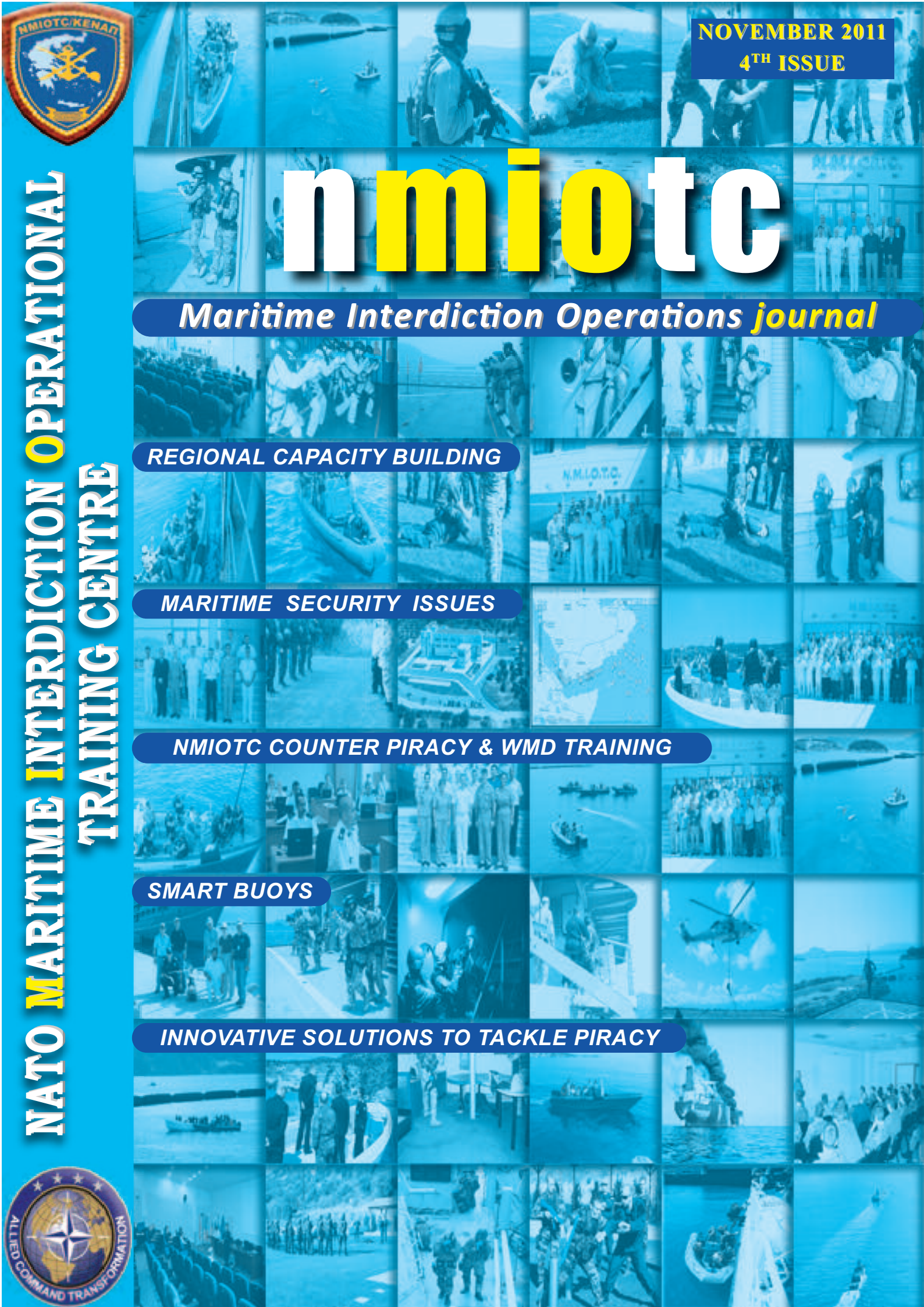
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NOVEMBER 2011
4TH ISSUE
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Maritime Interdiction Operations journal
REGIONAL CAPACITY BUILDING
MARITIME SECURITY ISSUES
NMIOTC COUNTER PIRACY & WMD TRAINING
SMART BUOYS
INNOVATIVE SOLUTIONS TO TACKLE PIRACY
ALLIED COMMAND TRANSFORMATION

NMIOTC MIO JOURNAL

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The ***NMIOTC MIO Journal*** is a professional publication of NATO Maritime Interdiction Operational Training Center, aiming to serve as a forum for the presentation and stimulation of innovative thinking on NATO Maritime Interdiction related issues such as doctrine, concepts, force structure, employment and readiness.

The views and opinions expressed or implied in the ***NMIOTC MIO Journal*** are those of the authors and should not be construed as carrying the official sanction of NATO.

The ***NMIOTC MIO Journal*** is open to receive and publish articles at journal@nmiotc.grc.nato.int. We reserve the right to make editorial changes.

COMMANDANT'S OVERVIEW

by Commodore Adrianos Poulos GRC N

NMIOTC's MISSION

To conduct the combined training necessary for NATO forces to better execute surface, sub-surface, aerial surveillance, and special operations activities in support of Maritime Interdiction Operations.

NMIOTC Commandant's Vision

Enhance Maritime Security through MIO Training and remain the recognized expert in the field of MIO.

The fourth edition of our journal has found NMIOTC with an increased momentum in many aspects. Being one of the four NATO Education and Training Facilities is a heavy responsibility, but at the same time it is an honor to provide training to anyone interested in acquiring NATO standards in Maritime Interdiction Operations. Since the Center's inauguration in October 2008, the number of trainees has continuously grown, even amidst an era of austerity. NMIOTC stands in the forefront safeguarding maritime interdiction and security operations by transferring state of the art tactical / operational training to individuals, personnel, command and boarding teams of the units that are going to participate in NATO led operations such as Operation Ocean Shield, Operation Active Endeavour and many more. It is not the delivery of training that makes our environment unique, nor the enhancement of the expertise level that students acquire after finalizing the real hands on training, it is the exchange of knowledge and ideas that creates a productive environment for the students - allowing them to leave the facility with a unified and strengthened perspective. "It is practical, it is real, I need it, they know how to deliver it. At the same time it makes me feel safer during the execution of the real operation". This is the type of response we usually receive from students on their feedback opinion form. These positive reviews demonstrate that we are a unique training facility where student participation has increased by 30 % in the last year and by 70 % from the initiation of the Center three years ago.

Apart from being a training facility, NMIOTC is also an organization that holds a strong and active transformational department. The Italian Director along with his small but efficient team, supports ACT's transformational activities and goals by participating in numerous events ranging from experimentation, simulation to modeling. Cooperation with Military and Commercial Organizations, as well as with the Academia environment has raised NMIOTC's transformational fame to a level similar to larger and more mature organizations worldwide. It is a prototype filled with fresh, innovative ideas that our personnel effectively executes, invaluable cooperative schemes have been created and sustained.

On the other hand, and having in mind the above mentioned energetic environment, I would like to mention that NMIOTC is not an organization that has stable academic and operational characteristics. Along with the evolution of maritime security operations and taking into account that NMIOTC is in close cooperation with ACT and many other NATO and non NATO organizations (such as IMO, EU, UN etc) NMIOTC evolves its training products utilizing a dynamic process that is continuously updated and calibrated in accordance with current NATO operations. Three years ago, when NMIOTC started its operation, Maritime Interdiction Operations (MIO) were an important aspect in NATO objectives, but now it has become evident, especially after the execution of Operation Unified Protector that MIO attracts a lot of interest in the Alliance and worldwide.

The evolution of piracy, illicit trafficking of Weapons of Mass Destruction in the maritime movement (WMD in MIO) as well as the increased threat for maritime Improvised Explosive Devices (M-IEDs) has brought to NMIOTC's attention other aspects that are directly linked and affecting maritime interdiction operations as a whole. NMIOTC's scope, in accordance with the official documentation, is to provide training to improve expertise at the individual unit level or in combined maritime operations environment in the following areas, within a MIO context:

a. MIO plan development

b. Surface, Subsurface and aerial surveillance

c. Boarding process

d. MIO aspects of Special Operations

As we are all aware, the definition of MIO in Allied Publications is: " to enforce prohibition in the maritime movement of specified persons or material within a defined geographic area" (This definition encompasses many illegal activities which are known to day). So, it is obvious that piracy, WMD counter proliferation or Maritime Improvised Explosive Devices and numerous other activities are directly linked to the MIO context and substantially influence the execution of operations and therefore the training that needs to be delivered to assorted personnel. NMIOTC is trying to conduct the training in such a way that would first ensure the safety of the boarding parties during the execution of the mission and secondly to enhance safety in the maritime commons and serve the general objectives that Alliance is trying to enable. All the above mentioned concepts, depict the dynamic structure of NMIOTC, which eventually senses the necessity to cover the operational training gaps. For that reason three new courses in Counter Piracy Operations, Counter Proliferation of WMD and Counter Improvised Explosive Devices in the maritime environment have been created. These courses will provide modern NATO standardized training to personnel prior to deployment to the operational environment.

NMIOTC understands that there is always a cycle that needs to be executed in order for the training to be effective, efficient and affordable. We are always considering how to enhance Maritime Security Operations (MSO). NMIOTC believes that training plays a crucial role. As seen in the diagram above, our Center trains, evaluates, exercises, contributes to transformation and draws from lessons learned. In this way continuously feeds and ameliorates the cycle of MSO. This cycle is a conceptual product of NMIOTC and shows diligently that training can play a major role in modern maritime security operations.

On the other hand supporting the above mentioning idea and in order to place ourselves in the core of maritime security operations, we perceive that NMIOTC's training and transformational activities are capable of enhancing the future maritime security operations in the harsh modern maritime environment. NMIOTC stands in the Center of the evolutions, as

every other NATO entity and interconnects its products to every possible actor trying to better enhance the execution of maritime security operations in the Alliance. It is not only the training itself but also the participation in numerous activities and events that affects and is being affected by NMIOTC's contributions.

As NMIOTC Commandant and being honored to Command a NATO Training and Education Facility, it is my firm belief that NMIOTC's personnel has the knowledge, the capability and most importantly the will to better deliver unique training and transformational activities that start and end in continuous cooperation schemes with other NATO and non NATO entities, rendering the NMIOTC unique in the maritime domain.

Commodore Adrianos Poulos, GRC N *graduated from the Hellenic Navy Naval Academy in July 1981 and was appointed as Navigation Officer and XO to various types of ships. He had the honour to Command, the Fast Patrol Boat HS KAVALOUDIS (P-25 – Missile Patrol Boat) and the "S – Kortenaer" type Frigate, HS AIGAION (F-460). Commodore's main appointments include, Operations Officer in the Frigates Command, Staff Officer to the Hellenic Navy General Staff / A1 directorate as well as in Hellenic Defense General Staff in National Defense Planning, as Head of the Directorate. His NATO experience includes a two year assignment to the NATO / PfP cell in Mons, Belgium and also a two year tour as DCOS for STRFORNATO in Naples. Since April 2011 Commodore Adrianos Poulos is the NMIOTC Commandant.*

Besides his naval education, Commodore Adrianos Poulos has received a master's degree in Operations Research from Naval Postgraduate School in Monterey California and he holds a B.S. from the Economic University of Athens. Additionally, he has attended a number of educational programs in military colleges, such as the Hellenic Naval Staff and Command College, the Hellenic Naval War College and the Hellenic National Defense College.

Commodore's awards include the Cross of the Order of Honor, the Cross of the Order of Phoenix, the Medal of Military Merit B' Class, the Navy Force Formation Command Medal C' Class and the Staff Officer Service Commendation Medal B' Class.

He is married with Constantina Stratigou, who is an English Teacher in Primary Schools and he has three children, one daughter and two sons.

NMIOTS PHOTO GALERY

VIP VISITS

Visit of the Hungarian Ambassador
11 October 2011

Visit of the Spanish Defense Attache
27 October 2011

Visit of US 6th Fleet Commandant
1 June 2011

Visit of NATO's Assistant Secretary General
5 August 2011

Visit of SACT Commandant
15 June 2011

Visit of the Ukrainian Ambassador
18 July 2011

VIP VISITS

Visit of the Belgian MoD
25 May 2011

Visit of the Commander of the US Navy Expeditory Combat Command
1 June 2011

Visit of DCOM JFC NAPLES-COM OUP & COM MCC NAPLES-MARCOM OUP
26 July 2011

Visit of the US Department of State Senior Greek Desk Officer
30 September 2011

Visit of the Italian Defense Attache
24 November 2011

Visit of Russian Task Group Commander
25 May 2011

Exercise "Phoenix Express '11"
Presail Conference
1 June 2011

ESSM Requirements Panel Conference
13-15 September 2011

NMIOTC 2nd Annual Conference
28-30 June 2011

ATP-71 Working Group Meeting
7-9 September 2011

Maritime Operational Language Course
19-30 September 2011

Joint NPS-LLNL WMD in MIO experiment
6 June 2011

Training of HNLMS ZUIDERKRUIZ
2-9 September 2011

WMD in MIO training / experimentation
6-10 June 2011

Training of Maritime Expeditionary Unit
13-23 June 2011

Training of Hellenic Navy Special Forces
16-18 November 2011

Training of US Coast Guard Deployed Specialized Forces
20-24 June 2011

Training of German Boarding School
29 August - 6 September 2011

Exercise "Phoenix Express'11" MIO Training
23 May - 3 June 2011

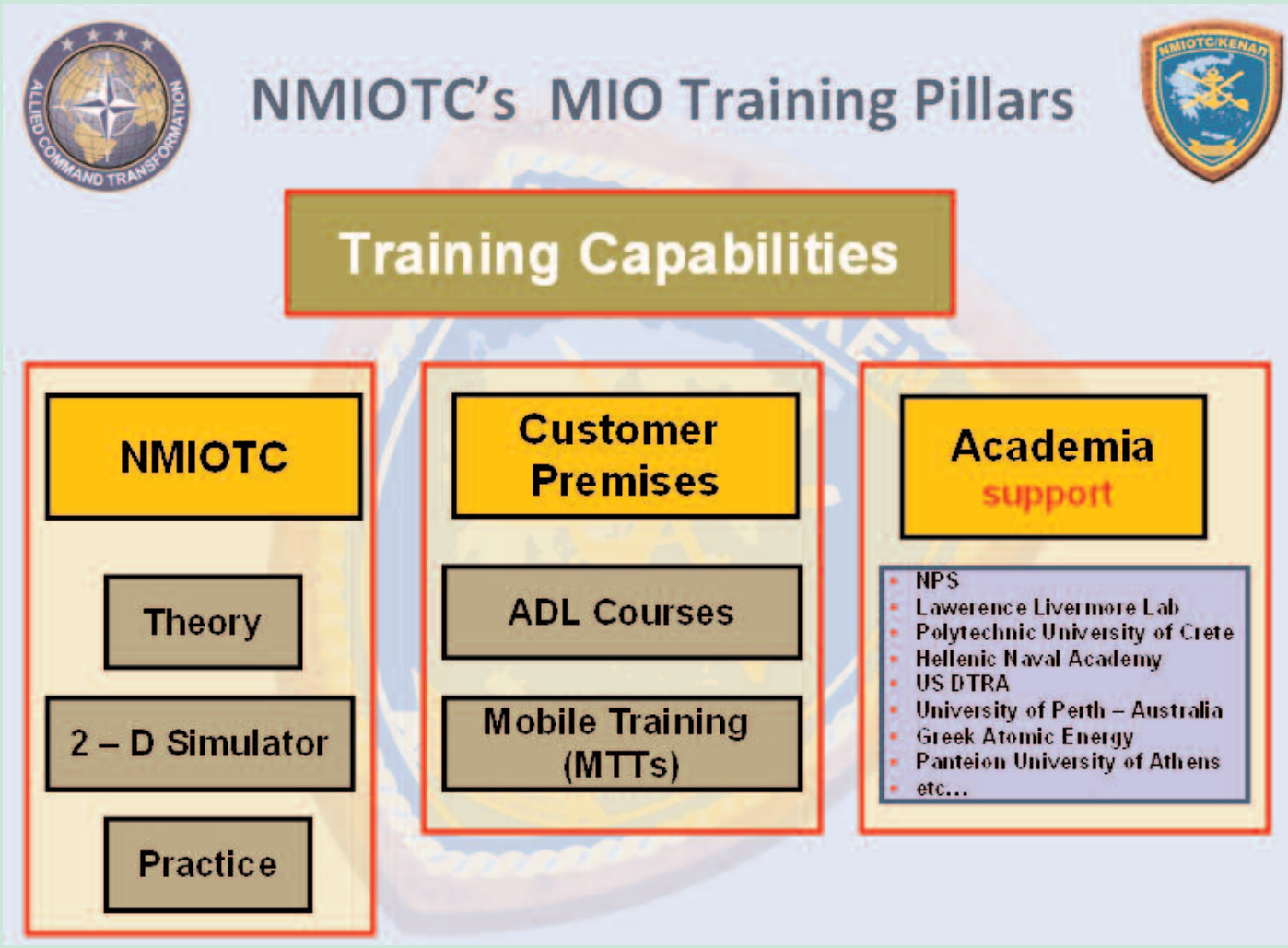
Training of the Russian Task Group
26-29 May 2011

Training of HMS ARGYLL
11-13 October 2011

ACT's Immersive Learning Course
10-14 October 2011

Training of HDMS ABSALON
25 October 2011

Training of ROS Regina Maria
1-3 November 2011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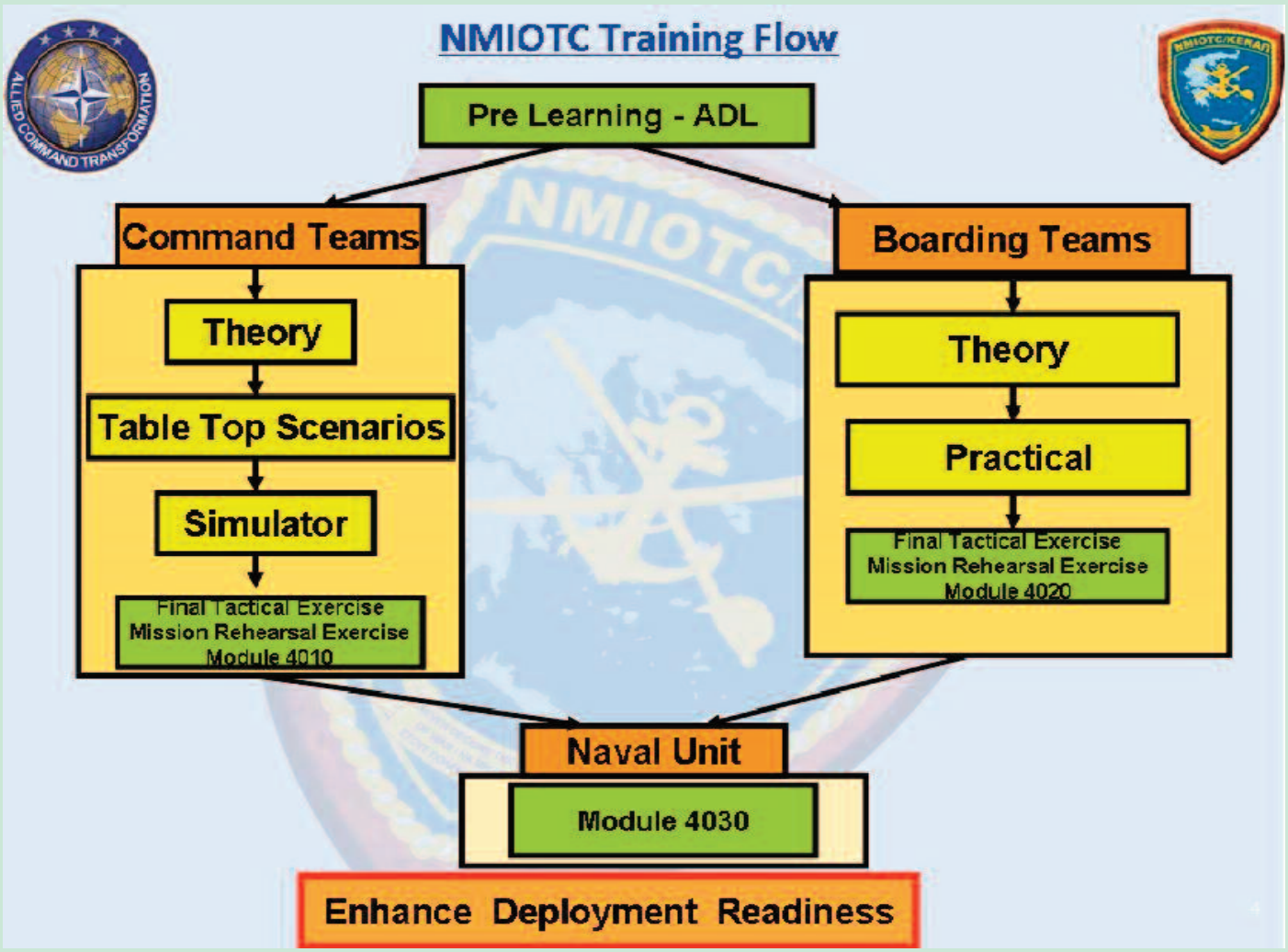
Polytechnic University of Crete
Hellenic Naval Academy
US DTRA
University of Perth – Australia
Greek Atomic Energy
Panteion University of Athens
etc...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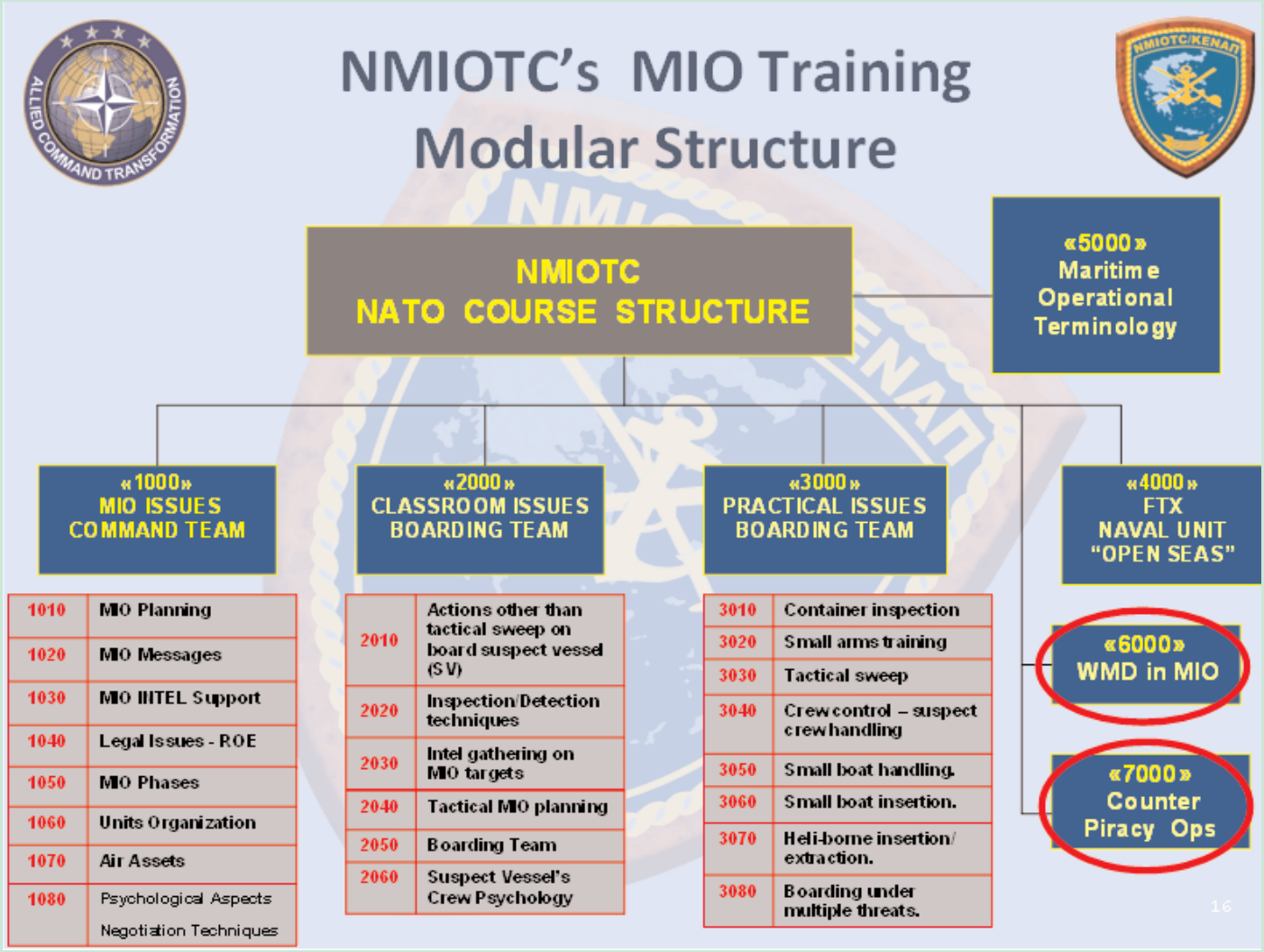
Module 4020
Naval Unit
Module 4030
Enhance Deployment Readiness



NMIOTC's training is following ACT's training guidelines and principles. It is using the three key words that ACT has implemented in the training concepts...

Effective
Efficient and
Affordable

Training is **effective** by having modular structure, providing ad-hoc and on request - just in time training, executing specific training analysis for each target audience, conducting adjustable training levels on a case by case basis, conducting tailored and customized training iaw operational needs and finally by delivering a mission rehearsal training.

It is **efficient** as it follows NATO standards, it is being enriched with subject matter experts / specialized trainers/ experienced lecturers, by implementing day and night training scenarios and finally by having strong cooperations with other Institutions/Agencies and the Academia.

It is **affordable** primarily because it is at very low cost, students pay only for incremental costs like simnition and helicopter usage and finally because NMIOTC has the ability of deploying its Specialized MIO Mobile Training Teams (MTT) to customer's premises at very low cost.

NMIOTC Training Facilities

NMIOTC MIO Simulator

Simulation for MIO Scenarios Related to current NATO Operations

NMIOTC's instructors (in blue) teaching counter piracy techniques to a MIO boarding team. Training is being executed with NMIOTC's RHIBs in Souda Bay area conducting realistic and mission reahearsal scenarios.

A **real pirate whaler** is used for practical small vessel investigation training. NMIOTC extensively apply the model of **realistic mission rehearsal** before deployment.

Recently NMIOTC's training support team installed smoke, noise and background noise generators inside training ship "HS Aris" in order to make training more realistic and effetive for the students creating a real war gaming zone environment.

Pictures from the monitors of the CCTV system on board NMIOTC's training ship "HS Aris", where students actions are being recorded and played back after training in post evaluation training briefs. These pictures is the material collected from 31 microcameras in hidden places inside the training ship.

NMIOTC ANNUAL CONFERENCE

28-30 JUNE 2011

"REGIONAL CAPACITY BUILDING IN COUNTERING MARITIME TERRORISM AND PIRACY. INFLUENCE TO FUTURE MARITIME INTERDICTION OPERATIONS"

by Mr. Michel Soula

Piracy off the Horn of Africa continues to grow in intensity and reach. There is a great concern about the current qualitative change in the piracy situation. The international community is faced with rising ransom demands, as well as more sophisticated and brutal modus operandi by pirates which raise concern about the safety of vessel crews and private citizens. Piracy has become a thriving business model.

Naval presences in the area, including that of NATO, have disrupted a significant number of pirate attacks and contained the number of successful attacks to some degree, notably in the Gulf of Aden. As confirmed by NATO Defence Ministers at their meeting on 8-9 June 2011, NATO is committed to continue to play its operational role at sea in close coordination and complementarity with the efforts of the other actors in the area at least until the end of 2012.

That said, naval presences in the area are managing the piracy problem. Ultimately, as noted by the NATO Heads of State and Government at the Summit in Strasbourg-Kehl, for a lasting solution to the piracy threat, there is a need for a coordinated multi-faceted comprehensive international effort to counter-piracy that requires to address the situation in Somalia itself, as well as to build the capacity of the countries in the region to combat piracy activities themselves.

NATO is playing its part in this regard. Indeed, NATO is assisting the African Union Mission in Somalia in logistical and planning terms at the African Union's request. NATO also contributes to the international community's effort in the area of regional capacity building. At the NATO Summit in Strasbourg-Kehl, NATO Heads of State and Government noted that 'they are considering options for a possible long-term NATO role to combat piracy, including by taking into account, as appropriate, regional requests for capacity-building'.

On 10 August 2009, the NATO Ambassadors agreed to NATO support to regional capacity building, acknowledging that NATO has an added value role to play and expertise to convey within the area of strengthening maritime capabilities of countries in the region to secure their territorial and internal waters, hence assisting them, upon their request, in developing their own ability to combat piracy activities. Thus, based upon its training and mentorship credentials, NATO has a range of capabilities which are readily exportable in support of regional capacity building, enabling NATO to make a distinctive contribution to the development of an enduring regional maritime security capacity to counter the threat of piracy.

Any NATO contribution in this area should be seen

...for a lasting solution to the piracy threat, there is a need for a coordinated multi-faceted comprehensive international effort to counter-piracy that requires to address the situation in Somalia itself, as well as to build the capacity of the countries in the region to combat piracy activities...

as a single supporting line of effort, complementing the efforts of other players and under the umbrella of the UN-mandated Working Group 1 of the Contact Group on Piracy off the Coast of Somalia, as well as compliant with and wherever possible supportive of the Djibouti Code of Conduct.

In this context, NATO has contributed to initiatives by Working Group 1 of the Contact Group on Piracy off the Coast of Somalia to formulate regional capacity building priorities. Indeed, Working Group 1 has developed a regional counter-piracy capability development needs assessment matrix, which provides a high-level awareness of the needs of regional states and stakeholders' donations. Based on that collaborative effort, and in light of NATO's specific capabilities and strengths, NATO has explored ways in which it can assist on an added value basis countries in the region, upon their request, in building counter-piracy capacity.

Hence, NATO is currently undertaking some limited and focused regional capacity building activities within means and capabilities. Such NATO training activities take place during port visits of NATO warships. Thus, NATO commanders take advantage of port visits for instance, for regional training, joint exercises, conducting ship-rider programs, and donating excess equipment. These efforts, so far, have proven positive and very much welcome. NATO Defence Ministers, at their meeting on 8-9 June 2011, confirmed their commitment to continue to provide such assistance within means and capabilities.

Such NATO training activities within means and capabilities have, so far, focused on the Seychelles. However, NATO is ready to extend such added value assistance to other countries in the region, if so requested. In this regard, the important progress achieved in the last few months in the Kampala process, which establishes a focal point on piracy for each Somali entity in its relations with the outside world, is of key significance. Indeed, although the Transitional Federal Government is recognised as the sole Somali government, these focal points facilitate dealings with the regional Somali entities, in particular Puntland, Galmudug and Somaliland, on regional capacity building.

NATO is an initial partner and plays the role of facilitator of the Training Awareness and Deconfliction (TRADE), which aims at gaining awareness and deconfliction of maritime tactical level training capabilities inherent in the maritime forces operating off the Horn of Africa. As part of its cooperation with the African Union, NATO is also continuing to support the African Union in maritime staff capacity building for the development of an African Union maritime strategy at the latter's request.

NATO's regional capacity building activities are, so far, carried out with no extra cost for NATO, and in close coordination with other actors. Indeed, in the current difficult economic climate, resources are scarce and it is therefore, extremely hard for NATO nations to make any further financial commitment for any regional capacity building activities that go beyond means and capabilities. NATO is open to external sources of funding to resource its regional capacity building activities, if and when such are made available.

In conclusion, NATO is hence playing its part in supporting regional capacity building efforts within means and capabilities and the framework of Working Group 1 of the Contact Group on Piracy off the Coast of Somalia. NATO's efforts are complementary to other actors' activities and are seen as part of a multi-faceted and sustainble international response to the problem of piracy.

...NATO is ready to extend such added value assistance to other countries in the region...

Mr. Michel Soula *is currently Head of the Crisis management Policy Section in the Operations Directorate at NATO Headquarters in Brussels. He is dealing with the political aspects of all crises NATO is currently involved in. Prior to that, he held the position of Deputy Director of the Private Office of the NATO Secretary General for seven years, working first with Javier Solana and then with Lord Robertson. He was interalia in charge of the Balkans. As French civil servant, Mr Soula started his career in the French Post Ministry before he was seconded to the French Foreign Service where he held various positions, in particular in the Strategic Affairs and Disarmament Directorate on chemical and biological warfare.*

REGIONAL CAPACITY BUILDING

NMIOTC ANNUAL CONFERENCE 2011
Executive Summary

by LTC (Ret) Phyllis Mihalas, Ph.D.

In Africa, threats to Regional Capacity Building (RCB) undermine the security of individuals, states/societies and regional and international trade systems. There cannot be regional stability until there is security within a region. The responsibility for action lies with individuals, communities, provinces, national governments, regional organizations and the international community at large. As we learned from the presenters and participants of the 2nd Annual NMIOTC Conference, there are myriad of threats to Africa's Maritime Domain.

Threats like unreported and unregulated fishing due to overexploitation of overfishing and pirate fishing and environmental crimes such as illegal dumping of toxic waste adversely affect maritime security. Africa has become a major hub for global drug smuggling, where 46% of all cocaine caught in Europe airports is from Africa . Oil bunkering involves siphoning oil from the network of pipelines that cross the oil fields into private barrages, which are then ferried out and sold on the black market. Environmental crimes such as illegal dumping of toxic waste and lead-contaminated waste as well as human trafficking (60% of the world's human trafficking occurs in Sub-Saharan Africa) further contribute to the erosion of a secure and stable maritime environment. Of course, sea piracy, one of the main topics of the conference, continues to escalate.

When an area is suddenly struck by a natural disaster such as a flooding, a massive civil unrest erupts, or the constant maritime piracy phenomenon, it is too late to start building the relief ship. Likewise, unilateral actions of one nation, or an outside coalition for that matter, cannot achieve total success.

U.S. and European interests often find themselves as the external participants during these crises. Granted, our western efforts may possess some of the critical resources and expertise. At the most basic level, host nations and regional partners understand the environments they live in. In today's strained economic climate and scarce resources, it would be unconscionable to blindly launch into crisis effort without local participation and collaboration to the greatest extent feasibly possible. Properly orchestrated, and with a framework already in place, the response(s) can be efficient, proportional and have a meaningful impact on their nation(s) as well as ours.

So where does the effort begin? As discussed at the conference, NATO has proposed to further support the efforts of minimizing the piracy problems by implementing a Regional Capacity Building Strategy which follows a United Nations example. Further discussed and as outlined in the "NMIOTC Food for Thought Paper" authored by Lieutenant (OF-2) Georgios Mantzouris, the presentations and follow-up discussions at the conference proved that RCB may boost capabilities and help to eventually solve the piracy phenomenon. These are strategic thoughts that must be operationally executed through tactical operations.

So why the military? We learned from the presentation on the U.S. Navy's Maritime Civil Affairs and Security Training Command (MCAST) that it often takes a comprehensive military and civilian approach that relies on established long-term partnerships

MCAST Security Force Assistance military to military training on Small Boat Operations

between internal and external governments, militaries, international agencies, and non-governmental organizations. These collective efforts recognize that synchronized regional stability and capacity building are the capstones to a healthy global socio-economic framework. A common effort that one that certainly will not eliminate the inevitable world crises, but can

MCAST military to military training in Visit, Board, Search and Seizure (MIO) Training

endure, mitigate, and strategically over come with the least amount of suffering and cost possible.

MCAST has two distinct missions; Maritime Civil Affairs (Civil Military Operations/CIMIC) and Security Force Assistance (SFA) (Military to Military Training). Both missions directly support the U.S. Navy's Maritime Strategy through persistent forward presence and contact in the regions to build trust and enduring relationships with partner nations. By assisting other nations in building their own security capabilities, the burden on the international community is reduced.

In recent years, maritime security threats and challenges have evolved. In addition to nations potentially hostile to the United States, maritime security challenges now include non-state, transnational, and irregular threats in the maritime domain, as well as natural disasters, environmental and natural resource protection challenges. New partnerships with the world's maritime commercial interests and the maritime forces of participating nations will pay dividends to the concept of RCB.

From the tactical perspective of the MCAST, a strategy of outreach, engagement and partnership-building between MCAST, local governments, civilian populace and non-governmental organizations (NGOs) works to address the maritime security and stability issue.

What partnerships exist? Security of the local maritime domain is the critical maritime enabler of stability operations. Without maritime security, maritime operations and their support of operations ashore would be a risky undertaking. The early establishment of local maritime security is a necessary precondition of stability operations – in which RCB can flourish.

The goal of the NMIOTC's Second Annual Conference (June 2011) was to provide background, current capabilities of failed and actor states, as well as investigate models that will lead NATO to a feasible and economic cost benefit approach to Regional Capacity Building (RCB). The conference also became a forum for creation of partnerships. Formally and informally, the list of impressive and accomplished speakers from NATO and non-NATO organizations, private shipping, academia, and others participated and presented their ideas and thoughts regarding RCB.

***LTC (Ret) Phyllis Mihalas, Ph.D.**, is the Senior Advisor to the Commanding Officer, MCAST. In 2007, LTC Mihalas retired from the U.S. Army after 28 years in the U.S. Army with a specialty in Civil Affairs, which included a deployment as the CIMIC Officer to the UN Mission in Ethiopia and Eritrea. Dr. Mihalas has been with MCAST for four years.*

JOINT NPS-LLNL FIELD EXPERIMENT

NETWORKING AND INTERAGENCY COLLABORATION ON MARITIME-SOURCED NUCLEAR RADIOLOGICAL THREAT DETECTION AND INTERDICTION

by Dr. Alex Bordetsky, Mr. Steve Mullins, Lt Georgios Mantzouris Mr. Eugene Bourakov, Mr. Bryan Hudgens, and Mr. David Trombino

The Naval Postgraduate School (NPS), Lawrence Livermore National Laboratory (LLNL) and the NMIOTC organized and conducted the 3rd Joint NPS – LLNL MIO experiment at NMIOTC from 6 -10 June 2011. The experiment focused on Weapons of Mass Destruction (WMD) in Maritime Interdiction Operations (MIO) C2, reachback and sensing capabilities in the maritime environment. Participating organizations included NPS/LLNL-USA, NMIOTC-Greece, NATO JCBRN COE-Czech Republic, FOI-Sweden, University of Bundeswehr-Germany, a Dutch NSW unit and the Hellenic Naval Academy (HNA). This iteration continues a campaign of experimentation that began at NMIOTC in 2008, and continues on an annual basis. The principal investigator of the MIO experiments is Dr. Alex Bordetsky, founder of the Center for Innovation and Experimentation (CENETIX), which integrates and operates a MIO tactical testbed.

INTRODUCTION

The focus of the MIO 11-2 experiment was on the use of networks, advanced sensors, and collaborative technology to support integrated detection and interagency collaboration during operations to counter nuclear and radiological threats aboard maritime craft. The joint tracking portion took place at the NATO MIO Training Center in Souda Bay, Crete. These ongoing MIO events are considered as discovery experiments, in that we continually introduce new systems, concepts and technologies into a setting where we can observe and catalog their results (Alberts, p. 19).

FOCUS AREAS

In our scenario, some small maritime craft were illicitly transporting nuclear/radiological threat materials toward US and NATO installations overseas. We modeled methods of network-enabled detection and interdiction of those threats. The experiment culminated in the joint detection and interdiction of a suspect small maritime craft by international boarding teams.

From a technical standpoint, MIO 11-2 represented an incremental step in the study of several areas of research, including:

- The use of ad hoc mobile networking architectures to integrate tactical level boarding teams (equipped with hand-held portable and unmanned system-based detectors) with geographically-distributed technical subject matter experts and data fusion centers
- Using information management architectures to share alerts from threats aboard small maritime craft or between land borders or ports of entry (POE), and to translate active and passive detection alerts into the shared situational awareness (SA) common operating picture (COP)
- Surveillance techniques that enable the global locating, tagging, and tracking of small maritime craft that are transporting illicit materials
- Mission control operational constraints related to search models for stand-off and high-speed drive-by detection, in combination with network-controlled unmanned surface vehicles (USV), aerial vehicles (UAV) (provided by the Hellenic Naval Academy
- Cyber distortion during technical expert reachback situational assessments, and measures to compensate for that distortion
- Knowledge based and transactive memory system architectures for network-enabled integrated detection
- Visibility and vulnerability of detector networking

OPERATIONAL PHASES

The experiment was divided into four phases.

Phase I. Simulated early detection and interdiction activities in the Baltic Sea near the Swedish port of Karlskrona. This led to the subsequent target identification at NMIOTC. (Conducted at FOI, Sweden)

Phase II. Large vessel search. Swimmers evaluated a parasite box attached to a vessel's hull. International crews searched for shielded materials using portable sensors and mesh peer-to-peer ubiquitous networking, and posted findings over the network to the shared event SA portal.

Phase III. Small craft tracking, detection and search. A USV served as the target small vessel for detection by tactical swimmers, setup of a primary choke-point screen, setup of a secondary choke-point screen and high-speed stand-off detection and pursuit.

Phase IV. Same objectives as Phase III, with target modeled by a small manned boat.

COLLABORATION SCHEMES

Reachback to and Collaboration with Remote Technical Subject Matter Experts

A central part of TNT MIO Experiments has historically been the study of collaboration between boarding officers/detector operators and remote technical experts, during the process of detection and interdiction operations. In MIO 11-2 we explored collaboration between European regional (NATO JCBRN CoE in the Czech Republic) and Global (in U.S.) technical nuc/rad SMEs, with overseas POE operators. The types of operation included set-up of network-controlled choke points, primary and secondary drive-by screening, and stand-off detection during high-speed pursuit.

In comparison with previous experiments an important new element in MIO 11-2 was the addition of the NATO JCBRN Center of Excellence (COE) in the Czech Republic into the MIO testbed reachback infrastructure. We integrated the CoE technical experts in support of NATO boarding crews. Observations were shared during a network-enabled detection and interdiction process among several reachback centers (NPS, UoB, JCBRN COE, FOI-Sweden, and the Changi C2 Center-Singapore). These observations will support analysis of requirements for Cooperative Mission Control as it applies to the tracking, choke point screening, pursuit, and interdiction, of small maritime craft, and the sharing of SA.

Collaboration between a Boarding Team and Reachback Technical SMEs

Boarding Teams received detection inputs:

- from the detector aboard the BT vessel,

- from file(s) downloaded from a tactical swimmer's detector,

- as a visual and verbal description of a suspect vessel/parasite box from a tactical swimmer who is connected to the BT via an ad-hoc mobile network.

Collaboration among Regional and Global Center Experts

Upon receiving spectrum images Regional and Global experts started the triage procedure collaborating between the centers on Spectrum image analysis. They used a collaborative platform centered on white board features of image sharing and discussion (Elluminate and Slate platforms). The results of cooperative adjudication were posted back in the Event Portal.

RESEARCH QUESTIONS

The main objective was to examine research questions in terms of the feasibility and major constraints associated with network-enabled detection and interdiction of maritime-sourced nuclear radiological threats to the U.S. and NATO installations overseas. In terms of the DNDO Global Detection Architecture (Figure 1), the set of the trial steps was designed to explore several of the architecture's key elements. Research questions were as follows:

1. How can networked swimmers, (Figure 2) sensor operators, patrol boat crews, and synchronously connected reachback technical experts (Figure 3) identify illicit materials during transport/delivery to a foreign POE via small craft?

2. What is the best method to facilitate locating and interdicting illicit material/devices in the approaches to a target area?

3. How can we conduct blue water tracking of illicit material delivery near a NATO / U.S. facility in the Mediterranean (Figure 4)?

4. Collaboration among NATO MIO crews executing network-enabled choke point (Figure 5) and target pursuit.

5. Integration of unmanned aerial vehicles (Figure 6) to support choke point screening & target vessel pursuit.

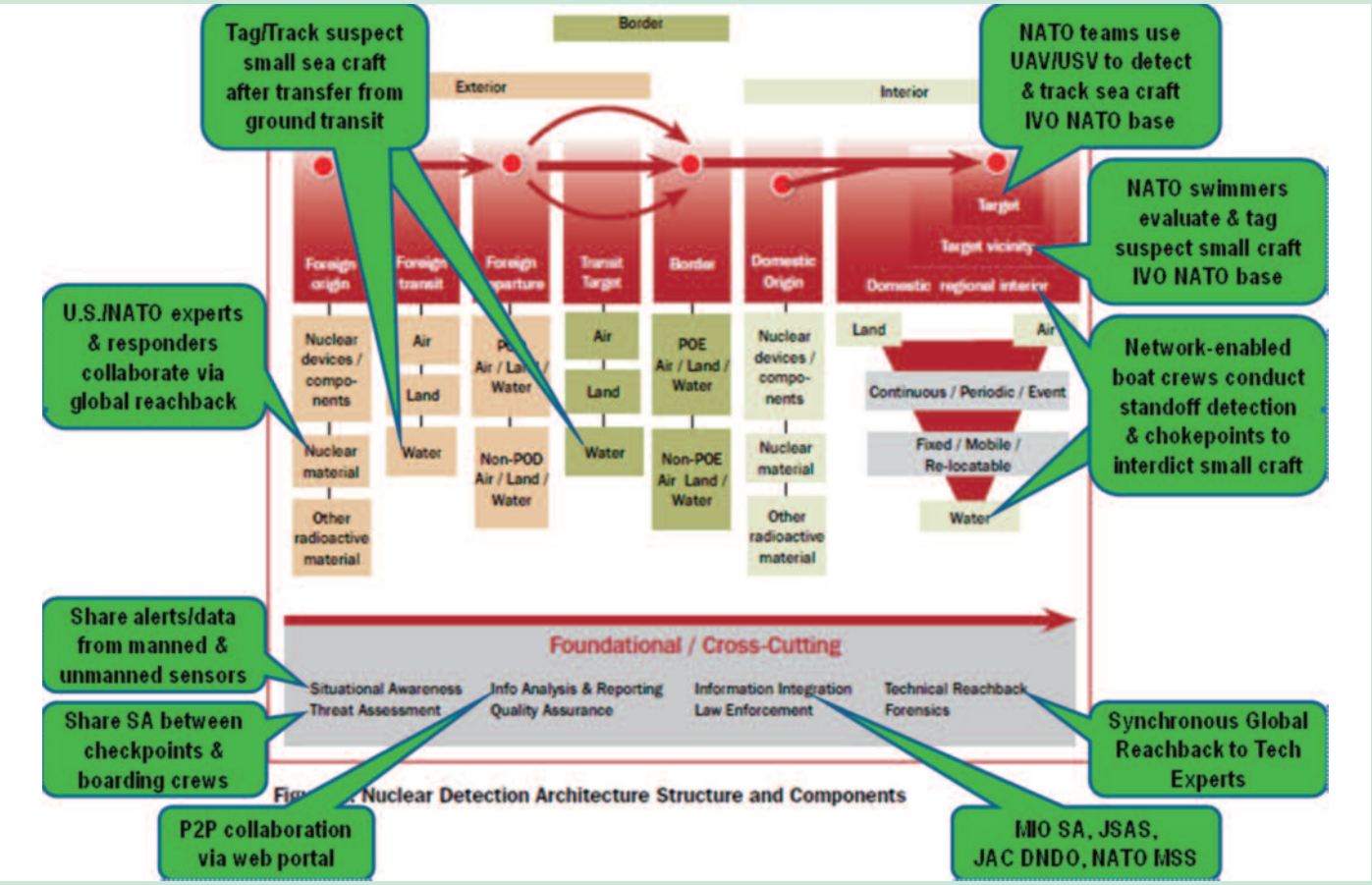
6. Detecting illicit material and interdicting target small craft with coordination and shared situational awareness between the multinational crews assisting each other.

7. How can simulations be used as input to test the expert reachback concept and shared situational awareness?

GENERAL FINDINGS

The research team (Figure 7) captured numerous observations and findings. Some of the important ones are listed as follows:

One of the major findings pertains to the structure of the expert reachback process and collaboration with



MIO 11-2 experiment focus correlated to USDNDO Nuclear Detection Architecture

detector operators on–the-move (Boarding teams combat swimmers).

- The two-way voice/data/video collaboration between detector operators and BT's operating in a fragile ad-hoc mobile networking environment proved to be feasible through the robust shared event log (Observer Notepad) with rapid data entry by Boarding Team members, either typing or by voice inputs.

- The automatic ARAM sensor postings into the shared event log appeared to be a time saving solution.

- Each individual was able to collaborate and guide the actions of the BTs and swimmers.

Alternatively, the SME teams at the JCBRN CoE, LLNL-NPS, Singapore, and FOI, located in office environments with high-end undisturbed communications, were able to collaboratively analyze spectra and information using the benefit of white board and VTC centered collaborative environment (Elluminate platform). At this level, any differences in national approaches to threat adjudication became easily negotiable. Such a workspace collaborative environment seems to be the most suitable for network-enabled detection with immediate reachback to experts in

Networked swimmers are approaching large target vessel in this case NMIOTC's training ship "HS Aris"

The swimmers observe a suspicious object on the target vessel, and capture spectroscopic data using the Identifinder radiological detector

multiple countries.

Also, technical findings on networking with swimmers, putting detectors on the network, integrating UAVs and USVs contributed to the set of solutions. Several partner participants and observers also provided observations and recommendations. Particularly salient notes were provided by representatives from Lawrence Livermore, NATO ACT, the NATO JCBRN CoE, and DHS DNDO, among others.

General Observations – Recommendations

Some of the most precious and valuable observations are:

Observations (Doctrines and TTP)

a) The challenge is how to integrate the MOC and/or ship command team, while minimizing boarding team timelines as much as possible. Key information exchanges include:

- Between BTs and the mother ship
- Between the mother ship and MOC and SMEs
- Collaboration between the MOC and the Joint Force Commander (e.g. NATO)
- Between the JFC watch floor and strategic decision makers

b) An initial conclusion is the need for 2-3 different communication pathways. Two of these communications architectures may be needed. In either case, they must ensure that clear, coherent and efficient information exchange and direction occurs throughout the boarding or boat mission. For example:

- BT/boat crew exchanges information with the reach back SMEs by relaying through the 'mother' ship and the MOC (linear design).
- BT/boat crew exchanges information directly with the reach back SMEs; the 'mother' ship and the MOC monitor and comment/question/intervene as necessary.
- Reachback SMEs or the MOC manage the information exchange and direct sensor and other data collection requirements (i.e. spectra, pictures, manifest information, etc.) or direct other actions according to the mission and available ROE. (Star design)

Recommendation

c) The experimentation should include players at the MOC echelon, including a designated key decision maker / commander. This will be pivotal to ensure experimental findings regarding networked decision making.

Observations (Doctrines and TTP)

d) No standard message formats (like the medevac 9-line format) were used. This impacted the experiment by decreasing effective information and data requests and exchange. It also included contextual information such as the type of sensor that produced the spectra that were transmitted, the distance from which measurements were taken, ambient conditions, etc. While not the direct jurisdiction of the researchers, standardized formats will reduce the possibility of introducing error variables into findings related to collaboration effectiveness.

e) Similarly, the (international) MIO operational world does not employ standardized terminology. During the experiment, it was clear that numerous separate lexicons were being employed. As above, it is within the capability of the researchers to establish a common set of terms, even if only for use during MIO

Choke point formation and stand-off detection dynamics as observed by remote experts via online software tools

experimentation. Absence of a lexicon could lead to faulty findings, and might help to add some terms for possible NATO/global use. This is now important because future MIO experiments are expected to include players such as whom were present at MIO 11-2, from Asian, NATO, and non-NATO partners.

f) No standard communication ways were followed. One participant commented that they already have well-established communication plans for this type of scenario.

Recommendation

a) Generate a set of protocols and standardized message formats for the experiments, and familiarize participants with them during a preparatory period.

b) Establish a standard lexicon of key terms. As above, familiarize participants with them

c) Implement the above mentioned formats and ontology in the collaboration tools to encourage standardized reporting.

d) Use standard communication plans, or develop and motivate new plans that are better suited for the virtual collaboration platform. With new plans, these must be communicated to all participants.

Observations (Reachback SMEs - Training)

a) The first ever collaboration between the geographically separated reachback SME organizations was seen as positive by both organizations. It was viewed as a start in the establishment of this new NATO capability, which should be continued and refined.

b) Few of the reachback SMEs who participated in the experiment are familiar with the MIO environment. While technically expert, most do not know the operational conditions and limitations under which the BTs work. This hindered efficient collaboration. SMEs must know what to ask for, how, and when. They may want to 'bundle' several RFIs to the BTs for efficiency.

c) The SMEs understood the tools (Elluminate, Observer notepad, discussions between the experts). The collaboration between the BT and SMEs seemed good. The setup and manning of the CoE SME team was good: Two experts, one CBRN specialist, OpsOf, CIS officer. Experts found their own way how to discuss special topics and came to the common conclusion.

Recommendation

a) Recommend a continued interchange between LLNL and the JCBRN CoE SMEs to sustain this initial relationship.

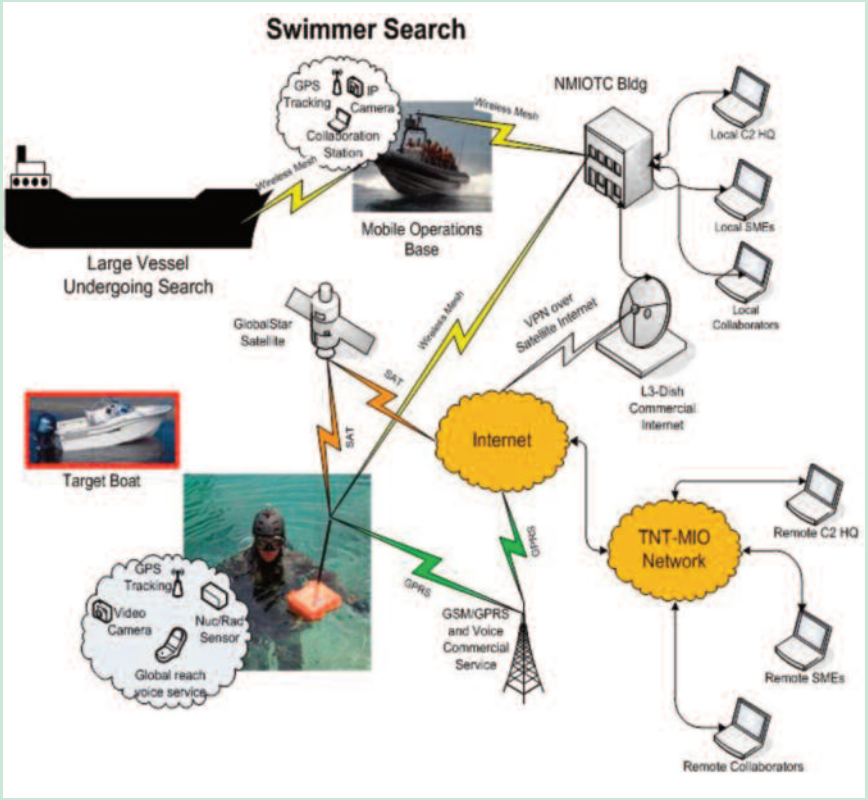
b) Conduct some level of MIO-related training for SMEs in order to understand the Boarding Teams' operating environment and the limitations of the current experimentation.

c) Experts need more information about the spectra. They need background and calibration data and training on them.

Observations (Boarding Team Operations-Materiel)

a) Boarding Teams successfully integrated with the MOC and SMEs (using hand-held, portable, and unmanned detection systems to detect & collect

MIO Experiment Participation		
Name	Organization	Responsibilities
Leads		
Alex Bordetsky	NPS	Principal Investigator
Dave Trombino	LLNL	LLNL Lead
Wayne Buchanan	DNDO	Sponsor Agency Advisor
Martin Garvey	NATO SACT	NATO Advisor/Observer
Peter Zielinski	DTRA	Sponsor Agency Advisor
O. Celebi	NMIOTC	Host Advisor
Design, Planning & Coordination		
Steve Kreek	LLNL	Nuc/Rad Technical Expert
Joel Swanson		
Eugene Bourakov	NPS	Network Engineer
Steve Mullins		Experiment Plan, Design, Execution
Bryan Hudgens		TOC Observer's Notepad Operator
LCDR R. McLaughlin		KU Band SATCOM Ground Station Unit & Reachback Link
Capt Chad Puff		Manage Trellisware radios & PLI data, austere environment comms
Capt Rob Gruber		
CDR John Looney		CENETIX/MIO SME
MAJ Karel Vydra	NATO JCBRN CoE	CoE Operations Officer
Jaroslav Kareš		Military Technical Institute
Nuc/Rad Technical Expert		
Ota Fišera		
WO Marek Nem		
LTC Adolf Labák		CoE Lessons Learned Recorder
Capt Richard Hanák		CoE Network Manager
Christine van Burken	NLDA	Data Capture & Analysis
Dennis Andersson	FOI	FOI Data Capture & Analysis
Robert Forsgren		FOI Simulation Engineer
Carl-Johan Thunfeldt	SNWC	FOI C2 team
LT Darryl Diptee	NPS	NPS NOC Operations Officer
LT Georgios. Mantzouris	NATO MIOTC	Host Agency Lead Rep
Ens Kostas Papanastasis		Host Agency Support Rep
LT Jim Pierce	USNSA	USN Logistics Support Coordinator
Georgios Drikakis		
Maj Houtschild	NL Navy	Tactical Swimmer Team
Mike Janssen		
Dennis Runhart		
Supporting Partners		
Vance Kannapel	L-3 GCS	KU Band Satellite Ground Station Unit & Reachback Satellite Link
Tom Calabro	CDI	Biometrics Identification System
Mark St. John	Pac NW	Slate Whiteboard-based Collaborative SA System
Marc Balbes	Asynchronous, Inc.	Mobile Field Kit (MFK) Collaborative SA Tool for Detector Operators
Herb Rubens	Persistent Systems	Wave Relay Mesh Tactical Network
USMC MCWL		Tactical Mesh Software Programmable Radios



Small Craft Detection and Interdiction Network

spectroscopic and operational data). They accomplished test objectives to collect, transmit, and resolve alarms within appropriate time margin and demonstrated how the detectors can integrate into data-sharing information mesh network.

Recommendation

b) Opportunities exist to improve the relay of requests and feedback between SMEs and Boarding Teams. Boarding Teams will eventually gain proficiency in measuring and transmitting key information to the MOC and SMEs, streamlining collaboration with SMEs. This calls for both technical advances and collective and individual training to increase proficiency with the equipment. This will be important as the researchers continue to employ NMIOTC students as boarding team and MOC player personnel.

Integration of Unmanned Surface and Aerial Vehicles

The Hellenic Naval Academy (HNA) UAV in MIO team participated and represented by the team leader Professor Ioannis Koukos and the mini helo pilot LTJG Kyriakos Karanagnostis GRC(N). The presence and entanglement on the experiment added significant value and revealed many advantages for the use of UAVs in Maritime Interdiction Operations. Also the use of a mini - USV which was carrying the radioactive material simulating a fast attack very small incoming craft was one of a kind prototype application that contributed significantly to the conduction of the experiment and the findings that were acquired.

MIO students receiving orientation prior to executing their roles in the experiment

CONCLUSIONS

Overall the experiment fully met the objectives that had been set during the planning phase and acquired precious results for the future implementation and execution of MIO experimentations. NMIOTC along with NPS and LLNL MIO expert teams will continue to stand side by side in conducting experimentation events with utmost goal to better enhance the operational knowledge in the areas of C2 collaboration in the maritime environment, in support of the maritime security operational concept by providing state of the art means and innovative methods to counter maritime terrorism activities in the maritime commons.

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ATP-71 WORKSHOP IN NMIOTC

by LCdr Alexandrou Gobjila, ROU N

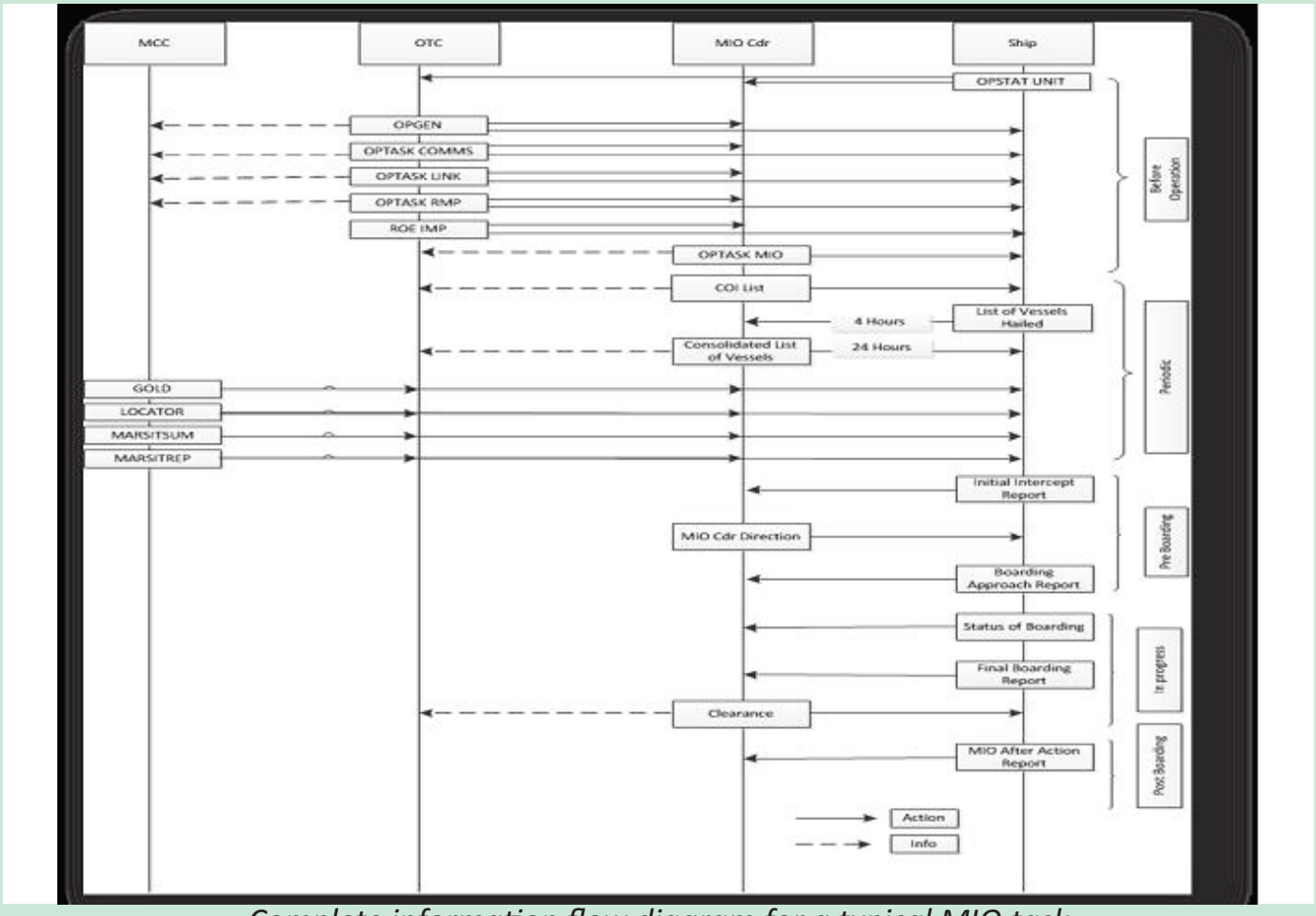
NMIOTC works on issues related to Maritime security and prepares updates to the ATP-71 document which supports Maritime Interdiction Operations. So as to sustain today's operational requirements, the third ATP-71 Workshop was organized and held by NMIOTC from 7th to 9th September 2011, in NMIOTC's facilities.

The workshop work started with a warm welcome address from NMIOTC's Commander, Commodore A. Poulous, GRC N, who asked everybody for an active and fruitful participation. Following, NMIOTC Staff Officers initiated the procedure of presenting and discussing the NMIOTC's change proposals along with the participants from UK, Spain, Greece, and USA. During the workshop other nations change proposals were also discussed.

As NMIOTC, we hope that these change proposals will improve the currency of ATP-71 document and make contributions to the Maritime Interdiction Operations. The discussions made over proposals consist of the issues that are related to todays technological and operational requirements that were experienced by the help of previous Maritime Operations. For further studies, the final ATP-71 workshop change proposals are posted to the MAROPS forum (NSA's official site).

The workshop also included an NMIOTC Command Brief and an NMIOTC Facilities Tour for the participants to acquire a thorough knowledge of the training capabilities that NMIOTC is able to offer to Allies and Partners.

A series of changes were discussed, including the standardisation of the equipment for the boarding teams, composition of the boarding team (based upon ship sizes), the update of several sections regarding opposed boarding and the revision of chapter 9, regarding boarding and searching in an CBRN environment



Complete information flow diagram for a typical MIO task

(NMIOTC & SMIER panel rep in house development)

The agenda included also the transformation of the structured OPTASK MIO into a formatted OPTASK, following the general tendency to move towards the man-and-machine readable messages. The initial task of the Workshop was to identify the Information Exchange Requirements (IERs) for Maritime Interdiction Operations (MIO) Operations, a structured OPTASK MIO had already been developed; however, based on the decision of the Naval Board (predecessor to the Maritime Standardisation Board) in 2004 there is a requirement that the textual solution to all maritime IERs was to be Message Text Formats, developed using the rules in ADatP-3(A).

The rationale behind the decision of the Naval Board to require all new messages being developed as MTF's was explained and that unless all Maritime messages were in a format that could be automated then the ships staff would continue to be burdened by manual processing of message traffic and the Naval Board did not want a dual standard of structured and formatted messages to exist beyond 2007.

...there are a number IERs that are not standardised in the NATO...

The workshop developed the IER using the format in specified so that the validity of that process could be tested. As this was the first time a Maritime IER panel that had been developed using APP-15, at the request of the SMIER Chairman, GBR provided a MTF facilitator to assist the MIO delegates develop the IER.

The initial stage in the process was to gain an overview of all the IERs that are associated with a MIO operation and where an OPTASK MIO might fit in, this process also helped determine the if the OPTASK MIO was the correct location for some of the IERs e.g. would some IERs be better served by existing specialist messages, e.g. communications data should be in the OPTASK COMMS, ROE should be in the ROEIMP etc. The complete information flow for a typical MIO task was developed and it is shown on the Figure.

This process highlighted that that there are a number IERs that are not standardised in the NATO and were being created on an ad hoc basis be Commanders. These additional IERs are:

- COI list - Periodic update of vessels on interest to the MIO Task
- Consolidated List of Vessels Hailed
- List of vessels hailed by a unit
- MIO Reports
- Initial Intercept Report
- Boarding Approach Report
- Status of Boarding Report
- Final Boarding Report
- After Action Report
- Clearance Message

In discussion it was apparent that some of these reports we initially sent as voice messages they had to be backed up by textual messages for legal reason. Examples of messages from Operation ACTIVE ENDEAVOUR and Operation UNIFIED PROTECTOR were used to determine additional IERs that had not been expressed in the example message in ATP-71 Change 4.

During the development of the message, the NMIOTC would conduct short trials of the messages to ensure that the developed solution meets the needs of the operational community that they represent.

One of the features of the example messages was that a significant proportion of the messages we devoted to defining the IER for the collection and dissemination of information within the Operations. There was considerable similarity between the requirements; however, there were differences in the ordering of data. This is a very inefficient method of processing information as significant manual intervention is required and training cannot be standardised.

It was considered that these messages should be standardized, this will allow NATO and/or nations to develop automated methods of processing these messages, which will significantly reduce the workload on operational personnel. Overall the ATP-71 workshop held successfully and produced results that are going to be further discussed in MAROPS 2012 working group.

LCdr Alexandru Gobjila, ROU N *is currently a Counter-Piracy instructor in NMIOTC.During his 13 year carrier he has served on board MCM ships and Frigates of the Romanian Navy. He is also a qualified English Language instructor.*

MARITIME 'ICAO': PERHAPS AN ANSWER TO MODERN MARITIME TERRORISM?

by Professor NikitasNikitakos & Lt Ioannis Nellas GRC N

INTRODUCTION

The maritime domain constitutes a significant aspect of the global security agenda. In the modern era there is a large number of issues that create the need for the policy makers to adopt new approaches and ideas and ultimately to think out of the box. The 9/11 terrorist attack clearly demonstrated the enlarged dimensions the issue of terrorism has gained. Considering the fact that the sea covers 7/10 of the earth's surface a spill over phenomenon is expected taking into account the fragile political situation in many coastal areas all over the world. Inevitably, the term of maritime terrorism was introduced and although it is frequently discussed it has not been actually analyzed in depth; though sooner or later it will draw more attention. This article attempts to propose a new and innovative solution to tackle maritime terrorism by founding a maritime equivalent to ICAO (International Civil Aviation Organization).

MARITIME TERRORISM

Maritime terrorism (including criminal and political violence at sea) is an issue with many parameters and a definition that can be used to define it is the following [2]:

The undertaking of terrorist, insurgent or criminal acts and activities

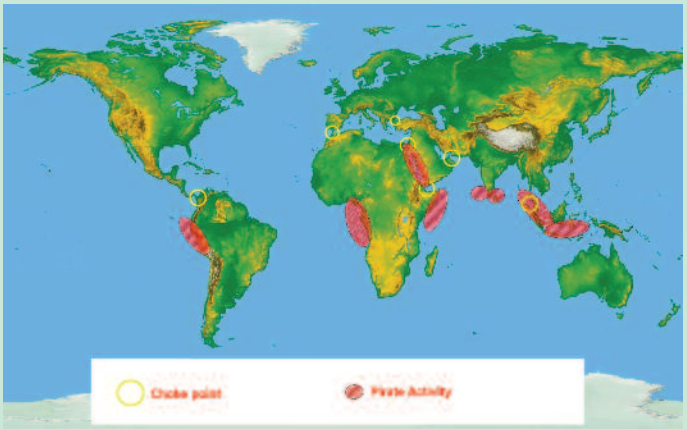
- **Within the maritime environment**
- **Using or directed against vessels or fixed platforms at sea and members of their passengers and personnel**
- **Against coastal facilities or settlements, including tourist resorts, port areas and port towns and cities.**

Maritime domain is a frequently spoken term and often misunderstood, that's why it is important to accurately define it, so the maritime domain or environment consists of the following [1]:

Everything of, on, under, relating to, adjacent to, or bordering on Seas, Oceans, or other Navigable Waterways

- **All maritime-related activities**
- **Infrastructure**
- **People**
- **Cargo**
- **Vessels and other conveyances**

In order to have a sense regarding the areas of danger in the maritime domain Figure 1 is depicting the areas where maritime risks exist. Also in the graph we can observe the main global choke points and the main sea-lanes where there is high density of maritime traffic [1].



Choke points and Areas of Pirate activity [1]

Maritime terrorism is an issue with many parameters

Next, we will briefly discuss on the historic aspect of maritime terrorism. The maritime domain by default carries a number of limitations, which include geographical, operational and other parameters. For example, terrorist attacks on land-based targets offer more publicity and fewer possibilities for failure [2]. In addition is has been proven historically that terrorists act in a more traditional fashion. Operations at seas require special training and set of skills from the personnel involved. Statistics officially confirm the above arguments since 1968 only 2% of terrorist incidents

involve the maritime domain. However, since 2000 maritime terrorist incidents have increased considerably (i.e suicide attack against Japanese flag ship M-Star in July 2010) [2].

Threats to Maritime Security in the Maritime Domain [1]

Many often get confused in clearly understanding the differences between maritime terrorism and piracy. In this point it is useful to discuss if there is any anexus and possible points of contact between piracy and maritime terrorism. Nowadays, there is no obvious point of contact between pirates and terrorists since their aims are different. Terrorists primarily desire to impede maritime traffic and cause great burden to global stability on the other hand pirates want to collect ransom by high-jacking a merchant ship [2].

MARITIME SECURITY

Firstly, it is crucial to conceptualize that maritime security is the outcome of many factors; specifically there are many issues to be tackled properly in order to claim that we have reached an acceptable security level.

In the graph above the complexity concerning the issue of maritime security is shown and it is clearly implied how coordinated a maritime anti-terrorism policy and tactic should be followed in order to meet all the challenges related to the maritime domain. Many of the issues stated above require a collective cooperation from the local, regional and international authorities to deal with this issue otherwise all other approaches will reach to a stalemate [3].

MARITIME EQUIVALENT TO ICAO

The maritime domain shares a number of similarities with the air space. The international community in order to prevent friction and conflicts between states concerning issues with airtransportation and other related issues after World War II signed a treaty in Chicago on December 1944 stating their will to develop air transport services in a safe and right manner.

The basic principles of the Chicago treaty are listed below [4]:

- **Insure the safe and orderly growth of international civil aviation throughout the world;**
- **Encourage the arts of aircraft design and operation for peaceful purposes;**
- **Encourage the development of airways, airports and air navigation facilities for international civil aviation;**
- **Meet the needs of the peoples of the world for safe, regular, efficient and economical air transport;**
- **Prevent economic waste caused by unreasonable competition;**
- **Ensure that the rights of Contracting States are fully respected and that every Contracting State has a fair opportunity to operate international airlines;**
- **Avoid discrimination between Contracting States;**
- **Promote safety of flight in international air navigation;**
- **Promote generally the development of all aspects of international civil aeronautics.**

...maritime domain space although it shares a number of similarities with the airspace, it differs however considerably also...

The maritime domain space although it shares a number of similarities with the airspace, it differs however considerably also and not all the above principles are respectively applicable. Sea transportation carries a number of special characteristics which need special consideration and acts. However the concept of founding a maritime equivalent to ICAO appears challenging and has a hopeful dimension since the augmented needs for maritime security need a good basis in order for the involved states to take the

necessary security measures.

Currently maritime shipping is monitored and regulated by IMO (International Maritime Organization). IMO was founded in 1948 by the United Nations with its overall objectives summed up to the following slogan:

"Safe, secure and efficient shipping on clean oceans".

The IMO regulates maritime industry and also addresses all the issues related to the maritime environment (pollution and other) [5]. However, the conditions since the IMO was founded have changed dramatically including the technological evolution. Security in ports and in the sea domain is not easily achievable, however there is a great need to reach acceptable security levels in ports and away from shore and consequently new solutions should be pursued. An effective solution against maritime terrorism should focus on exercising strict control in ports and to the sea lanes in use by merchant ships through the support of a set of technologically advanced assets (satellite, UAVs, and sea based assets). This control should be exercised by an organization in symphony to what ICAO is doing for air transport services.

TASK AND TOOLS OF A MARITIME "ICAO"

Maritime terrorism as it has been stressed previously requires modern innovative approaches from all the involved states. Since the sea is providing goods and resources to the vast majority of humanity it becomes imperative for the United Nations to play a key role in structuring this new institution in accordance to what happened with the foundation of ICAO.

The maritime domain as it has been eluded shares a number of characteristics with the airspace, however in regards to ISR (Intelligence – Surveillance - Reconnaissance) an innovative out of the box anti-maritime terrorism strategy should be followed. The first part has to do with port security and it is an important issue of national policy in each state. Port security is of fundamental importance since it is the starting point for merchant ships and the place where all the loading and unloading happens. Consequently port security is an important phase in merchant maritime traffic and needs special action which needs to be standardized globally in order to reduce illegal activity at sea.

Figure 1 is clearly depicting the main choke points

Schematic Depiction Coverage of a Maritime Area of Interest through an Innovative Air Monitoring System

and sea lanes which are currently followed by merchant ships globally. The international community through HUMINT and other sources can identify the possible areas of a danger and act accordingly. A potential course of action could easily involve the monitoring of all the troubled areas through the employment of cutting edge technological assets (UAVs, satellites and tethered aerostats with embedded sensors) [7]. The control of these assets and the classification of the collected information will occur in special Command and Control Centers which they will direct and coordinate accordingly all the available naval and non naval assets in the area of trouble in order to deter potential terrorist activities.

In Figure 3 a potential monitoring scheme is illustrated in the troubled area in the Horn of Africa. This air monitoring system consists of a constellation from tethered aerostats with embedded radar sensors (effective footprint of 200 n.m), which gathers all the information and promulgates it to a Command and Control Center that is located in a safe area.

CONCLUSIONS

Terrorism is a phenomenon that unfortunately is evolving to a more and more serious issue in the global security agenda. The maritime aspect of this issue is a potential area of high danger for many countries and requires innovative out of the box approaches from all the involved parties. The current regulating system of maritime industry and shipping is not adequate enough to control and deter terrorist actions since the technological evolution has altered dramatically the way terrorists act. Consequently, new regulating systems and institutions are needed to effectively exercise maritime control collaboratively. An institution which is sponsored by the United Nations and is structured after ICAO would increase the level of security since a constant monitoring through cutting edge technological assets (satellite, aerostats with embedded radar sensors) would offer continuous control of the maritime traffic and reduce in the long ran terrorist incidents.

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LEGAL IMPLICATIONS OF IMPLEMENTING REGIONAL CAPACITY BUILDING TO SOMALIA

by Isaac Wiles Jr Esq

A. FOREWORD

The strategic importance of Somalia to the fight against piracy and terrorism is significant because Somalia is known to generate piracy due to the lack of an effective government, which gives rise to other legal implications that affect implementing regional capacity building to Somalia.

Critical factors that underpin and support the menace of Piracy in the North-Western Indian Ocean and impact regional stability can not also go un-notice – lack of economic opportunities for the youths and an alternative livelihood for those likely to find Piracy as a fair way of making a living and getting rich quick with minimum risk.

1. Want of effective Government and Governance in Somalia.

Somalia has been in a state of degenerated conflict and breakdown of law and order and state institutions for two decades since the overthrow of the late President Siad Barre; initially Clan warlords, and now the Islamist insurgency of Al Shabaab. This state of affairs has encouraged piracy, this state of affairs has encouraged terrorism and this state of affairs has made Somalia a sanctuary and indeed a safe haven for terrorism and Piracy in the eastern African region.

According to APF World News,

"Piracy hit an all-time high in the first three months of 2011, with 142 attacks worldwide, driven mainly by raids off the lawless Somali coast, a maritime watchdog said [Thursday]. A total of 97 attacks were recorded off Somalia in the first quarter, up from 35 in the same period last year,...Figures for piracy and armed robbery at sea in the past three months are higher than we've ever recorded in the first quarter of any past year….since 1991…Of the 18 ships hijacked worldwide, 15 were captured off the east coast of Somalia, in and around the Arabian Sea and one in the Gulf of Aden. At the last count, on 31 March, IMB figures showed that Somali pirates were holding captive 596 crew members on 28 ships." [1]

Increase in attacks on ships in recent times reflects continuing political instability in Somalia. And although the international military-naval presence has made substantial and noteworthy progress in repressing the challenges posed by pirates; it is obvious, that military interventions alone is not enough to restrain and contain the nuisance of piracy, its not enough to achieve stability in Somalia and its not enough restore the rules of law[2] there.

2. Emerging Regional Governments/ Administrations in Somalia

There are two de facto or quasi states in Somalia - Puntland and Somaliland, each claiming statehood although Somaliland's claim has been for a period than Puntland. And yet still, there are other evolving quasi autonomous bodies within the Somali emerging federation, that further compounds and complicates the scenario; Azania (the most recent to claim the status of a region); Galmadug, Hibin & Heeb, Hiraan, Shebelle Valley, etc.

Increase in attacks on ships in recent times reflects continuing political instability in Somalia.

[1] Attacks off Somalia drive piracy to record high, AFP World News: April 14, 2011, owner-unsoainternational@unsoa.org

[2] Developing a Strategic Response to the Emerging Regional Entities in Somalia: A Review of Options and an Assessment of Legal & Political Implications for the International Community (2011)

Relations between international operators and national governments are customarily dealt with and negotiated through the Government that is recognized; in the instant case, the Transitional Federal Government of Somalia (TFG) is the internationally recognized government. Hence, material and technical support from the international community for building capacity and other assistances are passed on and conveyed through the channels of Government. But the Government is fragile, unstable and incapable of exercising its sovereignty and authority beyond a certain aerial blocks within Mogadishu, nor can it engaged (adequately) with regional areas asserting autonomy and self rule. Recent report shows that the TFG and AMISOM control 8 districts in the city, Al-Shabaab is in charge of 3 and the control 5 districts remains undermined.

The Transitional Federal Government's term expires in August and it wants to extend its mandate for another year and has done so. Somali leaders in an effort to end the transitional period met in Kampala (Uganda) on 9 June 2011 and resolved to extend the mandate of the government (P/E) together with the presidential vote by one year, in order to deal with pending security and political issues that have been sidelined due to political infighting. The negotiation called for the resignation of the Prime Minister to facilitate the formation of a new government. Initially the Prime Minister refused to resign but did resign subsequently on 19 June. On the 23rd June, 2011 a new Prime Minister (Abdiweli Mohamed Ali) was appointed. But the prevailing scenario of not having a steadfast and effective government affects regional capacity building; because international assistance and support may not always cascade where it is most needed. The International Community (IC) has a quandary of whether to continue the traditional or customary approach of engaging only the recognized Government and its national institutions (Transitional Federal Institutions /TFIs/), or adopt a more flexible and proactive policy that accommodates local aspirations, peculiarities and needs.

This dual track approach includes and incorporates emerging administrations and their institutions for the greater good of security and broader development strategy. It is noteworthy that the IC does dialogue with Puntland and with Somaliland and supports many developmental initiatives there; to the extent that the United States has declared it is pursing bi-lateral relations with these entities to promote security and to stabilize Somalia[3]. The Government obviously dislikes the dual track approach as undermining its legitimacy and credibility and encouraging partition. Other inhibiting factors can better be explained by the Associated Press, 24 May 2011 report as follows:

"NAIROBI, Kenya

Somali politicians are returning from Arab nations with briefcases of cash, and a Somali government watchdog report obtained by The Associated Press

found that more than $70 million of it is missing instead of being used to fight terrorism, piracy or hunger.

The large cash payments encourage politicians to hang onto power while paying little attention to crucial needs in a country devastated by two decades of war.

A lack of attention to constituents' needs may also be fueling an

al-Qaeda-linked insurgency, officials say....."

[3] Remarks by Assistant Secretary Carson at the Center for Strategic and International Studies, October 20, 2010

The Associated Press also attributed a report by the Head of Public Finance Management Unit of the TFG (Abdirazak Fartaag), which illustrates the depth of the situation.

"In a 22-page report due to be released Wednesday 25 May and obtained exclusively by AP, Abdirazak Fartaag documented cash payments that came from Libya, the United Arab Emirates, Sudan and other donors in 2009 and 2010 totaling more than $75 million. Only $2.8 million was accounted for by the government. He based his report, which was written for the Somali government, on interviews with politicians who witnessed the payments or received money in Mogadishu, Somalia's capital…. that the Somali government is missing more than $300 million once (of)internal revenues from the port, airport, khat trade and telecommunications are added to the Arab millions that have vanished. A separate AP investigation established that cash payments from Arab nations continue amid a lack of transparency over how much money politicians accept and what happens with it….. Somali Prime Minister Mohamed Abdullahi Mohamed told AP in an interview in Mogadishu in April that his government received one payment of $5 million dollars from a Middle Eastern country this year that he "believed" to be the United Arab Emirates. But Finance Minister Hussein Halane told AP in April that he accompanied the prime minister twice to Abu Dhabi, the capital of the United Arab Emirates, this year and had seen Mohamed personally receive $5 million in cash each time. After more than 50 phone calls and e-mails from AP over six weeks, the government produced documentation showing that only one payment of $5 million was deposited into the country's Central Bank. The other payment remains unaccounted for. Politicians in position to receive such payments have little incentive to reach out to armed groups to end conflict because then they'd have to share the money, Fartaag said in an interview in Nairobi on Tuesday….The sums are a fortune, especially in impoverished, war-ravaged Somalia.."[4]

According to a Somali National TV Broadcast of 29 May 2011 also reported by the AP of government reaction to the story, both the Somali Finance Minister and Information Minister Abdikarim Hassan Jama said:

3. Want of law specific to piracy in number of States.

"....a leaked document that accuses the TFG of mishandling at least $300 million is irresponsible."

There is preponderance of the evidence that relate to the sufficiency of international legal regime for the repression of piracy and terrorism off the coast of Somalia and elsewhere. The international legal framework applicable to piracy is encapsulated and set out in the United Nations Convention on the Law of the Sea (UNCLOS 1982). UNCLOS Convention approves "universal jurisdiction" over piracy and may be supplemented as the case may be, by elements of the Convention on the Suppression of Unlawful Acts against the Safety of Maritime Navigation[5] (SUA 1846 (2008), the Convention on Transnational Organized Crime and the Hostage-taking Convention, etc. Despite

[4] Associated Press, May 24, 2011, owner-unsoainternational@unsoa.org

[5] The SUA Convention provides for Parties to create criminal offences, establish jurisdiction and accept delivery of persons responsible for, or suspected of, seizing or exercising control over a ship by force or threat of force, or any other form of intimidation. Some States disagree that the SUA Convention applies to acts of piracy because they believe that it is specific to terrorist acts.

[6] The General Assembly upon States to take appropriate steps under their national law to facilitate the apprehension and prosecution of suspected pirates and urged all States, in cooperation with IMO, to actively combat piracy and armed robbery at sea by adopting national legislation.

these enabling resolutions and conventions, a number of States are yet to enact specific national law criminalizing piracy, or adopting legal Procedures for the criminal prosecution of suspected pirates.[6] Perhaps this is so because the legal regimes that applies within States' territorial seas, is a matter of national law and sovereignty, not harmonized with or regulated by the UNCLOS Convention. What this means is that acts that would ordinarily constitute piracy under UNCLOS on the high seas, may constitute "armed robbery at sea" within the territorial sea and legal jurisdiction of a concerned/member State subject to national law. Such arrangements of criminality relates to issues of national sovereignty and whereas, treaties are based on mutual cooperation, it may not always be practical/expedient on the part of a concerned/member State to reach agreement on every facets of international cooperation and therefore, some agreements tend to be more constrained and perhaps more restricted then others.

There is also the challenge of inadequate or the want of Domestic Legal Framework (on Piracy) in some States, which adversely affects the issue of law enforcement of the crime. The complexity of the issue is further aggravated by the absence of a coordinated strategy approach among States with different legal systems. To this end, Working Group2 (WG2) of the Contact Group for Piracy of the Coast of Somalia (CGPCS) is in hot pursuit of a consensus on the issue of legal principle(s) that facilitates a more coherent and integrated legal approach to piracy.[7] In the words of the Chairman of WG2 on Legal Issues of piracy off the Coast of Somalia, of the Contact Group for Piracy of the Coast of Somalia (CGPCS),

WG2 and the United Nations Office for Drug and Crime (UNODC) have started building the Judicial and Corrections capacities of the countries that have volunteered to put on trial suspected pirates. The Contact Group for Piracy of the Coast of Somalia (CGPCS) leads and coordinates efforts by States and relevant organizations to counter piracy and armed robbery at sea off the coast of Somalia. Notwithstanding, the United Nations Political Office for Somalia (UNPOS) and the UN Office for Legal Affairs (OLA) in collaboration with the United Nations Office for Drug and Crime UNODC) are in the meantime working to compile national legislation on piracy, which could help States wishing to review their laws.

"The world was not engaged in an armed conflict with pirates; rather, the crime of piracy was an issue of law enforcement, even when the military was used to capture them."

[7] UN Report Global Counter-Piracy Activities: NATO'S Role

4. Djibouti Code of Conduct

The Djibouti Code of Conduct is a vital piece of counter-piracy strategy that was adopted on 29 January 2009 under the auspices of the International Maritime Organization (IMO) as a way of facilitating the implementation of relevant binding international law for the repression of piracy and armed robbery against Ships in the Western Indian Ocean and the Gulf of Aden. It sets forth a framework for the suppression of piracy at sea off the coast of Somalia. It recommends among other things, review and reform of domestic laws to criminalize piracy and armed robbery at sea, with a wide range of other integrated capacity development support strategies for member States including a Trust Fund to support and fund counter-piracy initiatives and strategies for States combating Piracy off the Coast of Somalia. Although the Code is a critical and essential piece of counter piracy mechanism, which should strengthen regional maritime and law enforcement capabilities when fully implemented; the reality is that the Code is a Nonbinding Instrument.

This seems to illustrate a limitation of obligation; in that, it may be interpreted as not having sufficient legal responsibility attached on the part of some as it provides the option to cooperate or not to cooperate. Perhaps other pressing domestic issues, in the forefront of some regional States agendas, combating piracy may not feature very permanent. And this in my opinion seems counter-productive and contrary to the intent and purposes of the Code, as a collaborative strategy.

B. ASSUMPTION

The prevailing situation of piracy and terrorism and the legal implications of the lack of governance, the lack of law specific to piracy in number of States, inadequate or lack of domestic legal framework in others, issues of emerging entities, corruption in Somalia, (the limitation

If indeed the crime of piracy was an issue of law enforcement, that "the world was not engaged in an armed conflict with pirates; rather, the crime of piracy was an issue of law enforcement,…" then a comprehensive regional or global law enforcement policy framework interventions must ultimately requires a return to an effective central government control and the rule of law in Somalia.

of the Code of Conduct), etc., all have legal implications of implementing regional capacity building for Somalia. It seems obvious that an effective government in Somalia would invariably help stamp out piracy and go a distance to help restore maritime trade in the North-Western Indian Ocean, and help secure maritime safety and security. In this effort, the Security Council mandated the Secretary-General and the United Nations Political Office for Somalia (UNPOS), and it is the mandate of UNPOS, to promote an inclusive political process for durable peace and security in Somalia in accordance with relevant resolutions including 1744 (2007) and 1772 (2007), and encouraged "all States and regional organizations fighting piracy and armed robbery at sea off the coast of Somalia to establish an international cooperation mechanism to act as a common point of contact, between and among States, regional and international organizations on all aspects of combating piracy and armed robbery at sea off Somalia."[8]

The Secretary-General also mandated UNPOS to take the lead in overseeing the implementation of counter-piracy initiatives for Somalia, and off the coast of Somalia. Security Council also pursuant to resolution 1814 (2008) obliges the UNPOS to interface with and build effective partnership with the United Nations country team in this regard. If indeed the crime of piracy was an issue of law enforcement, that "the world was not engaged in an armed conflict with pirates; rather, the crime of piracy was an issue of law enforcement,…" then a comprehensive regional or global law enforcement policy framework interventions must ultimately requires a return to an effective central government control and the rule of law in Somalia. Somalia is tactical and strategic to any counter-piracy strategy. Therefore removing and do away with these legal implications mentioned, would ameliorate and improve regional capacity building initiatives to the State, and strengthen its capacity and legal framework as first responder against any act of piracy and terrorism originating ashore.

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[8] Resolution 1851 (2008)

READJUSTING ANTI-PIRACY LAW EFFECTIVENESS THROUGH STATE PRACTICE. HOW FEASIBLE?

by Gerasimos Rodotheatos, PhD Candidate

SIZE OF THE PROBLEM

Piracy on the High Seas is not a new problem. In its modern incarnation, it is rather its root causes and methods, as well as the means of fighting it. For many years, it was conceived as an old-fashioned and fading problem for maritime shipping. According to statistics, it is apparent that there is a significant rise of incidents during the last ten years (i). This change does not only concern quantity, but also quality. Today's pirates have distanced themselves from obsolete tactics, means and scope. Enhanced operational capacity, modern intelligence and telecommunication technologies and direct targeting of seamen are the main characteristics of modern piracy. This clear increase of incidents could not have been a reality without the occurrence of a series of factors on land. Political instability, corruption and extreme poverty serve as an excellent breeding ground for unlawful activities on the East, and more recently, West coast of Africa.

COMMON CONCERN AND EFFORTS TO TACKLE IT

A vast amount of effort taken by the major Naval Powers and littoral states is a sound proof that today's piracy (ii), not only effects a limited number of neighboring nations or shipping lanes, but also has various implications on regional or even, sometimes, global level (iii). Though it is hard to measure the volume of effects per country or per economic sector, the international community seems to have understood the trends of impacts and has already started moving towards the achievement of a solution in a dynamic way.

Ironically though, international community's increased effort has not met with exceptional results. This kind of "non-success" should lead us to some conclusions only after the assessment of methods used, in combination with policy objectives and engaged capacity. Usually, if a machine does not work, one could easily blame this piece of steel for it! But is it always due to the equipment's flaw or the inability of the user and, more generally, the influence of external parameters?

INTERNATIONAL LAW AS A PRACTICAL TOOL AGAINST PIRACY

This article views International Law as nothing more, or even less, than a practical tool in the hands of those able of resolving a problem or/ and willing to promote international cooperation. As an institution of International Politics, International Law is often being criticized as a setback for International Relations or just a "romantic" conception only sponsored by the weakest parties.

In our case, International Anti-Piracy Legislation has often been criticized as "obsolete", "inadequate" or "insufficient". However true is the fact that the jurisdictional basis contained in the Law of the Sea Convention (LOSC), esp. articles 101-107, codifies customary rules dating back to early 20th century, those regulations remain valid and applicable even under today's circumstances. Of course, the International Community has not contained itself in tackling only Piracy; a series of other grave crimes occurring on the High Seas (e.g. human and drug trafficking, illegal fishing, terrorist acts, weapons of mass destruction proliferation etc.) have been dealt with by various international agreements and resolutions (iv). However well structured can all these agreements be, they are useless unless their implementation receives equal devotion.

Because of International Law's features, international regulations are being domestically implemented according to the will, capacity and national interest of states. Since there is absence of imposing mechanisms, states are free to interpret and transpose international rules. It is obvious that this scheme can lead to lack of uniformity, a clue that is more than essential for achieving the targets set by every international agreement.

The following examples are indicative of states' devotion/ effort to the common target of fighting piracy.

i) **Practical capacity:** When a naval ship engages into an interdiction operation certain issues might occur; e.g. arrested persons should be detained onboard, crew members might be asked to participate in a prosecution procedure while, sometimes, there is a lack of knowledge and experience for carrying out such kind of operations. On a state level, naval forces are often ordered to implement "selective patterns of engagement" (v), which means they tend to operate

under the prism of national interest and outside the spirit of international cooperation.

ii) **Legal Capacity:** Since there is no hierarchy or obligatoriness in State Jurisdiction regarding repress of Piracy on the High Seas, even states that participate in Anti-Piracy operations lack adequate domestic legislation. Without a clear framework and/ or mandate, naval ships are keen on following Catch and Release tactics, or else, states are rather unwilling to prosecute and prefer extradition.

All these paradigms lead us to the conclusion that no matter how strong is the naval power used and no matter how concise is the operating framework, if there is a lack of original will by the actors, all attempts could direct us to deadlocks.

...

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IS THERE LIGHT AT THE END OF THE TUNNEL?

Even though International Law is usually perceived as a suppression mechanism, its role as an important tool for deterrence should not be ignored. In our case, solid implementation of rules is a key element in deterring various unlawful acts on the High Seas, since a robust and continuous enforcement of law can only act in a dissuasive way for pirates, terrorists and armed robbers. As it has been mentioned, there is no lack of international regulations, without this meaning that no improvements are needed, but serious flaws can be traced in the implementation phase. While some scholars suggest that International Anti-Piracy legislation and institutions should undergo major revisions (vi), it should be more subtly taken into account that specific reforms on domestic level can lead us to more success in shorter time. Of course it's not only regulations that have to change; capacity building, continuous training and assistance to interested states could also fill in the puzzle. To sum up, a reasonable degree of uniformity, that would start piling up res judicata, could be an enormous leap towards desirable results.

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(i) IMO has recorded 434 Acts of Piracy and Armed Robbery Against Ships in the first nine months of 2011. Accordingly, 489 acts took place in 2010, holding the record since 1984. For updated facts see: IMO, Reports on Acts of Piracy and Armed Robbery Against Ships, MSC. 4/ Circ. 176, November 1st 2011.

(ii) World Community's concerted efforts have focused their attention on the East African Coast. See Arsanjani, M. H., Reisman, W. M., East African Piracy and the Defense of World Public Order, in Hestermeyer, H., Matz – Lück, N., Seibert – Fohr, A., Vöneky, S., (eds.), Law of the Sea in Dialogue, Springer, Heidelberg, 2011, pp. 149-151.

(iii) For an overview, see: Mair, St., (ed.), Piracy and Maritime Security. Regional Characteristics and political, military, legal and economic implications, SWP Research Paper 3, German Institute for International and Security Affairs, Berlin, March 2011.

(iv) For a brief description, see: Satkauskas, R., Piracy at sea and the limits of international law, Aegean Review of the Law of the Sea and Maritime Law, vol. 1. No. 2, 2011, pp. 217-235.

(v) Thus meaning that some states choose to engage only in certain cases, in order to protect "national" vessels or cargoes, and do not fulfill their obligation to repress any kind of piracy on the High Seas, according to LOSC art. 100.

(vi) For example, see: Madden, M., Trading the Shield of Sovereignty for the Scales of Justice: A Proposal for Reform of International Sea Piracy Laws, University of San Francisco School of Law Maritime Law Journal, vol. 21, no. 2, 2008-2009, pp. 139-166.

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PROSECUTION OF SOMALI PIRATES: AN OVERVIEW

by Mr Ingo Klaus Wamser Esq.

LEGAL SYSTEM OF SOMALIA

Starting in the 7th century the Horn of Africa region developed an indigenous law system called Xeer being able to cope with civil as well as criminal law problems. Xeer is not an authority based law but a system of elders serving as judges mediating cases by using precendents. The law is compensatory rather than punitive. Imprisonment is by fact unknown to the Xeer system and fines occur only as direct payments to the victim exceeding the amount of compensation for example in cases of deliberate and premeditated cause of damages. Parallel to the Xeer legal system existed the Sharia law system distinctly separated from the Xeer system and restricted to matters of family, inheritance and morality.

With the formation of the British Somaliland protectorate in 1886 and Italian Somaliland in 1893 the two European authorities imported their own legal systems. Nevertheless they accepted the existence of a customary and a religious law system. As a consequence both administrations established the supremacy of codified and secular Western law, particularly for significant criminal cases. In addition both administrations allowed affairs between Somalis be settled through the customary Xeer system at least when threats to the general public order were not concerned and regarding family and inheritance matters Sharia rulings were allowed.

After gaining independence during the 1960s a uniform penal code, a code of criminal court procedures and a standardised judicial organisation were introduced, basing mainly on the Italian system of application and interpretation of a legal code. English common law ideas were executed in matters not governed by legislation. Even after the suspension of the 1961's constitution in 1969 other sources of law were respected.

Since the collapse of the central government in 1991 the judicial organisation was rapidly declining handing the legal system back over to the Xeer system for general legal matters and to the Sharia system in family, inheritance and morality affairs. Estimated resulting from years of civil war and a significant decline in values due to war related cruelties religious (Islamic) extremism spread leading to an overwhelming jurisdiction of the Sharia system even in general legal cases. This lead also to the Islamic Courts Union maintaining militias acting as both police and military forces and trying to keep up some form of law and order. Keeping Somalia-related topics in mind the ICU succeeded in counter-narcotics campaigns like the ban of khat.

The prosecution of marine related crimes involving piracy as well as environmental crimes and fisheries regulations seems to be beyond the abilities and resources of local judicial organisations. In addition, the prosecution of piracy seems to lacking of acceptance, because the rest of social values, which are left after decades of civil war, do not include a sense of guilt for criminal behaviour not harmfully involving the local community. Furthermore some statements could lead to the conclusion that piracy is seen as a justified reaction on alleged pollution caused by Western companies.

The prosecution of marine related crimes involving piracy as well as environmental crimes and fisheries regulations seems to be beyond the abilities and resources of local judicial organisations

WORLDWIDE PROSECUTION OF SOMALI PIRATES

During the last years the presence of international warships resulted in the arrest of a significant number of Somali pirates handed over to justice. Basing on Art. 100

UNCLOS and other relevant international conventions on piracy most states actually have legal possibilities to prosecute piracy under their national jurisdiction at least when the flag state of the attacked vessel or a national of this state is involved. Even states not having incorporated the crime of "piracy" are able to prosecute the deviant behaviour as armed robbery or different other crimes included in the pirate's action. Court trials on piracy in the HoA-region took place in Germany, Spain and the US recently. The advantage of the prosecution in Western countries is the availability of judicial infrastructure and a good access to the court system for witnesses and experts. As a consequence it would be easier to transport the offenders to a court far away from the crime scene instead of transporting all the other people involved to Somalia.

Nevertheless it can not be expected that trials abroad will have much impact on the Somali community and the lack of a sense of guilt on crimes like piracy being in their situation not a tangible wrong. A person not returning from a raid is in many cases not seen as a loss due to the unknown situation of imprisonment in Somali culture. The inconveniences of just being away from the clan and the relatives are covered by accommodation and access to ample food and medical care.

PROSECUTION IN SOMALIA

From a criminological point of view it would be much better to prosecute piracy in Somalia especially when laying the focus on the aim of punishment of general deterrence. As soon as the local community can experience a trial in a piracy case, as soon as it can experience the physical and psychological situation of the victims, the local community might get into the position of realizing the guilt included in piracy detached from the acceptance of the fact that the behaviour is considered illegal. Due to the participation of Somali people in a trial not only as the accused hopefully the acceptance of these decisions would by far exceed the acceptance of the decisions only done by foreigners standing outside the tribal culture and the ancient Somali customary law system.

In addition the support of a local prosecution infrastructure could offer the possibility to establish law enforcement capabilities for the marine environment in general including the enforcement of environmental and fisheries management regulations. This would put an end to the justification of piracy as result of the destruction of the marine environment by Western companies and would offer a road to a self-determined future.

From international side it would be necessary to support the establishment of local prosecution resources by creating a criminal justice infrastructure like court rooms and a form of detention centre hardened enough to withstand attacks and civil unrest. In addition accommodation for witnesses and experts would be necessary. The supporting efforts should definitely include a strong professional involvement of international lawyers and staff to ensure a proper use of the facilities and prevent an instrumentalisation of the court by extremist groups.

Through the establishment of a local criminal law system the piracy in the HoA-region can be suppressed much better and on the long hand cheaper than by naval operations including the well known shortfalls and a world wide transfer of pirates for prosecution.

Ingo Klaus Wamser Esq.

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THE NEXT STEP TO THE EVOLUTION OF THE NMIOTC: A CONCEPTUAL MODEL

by Dr. Marios Panagiotis Efthymiopoulos

INTRODUCTION

The NATO Maritime Interdiction Operational Training Center (NMIOTC) in Souda Bay, Crete stands out as one of the most important aspects of Greece's Voluntary National Contributions to NATO. In an age of fiscal constraints, the NMIOTC is an initiative of prime importance to Greece. Souda Bay itself stands out as an important hub to commercial maritime trade, for countries and companies. Greece remains in the forefront of countries with commercial maritime supremacy and importance. As such, the NMIOTC is a NATO initiative that attaches both military and commercial importance.

The location of Crete in the Southeastern Mediterranean region stands out as an important hub for commercial trade and also for NATO, U.S., and regional naval forces, given its strategic location between the Straits of Gibraltar, the Dardanelles, and the Suez Canal. The NMIOTC holds all necessary credentials and it is a success story for naval training and operations. Given its geo-strategic importance, its ability to combine the necessary tools for successful training and operations, and its role as a catalyst for interoperable multinational forces, the NMIOTC could be looking to a new age of evolution. While NATO looks for smarter defense tactics, techniques, and procedures, this paper asks for smarter initiatives that will be used to enhance the role of the NMIOTC in the field of training, education, research and operational support to current and future emergent real-world requirements.

The topic that will be analyzed is this paper is part of a greater research effort that is currently being conducted by the author. The larger academic/professional research is on NATO, Greece, and the future of transatlantic collaboration. This paper is merely a proposal with a concept attached to it. It examines a possibility on the future evolution of the NMIOTC. It is a document with proposals and issues for consideration.

The preliminary proposals within this paper were presented at the 2nd annual conference of the NMIOTC in June 2011. The feedback received at that event together with an on-site examination forms the final outcome delivered by this paper.

Primary sources of information include academic research, analyses, and interviews that were conducted both in Greece and at NATO in my academic capacity. Secondary sources of information include books and articles on current NATO policies and issues.

Greece needs to request a new foreign and security policy concept for the long-term with specific initiatives. NATO needs to exceed expectations with bold steps beyond the anticipated results of the NATO Strategic Concept (Lisbon, 2010). In accordance with the Memorandum of Understanding (MOU) it was created with, the NMIOTC needs to pursue all possibilities for its evolution.

The topic that will be analyzed in this paper is part of a greater research effort that is currently being conducted by the author

The questions that are raised in this paper are: Can the NMIOTC stand out as a successful model for a center that does much more than was initially anticipated by its MOU? Can the NMIOTC be upgraded and supported by NATO allies in a deeper and more constructive manner that will bring a balance of interests to the region and to NATO allies in expanding collaboration? Can the NMIOTC stand out in its evolution as a key training core of NATO to join the NATO Defence College and the NATO Communications and Information Systems School in Italy and the NATO School in Germany?

To avoid any misinterpretation, the forthcoming topic that is presented below is in no way associated to the people or existing work of the NMIOTC. It is also not associated with any heads of state or governments, any international organizations (directly or indirectly), or any other institutions. What you will read below are the sole opinions and statements made by the author derived by academic and professional research only. They are as stated part of a larger research that is currently being conducted and will be published at a later date on Greece's future role with NATO.

The work of the NMIOTC is a reflection of the wider issue of maritime security and the tremendous potential for the international work of organizations. It reflects the importance of Greece as a NATO member state with a new capability for the future: to take initiatives in difficult fiscal times with a view to addressing new challenges. This paper is a conceptual proposal. It requests an advancement in both regional and alliance capacity building to address the emergent needs and challenges that NATO faces.

WHY ONE SHOULD SUPPORT THE NMIOTC?

The statement here is that the NMIOTC's role can ultimately be positively evaluated by NATO's military and political committees on its work as it is operationally relevant and trained to the highest NATO standards. It should, however, do more to evolve on the basis of the MOU it was created with, that is, training Alliance and partner forces on countering maritime challenges. It also involves attracting participation of more NATO member states with an interest in maritime security concerns as well as establishing interoperability amongst Alliance members and partner forces in multinational naval operations.

The statement made requests a new negotiation on a political level on the future role of the NMIOTC. This is a conceptual theory proposal. Given the emergent challenges in the maritime security sector today, the need for more capable and interoperable forces, the need for a smarter technological defense, and, finally, the geo-strategic location of Souda Bay, one may realize the significant role in global stability that the NMIOTC can and will play. One recent example of successful cooperation is the use of Souda Bay by the Alliance to protect ships operating in the Mediterranean, to implement the no-fly zones in Libya, and to control trafficking of illegal goods in and out of Libya[1]. This statement requests that Greece look at the operational significance of the NMIOTC as a center for training.

The NMIOTC can be seen as one aspect of a series of future initiatives by Greece in NATO. It can portray a new, important, and credible role for Greece in NATO's future and also re-engage Greece in the international arena with innovative and leading-edge proposals in the field of training and preparedness as well as interoperability in countering threats. Such a proactive approach may boost regional participation in maritime security operations. Finally, Greece's initiative to pursue an evolution of the NMIOTC will contribute to more cohesion amongst transatlantic allies and would ultimately result in a smarter collective defense.

NEEDS TO CONSIDER REGARDING THE EVOLUTION OF THE NMIOTC

The NMIOTC's role and impact to training for maritime operations is expected to increase. This means that the NMIOTC should evolve structurally as well as fiscally. It should also develop its standards such that they are more consistent with the needs and interests of all member states, in spite of the fact that the Center is a Voluntary National Contribution (VNC) of Greece and not NATO-funded.

STRUCTURAL PROPOSAL

The NMIOTC as a training center needs to create a series of key structural assets. These assets will lead the center into the forefront of training procedures in an era of new and emerging challenges. This paper's structural proposal is: to consider the creation of a military/professional and academic research branch that will have the responsibility of examining and introducing new methods and tools for deeper and more extensive training tactics, techniques, and procedures. An example of a research branch is the NATO Defense College in Italy. Their research branch will attract countries for more participation in the professional and academic fields. Such a branch is needed to prepare better methods and tools to deliver training that addresses emergent challenges and threats in the maritime sector. It could also combine land and air component cooperation in the framework of pursuing interoperability of forces. Taking this a step further, all three components (air, land, and sea) could pursue cyber-training for enhanced network operations that could be used to engage the enemy against any possible cyber-attacks. It will render the NMIOTC a center of smart defense preparation for joint/multinational maritime operations.

1. Ivo H. Daalder & James Stavridis, "NATO's Success in Libya" article posted at the NY times [31st October]. http://www.nytimes.com/2011/10/31/opinion/31iht-eddaalder31.html?_r=1

Conceptually, the NMIOTC should base its arguments for evolution on the following two aspects:

a. The need for a conceptual maritime security policy on smart defense measures.

b. The need to develop better civil-military relations in the field of collaboration outside NATO (military and business sectors). The private maritime sector may offer more contributions for research and development since their interests are similar to the interests of NATO (that is, to safeguard the free movement of goods in the global marketplace).

FISCAL PROPOSAL

NATO is looking to increase its policies on maritime security. For training purposes the NMIOTC, is considered now to be the first major tactical training center in NATO to be the third major training center alongside the NATO School and NATO Defense College. In the case of the NMIOTC this may mean that fiscal investment will only increase. In the framework of regional capacity building in the Southeastern Mediterranean region, the NMIOTC could stand as a focal hub.

Based on the aforementioned assumptions, a feasibility study, a study for regional and collective capacity building in the long-term (keeping in mind the needs for smart defense measures to counter challenges), and a planning procedure on maritime security interests (where to invest according to strategic importance of location) may be needed. In this case, the location of the NMIOTC will stand out as the most important of all other possible locations in the framework of NATO's needs.

The feasibility study should follow from an evaluation of the work of the NMIOTC - the 'Lessons Learned' thus far from the work of the center, an independent evaluation of the current and ongoing work of the NMIOTC.

THE IMPORTANCE OF THE NMIOTC TO GREECE

As stated earlier, the NMIOTC is a voluntary national contribution to NATO. This makes it a unique case, as Greece is downsizing its other contributions to NATO[2]. It is an incentive to uphold the best of standards and to upgrade those standards to meet the needs of NATO allies. As such the role of the NMIOTC is clear: The NMIOTC needs to become a default setting to all maritime training and preparation in maritime interdiction operations. There is a need for a political and strategic move to invite all remaining NATO member states to join the efforts made at the NMIOTC – that is, **to have more NATO members become "supporting nations" at NMIOTC**.

Greece needs to propose to NATO the creation of an Allied Maritime Security Policy, based on future needs. It should project smart defense capabilities[3] in the forefront of training and interoperability in countering threats in the maritime sector. It should enhance both international as well as regional capacity building with a global maritime view. The NMIOTC should also seek an enhanced bilateral collaboration with other states that are not NATO members but are Alliance or regional partners. Taking it a step further, the NMIOTC should also seek a civilian capacity center for maritime security - one that complements efforts made in the military sector. This should incorporate the research and technology development branch proposed earlier. A civilian training center should foster continued interest of both the military and the civilian sectors. These efforts can be enhanced further should interested parties supplement NATO joint funding.

This project is clearly relevant to the national interests of Greece. There is a growing insecurity due to piracy. Once again, Greece is a global leader in the commercial maritime sector. Greek shipping companies have a great financial stake attached to the commercial shipping industry. Greece needs to provide structural assurances of military support to protect freedom of movement as well as their assets and employees. The NATO MIO Training Center can provide the assurances for the highest level of training.

CONCLUSIONS

The NMIOTC holds the key for NATO success in maritime security training procedures. This NATO Education and Training Facility can also be attractive to private investment, easing the overall financial burden. Souda Bay represents a geo-strategic location without conflicting national or international interests. A feasibility study would address any conflict of interest with other NATO member states.

Notwithstanding the operational capacity of the NMIOTC to the highest levels of NATO standards, its evolution on a political level requires the following:

2. Greece to Cut Participation to NATO missions; article posted at the Atlantic Council of the USA [23rd September 2011]: http://acus.org/natosource/greece-cut-participation-nato-eu-military-missions
3. Defense Ministers gather in Brussels to discuss Operations and Capabilities, [5 October 2011], http://www.nato.int/cps/en/SID-0BAA643A-776377D4/natolive/news_78747.htm

a. A strong national and international political will and the ability to negotiate for the evolution of the center.

b. Additional academic and political research as well as greater effectiveness in crafting the message on the progress made to date by the NMIOTC.

c. Feasibility study and business planning procedure to attract possible private stakeholders with an interest in military and civilian training against piracy attacks.

d. New smart defense capabilities towards comprehensive interoperability of forces.

e. A civilian maritime training center that would leverage the best practices of the private and academic sectors in addition to the military sector in addressing piracy operations.

OTHER AREAS OF JOINT INTERESTS:

The use of the Center as a hub for joint maritime intelligence sharing.

The need to project Souda Bay as a hub for international investment. It will inspire growth and development. It can become a regional opportunity for Crete, for Greece and the region.

An evolved role to the NMIOTC will grant inter-organizational collaboration between the UN, EU and NATO at the maritime training levels of operation.

Use NMIOTC as a hub for joint maritime intelligence sharing

The NMIOTC stands out as a successful center in the training of forces, while NATO operates (e.g.: Libya case).

PORTRAYING THE INTERESTS OF GREECE TO NATO CONTRIBUTION:

Greece is a country that is, was and will always be a sea power.

Greece and the Greek Fleet according to the Bureau of Transportation Statistics[4] and the World Fact book[5], is today the largest in the world, with 3,099 vessels of 1000 tons or more (December 13, 2007) accounting for 18% of the world's fleet capacity.

Greece can have a deeper association with international organizations, academia, and maritime companies. E.g.: 28 member states of NATO plus 60 cooperative countries; also, India, China, and Australia, New Zealand and Singapore, among others.

EXPECTED RESULTS:

The region of Crete and the wider Mediterranean region will recreate a financial trade history around the maritime sector. It provides the opportunity to enhance anti-piracy training but also operations of smart defense capabilities.

The feasibility investment plan for NATO, including the civilian capacity mentioned earlier in the paper, will attract significant stakeholders.

The enhancement or evolution of the NMIOTC stands out as a win-win in addressing emergent threats such as Piracy (Somalia, Gulf of Aden), Terrorism, Regional Instability (Libya, Syria), Enlargement of NATO, and collaborating with non-NATO partners (India, China, et al).

A research center may raise awareness for other emergent challenges, such as Training for Natural Disasters and Relief Operations.

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4. Research and Innovative Technology Administration, Bureau of Transportation Services US Department of Transporation http://www.bts.gov/
5. CIA World Fact Book, Greece: https://www.cia.gov/library/publications/the-world-factbook/geos/gr.html

"REGIONAL CAPACITY BUILDING FOR COUNTERING PIRACY THROUGH THE HUMAN SECURITY CONCEPT"

by Commander Ioannis Chapsos, GRC N

HUMAN SECURITY, DEVELOPMENT AND MARITIME SECURITY

The 1994 United Nations Human Development Report (UNHDR) introduced a new security approach, broadened and deepened beyond the stratum of the state, putting emphasis on the security of human beings per se and the web of their social and economic relations. The concept of this form of security, the human security, goes beyond military threats; it is primarily focused on the standards of everyday living, human dignity and safety from diachronic threats such as lack of food and medicine, poverty and restrains. It also refers to the prevention of the phobia of an acute catastrophe, aiming to preserve the ordinarily living of the citizens with freedom, equality and justice.

This new concept of global security is directly interdependent with development. Although we are not able to explain how they interact, inequality, low growth, unemployment and weak economic institutions are identified as parameters of the socio-economic development, increasing the risks of violence. In this framework, maritime security became one of the primary concerns and contemporary challenges of global security, since it contributes to economic development from local to regional up to international level. The sea-based trading system developed mostly by littoral states, offers access to and distribution of energy resources, raw materials and all kind of products around the world; hence, since almost 80% of the global trade is transported in ships' hulls, littoral states developed maritime infrastructure in order to establish these energy supply chains and ensure the secure flow of goods to the international markets. But maritime security, besides piracy, is threatened also by maritime terrorism, illegal drug trafficking, gun-running, human smuggling, maritime theft, fraud, illegal fishing and pollution, which can all disrupt maritime supply chains to the heavy cost of the global economy.

MODERN PIRACY

The phenomenon is attributed to violent non state actors who perceive contemporary piracy not as a popular lifestyle but as the means to survive. The root causes of their appearance are stemming from the lack of human security, ineffective social security and bad (or even complete absence of) governance in their homeland. Additionally, the absence of littoral states' will to thwart piracy by exceeding sometimes their jurisdiction, the absence of a legal system and infrastructure that will robustly support their potential effort and the existence of ungoverned areas inside their territories due to lack of law enforcement efficiency, de facto establish safe havens for such activities.

There are three 'chock-points' of international shipping identified as the most risky in terms of piracy attacks incidents: The Malacca strait in South East Asia, the coast of Somalia/ Gulf of Aden and the coast of Nigeria/ Gulf of Guinea. All three of them are directly related also to energy security, as the primary routs of oil tankers towards the energy dependent economies of Europe, India, China, Japan, US. Inevitably, piracy proves to be interconnected also with food and economic security.

...piracy proves to be interconnected also with food and economic security

Piracy in South-East Asia occurs mainly against ships at anchor or in ports of Indonesia, the Philippines and Viet Nam and is a form of opportunistic theft. A second type of piracy occurs in the Straits of Malacca and Singapore when ships are underway; armed pirates board vessels to steal cash and valuables, but they use violence rarely. The last type of piracy in the region is the theft or hijacking of an entire ship, aiming to turn it into a "Phantom ship". In 2011 reported incidents off Malaysia were sharply decreased, partly because of a series of proactive counter-piracy measures that the littoral states of the Straits—Indonesia, Malaysia and Singapore— undertook since 2004, including surveillance and reconnaissance of the Straits through coordinated sea and air patrols, intelligence sharing and security enhancement.

In the Gulf of Guinea -and especially off Nigeria-

the situation is different, as reported by the crews. Attacks are usually perpetrated from heavily-armed pirates in coastal waters and rivers against vessels associated with the offshore oil and gas industry ant they are much more violent. Loss of life and crew members' kidnapping for ransom is frequent. The ships themselves are usually not hijacked .

The 'modern pirates' of Somalia are not interested in the ships or their cargoes per se, since they don't have access to port facilities where they could unload shipments; they foresee only in ransom for releasing captured vessels and crews, that range from $2 to $5 million per ship . Hence, there is no logical or practical reason for killing hostages. On the contrary, this action deprives them the profit from pirating vessels, which is their primary objective and motivation. The above are even further fostered by the deed that in many cases, where poor fishermen boats from Sri Lanka were seized, or crewmembers from poor states such as Bangladesh, the crews were released since there were not options and financial capabilities for ransom being paid .

The international effort is focused though on the Horn of Africa, where a multinational naval flotilla has been deployed under numerous UNSC mandates in the region. But all their efforts seem to be inadequate, since they have to patrol a vast area, while the use of seized vessels from the pirates as 'mother ships', expanded their area of operations from 200 to 600 miles offshore Somalia. The result, according to the ICC and the IMB is awesome and disappointing as well: during the first half of 2011 piracy at sea hit an all-time high , and the ransom paid were more than doubled . At their last count, on 13 June, IMB figures showed that Somali pirates were holding captive 439 crew members on 23 ships .

THE HUMAN SECURITY APPROACH – REGIONAL CAPACITY BUILDING

The above figures provide clear evidence that a shift in existing strategy is required. But in order to determine a new one, we should focus on the root causes and tactics of the other side, the one of modern pirates'.

A S. Korean Special Forces unit rescue operation (Jan. 21, 2011), which resulted to the shooting of eight pirates onboard the 'Samho Jewelry', initiated a new phase of violence escalation , which was with the capturing of a Danish family sailing in the area , and the killing of a four member US sailing crew . This proves also that the use of force deteriorated the already insecure environment, since when you exceed the amount of violence you try to suppress, inevitably this brings more violence as a response . On the other hand, the loss of life from the side of the Somali pirates is not often included in the public discussion about piracy and its impact. According to media reports, that at least 62 pirates have been killed at sea in the first five months of 2011, which amounts to 7% of the estimated 2,000 active pirates, while a total of approximately 200-300 pirates have not returned from their expeditions, not including those lost at sea.

On March the Reuters interviewed a pirate who made $2.4 million from ransoms only in 2010 , either by investing or participating in hijackings. The lack of human security conditions in the region become evident, when he stressed that he spend some of the money he earned from the ransom on weapons, private bodyguards, cars, tracks, boats, etc. But despite the existence of organized crime networks which need to be pre-established in order to procure all the above goods and services, what is shocking is that they fund local residents through the clan-elders, in order to cope with every day living; obviously, the total absence of a central state's governance, and the lack of the fundamental needs for the everyday living, leads the population to the solution of piracy in order to survive. The coastal villages e.g. around Harardheere and Hobyo, receive about 5% of the total ransom payments for allowing the ships to anchor there. We could be able to understand the importance of this income for local populations, if we bear in mind that children in Somalia are suffering some of the highest malnutrition rates in the world , even before the recent famine. This local informal economy is further enhanced by feeding both pirates and hostages, negotiating ransom deliveries, investment in crew recruitment , etc. Furthermore, the fact that the term 'child pirate' emerged, supports the above perception: During an Indian Navy operation, 61 pirates were arrested and surprisingly 25 of them were children under the age of 15 .

Another indication of the lack of governance in Somalia is the inability to prosecute and imprison the arrested pirates, known as the problem "catch-and-release" . Somalia's lack of security infrastructure is also stressed by the fact that approximately 200 convicted pirates are held in Kenya's prisons. In an international effort to resolve this major problem in the semi-autonomous adjacent regions of Somaliland and Puntland, the UN funded and opened Hargeisa Prison in Somaliland, in order to enhance prosecution capacities ; additionally, the UNSC announced the urgent need for establishing specialised courts in Somalia for trying pirates .

The EU Training Mission of Somali Security Forces,

launched last May in Uganda, could include governmental anti-piracy forces training to confront the perpetrators ashore, instead of contracting private security firms, as Puntland authorities recently did with the South African firm Saracen International in order to train 1.000 men for this purpose . Following the US Coast Guard initiative, which donated a ship to Nigeria for strengthening the regional maritime security , the above EU mission's expansion proposal could also find prompt application. A potential deployment of agile coast-guard ships to Somalia, operating in the area of the already known piracy safe havens, under the guidelines and supervision of NATO or EU experts, will deny the pirates the access to their sanctuaries and cut them off from the areas they replenish and keep the hostages ashore.

The establishment of the 3 piracy information sharing centres, envisaged to be commissioned in Mombasa Kenya, Dar es Salam, the United Republic of Tanzania, and Sana'a, Yemen are also important initiatives . If they could further cooperate with the satellite navigation system that was installed in South Africa during the 2010 Soccer World Cup, will increase even more the capabilities in terms of awareness and surveillance .

If we examine the overall annual coast of countering piracy and combine it with all the above, our findings are awesome . According to various studies, the annual coast of piracy to the global economy was calculated between $7bn and $12bn. But despite that vast amount of money, piracy attacks continue to occur and most important, none of the above expensive measures addresses the root cause of the phenomenon. Estimations also foresee that this cost is set to virtually double by 2015 . On the contrary, the UN humanitarian assistance to Somalia was announced to be approximately $530million for 2011.

CONCLUSION

All the data quoted above advocate to the perception of resolving the piracy problem ashore by addressing its root causes, since the military solution proved to be futile . Even the UN Secretary General, Ban Ki-moon identified piracy as a consequence of the overall insecurity, lack of a stable national government and underdevelopment in Somalia, stressing that "…Piracy is not a water-borne disease. It is a symptom of conditions on the ground, including the overall security and political situation in Somalia" .

If all this anti-piracy funding could be dedicated to restore robust and legitimate governance in Somalia, fight poverty and improve the conditions of autochthonous population's everyday living, maybe we could fight piracy ashore; not by using solely military means, following the traditional enemy centric strategic culture of the traditional western armed forces, but through a contemporary human centric approach, applying the human security doctrine, fighting the contemporary security challenges from the local population's perspective. The international community has to undertake civilian initiatives to foster robust governance and effective law enforcement agencies in the country.

The escalation of violence is the not the means to counter piracy and the 'witch hunt' and shooting from international Naval forces is just a short-term and inefficient response. An effective local 'coast-guard' i.e., could be a far more effective and long-term option, since it would deny also the approach from the sea to the already globally know pirates' safe havens. If we could provide them other alternatives for survival than piracy and organised crime activities, all actors, state and non, would have many things to gain.

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SOMALI PIRACY

UNDERSTANDING THE CRIMINAL BUSINESS MODEL

by Dr Alec D Coutroubis and George Kiourktsoglou, Ph.D. candidate

This article investigates Somali Piracy not as a mere criminal activity that challenges and eventually breaches the international Law of the Seas, but rather as an elaborate business model, that has far reaching tentacles in (Geo)-Politics, Business, Trade and Shipping.

To begin with and based on Michael E. Porter's theory of the 'Competitive Advantage of Nations', the piracy business model is analysed in terms of its 'National Determinants'. The latter are the four broad attributes of the Somali Nation that have all along nurtured the environment in which piracy has come to flourish:

a. Its 'Factor Conditions' or 'Factors of Production' which refer to human resources (pirates, investors, facilitators/negotiators of ransoms), knowledge resources (sources of information and intelligence on vessels and trade patterns), physical resources (equipment), capital resources ('Seed Capital' for the initial support of a piracy mission) etc.;

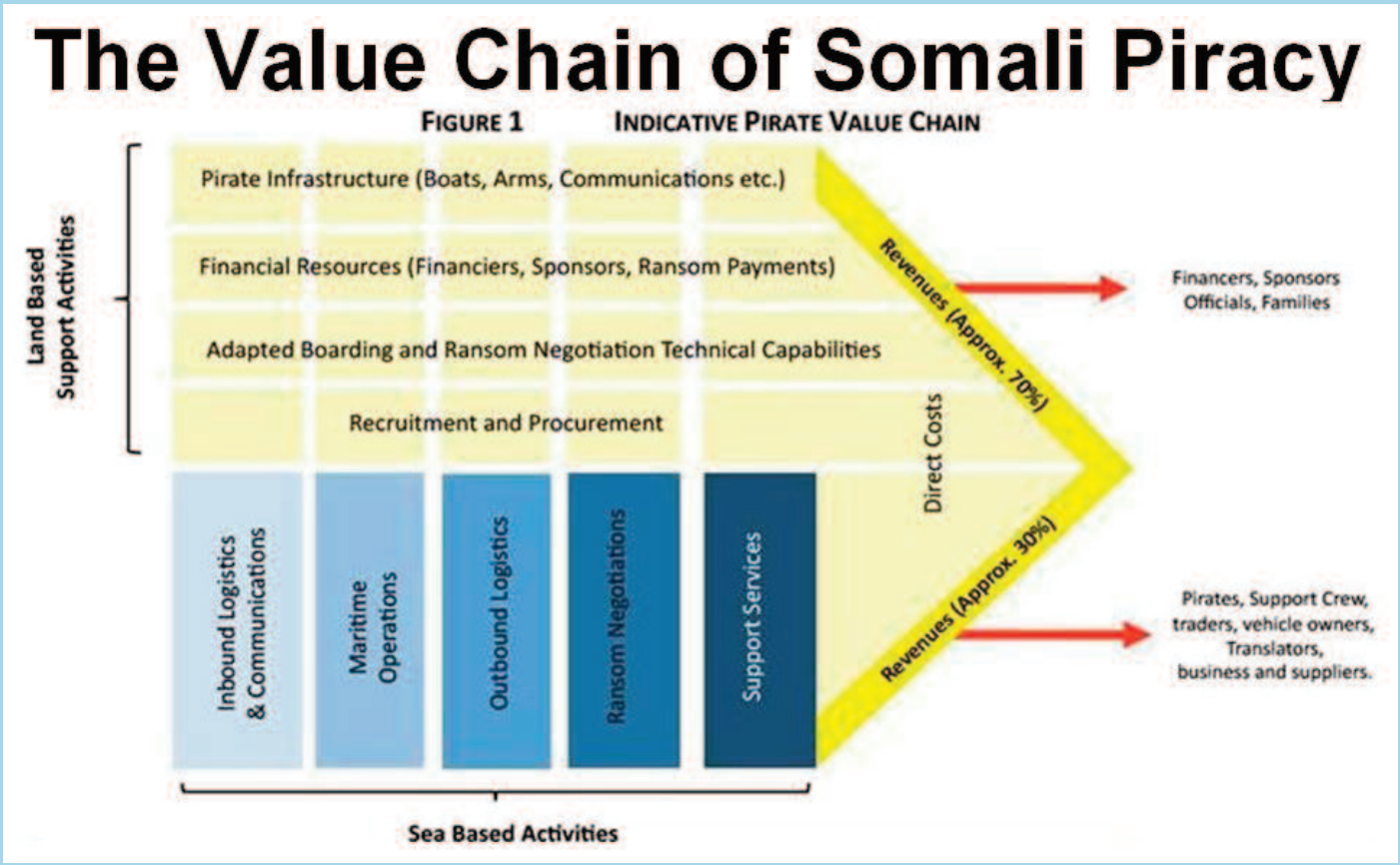
b. Its 'Demand Conditions' which are directly related to the local clan system's need for income and continuity, but also the mechanisms through which the local needs and aims resonate in the Piracy Industry;

c. Its 'Relating and Supporting Industries' which actually nurture (the disruptive in some cases) innovation and upgrade featured by the pirates. The most prominent among these industries is the financial one. It provides the venture(s) with the necessary means for the transfer and legalisation of the crime proceeds;

d. Its 'Structure and Domestic Rivalry' or alternatively the context within which a piracy organisation was created and is still managed.

In the next step and always within the above conceptual framework, the analysis moves on to flesh out the features of the phenomenon that have rendered it in the last four to five years so uniquely successful and at the same time so appealing to questionable investors of sorts.

The analysis tries to draw a distinction between 'Comparative' and 'Competitive' advantages of Somali Piracy. Since Somalia does not feature a 'Tradition in Piracy-practice', it is the belief of the authors that the phenomenon has remarkably evolved due mainly to the confluence of certain parameters nurtured (either intentionally or unintentionally) by the Somalis themselves.



Even more, it is claimed within this article that the piracy venture has evolved to a point of no return because it has ceased long ago to be just an opportunistic source of alternative income. Somali Piracy has created its own self sustained evolutionary system, the so called 'Piracy Diamond', which cannot be undone merely through the resurrection of mainstream, legitimate business and production. The business venture has intriguingly merged a set of disparate, mainly local (and international in some cases) stakeholders, like kingpins, semi trained ex-security personnel, money launderers, politicians and others, into a mosaic powered by diverse drivers like geography, international trade, poverty, lawlessness and lack of central political authority. Its mechanism has gone by now 'supercritical', which means that even if some of its initial 'comparative advantages' were neutralised, it would still keep on its developing course using its self-developed 'competitive advantages'. These were created and sustained through a highly localised process that is still developing. The role of the entire nation in this process seems to be as strong as, or stronger than ever.

The main theme of the international discussion around Somali Piracy is that the answer to the puzzle will come 'from ashore' through the development of alternative sources of income for the locals. With all due respect to the good-will of the international community, it is the view of the authors that this is a manifestly simplistic argument given that:

a. There are no (and neither will be) available sources of legitimate income except the traditional ones of agriculture, fishing and (to a lesser degree) trade;

b. Even if there were, the income (per capita) generated by these alternative professional activities would pale compared to the cash generated via piracy ransom payments.

Hence, it is the view of the authors that the country is hopelessly condemned to business oblivion.

Although the solution to the problem of piracy surely lies ashore, the authors claim that it will not come in the form of alternative, more legitimate sources of income, but rather through the negation of one (or potentially more) of the determinants that have rendered the scourge sustainable, innovative and eventually successful. This would be the gradual replacement of local rivalries (among politicians, clans and disparate militias) by a nation-(re)building process. Such a process could divert substantial physical and mental effort from illegitimate activities towards a creative virtuous circle. An approach that focuses on humanitarian aid and development could be far less costly than the current support of the Transitional Federal Government (TFG). More interestingly, a 'Somalia left to itself is in many respects less threatening than a Somalia that is being buffeted by the winds of international ambitions to control the country'. At the same time a progressive degeneration of local rivalries would steal from Piracy (and its 'Diamond') its most important determinant(s), the lifeline of indispensable human, financial and technical resources.

On the face of it, Somalia's history shows very clearly that in the absence of international intervention, the country has been quite 'inoculated' (a word used by intelligence operatives) against al-Qaeda and international terrorist organisations of sorts but not against local rivalries. The gist of this study is that unless these national hostilities get reasonably and effectively addressed by the Somalis themselves the high seas piracy off Eastern Africa will keep on festering for a long time to come.

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George Kiourktsoglou *obtained his B.Sc. in Mechanical Engineering in 1992 from the Aristotelian Technical University of Thessaloniki in Greece. As an intern, he worked for the Israeli Public Corporation of Electricity. Having concluded his military service he went to the U.S.A. to study Nuclear Engineering and Applied Physics at Cornell University. From the latter he graduated in 1996 with an M.Sc.. From 1996 till 2009 he worked for Royal Dutch Shell both in Greece and abroad, assuming various roles in Downstream Marketing, Strategy, Negotiations and eventually in Health, Safety, Environment and Security (H.S.S.E.). Sponsored by Shell Hellas, he graduated in 2006 from Alba in Athens with a Diploma in Management and two years later with an M.B.A. in Shipping from the same College. Currently he is doing research, as a Ph.D. candidate at the University of Greenwich. His field of interest is Maritime Security with a special focus on the "Piracy around the Gulf of Aden and the Horn of Africa". George is a member of the American Nuclear Society, the Chartered Management Institute and the Institute of Marine Engineering, Science Technology in London. He speaks Greek, English, German, Japanese and French.*

COMPREHENSIVE APPROACH: IMPLEMENTING THE EFFECT BASED APPROACH TO CONTEMPORARY MARITIME OPERATIONS PLANNING

by CDR Ioan Craciun ROU N

Abstract: The ambition of this paper is to increase awareness of the implementation of comprehensive approach, as a multilateral concept, in the Alliance's Operational Planning Process with a special focus on Maritime Operations Planning.

INTRODUCTION

The global security environment of the post-Cold War era is changing rapidly due to globalization, and a more dynamic and interconnected world. As a consequence a new set of "risk conditions, ranging from 'failed states' and 'disruption of access to critical resources,' to 'increasing ethnic tension' and the 'challenge of conflicting values and world views" has emerged. To be able to deal with this diversity, unpredictability, uncertainty and complexity it must be seen in light of a security agenda addressing concerns and vulnerabilities of our modern society with a greater focus on societal security. Furthermore, a generally agreed strategy characterized by continued internationally political, economic, military and civil engagement must be created.

But, to meet these requirements there is a need for new mutual expectations, arrangements, and institutions to help manage the security affairs in the coming decades. Coordination and cooperation between various actors from the international community across a broad spectrum of policy areas will provide the basis to achieving key objectives necessary for lasting security. NATO allies, for example, have adopted the comprehensive approach concept to meet the challenges and requirements of different operational environments shared with different international actors. At the same time, the EU seems to be adopting a concept based on similar comprehensive approach principles and, with a similar meaning and UN has introduced the concept of the integrated mission. All these concepts addressee the contemporary operating environment exposed to the potential use of violence by regular or irregular opponents and actors being subject to recent research and comments. In both national and multilateral forums, a consensus approach has formed around the need for 'comprehensiveness' at the conceptual level and 'integration' at the practical level.

As this paper in my opinion covers a certain/little amount of unknown terrain, I have chosen to formulate a relatively modest objective. The ambition is to increase awareness of the implementation of comprehensive approach, as a multilateral concept, in the Alliance's Operational Planning Process with a special focus on Maritime Operations Planning. It is not my intent to explore any of these multilateral concepts and associated processes of the multilateral organizations, NATO, UN and/or EU.

The ambition is to increase awareness of the implementation of comprehensive approach, as a multilateral concept, in the Alliance's Operational Planning Process with a special focus on Maritime Operations Planning

BATTELESPACE COMPLEXITY

There is no doubt that the changes in the international system combined with rapid technological advancement have affected the nature of warfare. What used to be based on simple symmetrical measures for strategic reference within the logic of strategic choice for parties to a conflict is no longer valid . The result is a war fighting environment that depicts two separate domains for strategic reference, a physical and a cognitive one. As a consequence, the complexity of the future strategic environment generated by this

asymmetry requires us to expand our perception of the battle field, Joint Forces and planning for operations.

We need first to explore and understand the non-linear relationship generated by the complex interactions in the battelespace and than the best ways to employ Joint Military Forces capable of operating in concert with political, economic and civil levers to achieve effects across the spectrum of conflict ranging from Article V force on force operations, to Non-Article V - Peace Support Opera¬tions and/or Humanitarian Assistance. It is more than obvious that 'Joint operations can only succeed through compre¬hensive coordination at all levels and the Alliance military approach will be effects-based, expeditionary and manoeuvrist in character . In other words, comprehensive approach should drive planning at the political/military strategic level which should then guide lower level planning in order to determine the objectives to be accom¬plished by Joint Military Forces to reach the desired end state. The Joint Force Commander will orchestrate the actions of his Components Commanders but it is they who will have to coordinate their activity to deliver operational success.

REBALANCING THE LOGIC OF "ENDS-WAYS-MEANS"

The non-linear relationship generated by the complex interactions in the battelespace has forced us to re-examine the way we think and plan strategically, operationally, and tactically. But this has to be explored by taking into considerations that the complex interaction of the physical and cognitive domains in terms of strategic reference produces results that have blurred the lines between the characterization of the traditional strategic, operational, and tactical levels. A physical event on the tactical level that would normally be insignificant in a symmetrical context may have strategic or operational consequences in the form of a cognitive effect 'en masse' .

Consequently, one of the most important developments in Western military was the effect-based thinking. In the context of military science this new way of thinking has been seen as the meeting place between the social sciences and the long domination by the natural/physical sciences of time and space within the operational planning process . Effect-based thinking is actually an attempt to explain the complexity produced by the non-linear strategic interaction in modern conflicts and find ways to make these interactions more manageable. Thus, for the purpose of the operations planning process the complexities of an asymmetric battlespace are divided up into different dimensions for strategic reference and in addition to the military dimension, the political, economic, social, infrastructure and information dimensions have to be addressed as well. The main reason of using the battlespace dimensions is simply to rebalance the logic of "ends-ways-means", as the essence of the operations planning process, in both physical and cognitive domains. By doing this the non-military dimensions are opened up for the operations planning process from the comprehensive approach perspective and provide the foundation for building future comprehensive approach capacities.

The comprehensive approach and effects-based philosophy together as mentioned in the UK Joint Doctrine Note issued by UK MoD in March 2007 "offer more sophisticated ways of analyzing complex situations and planning operations, as well as the means of incorporating and coordinating the efforts of all instruments and agencies required to counter irregular activity." However, establishing test variables to measure progress in a comprehensive approach operation is not an easy task.

Effect-based thinking is actually an attempt to explain the complexity produced by the non-linear strategic interaction in modern conflicts and find ways to make these interactions more manageable.

REBALANCING MARITIME ENDS-WAYS-MEANS

It is axiomatic that Joint operations are about all components working together as partners to in¬tegrate their capabilities towards the accomplishment of common objectives. Most likely, the operational activities carried out by Joint Military Forces could be categorized into three generic themes: preemption/prevention, engagement and rehabilitation/reconstruction. It is

more than obvious that Maritime Component will rarely, if ever, be able to accomplish the full spec¬trum of military effects alone. The same is true for Land and Air Components.

The complexity of the maritime environment demands a broader perspective of Maritime Component "employment across the spectrum of conflict, ranging from peace, crisis prevention and response operations, to war and conflict resolution" . In practice, maritime operations may move from one part of the spectrum to another as the operational environment changes. In any case Sea Control and/or secured access to project power from the sea remain essential for operational success.

...the establishment of more detailed practices and procedures will not in itself ensure improvement, if the personnel do not receive specific effect management training

In such circumstances and under the comprehensive approach principles the Maritime Component Commander faces his own business: the conduct of maritime operations, including those to securing maritime access in consent with integration with other sea users and followed by activities to stabilize rebuild and transition the maritime sector to civil control. It follows that coordination and cooperation between all sea actors has become even more essential to the maritime environment and that all of these elements must be taken into account when the planning process of the maritime campaign is conducted. It won't be a separate or isolated process but it will be part of the collective collaborative effort aimed to balance maritime ends-ways-means to accomplish joint effects. But what are the factors which should be considered under a comprehensive approach to maritime plan¬ning?

First of all, liaison with the main international maritime actors and host nation maritime representatives must be considered from the first planning phases as providing the basis for the comprehensive approach framework. Even if this normally begins at the strategic level it must be mirrored at operational and tactical level to include here Maritime Component level. This will facilitate the unification of effort between all parties under a clearly defined and articulated comprehensive approach strategy and allow maritime commander to employ his forces and contribute to joint effects requested by the political, economic, civil and military domains. This, in turn, will allow all stakeholders, including host nation, to complement and mutually reinforce each other's efforts to achieve their end states.

Another factor needed to be considered by the maritime planning process is the establishment of the minimum maritime force requirements. A minimum maritime forces needs to be assessed to support the operational military response options evaluation and than the international standards related to force deployment in dedicated area have to be considered. This will synchronize the use of maritime areas by different maritime actors especially the commercial shipping.

Than, operations planning process must account for the needs, expectations and perceptions of non-NATO maritime civil actors during the operation execution phases; they are shaped by a different environment and apply different proce¬dures and practices. They can be strongly independent and may not wish to be openly associated with the military which considerably complicates the comprehensive approach.

Once the operation is moving to its last phases planners need to understand that maritime civilian considerations begin to dominate and the maritime planning process must be adapted to reflect this and a more collegiate approach taken.

From the outset of the planning process planners must understand these requirements. Only after due consideration can lines of operation and courses of action be developed.

THE NEED FOR MARITIME PLANNERS TRAINING

The doctrinal entrenchment of the political, military, economic, social, infrastructure and information domains (PMESII) within the sphere of every officer's battle planning training will ensure that the principals of comprehensive approach are well understood and applied in consonance with current developments within the military doctrine.

But the establishment of more detailed practices and procedures will not in itself ensure improvement, if the personnel do not receive specific effect management training. If personnel are not trained in managing the effects cascade and using the PMESII mental modelling, they will likely resort to what they know best from the military dimension. Therefore diminishing the possible negative side effects of the 'old school' thinking will be

paramount to ensuring the success of the operations planning process at all levels including the tactical level.

The current dynamics of the NATO mission environment and the establishment of a new NATO Peacetime Establishment (PE) have clearly raised the need for educated and qualified NATO operations planners at strategic, operational and tactical level. The courses currently recognized to fill this standard are the NATO School's Operations Planning Courses (S3-54, S3-43, and S3-45). These courses are taught at operational level and now the school is developing under SHAPE's guidance another operations planning course to be taught at strategic level. In other words officer's battle planning training needs are efficiently satisfied at operational level and soon at strategic level. This dedicated training is not covered at all at tactical level unless it is planned as an internal HQs training. This is why there is real need for an institutionalized training program dedicated to tactical maritime planners.

NMIOTC could start considering this training gap and design an alternative planning course taught at tactical level for maritime planners. As a minimum the navy officers involved in operations planning process effect-based oriented should be educated in managing the effects cascade and using the PMESII mental modelling. Having the same skills and using the same methods, the overall process would benefit exponentially in terms of understanding situational awareness and designing lines of operations in consent with the other maritime actors involved in a contemporary conflict management.

CONCLUSIONS

The objective of this paper was to increase awareness of the implementation of comprehensive approach, as a multilateral concept, in the Alliance's Operational Planning Process with a special focus on Maritime Operations Planning.

Comprehensive approach itself has many different interpretations, however most identify the central thrust of it as an attempt to create more synergy between the military and non-military resources, and to maximize the desired effect at all levels of policy and plans. In this regard comprehensive approach represents a desire for a more effective doctrine when dealing with asymmetric or complex conflicts.

The effective implementation of comprehensive approach within the operations planning process will increase the effectiveness of NATO operations by providing practices and procedures within the non-military dimensions of PMESII that can act as the foundation for future military- non-military cooperation.

The present state of the comprehensive approach reflects doctrinal problems at the lower echelons implementation. This includes Maritime Component level where there are difficulties in cooperation and coordination with civil maritime actors and the lack of tactical training which make the comprehensive approach even more difficult to implement.

Moving from a kinetic analysis planning processes to an array of comprehensive approach practices and procedures inspired by an asymmetric environment is not an easy task. But the flexibility of the planning process should come from the comprehensive approach dimensional understanding of the battlespace and with contribution of skilled and educated planners.

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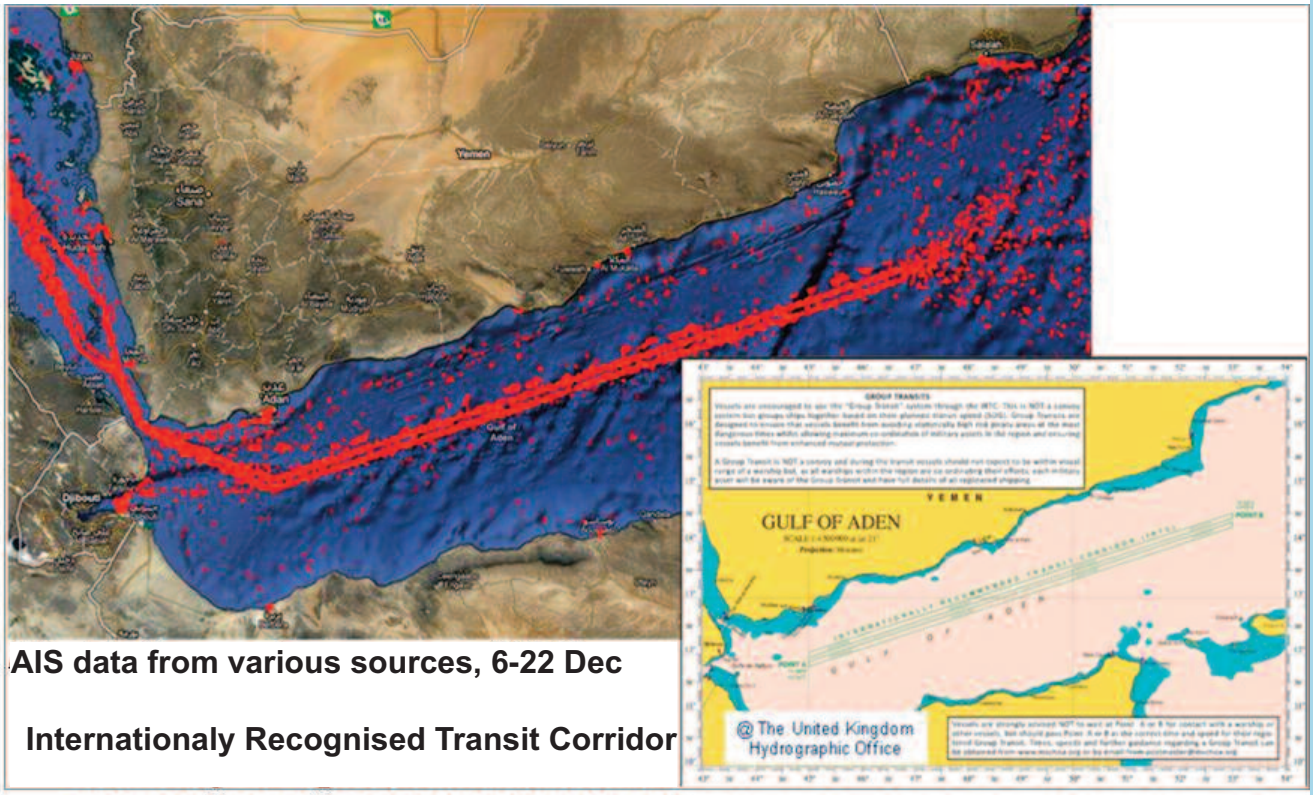
***Cdr Graciun Ioan ROU N** is a Director in the NATO School Oberammergau. He contributed the above paper in the NMIOTC Annual Conference 2011 presenting some general thoughts and ideas during the Discussion Board Session. The paper points were accepted by the Conference Committee and included in NMIOTC' s food for thought paper for Regional Capacity Building in NATO.*

REGIONAL SURVEILLANCE CONCEPT TO SUPPORT MARITIME GOVERNANCE AND SECURITY

by Mr. Harm Greidanus



AIS data from various sources, 6-22 Dec

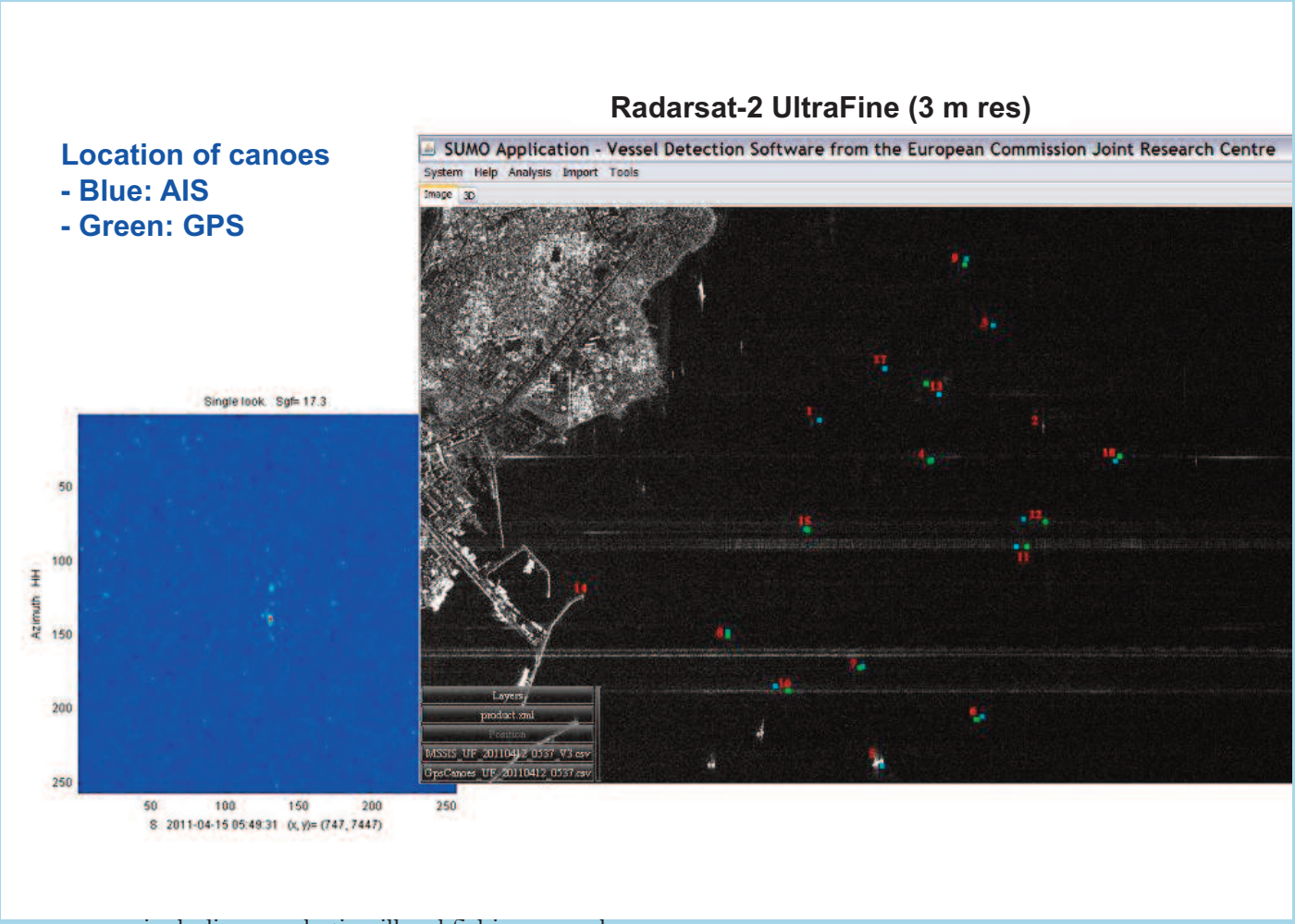
Internationaly Recognised Transit Corridor

PROJECT SUMMARY

Piracy is an issue of concern, posing serious threats to ships on innocent passage. The seas off the Horn of Africa are affected, but also West Africa is seeing an increase in the number and severity of incidents. While, especially for Somalia, the root causes of piracy are on land, it is necessary for the moment at least to take protective measures also at sea. Increasing maritime situational awareness can be one of those measures, as good situational awareness is a key element in counter-piracy operations and risk avoidance.

In the PMAR project, the Joint Research Centre of the European Commission is currently studying possibilities to obtain maritime situational awareness from a civilian background, primarily for the benefit of counter-piracy actors in the region. The concept envisions the production of (1) real-time maritime situational awareness pictures that contain positions of large and medium vessels on a digital map, and (2) historic piracy risk occurrence and vessel traffic distribution maps. These products are intended for use in the medium term by authorities in the region for carrying out maritime security tasks. In the short term, they may also be of use to foreign operators who fulfil that role at present, and to any stakeholders (commercial or government) in planning and executing their legitimate activities. While primarily developed for counter-piracy, it is foreseen that most elements of the system can also be used for local maritime governance in a wider sense, including monitoring for illegal fishing, smuggling and pollution.

The maritime surveillance information should be compiled from a variety of data sources: vessel reporting systems (technically: LRIT, AIS, VMS, VTS, voyage data) and observation systems (VDS or imaging satellite, surface radar, observer's reports). Some of these data are collected by Flag States, some by Coastal States, some by shipping industry and some can be purchased commercially. Existing space technologies play an important role in collecting and communicating data (satellite observation and communication). Since a complete picture of the maritime activities only emerges when all these data are combined, regional data sharing is key to adequate maritime situational awareness. A regional approach is also the most cost effective one for purchasing commercially produced data and exploiting space technologies. The need to build up regional maritime surveillance capabilities to enhance maritime



governance, including combating illegal fishing, was also one of the conclusions of the "First Regional Workshop on Piracy for Eastern and Southern Africa", organised by COMESA and IOC, held 19-20 July 2010 in the Seychelles.

It is the intention that the resulting maritime situational pictures will be unclassified, intended for use in constabulary / civilian tasks. Nevertheless, they are sensitive and therefore only for use by trusted parties, while their detailed content can be adapted for different users depending on their legal remit and to cover security concerns.

Today's technology does not allow the detection of small uncooperative vessels over wide areas, nor do mere vessel reporting and observation systems enable interception of suspect vessels. Therefore, conventional airborne and maritime patrol will always remain needed.

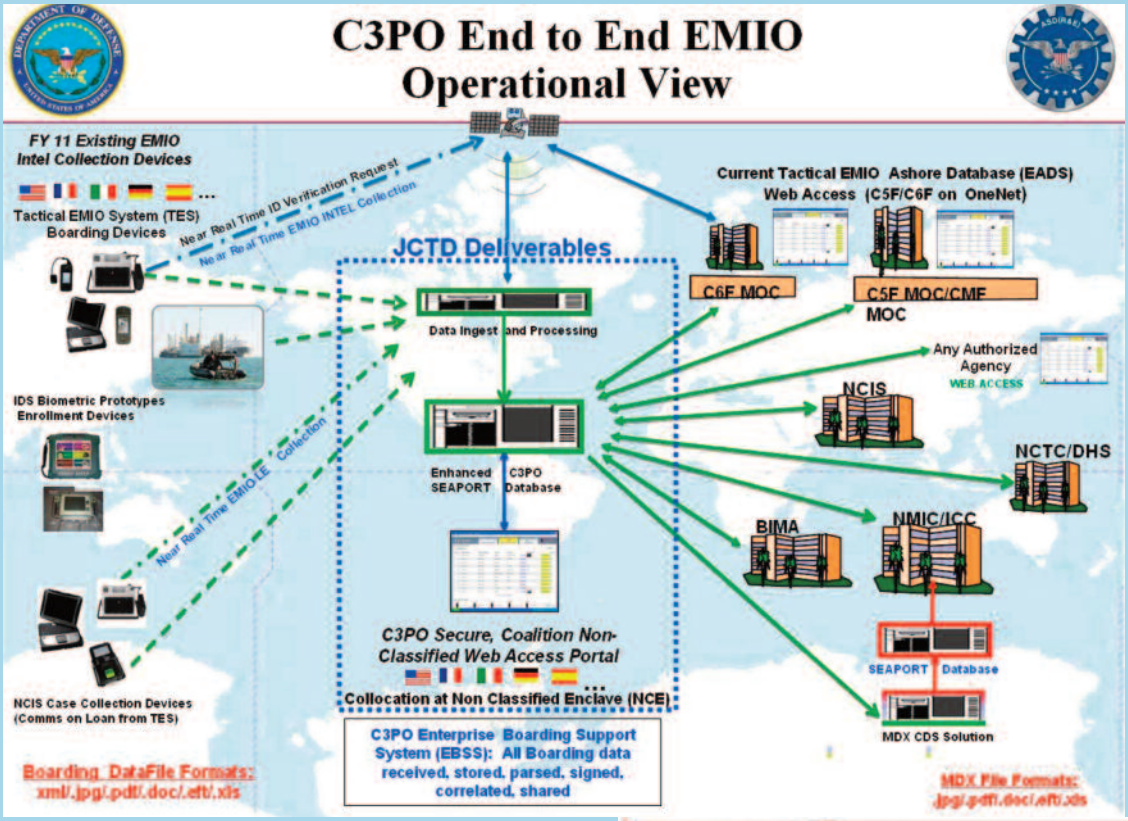
The present phase of the study is analysing the information content of the various possible input data sources and developing the processing and handling needed. A trial, collecting test data, was carried out at the end of 2010, and a new one is scheduled for Oct-Nov 2011. The concept design should be completed, including a cost-benefit analysis, by mid-2012. This should enable to make justified choices on how to proceed with further implementation.

Mr. Harm Greidanus *studied astrophysics at Leiden University, The Netherlands, and in 1989 received the Ph.D. degree. After that, he worked in remote sensing research at the TNO, the Netherlands Organisation for Applied Scientific Research, in The Hague, The Netherlands. His main topic was imaging radar, using various types of radar and from different platforms – ground-based, airborne and satellite; but the research also included optical and infrared observation systems. The work was predominantly concerned with maritime applications (bathymetry, surface waves and currents), but also extended to some land mapping. In 2003, he went to the Joint Research Centre of the European Commission, in Ispra, Italy. There, the work concentrated on vessel detection from satellite radar images, and more recently on the analysis of maritime surveillance concepts and systems integrating a variety of data sources. The research is application-oriented in the context of EU-level needs. These applications include fisheries control, maritime border security, maritime pollution control and, in the last years, counter-piracy. Currently he is involved in two EU-funded projects on the latter subject, one related to the Horn of Africa and one related to the Gulf of Guinea. He has authored over 100 publications in the scientific literature.*

COALITION END-TO-END EMIO PERFORMANCE OPTIMIZATION (C3PO) JOINT CAPABILITY TECHNOLOGY DEMONSTRATION (JCTD)

Data sharing to combat maritime illicit activities

by Dr. Stephen Desautel



The Coalition End-to-End EMIO Performance Optimization (C3PO) JCTD was conceived to provide a repository for data collected during ship boarding's. Currently there is no single system that allows all willing partners to share collected data and query against that data base, in a near real time, for operationally relevant information. The sharing of boarding data will allow all partners to leverage the efforts and expense of other partners while enhancing cooperation and trust. The results will include greater efficiencies in executing the mission, enhanced safety and security of the boarding teams, and a much greater capability for the multinational forces to combat piracy and other illicit maritime activities.

Building partner capacity is a primary mission not only for the United States Government, but for many nations all over the world. With over 95% of international trade moving by sea, world economies have become critically dependent upon free and uninterrupted sea trade. This increased globalization of trade by sea requires renewed cooperation in the maritime environment. With continued economic globalization, container volume is expected to double in ten years, creating increased strain on already taxed inspection and boarding resources. The basic concept and strategy to keep up with this growth are to share assets and data in order to overcome the scale of the problem, especially considering the current world economic situation.

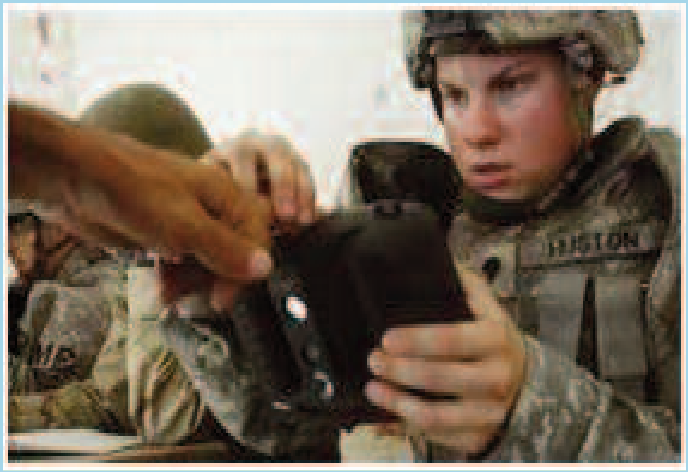
On Oct. 24 2011, the UN Security Council adopted an India co-sponsored resolution on piracy in Somalia, incorporating—at India's initiative—the issue of prosecution of convicted pirates not only for acts of piracy also for hostage taking. The resolution calls for international cooperation in sharing information for the purpose of law enforcement and effective prosecution.

Piracy is not a problem unique to NATO and the EU.

It is a worldwide problem affecting the entire world's ability to ship goods and trade in the maritime environment. Even so, piracy is only a small subset of the larger problem of international maritime illicit activities. Human and drug trafficking, illegal bunkering, hazardous waste dumping, and illegal fishing are some of the other problems that need to be addressed. International cooperation and the sharing of information freely and openly is required to address all of these problems.. The economic sovereignty of every nation supported by international trade is impacted by the inability to protect seafarers, and to monitor, regulate, and enforce maritime laws. Additionally, criminal syndicates have also adapted and migrated to the sea, taking advantage of the gray areas

in blue water law enforcement, the lower shipping costs and avoiding air interdiction. International air traffic data sharing has vastly improved over the last 20 years due to international cooperation. Maritime data sharing needs the same level of effort.

To combat these illicit activities sea-faring nations need to analyze and track activities that allow or enable piracy and other illicit maritime activities to flourish.



The C3PO JCTD is designed to support the monitoring of suspicious activities by providing all participating partners the ability to share and obtain information about the ship, the route, the cargo, and crew manifest to include identifying any crew previously highlighted as a person of interest.

Identity resolution operations, allow the ability to identify an individual through measurable characteristics, such as fingerprints or iris patterns. To enable this capability the C3PO JCTD will speed up access to the ship boarding data repository through automated interfaces that will parse and organize the information collected from the disparate systems that currently exist. Data will be available on a query basis through a new data center in Miami Florida and connected to the NATO BRITE system in San Diego, California. Partners may use the shared data to their best advantage. Enhancing maritime interdiction operation with identity resolution operations provides civil/law enforcement efforts and some military missions with the ability to precisely identify highlighted individuals even with forged documents.

C3PO is funded by the United States and will be supported by the U.S. Coast Guard and U.S. Navy. No funding is required to participate as a partner. The information will be available via the Internet on a secure socket layer server with password protection. For countries with handheld collection devices or kits, the C3PO system will allow both uploads and downloads of information through the internet with the aid of data transfer protocols.

The potential will be available, with the correct equipment, to have near-real-time information about the ship, the cargo, or crew and other concerns. The C3PO portal will allow participating boarding crews to be better prepared prior to the boarding, be more efficient during boarding, and to share what they find during a boarding. This effort will contribute significantly to capturing much of the relevant data required to counter piracy by more effectively targeting the use of maritime assets to deter or prevent illicit maritime activities.

Footnote: Graphics provided by Dalji,Globalspec, the US National Maritime Intelligence Center, Christian Science Monitor, biometrics4u

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Dr Stephen Desautel *currently works for the US European Command in Stuttgart, Germany. He is an expert in applying biometric techniques in Maritime Interdiction Operations environment. His team is working on the expanded MIO concept trying to provide viable solutions in order to effective combat the phenomenon of maritime terrorism. The above mentioned paper was presented to the NMIOTC annual conference as a proposal to NATO in the effective application to Regional Capacity Building. His team ideas where discussed extensively during the conference discussion board and included to the NMIOTC food for thought paper that was presented to NATO IMS.*

A FRAMEWORK FOR ENHANCED INTERNATIONAL MARITIME SECURITY COOPERATION AND AWARENESS

by Cpt Ken W. Hoffer USA N

INTRODUCTION

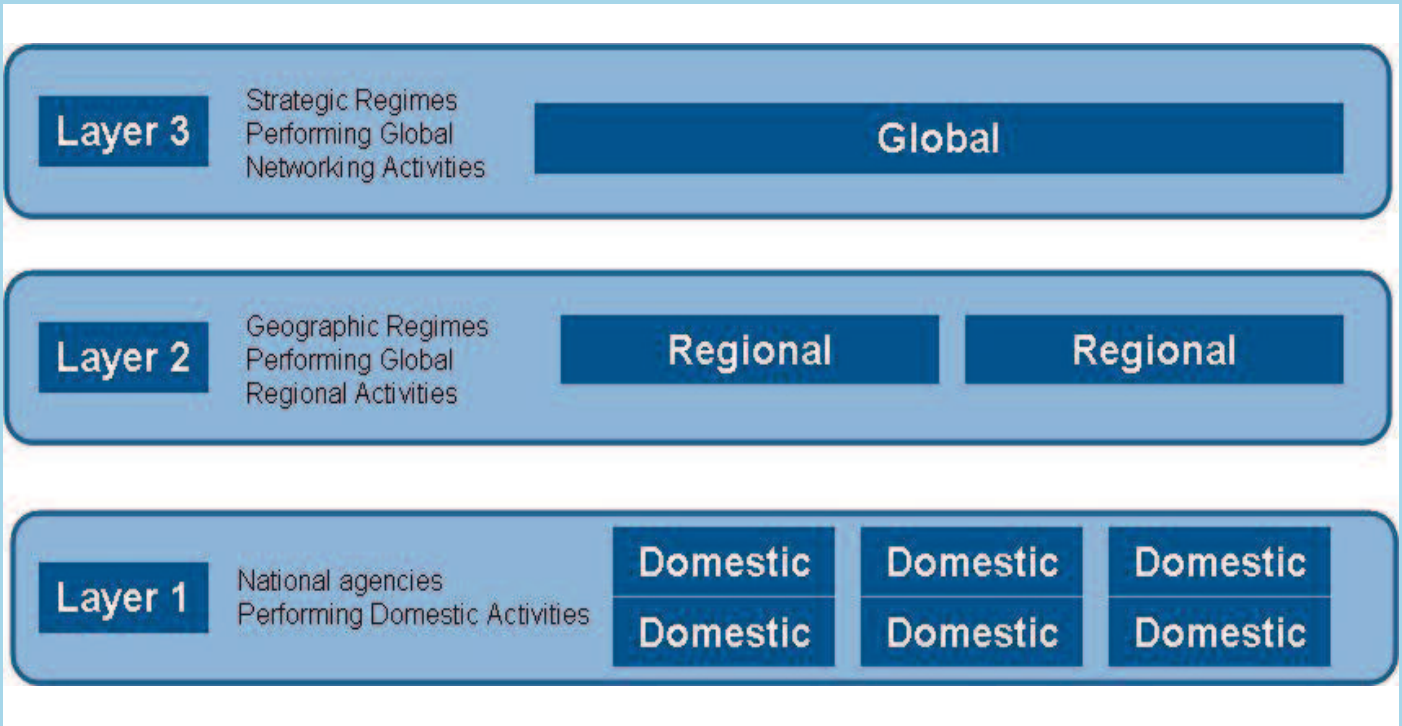
I recall a quote from former California Governor Arnold Schwarzenegger, who stated, "Start wide, expand further, and never look back". So you might ask, what does this have anything to do with Maritime Security Cooperation and Awareness ?

In the context of International maritime security cooperation, technical solutions and ad-hoc security arrangements can not adapt fast enough, to deliver a timely response to an ever expanding spectrum of asymmetric threats emanating from the shoreline and carried to sea. All too often we are faced with the challenge of reacting to situations which cause serious economic and political challenges rather than plan a deliberate and tailored response to control and resolve a potential security threat . Give the unprecedented nature of transnational crimes in today's global maritime environment, increased demands for security depends on a wider scale of networks that are willing to collaborate to protect everyone's national security and economic interests at sea. It involves an enhanced or "expanded" network of inter-regional maritime security coordination centers which serve to deliver a collaborative response to maritime threats.

IS IT A BRIDGE TOO FAR?

The development of standards for safe navigation, communication, and operation of maritime shipping has long been an area of international cooperation. Maritime Security Cooperation and Awareness (MSCA) is largely the responsibility of different national agencies in a domestic setting. In some nations, there are explicit oversight or co-ordination centers. To achieve awareness at a regional or even global level, many of the functions currently managed by individual nations will have to be undertaken by organizations which will enable all stakeholders to operate more efficiently and effectively together. One model for understanding maritime security cooperation and awareness (MSCA) organizes activities in layers:

International governance architectures often form in response to a need to coordinate behavior among countries around an issue such as maritime security. In the absence of an overarching governance organization, countries would have to align and coordinate activities, such as internet domain names and cellular telecommunications through numerous bilateral agreements, which would become impossibly complex to administer worldwide. Fortunately, international organizations such as, the Internet Corporation of



Layers of Maritime Security Cooperation and Awareness (MSCA)

Assigned Names and Numbers (ICANN) and the International Telecommunications Union (ITU) serve simultaneously as a forum, a multilateral treaty, and a governing body to standardize these activities globally. These examples serve to illustrate that an overarching concept to regulate and coordinate our collective efforts is possible and can serve a common good...in this case global INTERNET coverage and cellular communications. The precedence is there. Maritime Security Cooperation is achievable and simply requires the political will and a community of interest to implement.

WHO SHOULD LEAD?

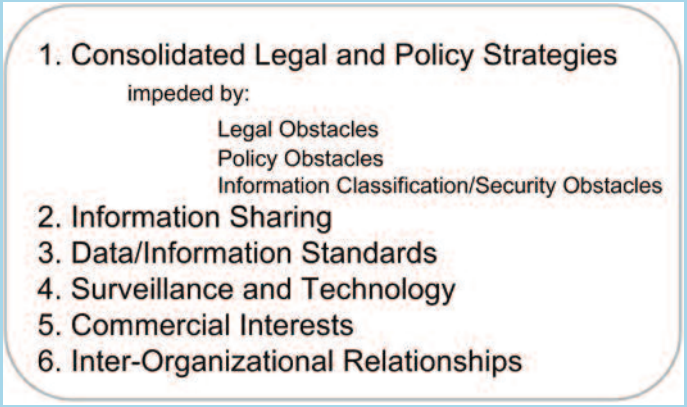
Given the plethora of maritime security initiatives which are now rapidly evolving in many nations and regions around the world, the challenge of linking the best of these diverse processes to form an effective international framework for maritime security cooperation and awareness is compounded by differing cultural norms, political agendas and technical standards. Given the inherent linkage of maritime safety and security, international co-operation in these activities could follow one of several conceptual models which could successfully close the gaps and provide effective global maritime security cooperation. A prime example where success has been achieved is in the civil air industry. The International Civil Aviation Organization (ICAO), founded by like-minded states, was originally designed to improve air safety standards. It has also achieved great success in sharing information and setting new security standards for passengers and air cargo worldwide to counter the growing threats from hijacking, terrorism and air piracy. There is no reason why this same conceptual approach would not work for maritime transportation.

Enhanced maritime security begins with a framework of domestic law enforcement and defense activities coordinated amongst various national agencies. This collaborative framework extends individual mandates and collective interests to facilitate broader co-operation for geographic regional activities, and can culminate in intra-regional global initiatives.

The enablers for greater maritime security cooperation and awareness (MSCA) include:

Whether operating at a domestic level, or a global level, any initiative for MSCA must tackle the difficult legal and policy issues which surround agency responsibility and co-ordination with other domestic or international groups. Sovereign governments must confirm that it is in their national interest to work with neighboring states and commercial or non-governmental agencies to improve maritime security.

Timely and effective information sharing must remain a central priority for the stakeholders who have a responsibility to inform and update information in line with desired operational outcomes. These networks must link constabulary with military networks where it makes good operational and economic sense to do so. There are practical concerns on how such information is to be structured electronically and securely managed. In many ways, new surveillance and communication technology is making MSCA more feasible, but such improvements carry with them the challenges of expense and increased complexity for establishing the requisite infrastructure that not all national partners can afford. Commercial maritime organizations have a vested interest in improved maritime security (since it directly impacts their costs and risks) but companies must often be convinced that their participation in MSCA initiatives will offer real affordable benefits



Enablers of Maritime Security Cooperation and Awareness

within clear regulatory structures. Finally, co-operation between current regional MSCA initiatives leverages the trusted relationships built between participants over many years of operation.

The growing number of national and regional initiatives creates independent systems and processes which detract from common standards. Through alignment of best practices, implementation of these enablers can provide a framework for superior maritime security cooperation and awareness on a global scale. Selecting the coordinating body for such a large undertaking must be made through consensus formed by all participants. This international community of interest will determine activities such as surveillance and information requirements, as well as, establish standards for the tools and applications needed to share and conduct collaborative risk assessments. The key objective here is aligning and linking the broad spectrum

of maritime security capabilities which will enable the relevant agencies to rapidly sort through volumes of data to quickly assess the appropriate level of response to deal with a specific threat.

The United Nations, as an international body with a reputation for impartiality among many participants, is an obvious choice for facilitating, providing legitimacy to, but not necessarily executing, global MSCA. Cooperation promotes a convergence of national strategic and security interests. International institutions help facilitate alignment of interests and provide a forum for establishing a reputation for implementing the efficient employment of complex strategies.

The International Maritime Organization (IMO) Maritime Security Directorate has a mandate which fits closely with enhancing international maritime security. It is a logical candidate for consideration as a facilitator for aligning processes and coordinating standards that enable regions to build on existing international cooperative frameworks to achieve global MSCA, leading to improved maritime security.

SO WHERE DO WE GO FROM HERE?

The IMO seems to be the logical choice, to carry this concept forward. In fact, there are several initiatives in IMO that include a comprehensive security regime for international shipping which entered into force on 1 July 2004, as well as mandatory security measures, adopted in December 2002. IMO has lead the effort in coordinating repression of piracy in Horn of Africa which is now codified in the Djibouti Code of Conduct which was signed in January 2009. Seventeen national signatories have agreed to co-operate, in a manner consistent with international law, delivering and enforcing the rule of law at sea and conduct shared operations, including the sharing of related information, through a number of centers and national focal points using existing infrastructures.

This ground breaking effort has set the stage to "expand further" the concepts for broader interregional cooperation to improve security on a global scale. IMO could facilitate the expansion of this concept, but it requires a coalition of the willing to set in place the appropriate governance architectures and standards to implement. In short, collective political will to get on with it and "not look back ".

The CJOS COE in concert with the Joint Staff (former US JFCOM) are now examining this challenge to assure safe an secure access to the Global Maritime Commons. The Multi-National Experiment 7 (MNE 7) Project is a two year interagency effort to develop solutions to address the challenge of a establishing a federated network of Inter-regional Maritime Security regimes which will serve all nations to guarantee access to a safe and secure Global Maritime Commons.

CONCLUSION

The development of relevant and effective solutions that meet all nations' needs in the maritime commons depends on each nation's level of commitment and involvement in contributing to this important international effort.

This ground breaking effort has set the stage to "expand further" the concepts for broader interregional cooperation to improve security on a global scale.

The outcomes of this research and development will provide fresh innovative approaches on how the international community can build or enhance existing maritime security regimes in order to assure all stakeholders can be assured of their access and legitimate freedoms to operate and prosper in a safe and secure global maritime environment. The findings of these studies will be published in 2012. A preliminary analysis will be presented at the next CJOS/CSW COE Combined Maritime Security Conference which will be held in Halifax, Nova Scotia Canada from 4 to 7 June 2011.

Details and registration for this conference are available at www.maritimesecurityconference.org.

Seventeen nations are currently committed to the study, the X factor in this equation remains…which nation or nations will demonstrate the political will and commitment stand before the IMO General Assembly, to table a resolution to establish a Convention for Maritime Security Cooperation and Awareness?

Captain Kenneth Hoffer *is a staff officer in CJOS Center of Excellence in Norfolk Virginia currently working on issues relevant to maritime security.*

MARITIME AFFAIRS, SAFETY OF NAVIGATION AND SECURITY

by Professor Josip Kasum

ABSTRACT

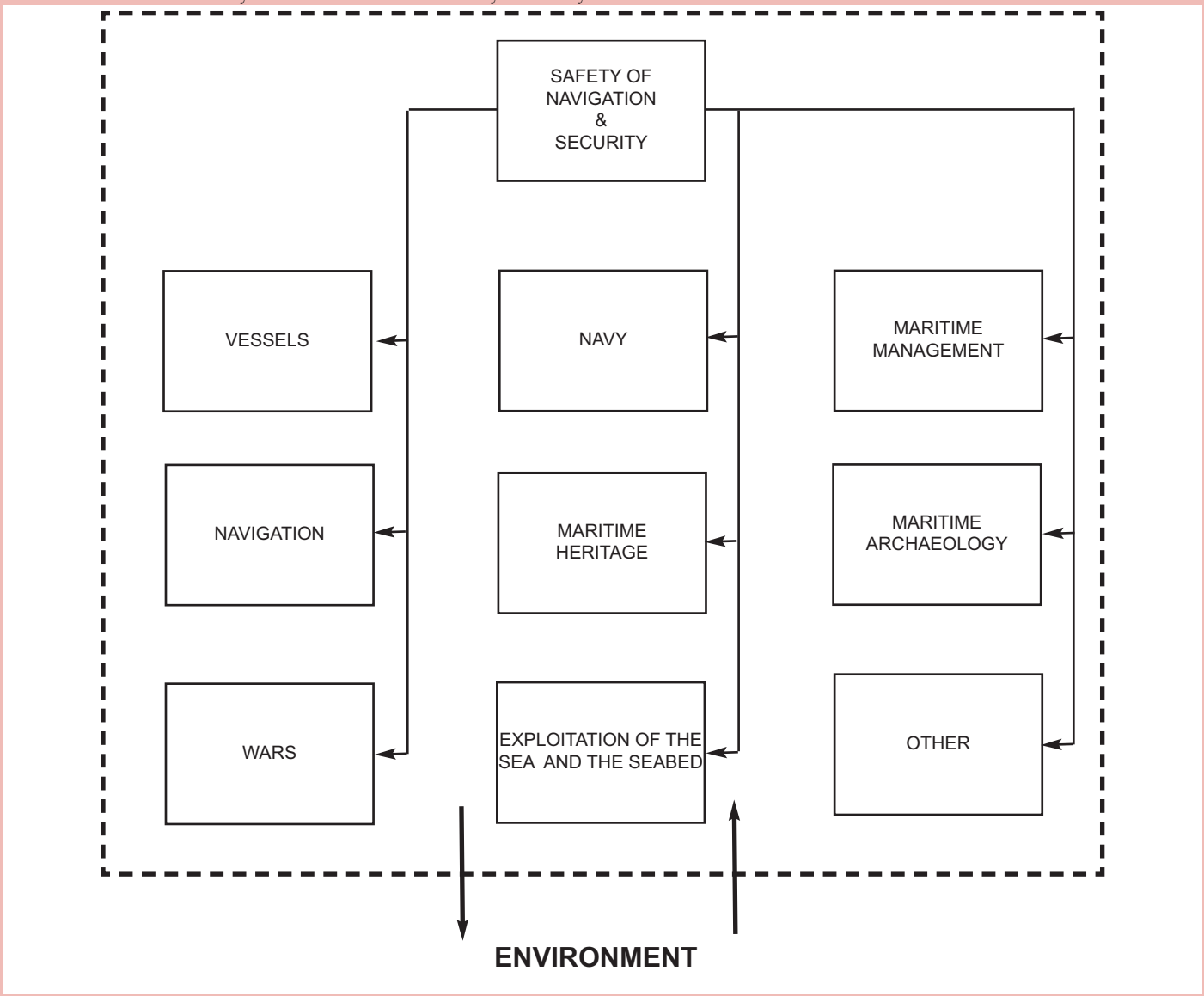
In this paper, maritime affairs are systematically determined. The analysis of the subsystem of safety of navigation and security indicates its importance. Its successful functioning in interaction with other subsystems is a precondition for optimum continuation of maritime traffic. The author also points out that the level of safety of navigation and security differ for various categories of ships. Therefore, possible problems are presented and ways to resolve them are recommended.

Key words: maritime affairs, ships, safety of navigation, security

MARITIME AFFAIRS

Maritime affairs may be observed in two ways. It may be considered as a skill to navigate and/or a system of various activities related to the exploitation of the sea. Maritime affairs may be systematically determined as an entirety of interactions between man and sea. It can be presented as a general model review (Figure 1).

According to the current concept of maritime affairs, in compliance to the recommendations given by the International Maritime Organization – IMO contained in the Convention Safety of Life at Sea – SOLAS, the subsystem of ships consists of two categories of ships: SOLAS ships and Non-SOLAS ships. The ships to which SOLAS Convention regulations are applied are determined in Chapter 1, Regulation II of the SOLAS Convention. Such ships are also referred to as SOLAS

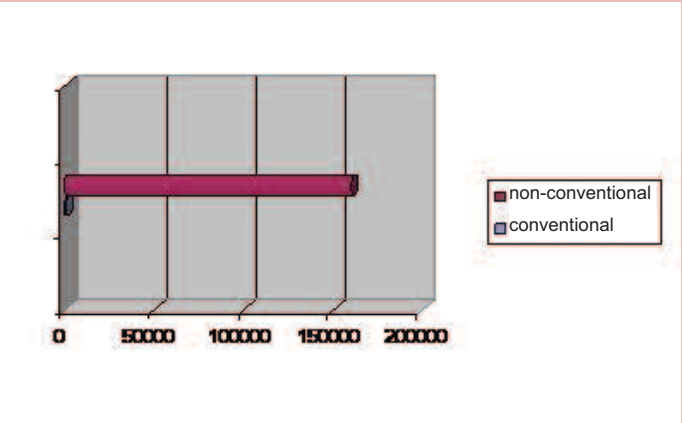


General model review of the maritime affairs system

ships, while those to which the SOLAS Convention does not apply are referred to as Non-SOLAS ships. Non-SOLAS ships are: cargo ships < 500 GT, war ships, wooden ships of primitive build, pleasure ships, fishing vessels and yachts. It may be concluded that the system of maritime affairs consists of a series of subsystems with a relatively great number of interactions between the subsystems, the system and the environment. Further on, a particular attention is given to maritime traffic in relation to the interaction of maritime traffic subsystem with the subsystems of safety of navigation and security.

MARITIME TRAFFIC

Maritime traffic may be observed according to the division to two kinds of ships. For instance, Convention or SOLAS ships are engaged in 80% of the global traffic of various goods [14]. The traffic of Non-Convention ships corresponds to the total capacity of fishing and war ships of particular countries and is considered to be significant. It is necessary to note the outstanding increase of the ships categorised as pleasure boats – ships for sports and recreation. The example of the Republic of Croatia may be analysed, where nautical tourism business is significant. The number of pleasure boats is constantly increasing, as well as the traffic density and the accommodation density of such vessels in corresponding ports. The ratio between Convention and non-Convention vessels in the Republic of Croatia is exceptionally disproportionate (Figure 2). It may be concluded that there is an outstanding discrepancy in the ratio between Convention and non-Convention ships. The situation is similar in the countries with outstanding nautical tourism activity [9]. With reference to the safety of navigation and potential risk, the situation may, to a certain extent, be compared to a



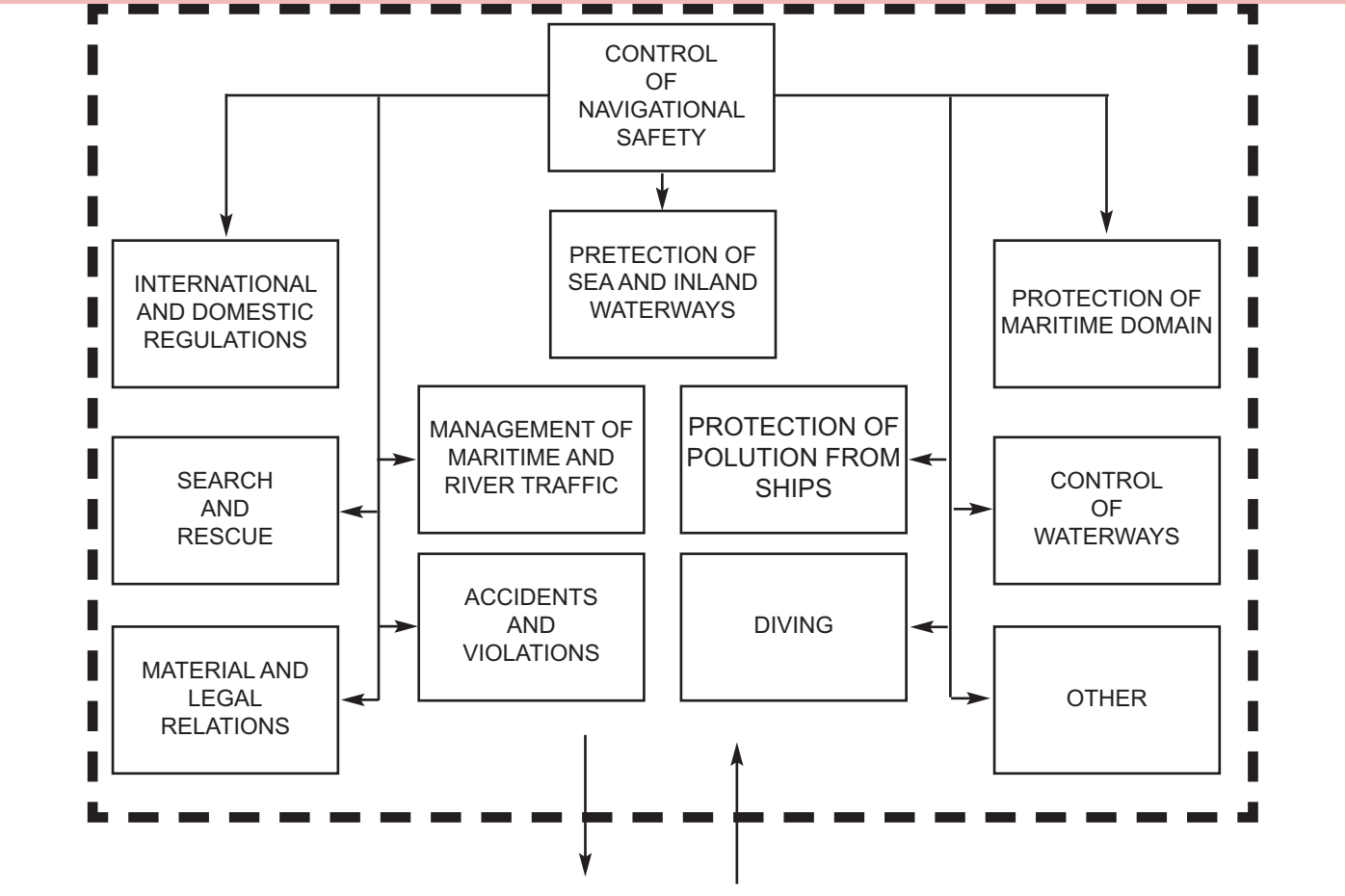
Convention and non-Convention ships in the Republic of Croatia in 2007 [10]

hypothetical example from aviation, by asking the following question: What would happen to the safety of air navigation if, along with 1,000 passenger planes, there were 160,000 smaller, sports planes? It may be concluded that in general, the traffic of vessels in nautical tourism is exceptionally increasing, and that thus the possibility of damage for the society and property is also increasing. To a certain extent, the activities of nautical tourism assume the characteristics of critical infrastructures [1, 2, 5, 11, 12, 13].

SAFETY OF NAIGATION AND SECURITY

The subsystem of safety of navigation and security shows its specific aspects in technical and technological maritime navigation process. Recently, there has been an increase of terrorist, pirate and other threats [4, 3, 7, 8], therefore the subsystem of safety of navigation and security is becoming more important. It can be considered as vital for a successful functioning of navigation process. It is therefore necessary to define its possible sensitivity to various types of threats [15]. Further on, the meaning of concepts of safety of navigation and security are explained. The safety of navigation may be considered as a system consisting of a series of subsystems and activities. The function of the safety of navigation system is to maintain the navigation safe. The importance of the control subsystem may be pointed out. Its activity is important for the functioning of other subsystems and of the system as a whole. The safety of navigation may be presented in the general model review (Figure 3). In order to perform the tasks related to the safety of navigation and security, the countries with business activities in maritime and internal navigation constitute functional bodies of the government administration. It may be concluded that, for the reasons of safety of navigation and security, recommendations given by international organisations engaged in navigation are adopted in national regulations and implemented in practice. An example can be the Law on Safety Protection of Commercial Vessels and Ports Open to International Traffic (International Ship and Port Facility Security - ISPS Code). Its implementation is compulsory in countries with maritime industry. Its main purpose is security and it relates to the security of merchant ships, i.e. of Convention or SOLAS ships and to the security of ports open to international traffic. It may be concluded that the law is implemented in practice, but only at SOLAS ships and in international traffic ports. The concepts of safety and security need to be distinguished. It can be concluded that SOLAS ships, despite the highest level of safety of navigation and security in conformity with present resolutions, still indicate certain sensitivity to various kinds of threats.

When comparing SOLAS ships and non-SOLAS



General model review of safety of navigation

ships and especially pleasure boats in nautical tourism, it is necessary to point out that adequate legal regulations do not exist or they are insufficient [6, 10]. For example, the security for such ships does not correspond to current solutions and demonstrates extreme sensitivity to various types of threats. Hence, it is necessary to undertake suitable measures for improvement.

MEASURES FOR IMPROVEMENT

It is assumed that in most cases the number of non-Convention ships in relation to Convention ships is higher or increasing. The risks are various and predictable. Some examples of risks are terrorist attacks, environment pollution, biological pollution, human trafficking, illegal trade, etc. It is evident that a relatively big group of non-Convention ships is in the area for which there is no suited form of ISPS code. Therefore the appropriate security code for non-Convention ships and nautical tourism ports has to be developed: (International Non-Convention Ship and Nautical Tourism Port Facility Security Code – InSNTPS Code) [10].

When creating the InSNTPS code for non-Convention ships it is proposed to start from the basic elements (levels one to four):

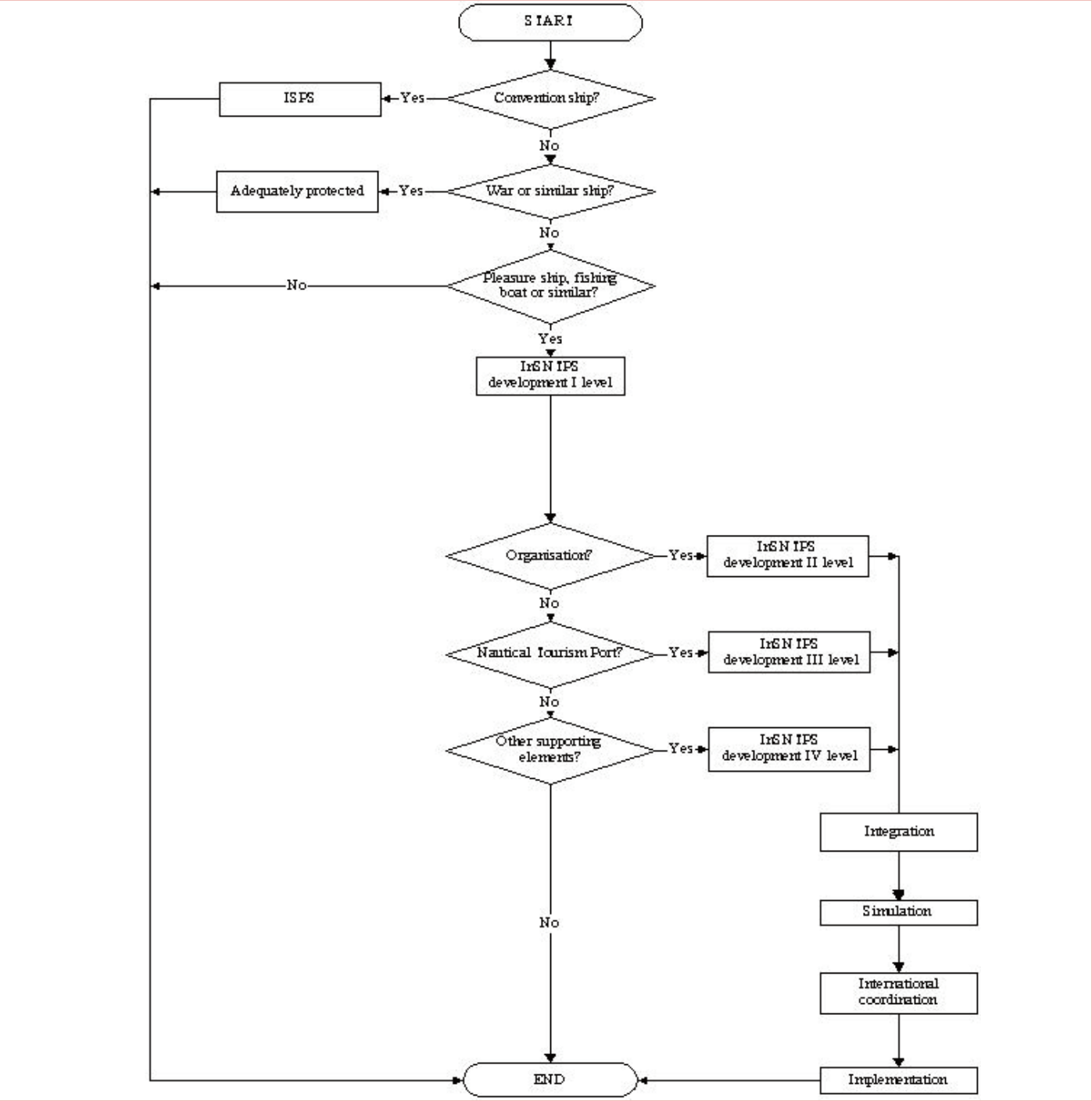
1) non-Convention ship,

2) organisation,

3) nautical tourism port, and

4) other supporting elements.

The first level refers to non-Convention ships. It is proposed to analyse pleasure boats, fishing and other ships. It is assumed that military and police ships are adequately protected by corresponding legal regulations. Pleasure and fishing ships in various countries are steered by individuals with various unequal and non-standardised skills and licences. Differences are in acquired skills, authority and formal licences. Therefore, it is proposed to standardise at international level officer's qualifications, education programme and official form of various licences. Special education programmes relating to security need to be developed and implemented in the existing programmes for obtaining licences. At the second level, organisation forms need to be recognised or developed. Non-Convention ships, except fishing boats, mostly refer to pleasure boats. The characteristic of these ships is individual, i.e. free or personal engagement of owners or users in navigation and other procedures relating to ships. Therefore any form of organising them is, to put it mildly, undesirable. However, this category of ships may be classified in various forms of organisations. Organisation is a from of trade, sports or similar association, for instance,



General algorithm of the development of InSNTPS

charter agency, user of the ship, owner of the ship, sports club, diving club, etc. It is proposed to develop programmes of organised educational courses and issuing permits relating to security. The third level relates to the proposed general term, nautical tourism port. It is assumed that such a port is an organised coastal infrastructure for organised berthing and guarding of ships. A nautical tourism port needs to be considered as the basic element of coastal part for which appropriate security procedures and permits have to be developed. The fourth level includes other ancillary supporting which are expected to be partially included in the model. These are port authorities, information and flows of information, various verification procedures, etc. In some countries, for instance in the Republic of Croatia, there are organised voluntary guards of non-Convention pleasure boats. They have to be appropriately included in the system. It is certain that adequate areas need to be discussed and co-ordinated at international level. Therefore, it is proposed that the development of the security system of non-Convention ships is implemented through an international organisation, like United Nations - UN or International Maritime Organization - IMO. The procedure of creating appropriate security system of non-Convention ships is very complex and comprehensive. Therefore it is proposed to develop an outline of the security system of non-Convention ships according to the proposed algorithm (Figure 4). Complex dynamic systems, into which the security of non-Convention ships may be

categorised, is not easily developed and structured without suitable programme support. The method of dynamic modelling may be functional in understanding the behaviour of dynamic systems. Therefore, after developing the model it needs to be dynamically modelled and future effects need to be simulated.

CONCLUSION

Maritime affairs are considered to be a skill to navigate and/or an organised system of various activities related to the exploitation of the sea. Maritime affairs is systematically analysed as an entirety of interactions between man and sea. According to the International Maritime Organisation and the Convention of the protection of human life at sea, there are SOLAS and non-SOLAS ships. SOLAS ships are engaged in 80% of the modern global traffic of various goods. The number of non-SOLAS ships is constantly increasing, especially of the ships in nautical tourism. The safety of navigation and security are crucial for a successful functioning of both categories of ships. However, international regulations relating to security substantially differ. For instance, ISPS code is implemented for SOLAS ships, while there is no corresponding regulation relating to non-SOLAS ships, in spite of their high number and constant growth. It is therefore proposed to continue researches in developing the International Non-Convention Ship and Nautical Tourism Port Facility Security Code – InSNTPS Code, which will greatly reduce certain types of threats for the society and property [10].

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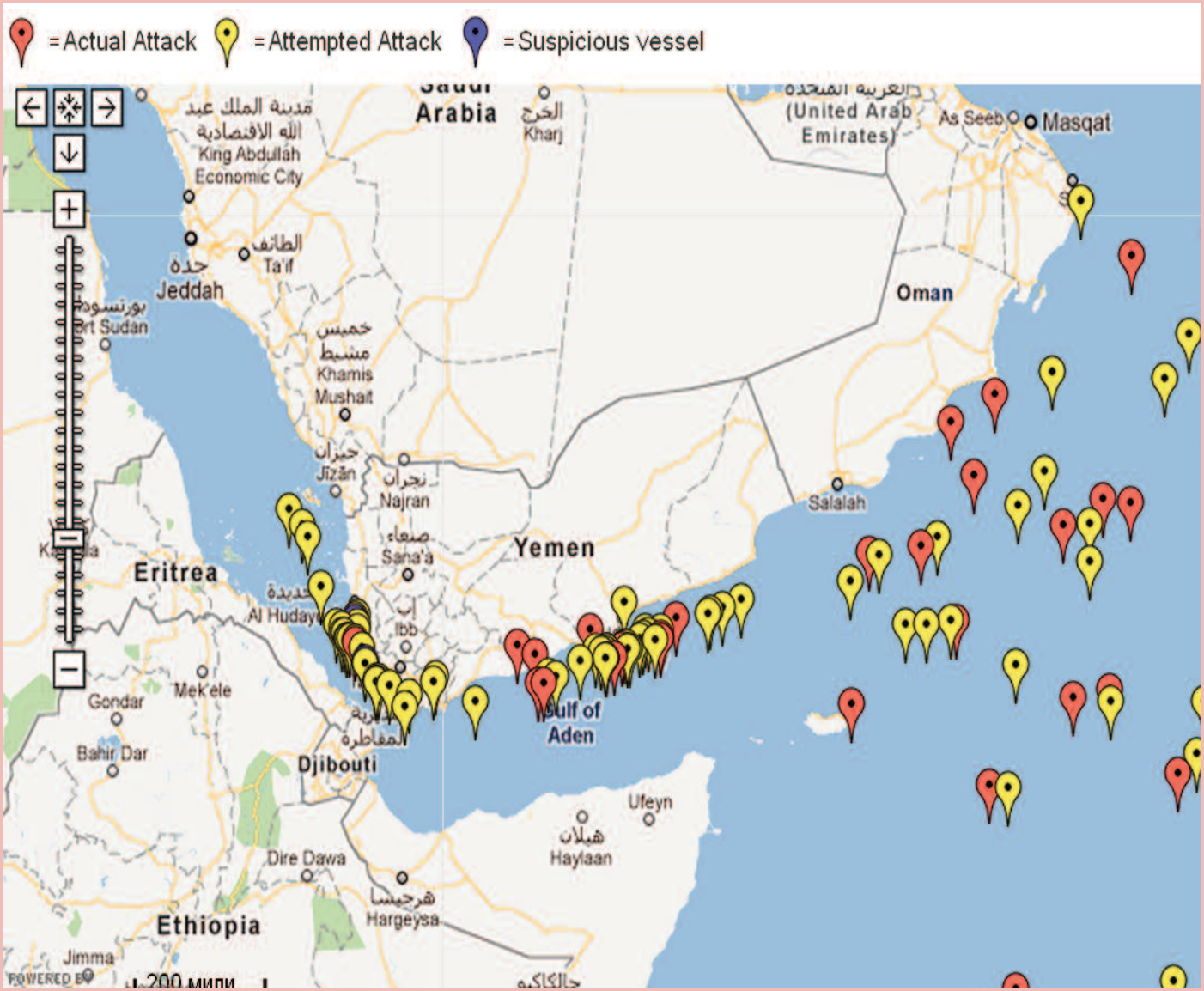
COUNTER-PIRACY ESCORT OPERATIONS IN THE GULF OF ADEN

by Professor Thomas Lucas and LtCdr T. Tsilis GRC N

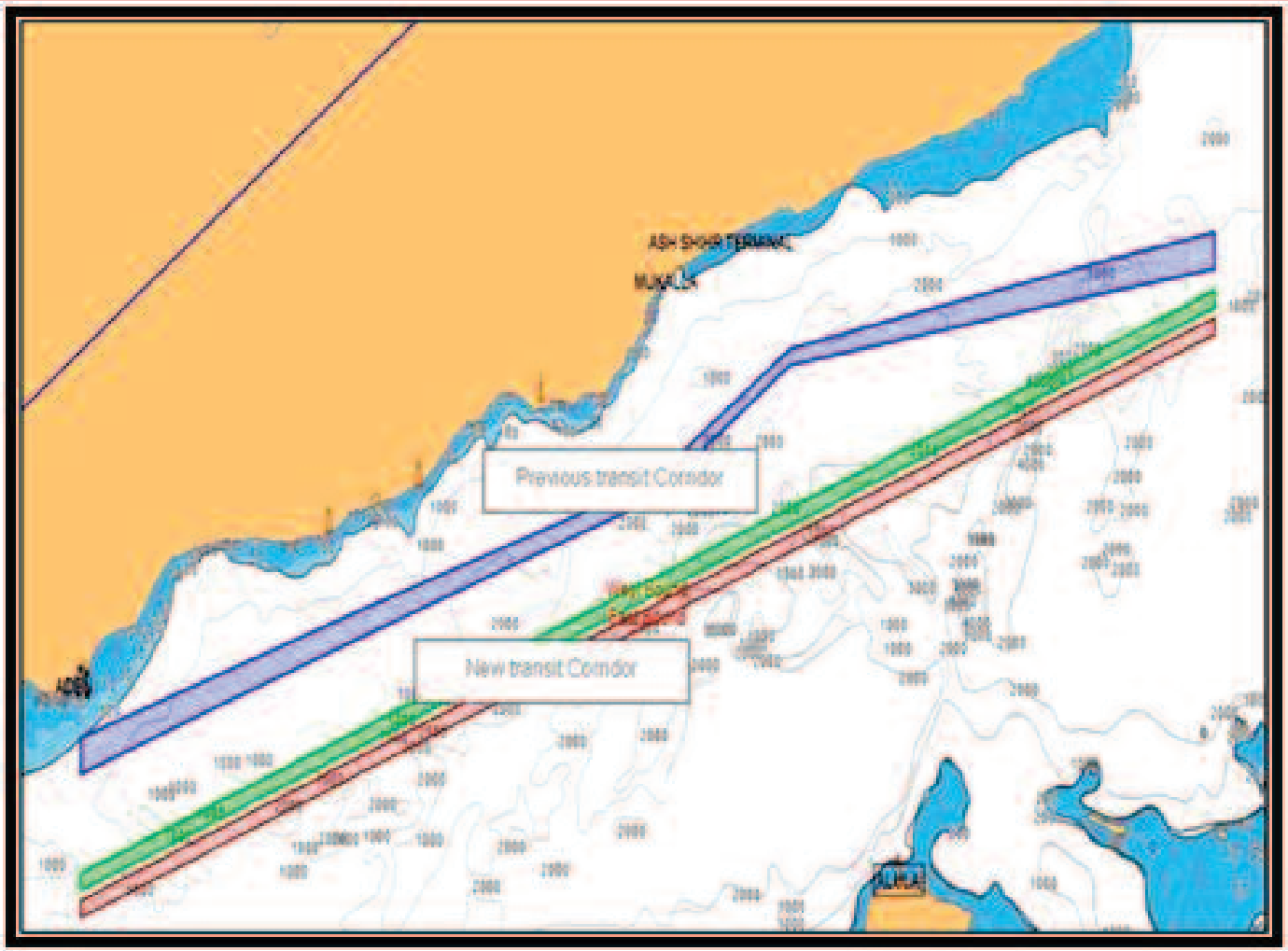
The Horn of Africa, a peninsula in East Africa, is a region comprising the countries of Eritrea, Djibouti, Ethiopia, and Somalia and is laved by the south part of the Red Sea and the Gulf of Africa (GOA). It is one of the most strategically important international waterways, and it carries almost the 95% of European Union (EU) trade (by volume) transported by sea and 20% of global trade.

Piracy and absence of the rule of law in war-torn Somalia are directly linked. In the early 21st century, when the second phase of the Somali civil war began, piracy off the long coastline of Somalia began to be a threat to international shipping. The lack of a substantial government, the disintegration of the Somali armed forces, and the possibility of gaining quick wealth through ransom caused a rapid increase in pirate attacks and armed robbery in the GOA and the Somali Basin region (SBR).

Some observers also allege that illegal over-fishing of the Somalian waters by foreign poachers and the dumping of toxic waste have motivated some Somali groups engaged in piracy. Big trawlers taking advantage of the lack of Somalian authority were illegally fishing vast amounts of sea life, estimated at $300 million's worth, leaving local fishermen with empty nets. Also, it is hinted that a large amount of nuclear waste, including



International Maritime Bureau Piracy Map for 2010
(From International Chamber of Commerce, 2010)



Internationally Recommended Transit Corridor

(From http://www.eurocean.org/np4/file/863/Piracy_Gulf_of_Aden___Indian_Ocean.pdf, 2010)

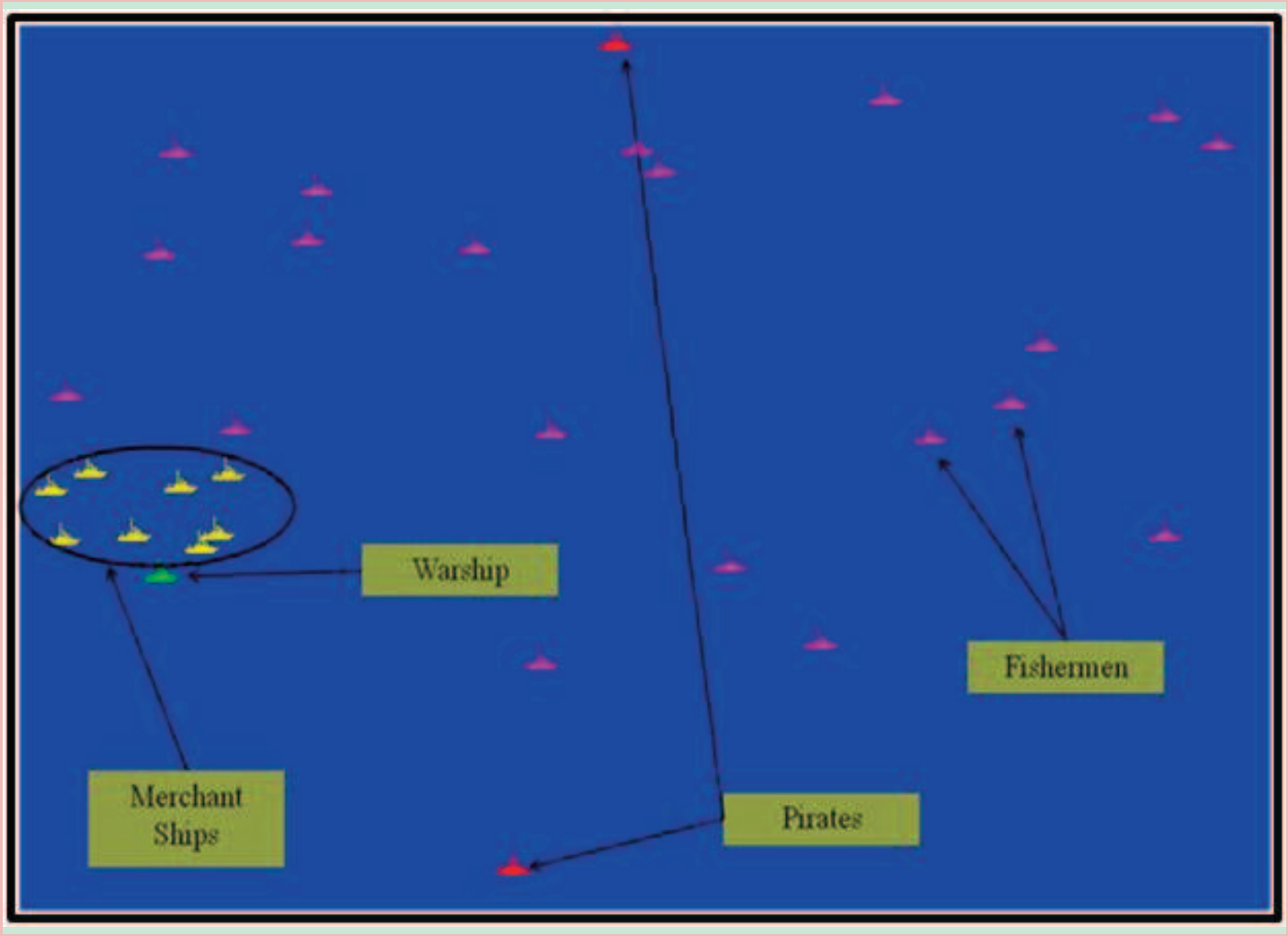
lead, cadmium, and mercury has been dumped in Somalian waters by other nations and individuals. This is allegedly contributing to the radical decrease in sea life. Early on, Somali fishermen started demanding that poachers pay fines, giving their groups names such as the National Volunteer Coast Guard of Somalia or Somali Marines. Later, they realized there was more money to be made from straightforward abductions for ransom.

Increased pirate activity in the Gulf of Aden (GOA) has gotten the attention of the international community, and many countries are engaged in counter-piracy operations to protect vulnerable shipping and provide humanitarian aid. The European Union Naval Force (EUNAVFOR) Somalia—Operation ATALANTA, is the European Union's first naval operation. In February 2009, the Internationally Recommended Transit Corridor (IRTC) was established in order to introduce safer and more organized passage for all merchant vessels transiting the GOA. The IRTC is a corridor between Somalia and Yemen within international waters, consisting of two lanes, each of five nautical miles (nm's) width, one eastbound and one westbound, with a space of two nm between them. The total length of the transit corridor is 480 nm, and a vessel maintaining 14 knots requires 34.5 hours to pass through it. Vessels that intend to pass through the IRTC are grouped according to transit speed. Groups of 10, 12, 14, 16, 18, and 20 knots transit speed are formed at specific hours and dates, and traverse the IRTC under the coalition's escort/convoy services.

This thesis uses simulation to identify the key factors involved in escorting vulnerable shipping through the Gulf of Aden. Specifically, a scenario in which a group of merchant ships travels under escort of a warship is modeled using an agent-based simulation environment known as Map-Aware, Non-uniform Automata (MANA). The simulation is run to address the following questions:

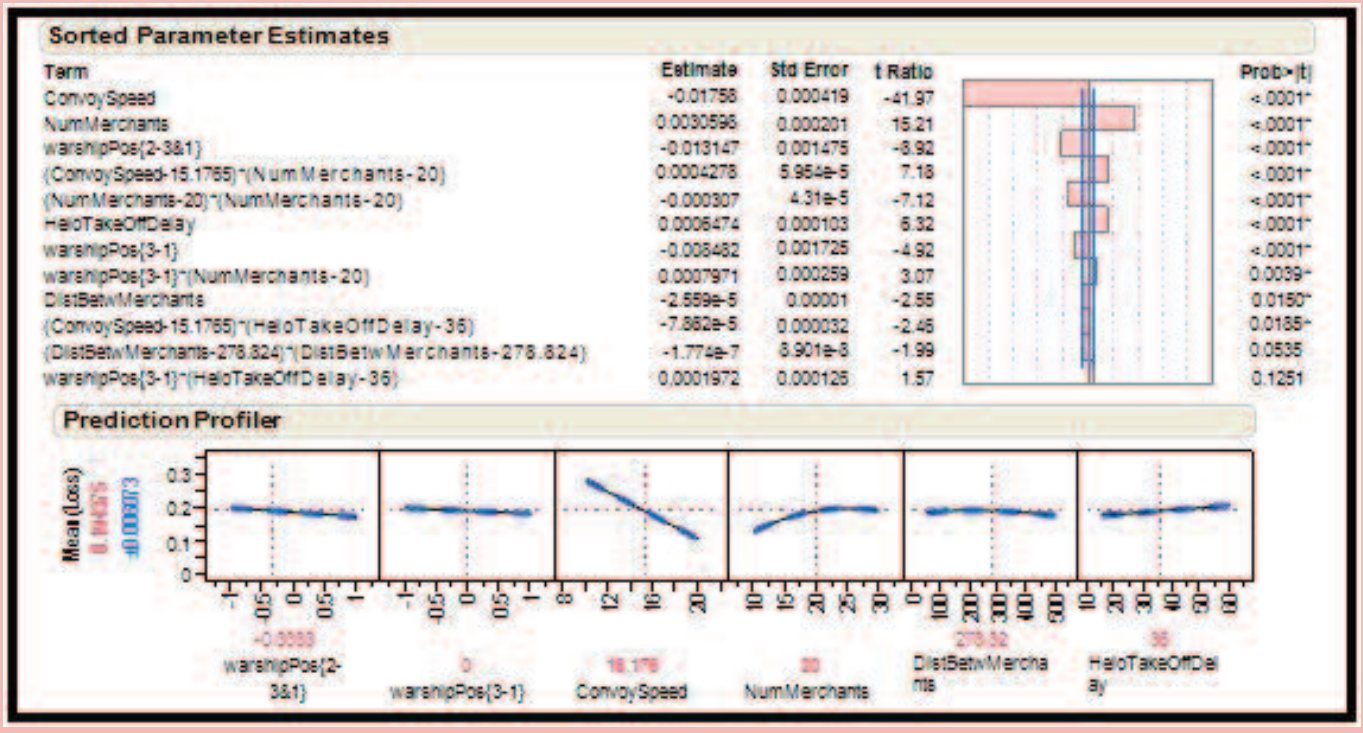
- How does the number of merchant ships affect the ability of the frigate to defend them?
- How many pirates can a convoy adequately handle?
- What factors should be taken under consideration when we have an escorted convoy?

The scenario simulated in MANA, shown in Figure



Map of the Scenario

1, involves coalition force operations using a warship with a helicopter to protect a convoy of merchant ships transiting westbound in two columns along the IRTC. This area usually includes many fishing or other individual traveling vessels, and the pirates behave like one of them until they approach a potential target, attack it, and attempt to capture it. The scenario commences from the point that the pirates have reached high



Parameter Estimates and Prediction Profiler for Final Fitted Model

velocity heading towards the convoy. The pirates can be identified by one of the merchant ships or by the escorting warship.

The merchant ships are sailing in two-column formation. As soon as one realizes it is being approached by a quickly moving, suspicious vessel, it signals the fleet, increases speed, and begins evasive tactics while the entire convoy flees. The warship, which may be sailing beside, before, or behind the merchant formation, increases speed and heads towards the merchant under attack. At the same time, orders are given for a helicopter to take off, which heads towards the provocation.

Using state-of-the-art design of experiments (DOE), over 300,000 convoy operations are simulated. The DOE distinguishes between decision factors (i.e., those variables that we can control) and noise factors (those variables we cannot control), and varies the following:

- Decision factors: warship position, convoy speed, number of merchant ships, distance between merchant ships, and helicopter takeoff delay
- Noise factors: number of pirates, pirate speed, communication latency between merchant ships and warship, and distance from convoy at which pirates reveal identity

As a measure of effectiveness (MOE), the mean merchant (blue) casualties are computed. Three primary analysis techniques are used to quantify how mean merchant (blue) casualties are affected by the factors above: multiple-regression analysis, robust analysis, and classification and regression trees.

The analysis finds that in the scenario modeled:

- The three most influential factors in the regression analysis are the number of pirates, pirate speed, and convoy speed,
- The most successful convoys have fewer than 14 merchant ships and travel at greater than 18 knots,
- The warship should patrol in front or on the flank of the convoy,
- It is important to be able to identify pirates at 4 kilometers from their target,
- More than three pirate vessels are especially difficult to counter, as are pirates that travel at more than 39 knots.

This thesis provides many opportunities for follow-on research:

- The scenario may be expanded using more than one escort warship or Unmanned, Aerial Vehicles (UAVs) to patrol over the convoy for the whole or part of the trip.
- The scenario may also include other MOEs, such as the time it takes for the warship to interdict the pirates.
- Finally, the scenario may be expanded to a higher level of detail. It may include the time it takes the warship or helicopter to stop and arrest the pirates or the actual self-protection measures the merchants may take to deter or delay the attack, like razor-wire barriers or water, spray, and foam monitors.

THESIS DISCLAIMER

The reader is cautioned that the computer programs presented in this research may not have been exercised for all cases of interest. While every effort has been made, within the time available, to ensure that the programs are free of computational and logical errors, they cannot be considered validated. Any application of these programs without additional verification is at the risk of the user.

Thomas Lucas *is a Professor of Operations Research at the Naval Postgraduate School (NPS) in Monterey California. He has been at NPS since 1998. Previously, he worked for six years as a statistician and project leader at RAND and for eleven years as a systems engineer at Hughes Aircraft Company. His primary research interests are simulation, warfare analysis, design of experiments, and robust Bayesian statistics. In addition to his regular faculty duties, Professor Lucas is a co-director of NPS's SEED Center for Data Farming—see http://harvest.nps.edu. SEED is an acronym for Simulation Experiments and Efficient Design. The Center's mission is to advance the collaborative development and use of simulation experiments and efficient designs to provide decision makers with timely insights on complex systems and operations.*

LtCdr T. Tsilis *graduated the Hellenic Naval Academy in 1965 and has served in various Hellenic ships (frigates, fast patrol ships), mainly on fast patrol ships as chief engineer. He has received a Masters degree in Operational Analysis from Naval Postgraduate School in Monterey California. He is currently serving in Souda Naval Base.*

ARTEMIS – A NOVEL MULTIPURPOSE SMART BUOY

by Mr Anastasios Kounoudes, Ph.D. and Mr Christodoulos Protopapas, Ph.D.

SignalGeneriX, a Cypriot R&D company has recently joined forces with Hellas-Sat and the Maritime Institute of Eastern Mediterranean for the development of ARTEMIS, a novel, multi-purpose, energy autonomous Smart Buoy able to operate in extreme environmental conditions providing real-time data from a wide range of environmental and security sensors.

The consortium is building on its own technology that has been developed for a variety of environmental and water monitoring applications both for on-shore and offshore deployments in Cyprus. The pictures below show a smart buoy designed for real time monitoring of water quality in dams and a smart buoy designed for offshore environmental monitoring deployments in the Mediterranean.

The aim is to build a multi-purpose, low cost, energy

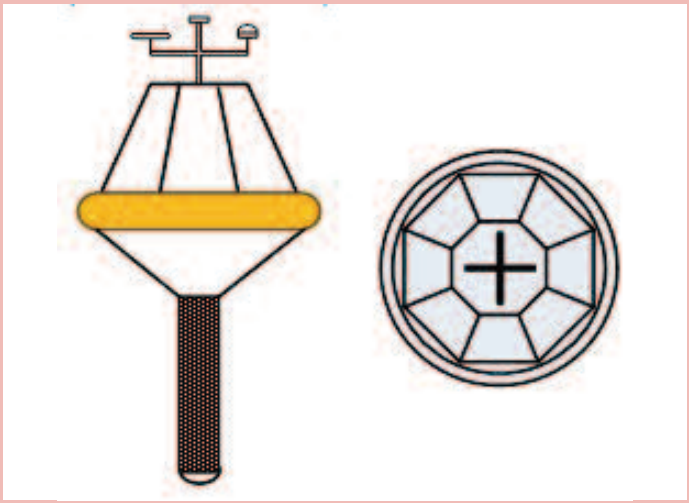
Buoy for Dam (right)
Offshore Buoy (left)

efficient, autonomous smart buoy able to operate in extreme weather conditions and which could be easily modified so as to pursue various missions such as Military and maritime terrorism surveillance, Security and Border Control, Search and Rescue, Sub-sea surveillance, Meteorology and Environmental Monitoring.

ARTEMIS uses the latest cutting edge technology in buoy design and construction materials, embedded electronics, satellite communications, renewable energy systems, mooring systems, and sensor data acquisition, processing and fusion. By optimizing the form and features of the following sub-systems, an ideal buoy can be developed to match specific needs, applications, and budget.

Buoy Structural Design: The buoy which exceeds 8m height has an octagonal shape and is divided in three sections namely the top level which includes the satellite antenna and long-range surveillance sensors, the main level which includes the doorway and powering system and the lower level which is below the waterline and includes the buoy's electronics. The buoy which is mostly constructed with aluminum is designed in such a way so as to minimize movement due to wave and maximize the period of oscillation. The octagonal design of the main and upper levels serves as a base for the deployment of photovoltaic's while the black ballast tank at bottom serves as a fuel reservoir. The buoy includes both topside and subsurface sensor deployment platforms with a variety of mounting options.

Hybrid Powering SYSTEM: ARTEMIS includes an innovative hybrid powering system, essential for extremely long power autonomy. Based on the Wisense® energy management system, the buoy can switch from solar powered to diesel powered option according to weather conditions, power consumption and operating scenario. The system can automatically adjust sensor sampling rates, communication options and also perform 'sleep and wake-up' and 'hibernation' modes if needed to optimize its power consumption. ARTEMIS is expected to run whole seasons without the need of re-fueling.



ARTEMIS site and top view

ARTEMIS-Wisense® Monitoring platform

Sensors and Data Acquisition. The buoy includes two sensor deployment platforms; one for underwater and one of surface sensors located below the lower and over the top level respectively. All sensors are easily integrated to the sensor interface which provides both powering and data acquisition functionalities as well as local and remote server data logging capabilities. The system is fully customizable since it is designed to ensure remote adaptation of sampling frequencies and data acquisition scenarios as operation priorities change. ARTEMIS can house from one to hundreds off the shelf analogue and digital sensors, meeting the needs of different demanding environmental, search and rescue, security and military applications.

Communications and telemetry. Hellas-Sat, a satellite owner and a major satellite communication provider is providing a high data-rate channel for ARTEMIS communication needs. A satellite antenna equipped with a 3-axis antenna positioner mounted at the top of the buoy ensures robust high speed data transmission. The dedicated satellite link significantly expands the capabilities of ARTEMIS beyond traditional telemetry applications since it can now accommodate video streaming in real time. This feature is essential for demanding surveillance application where day or night vision is required. ARTEMIS also offers several telemetry options for remote data access and sensor control on a 24 hours a day, 7 days a week, 365 days a year basis, providing consistent and high quality data.

Data Management. ARTEMIS boasts a powerful data management system, based on the Wisense® platform (Figure 3), which enables both the buoy administrator and selected users to have access to real time and historical buoy data. Wisense® enable the ARTEMIS administrator to fully control the various buoy systems remotely while also provides the user a powerful data presentation and charting platform for data analysis. In addition, ARTEMIS is equipped with and instant messaging and alerting mechanism, able to inform selected users about any change in significant parameters according to pre-defined scenarios. The systems also builds onto Wisense® powerful reporting tool to provide any user with customizable data reports and event logs according to their needs.

The above mentioned concept is being presented here in NMIOTC MIO Journal aiming to produce useful ideas, share maritime related technological knowledge and at the same time present to NATO and International Community that through technological advancements it is possible to increase maritime surveillance with low cost applications, which is now the most important factor that drives all operations in Alliance. It is our firm belief that technologies like the aforementioned will change the traditional maritime interdiction operations in the future in a more network centric environment. Our sole intention is to build and prove through experimentation, simulation and modelling that this technology will help to minimize costs and increase maritime interoperability and surveillance for better countering the phenomena of piracy and maritime terrorism that has been increased in the maritime commons during the last decade.

Mr Anastasios Kounoudes *is the CEO of Signal Generix Company and currently the lead advisor for Artemis project.*

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Mr Christodoulos Protopapas *is the CEO of Hellas Sat. He attended through his representative the NMIOTC Annual Conference and presented a paper for smart buoys and cutting edge technologies in the maritime satellite surveillance environment.*

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EXPANDING NMIOTC USING MOBILE TRAINING TEAMS

by Lt Antonios Pothitos GRC N

NMIOTC instructors along with Croatian officers on a ceremonial graduation photo after the end of the course. The Chief of the Croatian Fleet and the Chief of the Coast Guard were also present.

Within the last three years, NMIOTC has established its existence, as a NATO Education and Training Facility being the sole Center in Alliance relevant to Maritime Interdiction Operations (MIO).

Annual Conferences, Semi-Annual Courses, new courses that the Center continuously is developing - Weapons of Mass Distruction, Countering the phenomenon of Piracy, Countering Improvised Explosive Devices and the influence they have in a MIOperation – as well as Experimentation, simulation and modeling is providing the relevant knowledge that

makes us feel a key player in the tactical maritime environement training area.

Since NMIOTC started its full operational program of work, had the offer of providing its products through Mobile Training Teams (MTTs) to the customers. The last month an MTT took place in Croatia, Split. Two NMIOTC Instructors traveled to Croatia providing the whole Course of 1000 Series (Command Team MIO Issues) to 22 XOs, Operational Officers, Navigational Officers, Weapons Officers, Boarding Team Officers and Assistant Boarding Team Officers of the Croatian Navy. The course lasted one week, from 17 to 21 of October 2011.

The tools that NMIOTC MTT used to deliver the training were extracted from Alliances official techniques for educating its members.

Our main concern, was to establish a mutual cooperation with the trainees. We were prepared to teach

Students splitted in syndicates and worked on the last day on a three hour time dynamic table top exercise answering questions regarding real maritime scenarios which were focused on Adriatic sea's operational environment in order to facilitate Croatia's training needs.

them, we were most willing to guide them, we were leading them on how to use the provided knowledge but most importantly we had to make them believe on us. These were the main challenges we had to face.

... a table top exercise was implemented in order to maximize the effectiveness of the transferred knowledge and leave to the students practical ideas and techniques regarding the execution of maritime interdiction operations.

Also having the language barrier we had to be proactive and well prepared to avoid misunderstandings and finally reach our goals which was to transfer, share and exchange knowledge in the maritime interdiction field.

During all days of training we were continuously reviewing students' performance. All attendees answered a number of questions that covered mainly the whole subject, after each presentation.

Finally a table top exercise was implemented in order to maximize the effectiveness of the transferred knowledge and leave to the students practical ideas and techniques regarding the execution of maritime interdiction operations.

The effort that the Instructors had to make, for providing through Mobile Training Teams the same Courses, the same Modules and eventually the same knowledge as in NMIOTC, had to be doubled .

It was a difficult task, successfully completed and most importantly proving to ourselves that teaching does not always needs state of the art facilities but only cutting edge education skills that overcome all obstacles and make the class environement from cold friendly, from static dynamic and from indifferent challenging.

... teaching does not always needs state of the art facilities but only cutting edge education skills that overcome all obstacles and make the class environement from cold friendly, from static dynamic and from

... indifferent challenging

During graduation the Deputy of the Croatian Navy, the Chief of the Croatian Fleet and the Chief of the Coast Guard were present and briefed by NMIOTC's instructors on the training result of the course.

An NMIOTC Instructor delivering a class in Negotiation techniques. Subjects such as MIO Intelligence, MIO theory, air assets and capabilities, counter piracy and many more were presented to the Croatian Navy Officers class

This is the way of stemming new ideas and creating an environment that leaves behind solid knowledge and unforgettable experiences.

Lt Antonios Pothitos GRC N *is an NMIOTC Education and Training staff officer for tthe last three years. He has participated on various NATO MIO operations and he has served all his Navy career mainly on board frigates as Communications and Operations Officer. He is a qualified instuctor from NATO school Oberammergau and also from national accreditation authorities. He speaks fluent English and he is married with four children.*

MARITIME OPERATIONAL LANGUAGE TRAINING COURSE

by Cpt Teresa Fairbanks, USA Navy Reserve

The NATO Maritime Interdiction and Operational Training Center (NMIOTC) successfully completed the fourth annual presentation of the Maritime Operational Terminology Course (MOTC) from 19-30 September 2011, in beautiful Souda Bay, Crete, Greece. NMIOTC hosted and executed the MOTC event with student sponsorship provided by NATO Allied Commander Transformation (ACT), Norfolk, Virginia, USA. NMIOTC reports to ACT's Education & Training branch as a NATO instructional facility.

MOTC is just one of many course offerings at the training facility. This course enables forces to gain a better understanding of surface, sub-surface, aerial surveillance and special operations activities in support of NATO Maritime Interdiction Operations (MIO). NMIOTC's aim is to increase allied and partner expertise in MIO while developing interoperability and cooperation.

The objective of MOTC is to familiarize NATO, Partners for Peace (PfP), Mediterranean Dialogue (MD), Istanbul Cooperative Initiative (ICI) and other allied maritime officers with the use of the English-language maritime operational procedures, along with the associated terminology used by NATO naval forces. Students also receive instruction in NATO's Operational Planning Process (NATO OPP) and ship tactical simulator training.

After completion of the course, students will be

MOTC is just one of many course offerings at the training facility

prepared to operate alongside NATO maritime forces in a variety of contingency operations or serve as part of a joint NATO maritime staff. The course was well attended with students representing the countries of Algeria, Morocco, Tunisia, Ukraine, Kazakhstan, Greece, Czech Republic, and Mauritania.

The course introduced students to the history, structure, and functions of NATO with the main operational focus on the many challenges facing NATO and coalition maritime forces in suppressing piracy off the Horn of Africa (HoA) and Gulf of Aden regions. The class schedule featured briefings covering related topics such as NATO Anti-Piracy Operations, HOA Geopolitical Analysis, and Naval Guidance and Control of Shipping (NCAGS). These and the other core MOTC courses are designed to help a naval officer on anti-piracy patrol with NATO forces to better understand the type of environment he or she would be most likely to encounter.

MOTC is conducted in a dual format, a traditional classroom environment and a hands-on-simulator event. This is the second year that an extraordinary simulator exercise has been part of the curriculum, well received by the students, where they have the opportunity to apply learned knowledge from the classroom and apply this as they take on various roles as Commanding Officer, Operations, and Communications officers. The scenarios take the theme of encountering unknown contacts while patrolling the waters off of a fictional country, and allow the student to demonstrate skills in handling various situations. This is designed to help naval officers on anti-piracy patrol with NATO forces to better understand the type of environment he or she would be most likely to encounter.

MOTC instructors actively encouraged students to engage in class discussion and interact as much as possible, improving their English skills and enhancing the learning experience for both students and instructors. Students were tasked with giving a 20 minute presentation about their home countries in English during the second week. The MOTC participants are evaluated by instructors based on their graded results from daily quizzes, a comprehensive final exam and daily class participation.

Course Director Lt Georgios Mantzouris, GRC N, expertly coordinated all aspects of the program for the students from initiating the student sponsorship from NATO ACT through to graduation. He also arranged several events which allowed the students opportunities to learn about the Crete culture by touring ancient ruins and historic sites around Chania. Students and instructors also participated in several social events which were pleasant occasions for more sharing and interaction between all represented countires.

The success of MOTC 2011 was made possible through the close cooperation between the Hellenic Navy, NATO ACT and the U.S. Navy (USN). The Hellenic Navy provided multi-service instructors, advanced training facilities and logistical support with sponsorship assistance from NATO ACT, while four senior officer instructors from USN Reserve unit NR NATO ACT HQ UNIT provided the English-language maritime terminology expertise.

MOTC is conducted in a dual format, a traditional classroom environment and a hands-on-simulator

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Captain Teresa Fairbanks *is a member of US Navy Reserve unit in ACT, Norfolk, Virginia. She is an experienced educator from the US teaching English language skills and techniques to various schools and academies. For a second consecutive year she has provided skilled language techniques to MOTC students helping them to better familiarize with NATO maritime English abbreviations and language.*

TRAINING OF ROS REGINA MARIA IN NMIOTC

by LtCdr Alexandrou Gobjila ROU N

Between 01st and 03rd of November 2011, a Romanian frigate and its crew members received the NMIOTC partial training of "1000 - 3000" courses, taking advantage of the period spent in Souda for replenishment, while participating in Operation Active Endeavour.

This training is quickly becoming a tradition for the frigates of the Romanian Navy. Almost all ships have paid a visit to the center, prior their deployments, mainly in support of Operation Active Endeavour.

For ROS REGINA MARIA this training is not a novelty, but for the current command team, the opportunity to receive MIO training and to practice procedures in the NMIOTC simulator was well received. Subjects such as Legal Issues (Module 1040), INTEL Support to MIO (Module 1030), Air Assets (Module 1070) and Maritime Interdiction Operations Phases (Module 1050) were on the agenda. The training period ended with a simulator session, a good occasion for the junior officers to practice all the MIO procedures in a realistic setting.

There was a total participation of eight (8) officers, most of them for the first time in a deployment.

The Boarding Team members of ROS REGINA MARIA were trained in the following subjects:

(1). Tactical Sweep (Module 3030) - During this module, the trainees learned step by step the room clearing fundamentals. They also learn and execute techniques on how to clear corners, ladders and stairwells. Additionally they learned and executed tactical movement in passageways, small compartments and also on open decks.

(2). Crew Control / Suspect Crew Handling (Module 3040) - The Module's main objective is to improve the Boarding Party's skills necessary to safely approach, neutralize and secure crew of a suspect vessel (SV). During this module, the trainees learned and put into practice a full skill set of dealing with compliant or non compliant crew members and also arrest and searching techniques.

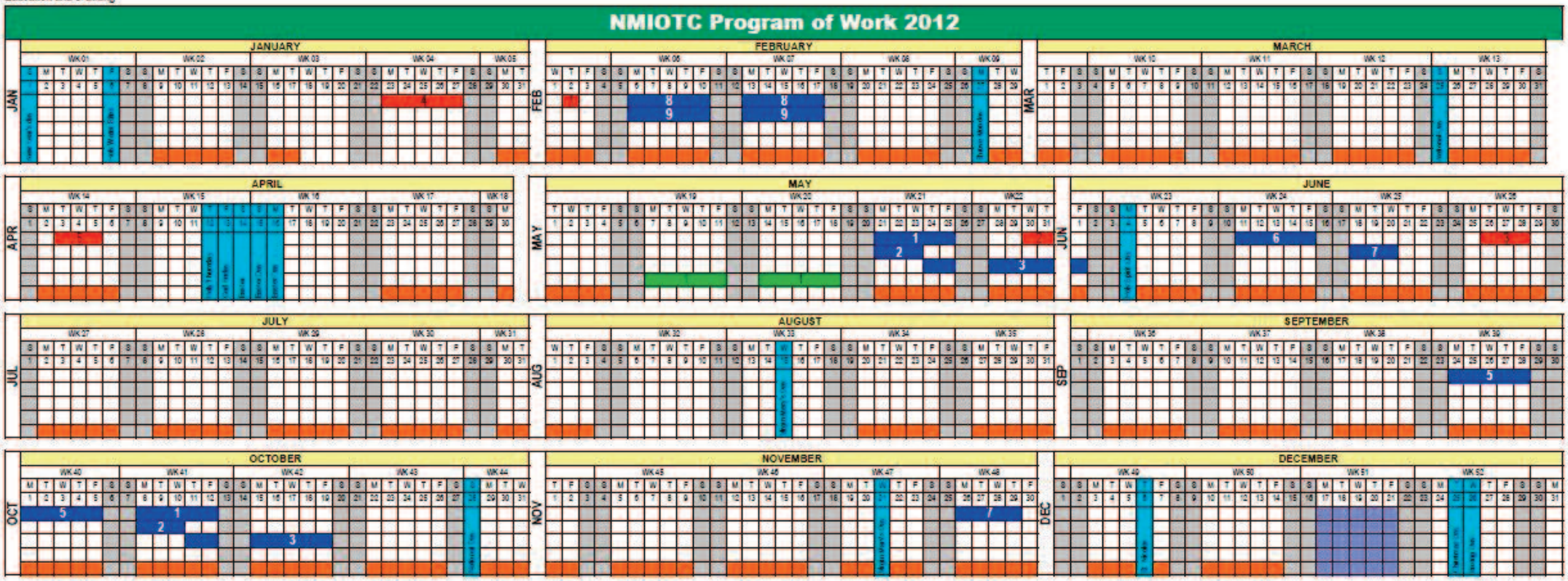
(3) Small Skiff Investigation (Module 7100) - this training was a new procedure for the crew. The teams learned how to approach and investigate a small craft, and how to clear it. This was a last minute addition to the training, well received and implemented.

There was a total participation of twenty-four (24) trainees, who are serving as Boarding Team members onboard their ship.

Despite the port period for replenishment was limited to three (3) days, training was tailored to comply with the requirements of the upcoming deployment. During the training there was full coverage concerning security issues of the trainees and the cooperation and coordination between instructors and trainees were excellent.

***LCdr Alexandru Gobjila** is currently a Counter-Piracy instructor in NMIOTC.During his 13 year carrier he has served on board MCM ships and frigates in the Romanian Navy.LCDR Gobjila is also a qualified English Language instructor.*

NMIOTC Program of Work 2012



LEGEND:

- Conference - Meeting
- Window for Units
- National Holidays
- Evaluation of courses / maintenance
- EXERCISE
- TRAINING

1. NAB (NMIOTC)
2. NCB (HNGS)
3. NMIOTC Annual Conference
4. MAROPS WG Conference (TBC)
5. PHOENIX EXPRESS 12 - FPC

1. PHOENIX EXPRESS (TBD)

1. Course 1000 - Command Team MIO Issues
2. Course 2000 - Boarding Team Classroom Issues
3. Course 3000 - Boarding Team Practical Issues
4. Course 4000 - Final Tactical Exercise (FTX)
5. Course 5000 - Maritime Operational Terminology Course (MOTC)
6. Course 6000 - Weapons of Mass Destruction in MIO Course
7. Course 7000 - Counter Piracy Operations Course (TBC)
   (also available all year upon request)
8. Maritime CBRN Detection, Identification and Control Operational Field Trial (train the trainers course only for ACT and NMIOTC personnel)
9. Training of Norwegian BT (TBC)

► Updated 14 November 2011

► Incremental costs related to participation in the NMIOTC's training programs iaw NMIOTC Directive 60-1 (Change 2) (in use from Jan 1st, 2012)

NMIOTC
Education and Training

"NEVER DECLINE THE DANGERS OF WAR"

NMIOTC Crest Logo

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