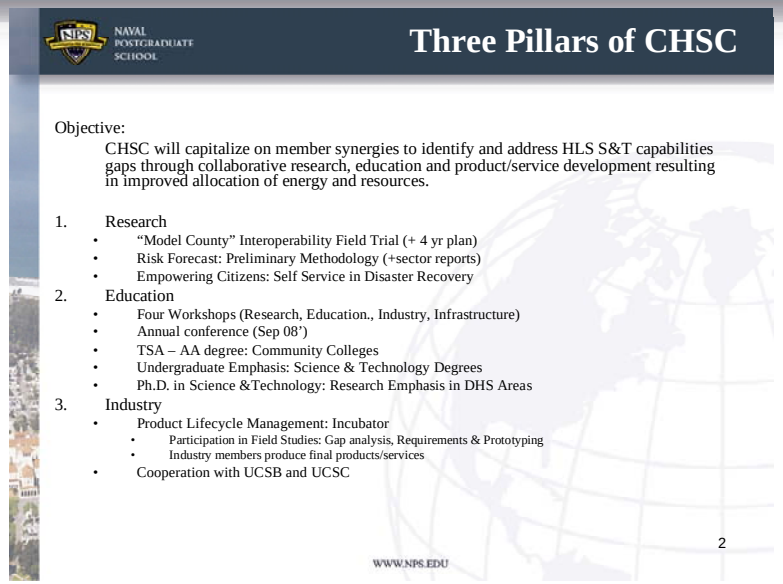
- Setup of similar NPS support for upcoming USS Ft McHenry outreach mission to Western Africa (Gulf of Guinea)
- NPS coordination with NETWARCOM, Flt Forces Command, etc, on frequency spectrum issues with gear radiating from the ship at these foreign ports

Key Deliverables:

- Field Demonstration
- CONOPS

Budget	$ TOTAL	Sponsor – OSD-NII
$ 250K	-- FY 07	
$ 250K	-- FY 08	

CA Homeland Security Consortium



Objectives:

The overarching objective of the CHSC is to develop a model national resource hub in the Monterey area to:

- promote undergraduate and graduate programs focused on national security
- conduct research on critical HLS issues
- conduct field trials of technological and operational processes
- facilitate planning among communities and organizations to prevent or mitigate the effects of HLS incidents
- create a "hot" back-up capability to remediate the effects of major incidents, such as natural disasters
- work with local community colleges to develop a robust Transportation Security Administration (TSA) training program leading to an Associate of Arts (AA) degree.

Description:

Local government and communities must focus on continually improving their ability to prevent, manage and remediate the effects of HLS incidents in their communities. NPS will take the lead on developing and managing the CHSC with participation from the CA higher education community, Monterey County, the State of CA, federal agencies, local research institutes and corporate members. CHSC will leverage unique regional capacity and ongoing collaboration among higher education, research, and national security-related institutions. The CHSC will track existing work by member institutions relating to HLS topics and facilitate inter-institutional collaboration by providing support for multi-institutional proposals, workshops, meetings and seminars.

Key Participants:

Dr. Tom Housel, Executive Director
Dr. Valery Kanevsky, Research Professor
Jane Barreto, Assistant Director
Yaara Bergin, Research Associate

Key Deliverables:

1. Secure commitments and clarify work to be accomplished with consortium members.
2. Develop an approved set of course curriculums for AA, undergraduate and PhD level programs.
3. Plan and participate in field exercises to promote interoperability among first responder agencies.
4. Host three workshops and an annual conference.

Annual Budget:

Consortium admin, program development, education, training and research funding	$ 2,000,000
Infrastructure – Fiber Network	$ 1,000,000
TSA AA degree program	$ 2,500,000
Undergraduate program	$11,000,000
PhD program	$ 1,500,000
Total program costs	$18,000,000

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Seaweb port surveillance

Subsurface sensor network for maritime domain awareness

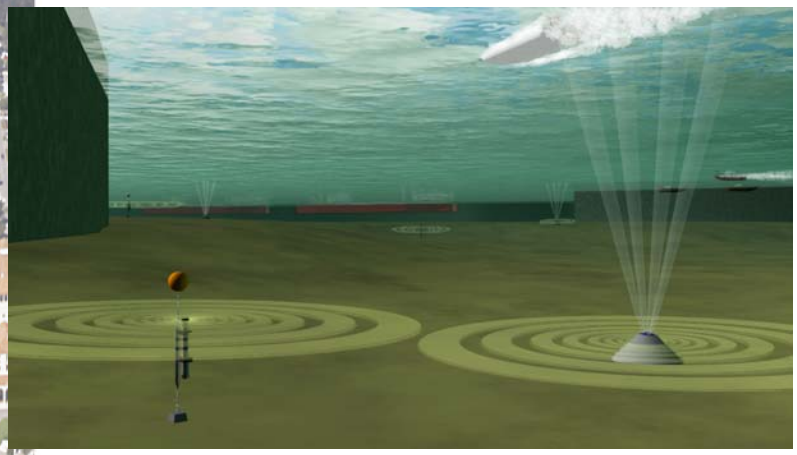
Port of Long Beach

Problem Statement

- National economy and security depend on commerce through our seaports.
- Ports are difficult to monitor and hence vulnerable.

Opportunity

- Seaweb acoustic communications are enabling distributed ASW and maritime sensor networks.
- Seaweb technology is well-suited for operations in ports and their approaches.



Autonomous, distributed, underwater sensors measure environmental parameters and detect surface vessels and subsurface intruders. Seaweb acoustic communications enable real-time, wireless data telemetry and command & control.

Objectives

- Implement Seaweb sensor network in a major port.
- Incorporate commercial environmental sensors and Naval ASW/SOF sensors.
- Integrate capability with existing & emerging MDA/ Information Sharing infrastructure.
- Develop CONOPS and test against threat scenarios.
- Measure performance.

FY08 Milestones

- Establish working arrangement with Port of Long Beach.
- Implement a Seaweb gateway node as persistent, long-term infrastructure.
- Perform wide-area Seaweb networking experiments with deployable sensor nodes and repeater nodes.
- Team with MDA partners to feed relevant sensor data to local and national users.

Long Beach Middle Harbor

Performers/ Partners

- NPS Maritime Defense & Security Research Program
- NPS Undersea Warfare Center
- SPAWAR Systems Center, San Diego
- LA/LB Homeland Security First Responders

Sponsors

- DHS- S&T- Command, Control& Interoperability Division
- Office of Naval Research
- DoD Small Business Innovative Research Program

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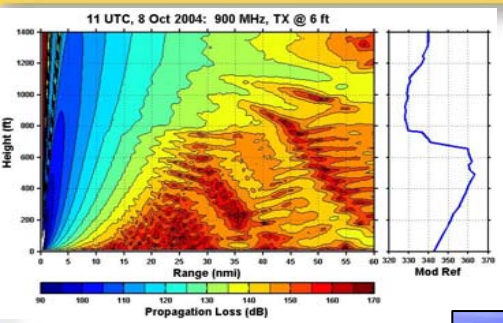
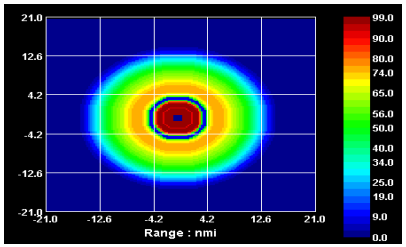
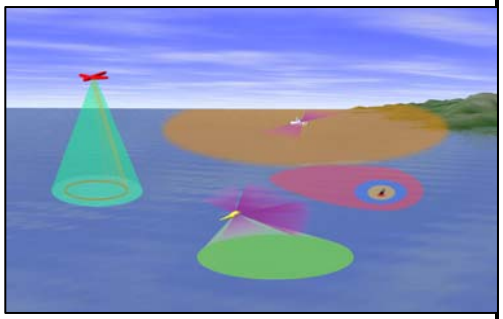
Formulate &Demonstrate Rf/IR Impact Tools







Objectives:

- Test in field exercise adaptations/modifications of MSPP and Atmosphere Detection Effects Prediction (ADEPT) impact tools
- Develop models and procedures to meet needs of decision makers in submarine operations:
  - NPS Bulk Surface Layer model
  - COAMPS (Coupled Atmosphere Ocean Mesoscale Prediction System)
  - Satellite Sensor
  - Propagation model (APM) & TAWS
  - Effects Model (AREPS/Builder)
- Evaluate/demonstrate best possible propagation model input, through entire Atmosphere Boundary Layer with USCG R&D Center

Description:

This project uses atmospheric variables to answer the question: *Can propagation models and operational data support MIO and surveillance requirements*

The project formulates & demonstrate tools that predict impact on own and threat force near-surface platforms & people by radar or infrared waves, or intercepts of comms. The technology incorporates and integrates multi-source high resolution airflow and surface data to predict airflow and surface impacts on radar detection and the vulnerability and communications intercept during submarine operations.

Key Participants:

- NPS (Dr. Ken Davidson and Dr. Peter Guest)
- SPAWAR Systems Center, San Diego (AMP/AREPS)
- Fleet Numerical Meteorology/Oceanography Center
- USCG Research & Development (R&D) Center

Milestones to Fielding Capability:

- Demonstrate operational use of tool.
- Field tests in surrogate locations
- Qualitative radar data & EO/IR data

Key Deliverables:

- Model formulation for detectability
- Demonstrate impact estimation o detectability/levels for 1st responders/Comms
- Design and test platform sensor

Analysis of Commercial Asset Effectiveness in Locating Underwater Explosive Devices in Domestic Ports

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Image 1

Image 2a

Image 2b

Image 1: Chart of San Diego Harbor MHS Experiment areas
Image 2a: Side scan sonar image of initial bottom objects (Kline 5000)
Image 2b: Side scan sonar image of same area as Image 2a at a later date indicating changes in bottom objects

Description: "***Analysis of Commercial Asset Effectiveness in Locating Underwater Explosive Devices in Domestic Ports***"

- The project will determine the probability of detect/classify for Remus vehicles and compare the navigational accuracy between Remus variants. The effect of bottom clutter density on change detection by operators will also be determined as a baseline for future computer change detect software.

- The analysis will identify if recent navigational system hardware and software upgrades on the Remus underwater vehicle is more accurate than previous versions. Cross track error and CLA will be taken into consideration. The focus of analysis on navigational error is to ensure accurate positional reporting of mine like objects for future reacquisition and prosecution.

-Analysis of bottom clutter effects on change detect performance will determine maximum levels of clutter in which change detection can be performed by current techniques. This baseline analysis can be utilized to determine the effectiveness of automated change detect software.

Key Participants:

LCDR Dale Johnson, MS Operations Research (OA), March 2008
LT Jason Barrett, MS Operations Research (USW), September 2008

Funding:

NPS Maritime Defense and Security Research Program

Objectives:

Analyze measures of performance as per TACDEV 08-03 and develop baseline change detect software parameters from current operational procedures.

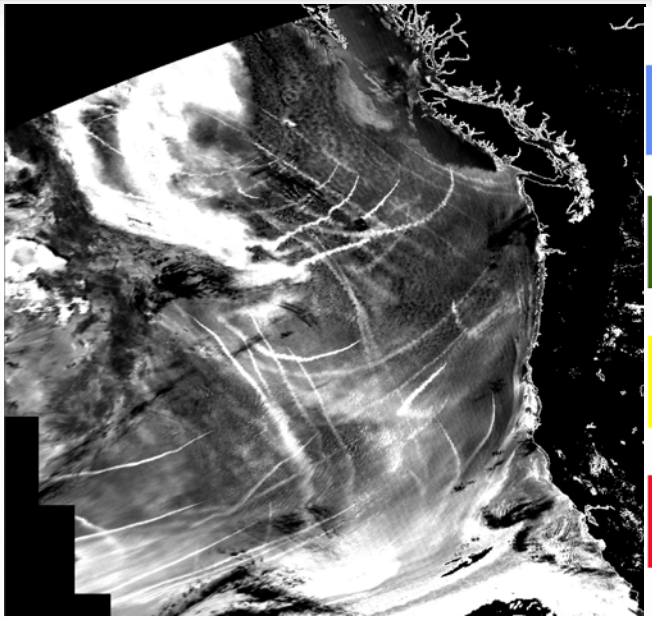
Milestones to Analysis:

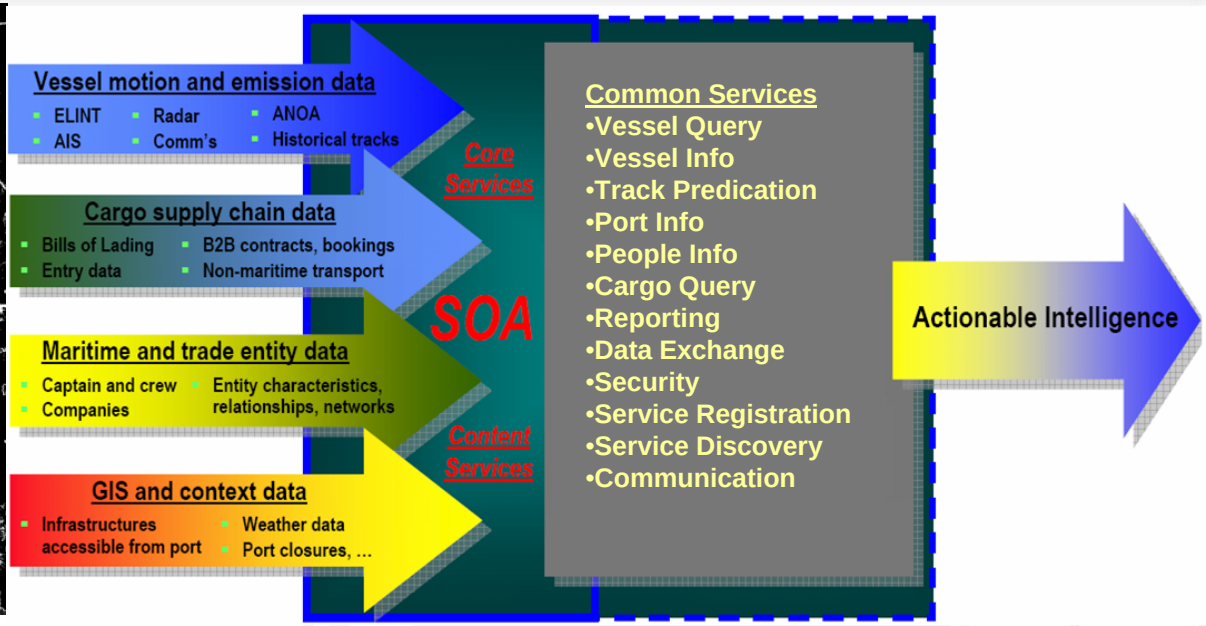
1. Assist in the development of the Data Collection and Analysis Plan for the San Diego Harbor Maritime Homeland Security (MHS) Experiment 9-14 Dec 2007
2. Observe data collection operations in San Diego Harbor
   a. Observe data collection with Orca Maritime (Remus UUV)
   b. Observe data collection with EOD Unit 7 (Kline 5000)
   c. Observe Post Mission Analysis performed by Orca Maritime
3. Coordinate with NSWC PC and NWDC for receipt of remaining MHS data.
4. Perform change detect procedures with varying bottom clutter conditions.
5. Conduct analysis and publish results.

Key Deliverables:

1. Final report (Theses) including:
   - Effectiveness of commercial asset use in MHS scenarios
   - Remus navigational accuracy
   - Minimum change detect performance for future software
2. Data results for:
   - Comparison of Remus vehicle navigation performance
   - Probability of detect/classify utilizing Remus UUV data
   - Human change detect performance as a function of bottom clutter density

National Sensor and MDA Fusion





- Objectives:
  - Develop an overall SYSTEM architecture for the MDA enterprise
  - Develop unusual data sources and evaluate their contributions
  - Explore novel fusion techniques
  - Evaluate existing fusion tools
  - Develop enterprise level multi-level security solutions

- Near Term Deliverables:
  - Formal Model and Methodology for Certification & Accreditation of MLS
  - Evaluation of a specific data source in the context of project Fairgame
  - Provide real-world data and information flows in graphic above.
- Funding is from STRATCOM, NRO, Navy TENCAP and DoD

Assessment of Maritime Domain Protection Capabilities
Maritime Intercept Analysis

Overview Aspects

Provide Quick-Response Analytical Decision Aid/Planning Tools: An economical system of equations with solutions and graphs to suggest/indicate likely behavior of a new system-of-systems, and to guide (costly) exercise planning and system acquisition.

POC:
Professor Donald P. Gaver (dgaver@nps.edu; 831 656 2605)
Professor Patricia A. Jacobs (pajacobs@nps.edu; 831 656 2258)

Technical Objective

Improve/enhance the cost effectiveness of exercises and systems acquisition using Analytical Modeling and Simulation

Technology Challenges

To capture the essential features of the system parsimoniously and flexibly. Especially interesting to derive unexpected non-linear responses and instabilities; carry out risk analysis. Account for Blue/Friendly cost effectiveness and attack surge resistance

Technical Approaches:

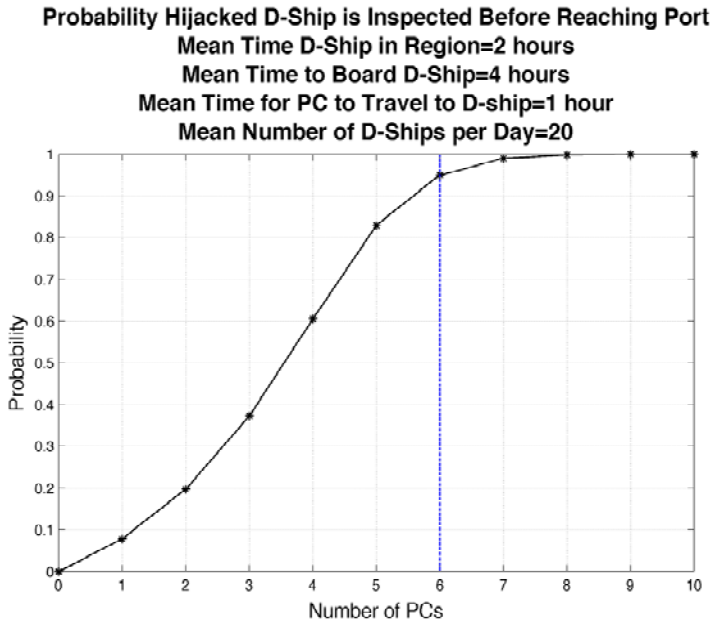
Creation of mathematical (probabilistic, statistical) models of entire system-of systems.

Operational Payoff/Transition Targets:

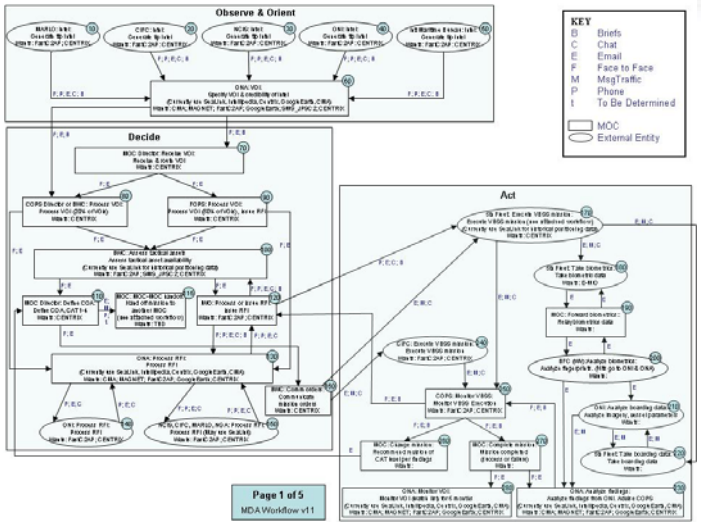
Models for surveillance of waters around a port quantify the number of response platforms needed to address misclassification of neutral vessels as hostile. Computer software is available.

Deliverables:

Invited technical papers have been presented at numerous international conferences



Maritime Domain Awareness: TTP Process Definition and Reengineering



MDA Workflow v11

Funding:

OPNAV via PEO C4I.

Objectives:

1. Develop and manage a project plan that will provide CONOP and Tactics, Techniques and Procedures (TTP) around core operational threads.
2. Validate and adjust project plan using input from operational field experimentation.

Milestones to Analysis:

1. Phase 1 (FY 07) Discovery
2. Phase 2 (October-December 2007) Process Reengineering for improved TTP
3. Phase 3 (Devember 2007-December 2008) Delivery, Validation and Feedback/Review of Proposed TTP Changes.

Description: *"Maritime Domain Awareness (MDA) CONOP to TTP Process Definition and Reengineering Employing Network Centric and Services Oriented Architectures"*

- The intent of this project is to refine a project plan that documents process, constraints to process and impact of technology as an input to CONOP and Tactics, Techniques and Procedures (TTP). The research is focused around core operational threads (e.g., standard work flows, or "business practices"). Outcomes will be further used for operational field experimentation in Trident Warrior 08 (planned for execution in June of 2008) and supporting venues for MDA Spiral-1. The project is intended to span two years, and provide feedback from this effort, TW 08 outcomes and modifications, back to Fleet participants, OPNAV, SECNAV and PEO C4I.

Key Participants:

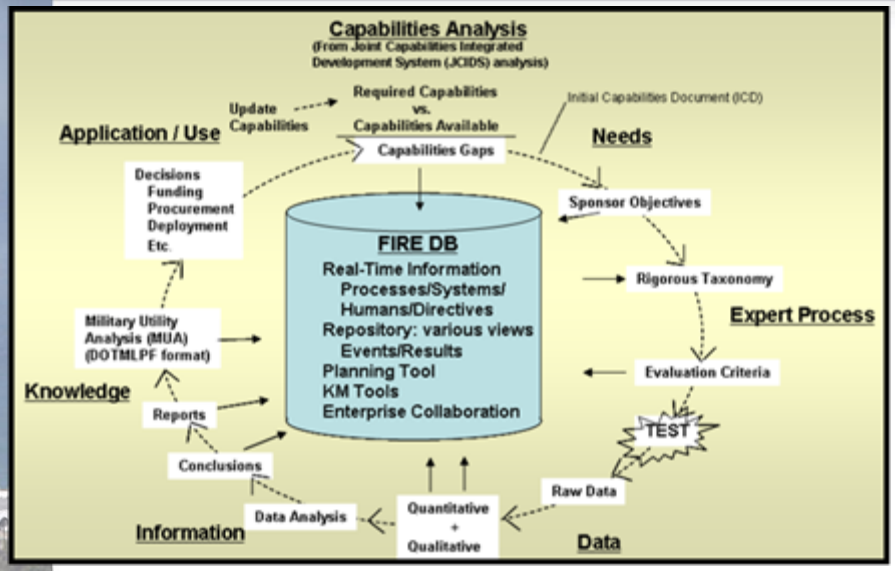
Naval Postgraduate School Principal Investigator and Lead: Dr. Shelley Gallup

- **Key Deliverables:**
- "As is" process maps for current MDA work flows, information flows and TTP from Fleet Commanders
- "To be" process improvements for core MDA work flows.
- Coordinated and congruent OVs, SVs and TVs between MDA Spiral 1, Trident Warrior 08, OPNAV N6 and NAVNETWARCOM. (Due March 30 08)
- Baseline MDA CONOP for input to NWDC for further CONOP development. (Due April 2008)
- Baseline TTPs for specified core MDA processes. (Due May 2008, prep for TW08 in June and July 08)
- Feedback report from TW 08, and other venues as derived from MDA Working Groups

Questions?

Backups

Maritime Domain Awareness: Assessment



Funding:

PEO C4I (unfunded)

Objectives:

Assess proposed technology and process capability within "operational context" of sufficient fidelity and variety to justify the cost and effort at integrating these capabilities within the iteration "Spiral-X" MDA system.

Proposed Milestones:

1. Phase 1 (January and February 2008) Discovery
2. Phase 2 (March--October 2008) Process Reengineering for Improved TTP
3. Phase 3 (November 2008-December 2009) Delivery, Validation and Feedback/Review of Proposed Spiral-X MDA

Description: "***Analysis of Commercial Asset Effectiveness in Locating Underwater Explosive Devices in Domestic Ports***"

- Acquisition and installation of developed capabilities to meet requirements described above includes a need to demonstrate capability within "operational context" of sufficient fidelity and variety to justify the cost and effort at integrating these capabilities within a first iteration "Spiral-1" MDA system. These capabilities may be organization specific so that no single venue may be sufficient to the demonstration.

- This proposal includes the level of effort and project elements that produces a continuum of demonstration, appropriately fit between capability and venue, the collection of necessary data and documentation, and finally results for reporting achievement of levels of performance sought in establishment of the Spiral-1 capability.

- The proposal integrates efforts across MDA working groups, brought together in operational testing (venues to be determined), under a consistent experiment design process that will also include standard metrics developed for MDA analysis of capabilities.

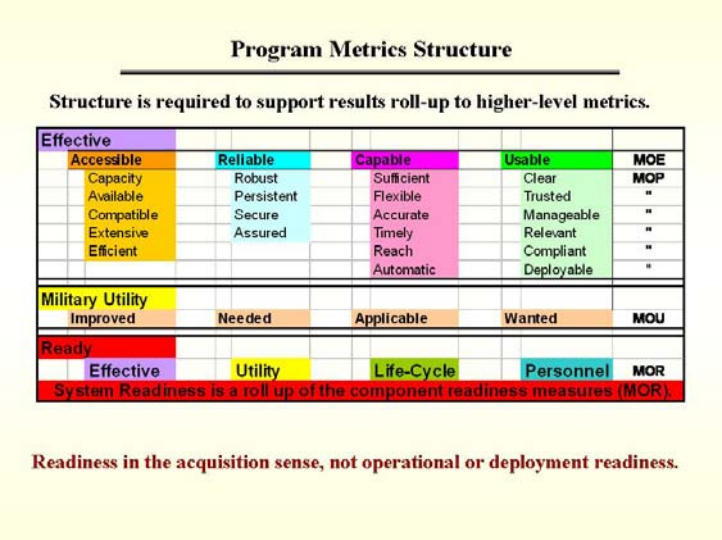
Key Participants:

Naval Postgraduate School Principal Investigator and Lead: Dr. Shelley Gallup

Key Tasks:

- Oversight of an IOC event, demonstration events in separate venues, and related MDA Spiral-1 specific data collection within TRIDENT WARRIOR 08, ensuring that the events are designed to meet IOC, MDA program and technology vendor requirements.
- Develop and coordinate assessment objectives with subject matter experts and stakeholders. Develop a community of interest for assessment.
- Lead development, with all stakeholders, of an integrated Data Collection and Assessment Plan (includes objectives, data requirements, metrics, roles and responsibilities).
- Data collection management from all applicable venues, with archiving and search capabilities to support multiple RFIs and analyses.
- Produce a report of final results, in collaboration with stakeholders other assessment leads..
- Coordinate with SPAWAR, technology stakeholders and Fleet representatives in preparation of DOTMLPF recommendations for a Military Utility Assessment.
- Archive documentation, event results and associated data relevant to MDA SP-1.
- Contribute to definition of SP-2 from SP-1 assessment and planning lessons learned

Maritime Domain Awareness: Spiral 1 Metrics



Funding:

OPNAV N3/N5 and N6 via PEO C4I

Objectives:

The purpose of this project is to specify measures and metrics that contribute to decision making and continued evolution of MDA system elements that contribute within the GWOT, and are also consistent with DoD , JCIDS, experimentation and acquisition program needs.

Milestones to Analysis:

1. Phase 1 (June and July 2007) Discovery
2. Phase 2 (August--October 2007) Process Reengineering for Improved TTP
3. Phase 3 (November 2007-December 2008) Delivery, Validation and Feedback/Review of Proposed Spiral-1 MDA

Description: *"Definition of Metrics for Maritime Domain Awareness (MDA) and Global War on Terror"*

- Installation of overarching concept, processes, procedures, technology, and other system elements is a multi-dimensional decision making problem, which requires definition of measures and metrics by which acquisition of these system elements can be understood, compared, and measured for system performance. However, understanding these system components and the means by which they will be understood, compared and measured has not been the subject of specific definition.
- The purpose of this project is to specify measures and metrics that contribute to decision making and continued evolution of MDA system elements that contribute within the GWOT, and are also consistent with DoD , JCIDS, experimentation and acquisition program needs.
- This effort will be conducted in parallel with an ongoing MDA study by NPS to determine current practices for MDA across Fleets, and propose improvements for an MDA Spiral-1 prototype. The intent is to use measure and metrics defined in this work to assess Sprial-1 capabilities.

Key Participants:

Naval Postgraduate School Principal Investigator and Lead: Dr. Shelley Gallup

Key Deliverables:

1. Refined measures and metrics for MDA contribution to GWOT, and for Spiral-1 capability.
2. Report of field tested use of metrics and measures for military utility.
3. Report of fit of measures and metrics within JCIDS.

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3D RAPIDS QUAD CHART

Raven UAV detected and tracks a downed aircrew on a CSAR mission

Objectives

- Phase 1 – Compile the necessary code to transfer the current functionality of HURTS mapping platform (Falcon View) to RAPIDS 3D engine.
- Phase 2 – Integrate components that allows concurrent interpolation of Georeferenced video on the same screen
- Phase 3 – Develop plug-ins that allow centralized swarm UAV control from the same RAPIDS machine.
- Phase 4 - Field testing and recommendations including aerial field trials
- Phase 5 – Final Report

Budget

- FY07/8 Phase 1 thru 5 (completed) $ 800K

Description: Develop a 3D mapping environment for tracking and controlling UAV swarms along with the associated video.

- Plot the tracks of every airborne, ground based or sea based asset in 3D.
- Control multiple UAV's from the same environment.
- Fuse the battlefield picture to remote commands.
- Increase mobility due to simultaneous tracking and control of every asset (UAV, others) on a single screen along with Georeferenced video.
- Ability to control the UAV's from multiple remote locations.

Key Participants: Naval Postgraduate School and Electricore, Inc.

Milestones / Steps Leading to Fielding Capability

- Rewrite the tool bars to accommodate 3D plotting capability and interpolation 120 days
- Modify the mapping layers to plot simultaneously various mapping schemes along with Georeferenced video 60 days
- Field testing, adjustments and recommendations 90 days

Key Deliverables

- Standalone multipurpose 3D software with HURTS toolbars
- Customizable plug-ins
- Handheld Tracking devices

WMD Interdiction support program at NPS

The diffusion of WMD technology through the global market has enabled proliferation networks to overtake nation states as the primary conduit for WMD proliferation. A new counterproliferation strategy attacks the networks using selected combinations of diplomatic, operational, law enforcement, and military means.

Funding:

National Counterproliferation Center (NCPC), Office of the Director of National Intelligence

Objectives: Develop and deploy a series of training modules on WMD proliferation interdiction

Milestones:

1 Develop curriculum in short and expanded versions, classified and unclassified formats

2. Obtain approval of content from sponsor/national focal point

3. Commission experts to develop individual modules

4. Deploy training modules to Combatant Commands, USG agencies, liaison partners

5. Offer courses/certificate program at NPS

Description: Develop training modules in support of national strategy to interdict WMD technology transfers.

Responding to the global dispersion of WMD technology , and applying lessons learned from the AQ Khan network, the USG is building a national WMD interdiction capability. This capability utilizes the talents, resources, and authorities of the IC, military, law enforcement, and other USG agencies to understand and then attack proliferation networks, The program at NPS program is developing training modules to prepare experts throughout the USG to actively participate in the interdiction components of counterproliferation policy.

Key Participants:

DNI, national focal point, NSC, technical, regional, and subject experts from NPS, National Labs, USG agencies

Key Deliverables:

1. Design overall curriculum

2 Develop 10 training modules on various aspects of WMD interdiction.

-technical aspects of WMD, nuclear, CW-BW, missiles

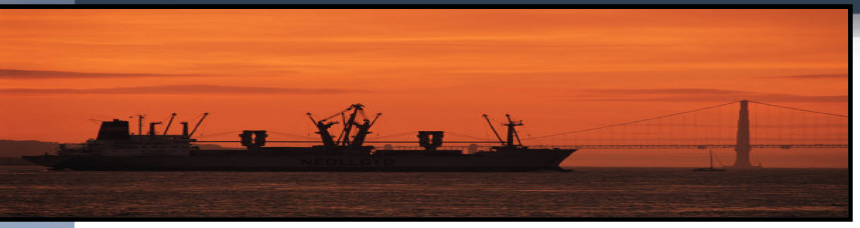
-network characteristics

-business aspects of proliferation

3. Deploy training to USG agencies, foreign partners

4. Provide interdiction con ops, serve as think tank for research on interdiction topics

Industry and Public Sector Cooperation for Information Sharing in the Maritime Environment



Problem Statement

- Private shipping companies, the Navy, the USCG, and port security implementers are all working toward safe and secure ports that support the free flow of commerce and facilitate the protection of our environment, yet there are legal, cultural, procedural, policy and social barriers to sharing the necessary information to achieve the desired end.

Objectives

- Complete a catalog of best practices for information sharing systems including both technical & social network solutions
- Partner with private sector shipping terminal companies to integrate tracking capability with existing & emerging information sharing infrastructure that provides useful information back to shippers and provide ready real time access to security information needed by first responders.
- Identify opportunities for shipping companies to share expertise with maritime students and participate in network experimentation.
- Identify and test methods for building trust
- Measure performance.

Opportunity

- DHS S&T Command, Control and Interoperability are supporting a state of the art information sharing tool in Los Angeles and we are working with NPS and a private shipper to conduct interoperability and information sharing within the port and terrestrial areas.
- American Cargo Transport Corp has expressed a willingness to work with NPS on research and experimentation.
- NPS experimentation programs have established relationships with maritime stakeholders.
- MARAD has expressed an interest in working with NPS to develop an operational strategic plan for the inclusion of the private sector in MDA.

Potential Partners

- United States Coast Guard
- US Navy MARLO & MARLU offices
- DHS S&T
- Pacific Maritime Association
- Total Terminals International
- American Cargo Transport Corp
- Office of Global Maritime Intelligent Integration
- MARAD- US Department of Transportation
- NAVSEC MDA office- San Diego
- NPS- field experimentation programs, Business School, CHDS and Innovation Chair
- San Diego State University