

CUTTING THE BOW WAVE



COMBINED JOINT OPERATIONS FROM THE SEA CENTRE OF EXCELLENCE



2012



2011 - 2012 MAJOR PROJECTS

Enhanced Maritime Security Cooperation and Awareness

Provide advice, innovative concepts that deliver coherent solutions in addressing global challenges in maritime security.

Allied Maritime Force Integration and Interoperability

Deliver a commander's handbook to improve integration of forces conducting allied operations and exercises.

NATO Command and Control/Maritime Situational Awareness (MSA)

Provide support and advice to ACT and ACO that energizes the fusion of best practices to meet MSA needs for the Alliance.

NATO Joint Operations on and from the Sea

Deliver an allied joint sea basing concept that encompasses the full range of capabilities maritime forces deliver.

Support to the UN

Provide maritime advice to Department of Peacekeeping Operations in support of ongoing UN operations.

Provide support to ACT, Sponsoring Nations and other customers and COEs:

Maritime Civil-Military Cooperation (CIMIC), Global Commons, Humanitarian Assistance and Disaster Relief (HADR).

Maritime Security Conference 2011

The first combined conference, cosponsored with the Centre of Excellence for Operations in Confined and Shallow Waters in Kiel, Germany, focused on the collaboration between international organizations and regional maritime security organizations that would lead toward a global network for maritime security cooperation.

A Framework for Enhanced International Maritime Security Cooperation

A white paper which will be forwarded to military/international organizations for consideration as a UN resolution.

NATO Guidance for Developing Maritime Unmanned Systems (MUS) capability

The guidance discusses the two primary subsets of MUS (unmanned underwater vehicles and unmanned surface vehicles) and describes the missions currently feasible and the potential for future capabilities.

Amphibious Operations Planning Study to identify TTPs and considerations to mitigate the asymmetric threat

A comprehensive study to identify tactics, techniques and procedures (TTPs) and planning considerations to mitigate security threats and allow for high-tempo amphibious operations on the littoral.

Supporting L.I.F.E.

A Humanitarian Assistance/Disaster Relief (HADR) initiative, the L.I.F.E. (Logistics, Information, Force protection, Expertise) concept provides a structured approach to improve both coordination and cooperation in HADR.

Maritime Security Conference 2012

The event will examine how existing and future maritime security initiatives can be more efficiently aligned to provide seamless interoperability and to develop a road map for operational implementation of an enhanced international framework for maritime security cooperation.



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MESSAGE FROM THE DIRECTOR

Vice Admiral David H. Buss, USN

*Director, Combined Joint Operations
From the Sea Centre of Excellence*

In September 2011, I took the helm as Director, CJOS COE from VADM Dan Holloway as part of the merger of Second Fleet into U.S. Fleet Forces Command.

I have long been aware of CJOS COE's reputation as an organization at the forefront of NATO transformation and innovation, not least of which from my time as Commander, Carrier Strike Group 12 based in Norfolk, VA from 2009-2010. It was therefore a pleasure for me to take over as the Director and to support the great contribution the Centre is making to the international maritime community at large.

Since becoming the Director, I have been routinely impressed with the value the COE brings to our sponsoring nations, NATO entities, and all of our customers. Core to the success of CJOS COE is the utilization of the vast experience from a diverse staff of professionals capable of generating comprehensive solutions to complex problems, leveraging each member's unique skills from their respective country in a collaborative environment. This fusion of intellectual energy sparks innovation in joint maritime expeditionary operations, interoperability, and maritime security which is then captured, analyzed, reviewed, and validated for publication, education, and/or training.

We continue to work closely with NATO, strengthening existing partnerships and expanding our relationships with new international partners. Our Programme of Work supports NATO's transformational goals and is focused on supporting NATO's Strategic Concept and Alliance Maritime Strategy. We have much work to do... so let's get to it! I am proud to be your shipmate.

Director's Vision

To become the pre-eminent source of innovative specialist advice and recognized expertise on all multi-national aspects of combined joint operations from the sea in support of the sponsoring nations, NATO, and other allies.

Our Mission

Working in conjunction with the Commander, U.S. Fleet Forces Command Staff, the CJOS COE will provide a focus for the sponsoring nations and NATO in improving allied ability to conduct combined joint operations from the sea in order to ensure that current and emerging global security challenges can be successfully solved.

Who We Are and How We Accomplish Our Mission:

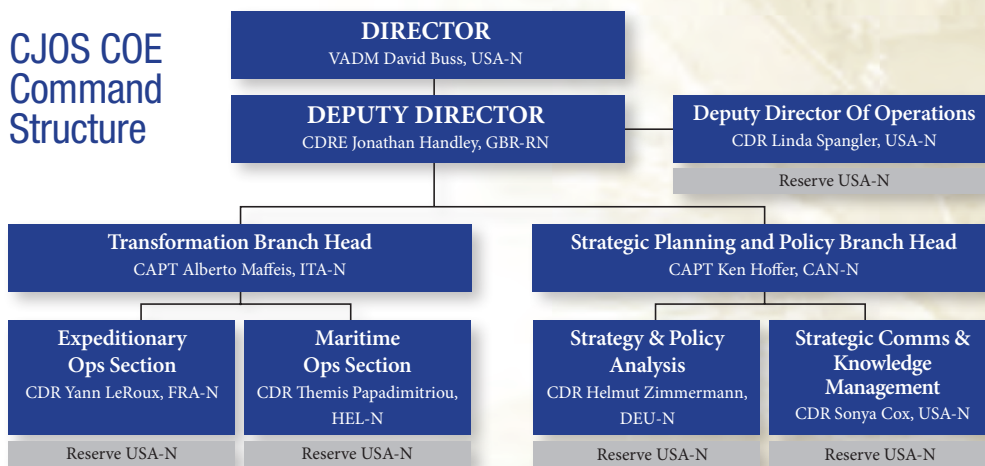
In May 2006, the Combined Joint Operations from the Sea, Centre of Excellence (CJOS COE) was established to provide a focal point for Joint Maritime Expeditionary Operations expertise for allied nations. Headquartered in Norfolk, Virginia, CJOS COE is comprised of representatives from 13 nations and is the only NATO accredited Centre of Excellence within the United States. Furthermore, it is the only COE to completely integrate its host nation's reserve force that has added tangible cost-effective results and flexibility into our business model. By leveraging the Naval Reserve's, the organization not only gains a force-multiplier capability, but also builds bridges to civilian networks of non-military actors crucial in supporting a comprehensive approach to maritime security solutions. We are one of 16 NATO accredited COEs worldwide, representing a collective wealth of international naval experience and expertise. CJOS COE draws on the knowledge and capabilities of U.S. Fleet Forces Command within its shared headquarters, as well as neighboring U.S. commands to promote common "best practices" within the Alliance, and to aid NATO's transformational goals with respect to maritime-based joint operations. We cooperate closely with Allied Command Transformation (ACT), other maritime COEs, NATO Joint Force Commands, and various national commands. Our value is achieved by shortening NATO decision cycles between the COE staff and individual Sponsoring Nations' key experts by setting up focal points of contact within nations.



U.S. Fleet Forces Command and U.S. SECOND Fleet— Post Merger:

As of September 30, 2011, U.S. Second Fleet Headquarters was disestablished and merged with U.S. Fleet Forces Command. CJOS COE is now integrated into the U.S. Fleet Forces Command construct, intact and fully operational. CJOS COE's Programme of Work is on course to address several high visibility efforts in 2012 such as improving allied interoperability, delivering a concept for an enhanced 'global maritime security network', securing access to the global (maritime) commons in concert with the U.S. Joint Staff, building a NATO Guide on Maritime Unmanned Systems, and delivering more effective Humanitarian Assistance/Disaster Relief in response to natural disasters and complex emergencies.

CJOS COE Command Structure



How We Are Tasked:

Shortfalls in current maritime capabilities/procedures are identified by ACT and NATO, who then request CJOS COE's support as reflected in our Annual Programme of Work (POW), which is approved by the Steering Committee. CJOS COE's POW 2012 contains a wide spectrum of proposals with strong focus on interoperability of global allies, maritime security initiatives, and working to deliver coherent operational Concept of Operations (CONOPS). Our aim is to become a pre-eminent source of innovative military advice on combined joint operations from the sea. We continue to raise our profile by collaborating with high profile institutions, publishing high quality, well researched products, and validating them through experimentation and exercise. This is made possible through our close relationship with U.S. Fleet Forces Command who provides the appropriate validation opportunities, thus maximizing the benefit of our unique position embedded in a USN 4 Star command. We continue to work with non-military entities to leverage knowledge expertise and to share best practices on maritime issues which further enhance global maritime security partnerships. ■





MESSAGE FROM THE DEPUTY DIRECTOR

Commodore Jonathan Handley, GBR-N

*Deputy Director,
Combined Joint Operations From the Sea
Centre of Excellence*

2011 has been another highly productive year for CJOS COE. We have published more products than ever before, supported more maritime exercises and training events and actively promoted more Allied Command Transformation (ACT) initiatives. In addition, our stakeholder support has increased as has our subject matter knowledge network, helped by our merger into the 4 star U.S. Fleet Forces Command. Furthermore, we have reorganized CJOS COE to provide greater coherence in the delivery of products through a more defined and responsive command structure and a totally integrated U.S. Naval Reserve component. Collaboration with other COEs, NATO entities and international institutions has also been a focus area this year, which has paid dividends in both the quality of our products and their acceptance within the broader maritime community. As we look toward future transformational capabilities between Allies and partners, being innovative in thought and action is critical! These elements are essential to the realization of our CJOS vision of being the preeminent source of innovative specialist advice and expertise on all multinational aspects of Combined Joint Operations from the Sea in support of the Sponsoring Nations, NATO and other allies.

Whilst COEs are NATO accredited and coordinated through ACT's Transformation Network Branch, they are not part of the NATO command structure, thus enabling them the intellectual freedom to independently address perceived capability gaps, work unhindered with international organisations and develop leading edge doctrine. The CJOS COE strongly encourages the spreading of best practices, forging closer ties amongst maritime-related institutions and organizations, while remaining focused

on transformation within the like-minded maritime community. Through our products (including conferences and exercise support) and our extensive networks, we aim to enhance NATO's reputation on the global stage, especially with important institutions such as the United Nations (UN), the International Committee of the Red Cross (ICRC) and the European Aide and Civil Protection organization (ECHO).

Our standard operating protocol is to address pressing issues of concern amongst our stakeholders and provide them with carefully researched, relevant and cutting edge useable products on time. Our top priority this year has been strengthening the Alliance's capability to work together at sea. Commander Themis Papadimitriou (GRC-N) and his interoperability team have deployed to various NATO ships, including those in the U.S. Navy providing their warfare experience and expertise to ensure quick and effective integration of units into battle winning forces. All the lessons and recommendations, from preparation to execution have been compiled into an Allied Interoperability Handbook that is now provided to warships on either side of the Atlantic prior to their deployment to work together. This is already paying dividends by giving command teams a clear idea of the challenges they are likely to encounter when operating with other navies which thus shortens the period required for initial force integration.

Several of our efforts over the past year can be grouped into core tasks. One of these is Maritime Security where projects take into consideration NATO's efforts to implement a comprehensive approach. In 2010, the CJOS COE partnered with ACT to write the Allied Maritime Strategy (AMS), Maritime Security Operations (MSO) concept and the Maritime

Situational Awareness (MSA) doctrinal papers. Building on this partnership and some previous work, the CJOS COE has collaborated with ACT and stakeholders, including the International Maritime Organization, to create a vision for strengthening global maritime security. The CJOS COE's strategic white paper encapsulating this concept entitled "A Framework for Enhanced International Maritime Security Cooperation and Awareness", is the underlying framework for the maritime element of the US and German co-led Multinational Experiment Seven (MNE-7) "Access to the Global Commons" Maritime Domain study, as part of the U.S. Joint Staff's J7 experimental programme. Commander Jose Martin (ESP-N) and Commander "PJ" Cummings (USA-N), core members of the concept writing team, are leading this effort on behalf of the CJOS COE. Both are committed to developing two regional case studies, West Africa and Singapore, that will be included as part of the concept framework. The MNE-7 team intends to use these studies to form the basis of an experiment; the results of which we look forward to seeing in late 2012.

Continuing on the theme of Maritime Security, we held our first combined Maritime Security Conference (MSC) in May. This event was co-sponsored with the COE for Operations in Confined and Shallow Waters (COE CSW) and held in the historic city of Kiel, Germany where they are based. This joint effort between the two COEs was an unequivocal success in large part due to the leadership of Captain Ken Hoffer (CAN-N) and Commander Ted Garrett (CAN-N) who planned and ran the event with outstanding support and cooperation from the COE CSW conference team. The theme for the conference was "Delivering Maritime Security



CJOS COE Team

and Safety in Global Partnership: Creating a Strategic Framework for Maritime Security Cooperation”. Over 30 distinguished speakers from military and civilian organizations addressed attendees comprising of some 180 delegates from 26 nations. The conference was structured around four objectives: governance to implement common security measures, consolidation of legal strategies, developing a comprehensive international and interagency approach to maritime situational cooperation and awareness, and establishing overarching standards to facilitate data sharing technologies and infrastructure. Amongst the many leading organizations presenting were the International Maritime Organization and the International Chamber of Shipping, both present to ensure we achieved a truly comprehensive approach to our efforts. The key conference takeaways have been incorporated into a revised white paper which will be used, together with the deliverables from the MNE 7 work, to form the basis for the next Maritime Security Conference scheduled to be held in Halifax, Nova Scotia, Canada, 4-7 June 2012.

Maritime Unmanned Systems have been another central theme this year given the immense potential these craft bring to the joint operating environment. As I realized after an eye opening visit to the NATO Undersea Research Centre in La Spezia, Italy, they don't just replace man in the dull, dirty and dangerous environment,

they are force multipliers and allow navies to do things they have hitherto been unable to accomplish. Under the leadership of Captain Alberto Maffei (ITA-N) and Colonel Antonio Evangelio (ITA-AF), the CJOS COE has developed a 'NATO Guidance for Developing a Maritime Unmanned Systems (MUS) Capability' which in October, I had the privilege of presenting to the Military Committee in Lisbon, Portugal as part of Supreme Allied Command Transformation's (SACT) annual activity update. As a result, General Stephane Abrial, SACT, has been asked by the Committee to forward this guidance to the Military Committee so that a vision for NATO can be written to steer nations as to how best this new technology can be taken forward to benefit the Alliance. A common approach is key to ensure systems are interoperable as well as to capitalize on the NATO Secretary General's Smart Defence initiative.

Lack of publicity of the utility of COEs is a recurring frustration amongst fellow COE Directors and Deputy Directors. Consequently, this year Captain Ken Hoffer (CAN-N) and Commander Sonya Cox (USA-N) have published a CJOS COE Corporate Communications Plan to better showcase the organisation and allow potential customers to become more acquainted with our available expertise and products. As a direct result of this plan, Commander Ionel Zibileanu (ROU-N) completely revised the

CJOS COE's website located at www.cjoscoe.org, which provides an automated, organized, and easily accessible medium to gather information about our organization.

Using the extensive talent pool and international experience of the CJOS Staff members, we have directly supported both the U.S. and international organizations in the planning and execution of exercises and training events throughout the year. Specific highlights include; contributing staff to the Joint Task Force Exercise with Strike Force NATO in preparing USS GEORGE H. W. BUSH (CVN 77) for her first overseas deployment, supporting the U.S. Joint Forces Staff College and ACT in four Purple Solace inter-agency exercises (dealing with complex emergencies and the military's support to delivering humanitarian aid and assistance). Here, amongst others, Commander Helmut Zimmermann (DEU-N), Commander Yann Le Roux (FRA-N), and Lieutenant Colonel Gary Yuzichuk (CAN-A) served as expert panelists and exercise moderators. During PANAMAX 2011 in August, an annual U.S. SOUTHCOM sponsored multinational exercise series, Colonel Antonio Evangelio, (ITA-AF), Lieutenant Colonel Gary Yuzichuk (CAN-A) and Commander Sonya Cox (USA-N) provided onsite land and cyber operations support. In September, Commander Mark Coffman (USA-N), Commander Yann Le Roux (FRA-N) and Warrant Officer Tim Lever (GBR-M) acted as

DEPUTY DIRECTOR'S MESSAGE

lead planners for the French, Russian, United Kingdom, and United States (FRUKUS) two week interoperability exercise aimed at improving maritime security through open dialogue and mutual cooperation. One of the CJOS' mid-term goals is to make further use of experimentation and exercises to enhance maritime interoperability and strengthen the Atlantic bridge.

This year we have also expanded our work with international organizations, in particular the UN. In January, under the supervision of Commander Ove Nyaas (NOR-N), we were asked to provide the Department of Peace Keeping Operations (UN DPKO) with a recommended structure for the maritime component of the UN's mission in Lebanon (UNIFIL). From the success of this work we were then requested to provide a generic command structure for a UN operation with a dominant maritime component. In the area of Humanitarian Aid and Disaster Relief, Commander Yann Le Roux's (FRA-N) work from last year and the lessons he learned from his time in Haiti, he has developed a practical concept. Supporting LIFE, (LIFE an acronym standing for Logistics Information,

Force Protection and Expertise, all the elements that the military can provide to support humanitarian efforts) is being widely acknowledged by a number of international agencies, most notably UNOCHA, ICRC and ECHO. Given the external demand for information and briefing on this excellent initiative, Lieutenant Colonel Gary Yuzichuk (CAN-A) has joined Yann's team.

These are just some of the highlights of a busy and productive year. The CJOS COE is a robust team of professionals, with varying backgrounds, experiences, and technical aptitude, ranging from expeditionary warfare to logistics, across both active and reserve components. As a collective, they form CJOS COE and I am absolutely confident that our work in Maritime Security, Interoperability, Maritime Unmanned Systems, Humanitarian Assistance and Disaster Relief (HADR), and Expeditionary Operations contributes to a safer and more collaborative maritime security environment. We also have a rapidly expanding network into academia, industry and military and civilian organizations. This keeps us at the cutting edge of innovative ideas.

In November, the CJOS COE Steering Committee approved our 2012 Programme of Work, a challenging collection of projects sure to deliver an even stronger NATO and contribute to a safer and more secure international maritime environment. It is a great honour to be the Deputy Director of such a dynamic and forward leaning organization that plays such a prominent role in meeting the wide range of security challenges that we face today and are likely to see in the future. ■



CJOS COE Reserve Component Team

COMBATING MARITIME PIRACY:

Inter-Disciplinary Cooperation and Information Sharing

Yaron Gottlieb
Senior Counsel,
Office of Legal Affairs
ICPO-INTERPOL

In recent years, maritime piracy has reemerged as a serious threat to peace and security, notably following the significant increase in piracy incidents off the coast of Somalia. To fight maritime piracy, inter-disciplinary cooperation is necessary, specifically cooperation among entities with expertise in different disciplines. Within this application of a holistic inter-disciplinary paradigm, the law enforcement angle must not be overlooked, and INTERPOL's tools and services can and should be used to assist in the prevention, investigation, and prosecution of cases related to maritime piracy.



Combating Maritime Piracy: The duty to cooperate and to share information

Combating maritime piracy requires commitment and active engagement by States, as indicated by Mr. Helmut Tuerk, the honorable judge of the International Tribunal for the Law of the Sea: "Every State not only has a right, but also a duty, to take action to curb piratical activities."¹ States are expected to take measures on both the domestic level — for example, by bringing to justice those who committed, facilitated or otherwise supported acts of maritime piracy — and the international one. International conventions clearly establish the duty of cooperation in the context of combating maritime piracy. Notably, Article 100 of the United Nations Convention on the Law of the Sea (UNCLOS), entitled "Duty to cooperate in the repression of piracy", specifies that:

"All States shall cooperate to the fullest possible extent in the repression of piracy on the high seas or in any other place outside the jurisdiction of any State."²

Whatever the specific measures are, there should be little doubt that information exchange is vital to ensure successful international cooperation. Moreover, restrictions on information exchange deriving from classification rules — while may be justified for the operations of navies during wartime or in preparation for military activities — should be reconsidered and ideally be removed when the navies carry-out

operations of law enforcement such as counter-piracy activities.

The Nature of Cooperation: A call for a holistic inter-disciplinary cooperation

Having established the existence of a general duty to cooperate and to share information, consideration should be given to the nature of the required cooperation in combating maritime piracy. Specifically, it is proposed to depart from traditional concepts related to crime prevention and adopt a holistic inter-disciplinary paradigm for cooperation.

Traditionally, governmental authorities and international entities operating in different fields have carried out their missions virtually independently of each other: police engage in purely police work, military engage in purely military operations and so on. The level of cooperation between these entities and the private sector has frequently been insignificant, if not almost non-existent.

Nonetheless, the risks posed to our societies by maritime piracy require adjustment on two levels: first, substantive changes are necessary, namely with regard to the type of tasks carried out by each actor, and second institutional — or, more precisely, inter-institutional — adjustments are required. There is a need to instill a holistic approach — and to establish cooperation among agencies and institutions whose role, mandate, and general activities may often be significantly different from one another.

The law enforcement angle

Considering that maritime piracy constitutes a crime, it may be interesting to note that during the first stages of creating mechanisms and networks to combat maritime piracy off the coast of Somalia, the law enforcement angle was somewhat overlooked.

As an example, the first eight Resolutions on the situation in Somalia, adopted by the UNSC between May 2008 and November 2010,³ did not specifically address the role of law enforcement agencies. It was not until Resolution 1950 that a clear reference was made to organizations such as INTERPOL and Europol in the fight against maritime piracy.⁴ This was particularly surprising since the guidelines for involving police

* Senior Counsel, Office of Legal Affairs, ICPO-INTERPOL. This paper is based on a presentation made at the 1st Combined Maritime Security Conference (MSC 2011), held in Kiel, Germany, 2-5 May 2011. The full version of this paper is available on INTERPOL's website at <http://www.interpol.int/Crime-areas/Maritime-piracy/Maritime-piracy>.

1. Helmut Tuerk, "Combating Terrorism at Sea- The Suppression of Unlawful Acts against the Safety of Maritime Navigation", 15 U. Miami Int'l & Comp. L. Rev. 337, 342.

2. Article 100 of the United Nations Convention on the Law of the Sea, December 10, 1982, 1833 U.N.T.S. 397, 21 I.L.M. 1245 [hereinafter "UNCLOS"].

forces in combating maritime piracy had already been put in place when the situation off the coast of Somalia began to deteriorate.⁵

By not considering the potential in engaging the law enforcement community at an early stage, a number of difficulties emerged, particularly with regard to facilitating the prosecution of pirates. Naval forces do not necessarily have the tools or the expertise to gather the relevant evidence necessary for prosecution. In addition, they generally do not have criminal databases where important data such as personal information on suspects, finger prints, and DNA can be stored and compared to existing data. These expertise and tools are at the core of law enforcement activities and international police cooperation.

INTERPOL's role in combating maritime piracy

INTERPOL is the world's largest international police organization,⁶ and its role is to facilitate cross-border police cooperation as well as to support and assist all organizations, authorities and services whose mission is to prevent or combat international crime.⁷

INTERPOL has created a global police communications system, known as I-24/7, which enables police in all member countries to request, submit and access vital data instantly in a secure environment; put in place databases that include information such as fingerprints, DNA profiles, and stolen or lost travel documents; and provided law enforcement officials in the field with emergency support and operational activities. INTERPOL's Command and Co-ordination Centre, which operates on a 24/7 basis, can deploy an Incident Response Team to the scene of a serious crime or disaster. Finally, INTERPOL provides police training and development.

Combating maritime piracy naturally falls squarely within INTERPOL's mandate. In 2005, INTERPOL signed a cooperation agreement with the International Maritime Organization (IMO), according to which both Organizations agreed to exchange information related to unlawful acts against the safety of maritime navigation and in combating, among other things, piracy and armed robbery against ships.⁹ In 2008, following the sharp rise of piracy activities off the coast of Somalia, INTERPOL joined the efforts of the international community to curb that phenomenon. In January 2010, a dedicated Maritime Piracy Task Force was established by INTERPOL.¹⁰ In collaboration with INTERPOL's Members, international organizations, naval forces, and the private sector, the Task

Force focuses its activities on enhancing evidence collection; facilitating and encouraging information exchange; building regional investigatory capabilities; and exchanging counter-maritime piracy ideas through conferences and meetings.¹¹

From a legal standpoint, a question arose on whether cooperation between INTERPOL and naval forces is permitted in light of Article 3 of INTERPOL's Constitution, according to which "It is strictly forbidden for the Organization to undertake any intervention or activities of a political, military, religious or racial character."¹² After careful examination it was concluded that so long as the purpose and nature of the cooperation concern law enforcement activities such as identification of suspected pirates, Article 3 does not impede cooperation with naval forces and with organizations such as NATO.¹³

INTERPOL has identified three potential modalities to enhance maritime information sharing under the legal framework that governs the processing of data via INTERPOL's channels. The first is communication through the INTERPOL focal points, called National Central Bureaus (NCB), established in each Member. Based on this modality, which has already been put in place, information gathered by the naval forces is forwarded to the national police authorities and from there to the country's NCB, which is in charge of communicating the information to other NCBs and to INTERPOL's General Secretariat. The second modality enables direct communication between naval forces and INTERPOL, if an NCB requests an extension of the I-24/7 communication system to the naval force of its country and in accordance with the conditions laid out by that NCB. Finally, the third modality enables the exchange of information between INTERPOL and another international organization with which INTERPOL has concluded an agreement, in a manner similar to the one provided in the cooperation agreement between INTERPOL and the IMO.

Conclusion

Maritime piracy poses numerous challenges for the international community. To successfully overcome those challenges it is important to recognize – and implement – the duties to cooperate and share information. It is further imperative to implement a holistic inter-disciplinary paradigm and to make full use of existing law enforcement tools and services such as those provided by INTERPOL. ■

3. The first UNSC Resolution addressing the threats posed by maritime piracy off the coast of Somalia was UNSC Resolution 1814 (S/RES/1814 (2008), adopted on 15 May 2008). It was followed by the following seven Resolutions adopted by November 2010: Resolution 1816 (S/RES/1816 (2008), adopted on 2 June, 2008), Resolution 1838 (S/RES/1838 (2008), adopted on 7 October 2008), Resolution 1844 (S/RES/1844 (2008), adopted on 20 November 2008), Resolution 1846 (S/RES/1846 (2008), adopted on 2 December 2008), Resolution 1851 (S/RES/1851 (2008), adopted on 16 December 2008), Resolution 1897 (S/RES/1897 (2009), adopted on 30 November, 2009), and Resolution 1918 (S/RES/1918 (2010), adopted on 27 April, 2010).

4. See UNSC Resolution 1950 (S/RES/1950 (2010), adopted on 23 November 2010). In this Resolution, the Security Council underlined the importance of continuing to enhance the collection, preservation and transmission to competent authorities of evidence of acts of piracy; welcomed the ongoing work of IMO, INTERPOL and industry groups to develop guidance to seafarers on preservation of crime scenes following acts of piracy; and urged States, in cooperation with INTERPOL and Europol, to further investigate international criminal networks involved in piracy off the coast of Somalia, including those responsible for illicit financing and facilitation.

5. See, for example, the Code of Practice for the Investigation of the Crimes of Piracy and Armed Robbery adopted by the International Maritime Organization (IMO) in Nov. 2001. Among the points included in that Code were the following: It is important to involve relevant organizations (e.g. INTERPOL) at an early stage; Evidence accumulated from different cases may create opportunities to identify offenders; Appropriate databases should be searched; and the importance of contacting INTERPOL for information on the offenders (e.g. prior convictions).

6. As of September 2011, INTERPOL has 188 Members - See INTERPOL's website at <http://www.interpol.int/Member-countries/World>.

7. See INTERPOL's website at <http://www.interpol.int/About-INTERPOL/Overview>. INTERPOL's aims are defined in Article 2 of INTERPOL's Constitution as follows:

"(1) To ensure and promote the widest possible mutual assistance between all criminal police authorities within the limits of the laws existing in the different countries and in the spirit of the 'Universal Declaration of Human Rights';

(2) To establish and develop all institutions likely to contribute effectively to the prevention and suppression of ordinary law crimes." - see INTERPOL's website at <http://www.interpol.int/About-INTERPOL/Legal-materials/The-Constitution..>

8. For further information regarding INTERPOL's priorities see INTERPOL's website at <http://www.interpol.int/About-INTERPOL/Priorities..>

9. See Article 2 of the Agreement of Cooperation between the International Maritime Organization and the International Criminal Police Organization – INTERPOL, available on INTERPOL's public website at <http://www.interpol.int/About-INTERPOL/Legal-materials/International-Cooperation-Agreements>. The Agreement came into force on 20 February 2006.

10. "INTERPOL to create task force against maritime piracy, landmark maritime piracy financing conference hears", 19 January 2010, available on INTERPOL's website at <http://www.interpol.int/News-and-media/News-media-releases/2010/PR004>.

11. See INTERPOL's website at <http://www.interpol.int/Crime-areas/Maritime-piracy/Maritime-piracy>.

12. See INTERPOL's Constitution, supra note 7.

13. For further discussion regarding the interpretation of Article 3 of INTERPOL's Constitution in the context of combating maritime piracy see Yaron Gottlieb, "Article 3 of Interpol's Constitution: Balancing International Police Cooperation with the Prohibition on Engaging in Political, Military, Religious, or Racial Activities", 23 Fla. J. Int'l L. (forthcoming 2011).

INFORMATION SHARING IN THE NATO MARITIME ENVIRONMENT:

Executive Summary

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In 2008, the Military Committee (MC) tasked Headquarters, Supreme Allied Commander Transformation (HQ SACT) to develop a Maritime Situational Awareness (MSA) Concept. Simply, MSA is awareness of the maritime operating environment at any given moment. This tasking included a Legal Study as one of seven study areas. The goal of the Legal Study is to strengthen NATO MSA by examining legal and policy constraints on maritime information sharing. The study focuses on information required for effective MSA, including how information is generated, controlled, used, and distributed. This Legal Study Report provides recommendations for the future of MSA.

MSA effectiveness arises from four related components: (1) a timely and sufficient stream of information; (2) adequate technology to process the volume of information received; (3) a suitable number of trained analysts to assess the operational implications of the information; and (4) flexible arrangements for coordinating and sharing with stakeholders. The study focused on factors (1) and (4).

MSA requires two sets of data for information superiority. The first is routine information needed every day to create an acceptable steady-state maritime picture, whereas the second is information needed during times of increased danger. When a threat or crisis looms, information is shared readily among nations. However, when operational tempo is slow and steady, the information flow subsides. During this time, an accurate picture must still be maintained. The Legal Study Team (LST) sent out two Information Requests (IRs) asking nations if they are willing and able to share specific maritime information identified as necessary by the NATO maritime component commands. The LST has maintained continuing dialogue with the nations throughout the 18 month study. In addition, the LST visited and conferred with the maritime component commands and attended MSA and other maritime-related conferences in order to liaise with a broad spectrum of the maritime community. All 28 nations responded to the first IR; 23 responded to the second IR.

The LST found that all NATO Nations have the capacity to share some maritime information with NATO; it also found that NATO is missing certain maritime information that could increase its MSA. The national responses suggest two patterns: (1) certain nations are more prone to cite constraints than others, and (2) certain information requirements consistently trigger constraints. As a whole, obstacles to data-sharing involve legal, policy or classification issues. In a few cases, nations could not share due to geographic or capability limitations or because they do not collect the information requested.

Three categories of legal issues affect MSA information sharing: (1) limitations imposed by privacy and data protection laws, (2) legal obligations from contractual provisions, i.e. commercial confidentiality, and (3) limitations due to pending civil or criminal investigations or litigation.

Nations cite policy as a reason not to share information in almost every information requirement. In fact, more nations cited policy as a limiter to information sharing than any other reason. An analysis of national responses reveals that policy limitations are related to trust and center around reciprocity, need-to-know, and the protection of classified material or sensitive sources.

Classification issues affect the responses of seven nations. Existing NATO security agreements should be sufficient to provide adequate protection and safeguards to allow nations to share this information with the maritime commands.

The Legal Study also researched existing information sources with worthwhile systems, procedures, and information: (1) regional data-sharing arrangements, (2) law enforcement mechanisms, (3) European Union (EU) initiatives and systems, and (4) shipping companies. Cooperation with these entities could increase Alliance MSA.

As with any multinational coordination project, the LST encountered challenges during the course of its work. Ironically, these challenges echo the same challenges that MSA itself faces: lack of communication, lack of coordination, and mindsets oriented toward

prohibition rather than permission.

The LST analysed all national responses and concluded as follows:

1. NATO Nations are generally willing and able to share maritime information with NATO.
2. MSA is not yet a priority for all NATO Nations or NATO.
3. Legal issues do not present a significant barrier to information sharing.
4. Policy considerations do present a significant barrier to information sharing.
5. NATO can benefit from existing information-sharing partnerships.
6. Maritime sharing protocols must be clear.
7. Infrastructure and technology must support MSA.
8. Nations must adopt a "green light" approach to information sharing.

Many of these issues presented in these conclusions could be resolved by implementing the following recommendations:

1. Create a strategic communication plan to promote awareness and understanding of MSA.
2. Establish MSA points of contact in NATO Nations.
3. Train and exercise MSA.
4. Seek commitments to share information about national Vessels of Interest.
5. Develop, maintain, and advance technology.
6. Approve an INTERPOL pilot project and consider other relationships with law enforcement agencies.
7. Establish relationships with existing maritime information-sharing organisations.
8. Coordinate with the EU.
9. Update existing policies and procedures that affect MSA.
10. Create an MSA Working Group for Phase II.

This study is a first step towards identifying impediments that prevent NATO Nations from sharing information with NATO. ■

THE RISE OF ANTI-ACCESS/ AREA DENIAL (A2AD) AMBITIONS and the Need for Maritime Cyber Security

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In a globalized world, the free flow of people, goods, capital, resources, and information is essential for prosperity, stability, and world order. But in the 21st century, this freedom will come under pressure from different trends that encroach upon the global commons of sea, air, space, and cyberspace. Among others, these trends include the global shift of power from a system with a more or less coherent leadership center to a diffuse multipolar framework, the challenge of a growing world population, the need for access to fossil and mineral resources, growing demand for nutrition, and the likely impact of global climate change.

A2AD vs. freedom of the global commons

Against this background, every nation wanting to exert strategic influence will develop a substantial interest in assuring unrestricted access to maneuverability within, and use of the global commons. This, however, will prompt anti-access and area denial (A2AD) strategies as counter-reactions. Right now, the debate about adversarial A2AD capabilities focuses on hard power. In the maritime context, fleet modernization programs and investments in specific weapon systems obviously take center stage. But if we look at A2AD from a more strategic perspective, we realize that a much more comprehensive approach is needed to fully address the effects of adversarial A2AD capabilities on our freedom of action and on the likely avenues for our own A2AD ambitions to contain adversarial maneuverability. In order to fully leverage the potential of A2AD as a strategic concept,

we need to think about the proper role of other instruments of power, such as diplomacy, economics, and the ability to influence and shape public opinion.

Seen from this perspective, cyber power is the quintessential A2AD capability, in particular in the maritime domain. Traditionally, maritime thinking has been informed by the freedom of the High Sea. In addition to the above-mentioned trends, next generation cyber technologies are shaping the way in which the global maritime domain is used. Today, computing power and interconnectivity are ubiquitous. As a consequence, cyber capabilities have become an integral part of naval operations, rendering them almost impossible without cyber security.

As A2AD is on the rise, maritime cyber security is needed to address the conceptual and operational consequences of the interplay between maritime security and cyber security. In light of the strategic importance of A2AD, maritime cyber security must be interpreted as a two-way concept. On the one hand, it is obvious that cyber insecurity can be exploited to affect all military and civilian actors operating in the maritime domain; this can help achieve adversarial A2AD ambitions. On the other hand, maritime disorder can affect cyber security, thereby serving A2AD interests as well. Let's look at this idea first.

The impact of maritime disorder on cyber security

When considering the relevance of maritime security for cyber security, three aspects are important. First, undersea communication

cables are absolutely vital because they handle almost all of the world's intercontinental digital traffic.¹ Interruptions caused by technical failure, natural hazards, or man-made attacks seriously hamper global connectivity. In addition, cyber security is not only about software, it is also about hardware. In order to produce high-end components, resources are needed. Resources as well as hardware components depend on accessible shipping lanes to reach designated target markets. Finally, the long-term prospect of rising sea levels can have a negative effect on physical cyber infrastructures, such as the landing points of global undersea communication cables, vital onshore connection points, and other infrastructure elements of the global communications industry.

These examples make it clear that maritime order along key global shipping lanes is vital to ensure the uninterrupted supply of the global cyber industry. Acknowledging this fact opens new avenues to think about the contribution of maritime security to advance cyber security. First, naval diplomacy can be very instrumental in advancing peaceful solutions to territorial disputes that could affect cyber infrastructure at sea.² Joint naval operations to fend off threats against vital global sea-lanes play a very important role already today. When it comes to underwater activities that could affect undersea communication cables, technical solutions such as advanced sensors, unmanned intelligence collection devices, pattern recognition, anomaly detection, and underwater situational awareness can provide real added value. This also holds

true for naval hydrographic capabilities, that provide early warning information on natural hazards affecting physical cyber infrastructures.

The impact of cyber insecurity in maritime security

This leads us to the impact of cyber insecurity on maritime security. From a conceptual point we should differentiate between technical vulnerabilities and different stakeholders affected by these vulnerabilities. Let's start with the technical aspects.

The most obvious target for cyber attacks is the C4ISTAR value chain. By deliberately disturbing, intercepting or taking out this key functionality, naval actors can be cut off and blinded with serious effects for the provision of Maritime Domain Awareness (MDA). Closely related to MDA are vital functions, such as identification, navigation, and positioning. In addition, electromagnetic clutter can be used to hamper the effective engagement of specific targets. Nations with explicit A2AD ambitions are very likely to use these attack vectors in future naval scenarios. Effector systems such as offensive and defensive weapon systems are additional elements likely to attract the interest of cyber villains. By targeting these elements, cyber attacks could debilitate one's ability to react at all, thus rendering potential contributions by naval assets null and void. Finally, we should also not forget the power management and distribution systems of naval platforms. Attacks against these systems could bring naval platforms to a standstill and limit their maneuverability to a significant extent.

In one way or another, all of these technical vulnerabilities will be relevant for all stakeholders acting within the global maritime domain. Naval forces might be obvious targets to look at, but given the importance of the maritime domain for global trade and resource, exploitation of other actors must not be neglected:

- Exploiting cyber vulnerabilities in the naval environment serves different purposes. Adversaries could have an interest in inhibiting one's own maneuverability, undermining the ability to deliver precision affects, and taking out naval support for force elements operating in other domains. In this regard, current concepts of seabasing might be especially vulnerable to cyber attacks, because sea-bases are high-value targets.

Using cyber attacks to render sea-bases ineffective deprives a nation of the benefits offered by prepositioned naval elements.

- Cyberspace could also be used to conduct malicious activities against coast guards, border control, and customs units. In these cases, camouflage and concealment might be the main motives of criminals and other non-state actors engaged in illicit trafficking of goods and human beings.
- More than ninety percent of world trade is carried out by sea. Given the enormous importance of maritime trade, it is surprising that the global maritime supply chain has not fallen victim to large-scale cyber attacks. Cyber-related vulnerabilities include information management systems needed to handle almost any harbor operation, vessel traffic systems needed to manage maritime trade flows, communication systems to operate fleets, and global positioning systems. Numerous initiatives such as the International Ship and Port Facility Security Code and others have been launched to advance physical safety and security. But cyber security, the Achilles Heel of maritime trade, seems conspicuously missing from these initiatives.
- Finally, cyber risks also pertain to actors exploiting maritime reserves such as fisheries and the global energy and extractive resources industry. Offshore natural reserves such as oil, gas, or manganese nodules are increasingly attractive, but exploitation takes place in an environment that is technically challenging. Cyber attacks against the respective exploitation platforms, some of them installed on the seabed, would create serious environmental and reputational damages. Given the very specific A2AD interests of certain actors operating in contested areas, it cannot be ruled out that these kinds of activities will gain in importance in the future.

Addressing the maritime domain's cyber vulnerabilities will require a comprehensive approach. Military and civilian, public and private actors will need to join forces in analyzing existing vulnerabilities, likely cascading effects, and the role of each stakeholder in remedying existing shortfalls. Joint assessments of the global maritime supply chain, for example, are obvious "low hanging fruit" to be picked for public-private cooperation.

These analyses would help advance mutual understanding of the very specific cyber risks each partner needs to tackle. In addition, cyber vulnerability analyses could also reveal how international safety and security regulation should be adapted and further developed. All maritime stakeholders should also prepare for situations where information provision and connectivity are less than optimal. Given the high ratio of congestion of key maritime shipping lanes, this will be particularly challenging. Quality and integrity of data is a third aspect that should receive more attention, as the breach of data integrity is a key cyber attack vector. This aspect is of particular importance for on-going regional and international initiatives aimed at advancing maritime surveillance. The value of information fusion can be seriously hampered if raw data is corrupted or if fused maritime pictures can be hacked and manipulated. Finally, more attention should be devoted to monitoring the almost invisible use of cyber capabilities to advance A2AD-related interests in disputed maritime regions. This will require new forms of intelligence sharing not only between public agencies, but also with the private sector.

Conclusion

In the 21st century strategic competition will be about access to, maneuverability in, and use of the global commons. In this context A2AD will be of prime importance. Actors with A2AD capabilities can assure their position in the global commons vis-à-vis other actors and fend off these actors' ambitions in the global commons. Cyber security is an important cornerstone of A2AD, because the exploitation of cyber vulnerabilities is one of the most effective ways to debilitate any actor's ability to advance in the global commons.

As A2AD is on the rise in the maritime domain, maritime stakeholders must react by making significant efforts to advance maritime cyber security. This requires new ways of interagency and public-private interaction and advanced concepts to understand the threats, determine adequate solutions, and train actors operating at all levels and in various domains. Failure to deliver maritime cyber security will translate into a serious strategic capability gap – the loss of strategic power to influence tomorrow's world order. ■

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1. Karl Frederick Rauscher, Reliability of Global Undersea Cable Communications Infrastructure (New York: IEEE Communications Society and EastWest Institute, 2009).

2. See also, Fred Teng, "Maritime Diplomacy Necessary for Cyber Security," Huffington Post, 13 September 2011.

CIVIL-MILITARY FUSION CENTRE

BARRIERS TO PROSECUTION: THE PROBLEM OF PIRACY

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Comprehensive Information on Complex Crises:

This paper provides a brief overview of the current difficulties involved in prosecuting pirates captured by international navies in the Indian Ocean and Gulf of Aden. Related information is available at www.cimicweb.org.

Despite a global response by some of the world's most powerful navies, Somali piracy continues to wreak havoc on ships attempting to navigate the Gulf of Aden and parts of the Indian Ocean, says Time Magazine. Maritime piracy has been on the rise for years, but the international community only took decisive action against it in 2008 when increasing attacks off the coast of Somalia led to economic burdens that affected the entire world.¹ Over the past four years, efforts have been made in a variety of areas to address the issue of piracy, including through naval intervention, the development of Best Management Practices and political efforts within Somalia and the greater Horn of Africa region. However, one of the major responses, piracy prosecutions, has also proven to be one of the most difficult to manoeuvre. In attempting to establish a strong legal regime to undertake piracy prosecutions, a number of obstacles have become apparent, among them, questions of jurisdiction, customary law, financing, the capacity of regional states, and other judicial hurdles that arise when attempting to prosecute criminal acts committed in international waters. The following article will attempt to outline some of these issues and list possible next steps offered by experts in the area of maritime piracy.

What is Piracy?

Maritime piracy is an issue specific to the high seas and as such, occurs outside the jurisdiction of any sovereign state. However, piracy is considered a universal crime - or one that affects all nations; therefore, pirates captured at sea can be tried by any willing State. Both the United Nations Convention on the High Seas (1958) and the United Nations Convention on the Law of the Sea (1982) maintain that "[all] States shall cooperate to the fullest possible extent in the repression of piracy on the high seas or in any other place outside the jurisdiction of any State."² Yet, as stated by the Council on Foreign Relations (CFR), because so many nations have a vested interest when a ship is hijacked, it is not immediately clear which state should prosecute. Moreover, many states still have not passed legislation making acts of piracy, as defined by UNCLOS, a crime.

1. See PBS NEWSHOUR, Modern day Somali Pirates Increase Attacks, 19 November 2008.

2. Article 14 and Article 100, respectively

The Problem of Piracy

There are currently few incentives to pull young Somali men away from the increasingly lucrative business of piracy; particularly as famine grips the Horn of Africa, leaving millions of Somalis without enough to eat and causing many to leave their homes and livelihoods in search of food. Maritime piracy experts feel that in light of these circumstances more emphasis should be placed on increasing the risks for pirates. There is broad consensus among many in the international community that by developing a strong legal deterrent alongside the dangers already involved in conducting pirate attacks, the number of Somali men joining the ranks of piracy gangs will significantly decrease.³ As such, the international community is in the midst of seeking ways to address the issue of impunity, which many So-

the high seas but has repercussions inland, some regional states have stepped up and offered to take on piracy prosecutions. Yet, considering the costs and infrastructure involved in such activities, these states have requested substantial international assistance to meet the requirements of such a steady influx of prisoners. Much of the burden of piracy prosecutions have fallen on Kenya and the Seychelles, but now with Kenya showing less willingness to take on this responsibility, according to Daily Nation (Kenya), a larger number of piracy cases are being dealt with on an ad hoc basis.

Until recently, many states had no laws that specifically condemned the act of piracy on the high seas, creating difficulties in bringing pirates to justice.⁴ While some states have laws making piracy a crime, they often only apply to incidents involving a citizen or ship

they fear that they may end up stuck with pirate detainees if the judicial hurdles cannot be overcome. It has become increasingly common for international navies, rather than detaining pirate suspects, to confiscate their weapons and release them, says the BBC. According to a UN envoy cited by The Guardian in 2011, nine out of every 10 pirates captured by international navies in the Indian Ocean are subsequently released because of legal constraints.

Due to the complexities involved in every piracy prosecution, it can take a great deal of time and money to de-conflict the legal situation that arises; time and money that many nations are unable/unwilling to spare, says Deutsche Welle. Moreover, according to a post-workshop report on piracy prosecutions, experts suggest that several disincentives exist that cause states to be reluctant about taking on prosecutions, these include: cost and logistics involved; the economic benefits to local communities; the economic situation of the prosecuting state; and concern over the optics of prosecution⁵. According to Nikolas Gvosdev in a New York Times blog post, under the current circumstances, pirates are taking advantage of the vacuum that has been created by the unwillingness of governments and private companies to set ground rules. As long as the international community continues to decline the prosecution of captured pirates and regional states are unable to take on this responsibility, there will be no effective legal deterrent to piracy off the coast of Somalia, Gvosdev argues. Instead, pirates will continue to operate with impunity, costing the world economy between USD 7 billion to 12 billion a year in ransoms, increased shipping costs and insurance premiums, as indicated by the non-profit Oceans Beyond Piracy.

The United Nations Convention on the Law of the Sea (UNCLOS) defines piracy as: “any illegal acts of violence or detention, or any act of depredation, committed for private ends by the crew or the passengers of a private ship or a private aircraft, and directed: (i) on the high seas, against another ship or aircraft, or against or property on board such ship or aircraft; (ii) against a ship, aircraft, persons or property in a place outside the jurisdiction of any State; (b) any act of voluntary participation in the operation of a ship or an aircraft with knowledge of facts making it a private ship or aircraft; (c) any act of inciting or of intentionally facilitating an act described in (a) and (b).”

Source: UNCLOS, Article 101

mal pirates have come to enjoy. According to CFR, maritime experts agree that creating significant risk for pirates is critical to deterring and reducing incidents of piracy worldwide.

In the absence of a strong government in Somalia and years of violence and war that have damaged much of the country's political infrastructure, little has been done on the ground, such as policing the coastline or prosecuting criminals, to develop any deterrence to piracy. As stated by Voice of America (VOA), Somalia has not had a fully functioning government since 1991 and there is currently little capacity to take on responsibility for fighting piracy as the UN-backed Transitional Federal Government (TFG) deals with an on-going Islamist insurgency. As Somali piracy not only affects

of that state. As such, depending on the varying circumstances of each pirate attack, some states involved in naval operations off the coast of Somalia are unable to prosecute captured pirates. Rear Admiral Philip Jones (UK) told the BBC in 2009 that when a navy intervenes to stop a pirate attack, they are often unaware of whether the pirates can be prosecuted. He explained, “[t]hat depends on where we find them, on the nationality of the ship that arrests them, on the nationality of the pirates themselves and the circumstances in which they are arrested ... There is a different response in almost every case.” Due to situations such as this, some international navies have become reluctant to detain pirate suspects as

Possible Next Steps

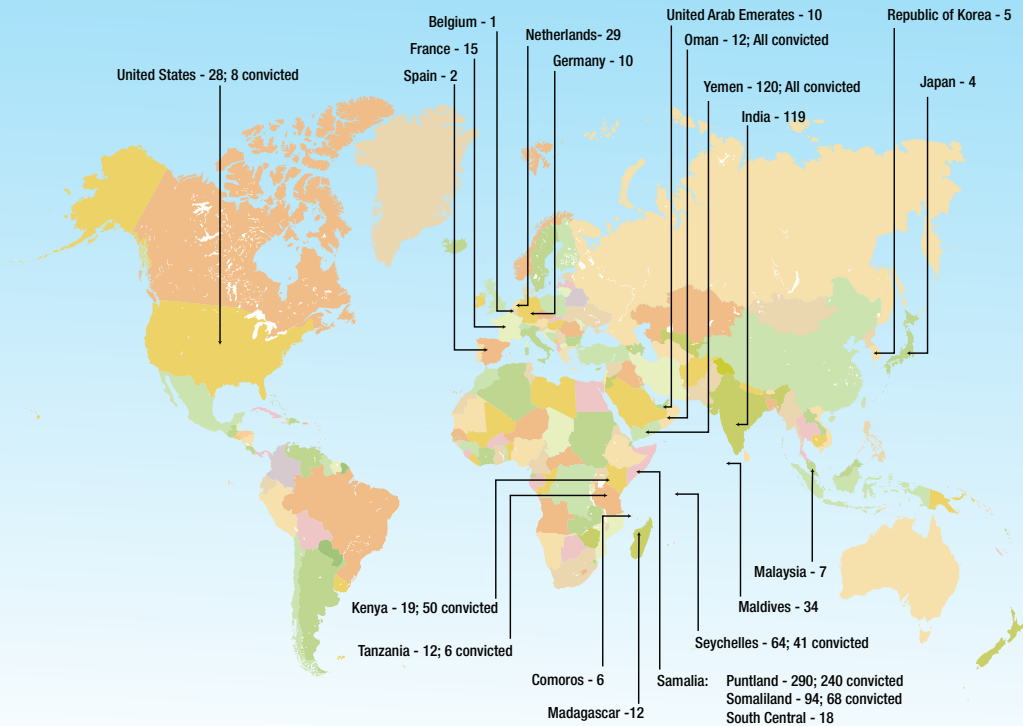
Some experts suggest that, with few states willing to take on piracy prosecutions themselves, an international body such as the International Criminal Court (ICC) in The Hague should accept jurisdiction. Other possibilities include the establishment of a special tribunal specifically mandated to address piracy prosecutions as well as an international prison where pirates will go to serve their sentences, notes the BBC. On this subject, there is much debate,

3. See Edoardo Collecchio, “Piracy off the Horn of Africa: Shifting incentives to induce behavioural change, Part 11” Consultancy Africa Intelligence, 02 May 2011.

4. For more specifics on the negative effects of the failure of individual states to criminalise piracy, see “Does absence of piracy offence limit administration of justice?” Neptune Maritime Security, 5 January 2011.

5. This would involve, for instance, concerns by and African nation over prosecuting other Africans for crimes against non-Africans.

Piracy Prosecutions Worldwide



with some arguing that piracy is outside the realm or level of crimes dealt with by the ICC. “Piracy does not fall under the jurisdiction of the ICC,” international criminal lawyer Geert-Jan Knoops told Radio Netherlands Worldwide (RNW). He explains, “[piracy] cannot be connected to the principles of the court [the ICC], which mainly aims at international or national armed conflicts.” Meanwhile, an initial attempt to create an international tribunal that would deal with piracy cases was rejected by the majority of UN members in 2009, as few member states are willing to set aside the resources to establish such a court. Yet, in the opinion of the United Nations’ top legal expert, Jack Lang, specialised courts should be urgently established in northern Somalia and Tanzania to try suspected pirates and break the present cycle of impunity.

Knoops further explains that the problem lies in that there is no universal system to try alleged pirates, adding that there is no obligation on the part of individual states to vest universal jurisdiction to combat piracy. Even when a state is willing to undertake a prosecution, the question remains as to where they should be sent to carry out their sentences. Pottengal Mukundan, the director of Commercial Crimes Services of the International Maritime Bureau (IMB) in London, told the

Associated Press, “I think EU countries are concerned that if the pirates are convicted and spend time in prison, when they finish their sentence they may not be able to send them back to Somalia.” According to a workshop report on options in international law related to maritime piracy, there is concern among states that under shorter sentences pirates could attempt to bring political asylum claims on behalf of themselves and their families before the government of the incarcerating state.

The international community is working hard to ensure that law enforcement and intelligence agencies can collect, analyse, and share operational and financial information to develop strong cases against those found to be involved in piracy. New legislation may also be necessary in some countries to criminalise the ways in which conspirators are involved in piracy, through anti-conspiracy laws and laws against financing crime, says the US Department of State. National courts have been called on to not only prosecute low-level pirates, but to put greater resources towards prosecuting pirate organisers, financiers and facilitators.

Conclusion

Maritime piracy presents a unique situation when it comes to creating an effective legal regime to combat piracy. In the opinion

of many of those active in anti-piracy efforts, effective action begins with increasing the capacity of east African nations to establish a solid rule of law framework and improve policing inland and offshore. However, it may be some years before these nations reach the level of capacity necessary to fully contribute to anti-piracy efforts. Therefore, it is now in the hands of the international community to show greater coordination and political will to take on the task.

Much has already been done along these lines, with various successes and failures over the past four years. James Kraska and Brian Wilson, in their report on combatting piracy in international waters, suggest that the problem of detained pirates can be solved through the development of an international maritime operational threat response plan that would designate international points of contact in shipping states and regional partners for the national police, coastguard or naval forces, foreign ministries and departments of justice who can quickly make decisions on behalf of all governments involved. What is now required, according to the authors, are agreements and commitments by all states involved that would support rapid decision-making before an incident occurs. This would allow states to answer questions about management, prosecution and legal claims before an emergency develops.

As evidenced by the regular decline of many states to accept captured pirates for prosecution in their domestic courts, the concerns of individual states must also be considered in order to develop greater political will to prosecute pirates. According to the joint-workshop report noted earlier in this article, suppressing maritime piracy involves three main areas: continued support to nations that have demonstrated willingness to take on piracy prosecutions, addressing the concerns of states unwilling to take on prosecutions by working to reform national laws to make prosecutions more convenient and less risky, and further consideration of the role of a regional or international court for piracy cases. As stated by UN legal expert, Jack Lang, “[t]hese are 1,500 people [pirates] who are defying the world, defying the UN. We must act now, quickly and firmly.” ■

Steve Ewell

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“LOVE AND MARITIME SECURITY”

Love and maritime security? Hey, I thought maritime security was anything associated with the global Maritime Domain that impacts the security, safety, economy, or environment of a nation? Does it not also aim to develop an enhanced capability to identify threats to the Maritime Domain as early and as distant from our national shores as possible by integrating intelligence, surveillance, observation, and navigation systems into a common, operating picture accessible to like-minded nations? So where does this love stuff come in? It's my way of reminding us that anything done in the international arena is based on personal interaction.

Maritime security is simply information sharing. Successful information sharing is based on relationships, not technology. Unfortunately, just as in our personal lives, building and maintaining an international relationship is difficult. Our U.S. national propensity, when we do not adequately understand the real requirement, is to default to what we are most comfortable with, technology and building systems. In the case of global maritime security, trying to create a standing monolithic network for information sharing is the wrong course of action, and an effort to do so will result in wasted time, effort, and money. A luxury we do not have in our budget-constrained environment. For the most part we, the global maritime community (governments and commercial shipping companies), have most of what we already need in place without building anything new. In this case, I am talking Information sharing, not surveillance. The message here is “leverage what the community has in place by simply adding concepts, direction and understanding.”

Organizational Construct for Maritime security. Let's talk about the goods and “bads” of networks as an organizational construct, not technology. Look at certain terrorist networks. These folks do not operate in hierarchical structures, as we do in government organizations. History shows us hierarchies always lose out to networks. Hierarchies are slower to react. They are more rigid. They wait for command and control, whereas networks are nimble. They can be cut in half, quarters, whatever. The remnants are able to operate on their own. Networks are very hard to pin down. As long as one part of the network exists, the whole network continues to exist. In a perfect world, the global community should move toward the premise of a “network of networked” regional and national maritime

centers. Doing so would allow maritime domain awareness and information sharing to effectively counter a network (criminal, terrorists) if it itself acts as a network providing sufficient information, connectivity, and relationship building horizontally across national partners across the globe.

Moving raw information. Most commercial shipping companies and militaries are already transmitting to our individual government's enormous amounts of information about cargo and sailing routes. Now couple that with LRIT, AIS and other systems, the available information is staggering. A simple question, how effective are we at using and sharing the ridiculously large amounts of information we already have? Should we focus on creation of new generation networks with specific national centers, regional centers, or should we focus on existing networks and improve the levels of interface between them for our first level success? Fiscal realities may in fact drive us to the latter solution. “One size for all” solutions may not be fiscally or politically palatable, meaning they will be resisted at national levels for governments, and corporate boards for companies that are profit motivated.

The international maritime community is answering my rhetorical question above with their actions. We have likeminded nations coming together out of necessity and mutual interest, federating their own regionally developed systems. They are linking and sharing information within individual regions, moving toward networked capability across regions. Where there is trust and cooperation, information flows freely across borders.

Governance. So, to sync the efforts described above, what is really required is an agreed upon governance framework to drive policy, transport (technology network), information sharing systems/tools/applications, a concept of operations as to what will be shared and agreed upon “network joining instructions” to allow the federation of different regional information systems on a transport layer or the internet. This acknowledges that nations will continue to field their own networks and systems. In the international community any single formal body governance will be difficult, which means a likely scenario for governance is an ad-hoc group from the regional centers reaching consensus on issues. A perceived neutral organization would have to bring the ad-hoc group together, quite frankly, an ideal role for the CJOS- COE.

Relationships. I told you I would get back to the “love” in my title. Hopefully you read this as an obvious example each of us can relate to in our personal lives to remind us of the actions required in forging new international relationships. As already stated, maritime security and information sharing is based on relationships and trust between partners. In personal relationships we work with our “significant other” or spouse to understand each other's needs. What motivates our partners and for us to act correctly on that motivation to meet their needs, which in turn, answers our individual desire to continue the relationship. Actions without the correct understanding usually do more harm than good. For example, in a personal context, it is a special anniversary, you can go out and buy a home appliance that your partner may need, or you can go out and buy that nice piece of jewelry. Hmm... vacuum cleaner or diamond bracelet? Both actions require the same amount of effort, but without doubt, one will be perceived differently from the other. Again, it is about understanding your partner and the situation, the same corollary applies to international relationship building. Finally, the single taboo, the line you do not cross in any relationship is “infidelity.” I know that word conjures up many imagines, but in the end, infidelity is simply a broken promise... resulting in a complete loss of trust. It is non recoverable in any relationship, including international partnerships.

Yes, there are issues to overcome to enable maritime information sharing. I have talked about a few, but in the end, I maintain they can be coped with if we take time to understand the motivations and maritime security needs of our partner nations. The international law enforcement and military intelligence communities over the years have come together to share information in selected networks out of necessity. These international partnerships are based on trust developed over years. While the policy makers wrestle with how to use (what kinetic or political responses are to be performed for maritime security), nothing should prevent us from forming an international maritime security awareness community of interest based purely on information sharing, with its underpinning in federation of different international systems to enable international Maritime Domain Awareness. Doing so begins with trust that comes from cultivating a solid relationship of understanding. ■

EVALUATING/MEASURING ALLIED/COALITION-USN INTEROPERABILITY

CDR Themistoklis Papadimitriou, GRC-N
Project Leader

Dr. Charles Nickerson



Today's Naval war-fighters whether operating in the Persian Gulf, the Mediterranean, or the Somali Basin are fighting an evolved enemy. The tactics are different, the enemy's method of attack is unpredictable and the technology is often highly advanced. In order to use all existing and future capabilities to confront these challenges, NATO is working very hard to improve coalition interoperability. The CJOS COE has developed and published an "Allied Interoperability Handbook" to improve interoperability between allied, coalition, and U.S. Navy ships. The Handbook includes the following documents:

- An "Interoperability Questionnaire Survey" that allows participating ships to report interoperability problems that appear during cooperation.
- A "Lessons Learned/Identified database" that includes all Lessons Learned (LL) and interoperability problems reported through the Interoperability Questionnaire.
- An "Interoperability checklist" that includes all preparatory actions/measures that both sides (coalition/allied navies, CJOS/

COE and USN) should take to minimize interoperability problems. The checklist items are derived from the LL database and revised after each cooperative event.

- The "Coalition Playbook" for allied/coalition units participating in USN-sponsored exercises. The purpose of this document is to facilitate coalition integration into USN hosted exercises.

With these products now available and in use, the next step is to determine whether they are actually improving interoperability and, if so, in what ways. This feedback will allow us to further refine the processes and products we provide. To gauge the effectiveness of the interoperability products we assess the following:

- Adherence to the Checklist – Measure how well the CJOS COE, the visiting ships, and the hosting USN Strike Groups follow the checklist for each visiting ship. This is a measure of preparedness; it quantifies efforts made to address known interoperability challenges.

- Demonstrated Interoperability – Evaluates the interoperability of visiting ships with their host Strike Groups during execution. Clear, objective standards are applied to evaluate how early in an event the interoperability challenges are overcome, as well as to record how well interoperability efforts is maintained throughout the exercise. These are measures of effectiveness for the units.

- Lessons Learned Again – Analyze interoperability LL from each ship to identify the repeat issues and determine which should have been prevented through adherence to the checklist. This is another measure of effectiveness for the units, but it also provides feedback on the effectiveness of the checklist.

Methodology

Adherence to the Checklist, Demonstrated Interoperability, and Lessons Learned are measured separately. Applying a common framework enhanced each by enabling cross-correlation. To evaluate the checklist, is critical

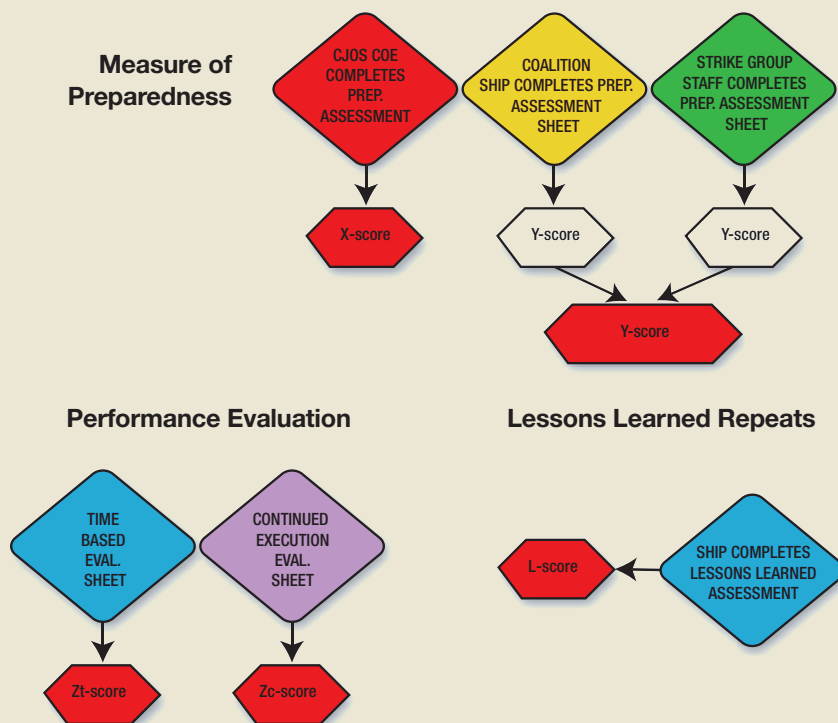
to know the efforts made to follow each recommendation. If we do not know whether a ship follows a particular recommendation, then it is impossible to determine whether it is of value. Efforts to follow the checklist are “inputs” into the process that should generate “output” interoperability. Recording which checklist items are completed (and when, relative to the exercise timeline) forms the key measures of performance (MOPs) in the larger assessment framework.

Adherence to the Interoperability Checklist (Measure of Preparedness) – There are over one hundred checklist items, often with multiple items related to a single topic, so it is important to group them by topic. Establishing a set of interoperability topics based on the Allied Interoperability Handbook’s checklist items and using it to organize the results of the performance and LL evaluations allows us to tie the process “inputs” to the “outputs.” Asking each party to record completion (Y/N) of each checklist item and requesting comments for items not completed (there may be many legitimate reasons) generates two scores for each topic—an “X” score as a percentage of items CJOS COE prepared, and a “Y” score as a percentage of items that other entities and Commands prepared (to include coalition /allied ships and USN Commands).

Demonstrated Interoperability (Measures of Effectiveness) – The demonstrated interoperability evaluation focuses on metrics tied directly to successful cooperation. This provides data for a post-exercise analysis of how well the checklist prepared the ship for the exercise being evaluated. An assessor or the ship’s staff is tasked with evaluating interoperability using two performance evaluation guides. The first is a set of timing-based evaluation metrics of when interoperability was initially demonstrated. The second evaluates how well interoperability was maintained through the course of continued execution. The final metric consists of two scores: Zt and Zc. Zt represents how quickly interoperability was initially demonstrated. The higher the score, the earlier interoperability is achieved. Zc represents how well interoperability was maintained. The higher the score, the better interoperability was maintained.

Five common topic areas are represented in both guides (National Interests, Doctrine, TTPs, Technical, Equipment) and correlated with the Other Entities/Commands Preparedness Assessment sheets. This facilitates the analysis process by connecting problems in execution to problems in preparation and what we

Overview of Metrics



The five scores are the basis for future comparisons and assessments. By analyzing the after action reports and the coalition/allied ship’s survey as well as the new LL reported by the ship and by including any explanatory variables noted by the ship or observers, we evaluate in which areas performance suggests that following the checklist is beneficial and which areas may need revision.

CJOS COE applies this methodology in training events that include coalition/partner navies working with USN in an ongoing effort to continue improving interoperability.

should change in the checklist in order to avoid interoperability problems in the same area in the future.

Lessons Learned – Post event, the lessons identified by the visiting ship and their host Strike Group are organized around the same set of interoperability topics as the checklist and the performance evaluation. They are compared with items in the existing LL database to determine whether these items are “repeat offenders.” The data is collected using a tool similar to the Lessons Learned Assessment Sheet included in the last section. The final metric is a score L that is the percentage of items for which the ship was prepared + items that were not problematic divided by the total number of items presented in the exercise. A perfect score is 100%, meaning that there were no repeat LL.

If all three assessment efforts are built around a common framework—a common

set of interoperability focus areas—then we are able to isolate the strengths and weaknesses of the checklist in each topic area.

After evaluating these three aspects of interoperability, we hope to tie performance and LL back to the checklist. If a ship follows all/most recommendations related to a particular topic, performs well in that topic during execution, and repeats no LL in this area, then we have initial evidence that following those particular checklist recommendations is helpful. If checklist items are not followed and/or the performance is not good in a particular area, further analysis may provide insight and the potential need to revise the checklist. We are able to do this by determining what fraction of checklist items from each topic were followed correctly and then compare those statistics with performance scores and LL reported in that area. ■

COMBINED JOINT OPERATIONS FROM THE SEA CENTRE OF EXCELLENCE CELEBRATES FIFTH ANNIVERSARY

CDR Sonya Cox USA-N
CJOS COE

On May 31st, 2011, the staff and families of CJOS COE recognized their fifth anniversary! Directly following the Steering Committee Meeting, the birthday luncheon was celebrated by participating National Liaison Representatives (NLR's) and steering committee members. VADM Daniel P. Holloway, Commander U.S. SECOND FLEET and Director of CJOS COE at the time, ADM J.C. Harvey Jr., Commander U.S. Fleet Forces Command and VADM (GBR) Bob Cooling, Chief of Staff, HQ Supreme Allied Command Transformation enjoyed a vast array of international cuisine and a great time was had by all! As the only COE within the U.S., CJOS COE works closely with the U.S. Fleet Forces Command staff, with special focus on delivering products which add value to NATO and all sponsoring nations.

“We have achieved significant milestones over the last five years in all aspects of maritime security, building partnerships, and establishing new relationships globally,” said British Navy Commodore Jonathan Handley, deputy director CJOS COE. “In doing all this, we have progressed toward our goal of achieving our vision, set in 2006, of becoming the preeminent source of innovative specialists advice and expertise on all multinational aspects of CJOS COE in support of sponsoring nations, NATO and other allies. We will continue to play a lead role in promoting best practice, forging closer ties among maritime-related institutions and remaining transformational in scope across the international maritime community.”



ENRICHING THE NATO LESSONS LEARNED CAPABILITY

How COEs can help

CDR Michael Hallett, USA-N
Staff Officer, NATO Supreme Allied Commander Transformation

The Lessons Learned (LL) capability is, at its most basic, a structured way to acquire feedback about an organizations’ activities, the effects those activities generate (both intended and unintended), and make the changes necessary to close the feedback revealed via gaps between desired and actual outcomes. The aim of the LL capability is to use knowledge gained through experience, and importantly the shared experience of others, to improve capabilities across the full range of organizational activities. In the military context, this means improvement to capabilities such as fires, manoeuvre, logistics, etc. and, increasingly, support to other actors, including civilian dimension actors, as part of an interagency Whole of Government or what NATO refers to as a “Comprehensive Approach”.

The LL Environment – and the gap

The LL environment is populated by the operational forces, the Nations, the NATO command structure, and other interested actors (UN, EU, Private Voluntary Organizations, Business, NGOs, etc.).

All of these actors in their operations generate Observations, Lessons Identified (LI), and Lessons Learned (LL). However, the LL related effort is intended to generate practical differences as seen in improved capabilities – not to create a library. Implementation, not simply problem identification, is thus required and implementation, moving from a Lessons Identified to a Lesson Learned, presents a difficult challenge.

How the CJOS COE is helping

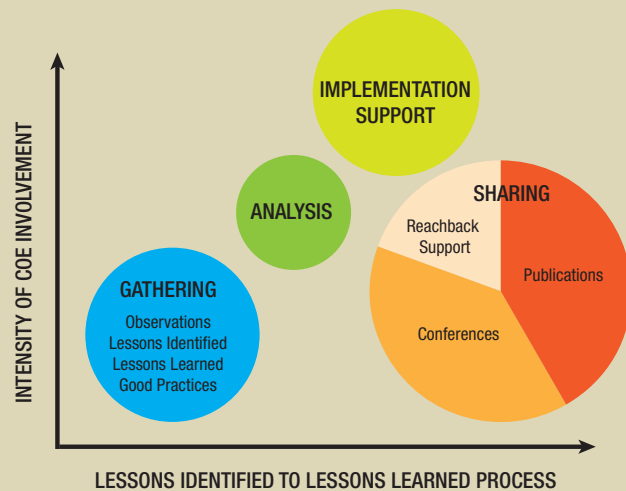
The CJOS COE is helping Nations manage this challenge in four different ways: by gathering observations, Lessons Identified, Lessons Learned, and Best Practices; engaging in issue analysis; providing implementation support; and facilitating sharing.

Gathering

Though many observations and LI make their way from the field to the LL bodies within NATO and the National LL organizations, there is considerable room for improvement in the information and knowledge management associated with these observations. The primary problem is that many observations, LI and LL from operational forces, are sent back

to the National LL organizations via the deployed National computer networks. Subsequently, these LL related products do not enter into the NATO LL system and therefore do not contribute to the NATO knowledge base. This sub-optimal gathering prevents National forces from benefiting from the experience of other Nations, leading to repeated re-learning of mistakes as forces rotate in and out of theatre. It also hinders implementation activities, and reduces opportunities for collaboration on implementation of improvements that would benefit many members of the Alliance, not just the group that initiated the Lesson Identified.

The COEs can facilitate enhanced gathering of the observations, Lessons Identified, Lessons Learned, and best practices within their focus areas by working with the Nations to collect these information products, appropriately sanitize them in light of security considerations, and edit them into knowledge products of use for the broader community. The



forces in the field lack the time, in most cases, to consolidate and publish their LL related information – the COEs can reduce this burden on the operational forces by doing the work necessary to gather the information for them.

Analysis

Much of the value the COE provides to the sponsoring Nations and the Alliance is derived from provision of both a

structure for collaboration among distributed experts and a core staff of co-located professionals with expertise in the COE's area of focus. This core staff has two advantages: one, the narrow focus of the COE enables them to efficiently expend their attention resources; and two, the daily face to face interaction with fellow experts enables them to constantly intensify their knowledge and understanding of the issues.

This focused and amplified expertise can be employed to perform the second step of the LL process, analysis. The experience of the COE staff enables them to quickly generate two critical outputs of the analysis process – the articulations of root causes (the deep source of the problem or good practice) and formulation of remedial actions (what needs to be done to fix the problem). The expertise of the COE staff gives a level of credibility to their root cause identification and suggestions regarding remedial actions, credibility that an individual out on the 'deckplates' may lack. The credibility is further enhanced by the multinational nature of the COE, which provides a rich set of perspectives from which to examine the issues.

Implementation Support

Implementation is the most difficult part of the LL process. Planning what needs to be done, performing the work to actually fix the issue, and validating that the implemented solutions actually generated the desired effects are time consuming. Furthermore, within the NATO context, implementation often involves each NATO nation agreeing to the changes and making the changes in their own National forces before a Lessons Identified can be referred to as a "Lesson Learned".

COE's will seldom be directly involved in implementing Lessons Identified. However, the expertise of the COE staff can provide an excellent resource for the responsible action body as they take the implementation steps necessary in each area of the Doctrine, Organization, Training, Materiel, Personnel, Facilities, and Interoperability (DOTMLPFI) paradigm.

The COE can provide implementation support in three ways. One, they can assist the action body in creating an implementation plan. This implementation plan will structure the implementation activities and help the various actors involved in implementation coordinate their efforts. Two, in some cases the COE can serve as a delegated action body. For example, the COE can update doctrine or develop a training program of use to all of its sponsoring Nations, both reducing the costs of such development and ensuring that it meets the training needs of more than one organization. Three, the COE can provide subject matter experts to advise the nations on implementation actions.

Sharing

Effective sharing requires that an individual or organization expends the resources necessary to cover the transaction costs associated with aggregating, sanitizing, and disseminating the

information and knowledge of interest. The COE through its sharing activities, will in effect "pay" these costs by taking the time to find out what is worth sharing, accessing that knowledge, and putting it into a readily digestible form that can be of practical benefit, thereby reducing the expenses associated with these activities for the Nations and other organizations. Thus, this LL related sharing is a key arena in which the COE can provide value to its sponsoring Nations.

Just as in the analysis phase, the multinational nature of the COE gives it a perspective from which to observe the various practices in the Nations. The COE thus has visibility on what is working and what needs improvement, and can share that knowledge quickly within its area of functional specialization. The COE can actively share this knowledge in three important ways. One, through the provision of expert reachback support. This is a normal part of the COE operations – the COE experts are "on call" to answer questions and provide advice within the functional area. The LL process both supports them in this activity and provides a vehicle for distributing their knowledge. Two, by participating in conferences and workshops COE staffers can both gather additional insights (from the sharing activity of others) and share their own. Even in an environment in which information technology has dramatically increased the possibilities for collaboration at a distance, face to face discussions, in which nuances that are extremely time consuming to articulate in writing can be quickly shared in a conversation, can be extremely cost effective in terms of knowledge sharing. Three, we often suffer not from too little information, but from a lack of time in which to examine the available knowledge products to determine their utility in meeting our specific challenges. Therefore, the COE publishing reports such as the Top Ten Lessons Identified from Counter Piracy Operations 2011 can be a useful way to share knowledge - the expert authority of the COE signals to staff officers in the Nations that expending their limited resources on reading the report will be worthwhile.

Conclusion

COEs constitute an extremely rich collection of experts who can use the LL process to both enrich their expertise and distribute the products of that expertise. In addition, this LL activity is a major example of the value COEs add to their sponsoring Nations and the Alliance as a whole. Allied Command Transformation offers a Lessons Learned Staff Officer Course and NATO's Joint Analysis Lessons Learned Centre hosts the NATO LL Portal at <https://nllp.jallc.nato.int> where additional LL information, and access to the unclassified LL database, is available. ■

MUS: BUILDING A NEW MARITIME CAPABILITY WITHIN NATO

By COL Antonio Evangelio, ITA-AF
Project Officer, CJOS COE

NATO's Maritime Security challenges have changed considerably since the formation of the Alliance. NATO Maritime Forces, principally designed during the Cold War era for ocean warfare in the AOR (Area of Responsibility) are increasingly used for Maritime Security Operations, Power Projection missions, Disaster Relief, and to ensure international access to global resources. As NATO's security and economic interests interconnect more with the concerns of the global community, these missions are often occurring outside the Alliance's strategic centre of gravity. The requirement to operate at extended ranges, distant from traditional support basing involves new risk and operating challenges for European navies. These missions expose NATO's maritime forces to a variety of conventional, hybrid, and asymmetric threats, either on the high seas or in coastal waters. The spectrum of potential threats requires versatile, adaptable naval forces with capabilities across multiple mission areas. Notwithstanding the current operating environment challenges, ever-reducing military budgets and force structures make tackling these challenges increasingly difficult. These realities compel NATO navies to transform force structures, and harness emerging technologies to maintain tactical and operational war fighting capability with reduced high-end capital

investment in personnel and material. Consequently, modern military forces increasingly rely on the attributes resident in unmanned systems to augment manned capabilities with potentially significant cost and risk reductions.

Current unmanned systems have already proven to be a force multiplier and key enablers to conventional forces. As seen with the integrated use of Unmanned Aerial Vehicles (UAV) in support of NATO ground operations in Afghanistan, Unmanned Systems provide enhanced operational and tactical capabilities. While recent UAV capability development has been near exponential, the development of Maritime Unmanned Systems (MUS) has seen a very modest effort applied in order to meet requirements on and below the surface of the sea. This gap in MUS capability has been recognized by NATO, and at the request of Allied Command Transformation (ACT), CJOS COE initiated a project to explore and guide the development of MUS to meet the Alliance's future maritime capability requirements. This document is to aid NATO countries in understanding what unmanned systems can currently and potentially accomplish in the maritime environment.

The result is a document titled 'MUS Guidance' and on 27 October 2011, the CJOS COE Deputy Director briefed the NATO

Military Committee (MC) outlining the capabilities provided through the employment of Surface and Underwater Maritime Unmanned Systems. The document is designed to assist in the transformation of NATO's maritime doctrine, organization, and capabilities by providing guiding principles for the development and employment of maritime unmanned systems.

The Guidance emphasizes that NATO should endeavor to improve the effectiveness of MUS through a judicious multinational integration and Joint collaboration project, fostering the development of policies, standards and procedures that enable safe and timely operations and the effective integration of manned and unmanned systems. Several NATO navies are now fully committed to MUS development. It should also be noted that there is no overarching NATO organization leading this effort. CJOS COE is willing to lead and collaborate with external agencies to develop a recommended concept of operations.

MUS are force multipliers. They can increase the operational capability of NATO while executing maritime missions in challenging environments and against risks that would otherwise not be possible. Finally, it is an ideal candidate for the philosophy of Smart Defense, whereby NATO seeks cost effective solutions to increase its' capabilities. ■



2011 MARITIME SECURITY CONFERENCE REVIEW

CDR Edmund Garrett, CAN-N
MSC Project Officer, CJSO COE

In May 2011, CJSO COE hosted its 4th annual Maritime Security Conference (MSC), but the 1st combined conference co-sponsored with the Centre of Excellence for Operations in Confined Shallow Waters in Kiel, Germany. The Conference theme was “Delivering Maritime Security and Safety in Global Partnership: Creating a Strategic Framework for Maritime Security Cooperation”. The aim was to examine how International Organizations and emerging Regional Maritime Security Organizations can collaborate together to form a global network for maritime security cooperation.

Following the MSC 2010, CJSO COE delivered a White Paper titled, A Framework for Enhanced Maritime Security Cooperation. This paper served as the scene setter for the conference plenary and panel discussions. A total of 31 distinguished military and civilian speakers addressed the audience made up of military and civilian organizations from some 26 Nations. As Commodore Jonathan Handley, Deputy Director CJSO COE stated, “Building on previous conferences’ themes, MSC 2011 allowed us to come together and share innovative ideas and best practices that will lead to a better mutual understanding of each other’s capabilities and limitations, which then naturally leads to greater collaboration and cooperation”.

Conference Objectives

1. **Governance** — The overarching goal for enhancing global maritime security is the need to implement uniform security measures around the world, a goal that cannot be achieved without an unwavering commitment by all concerned. To this end, the establishment

of an International Maritime Security Cooperation Organization (comparable to the International Civilian Aviation Organization (ICAO)) to provide oversight would help to set policies and standards and promote an integrated approach to maritime surveillance and information sharing. An “ICAO-like” organization would help to establish baseline structures with respect to policy, training and Maritime Security Sector Reform initiatives that would help States to achieve greater interoperability and make best use of existing systems on a cross-sector basis;

2. **Consolidated Legal Strategies** — States must demonstrate a willingness to make compromises in order to advance maritime security issues which consider UN conventions pertaining to legal activities at sea. This will require improvements in regulating the maritime commons, through sound legislation promoting interoperability between regional maritime security organizations. A high level of confidence in the security of the maritime domain is attainable through improved information sharing standards and creating more opportunities for mutual training and education;
3. **Surveillance** — Maritime security cooperation is rapidly evolving, perhaps more quickly than it did during the preceding decade. Persistent surveillance of the maritime commons requires a significant investment in national and international resources. Co-ordination and cooperation among states and inter-agencies could mitigate resource deficiencies thus providing more efficient and economical management of the surveil-

lance effort while extending coverage over a broader area through regional networks; and

4. **Data Sharing Technologies and Infrastructure** — The growing plethora of information management systems and standards will certainly create greater challenges and complexities for information sharing in future, especially in the face of cyber threats. To be globally effective, a set of overarching standards for operational reporting and technical baselines is needed.

Topics discussed during the plenary sessions set the scene for the afternoon panel sessions designed around the four conference objectives. During the wrap-up sessions on the final day, panel chairs presented their findings.

Governance

1. As a credible alliance, NATO is well positioned to promote and initiate a framework for maritime security cooperation and awareness. Working with government and non-government agencies of the European Union, these two entities could demonstrate a comprehensive resolve to improve maritime security ;
2. Need to focus on sharing specific pieces of information as we know nations are unlikely to change their policies to share;
3. Foster maritime domain awareness through increased political will and education of policy makers; and
4. To be effective, all stakeholders who have an interest in maritime security must share ownership in establishing a governance framework. This includes active collaboration between military entities, law enforcement agencies, government and non-government organizations, academe and commercial private sectors.

Consolidated Legal Strategies

1. States must demonstrate a willingness to make compromises in order to advance maritime security issues;
2. States must interpret and implement existing legal regimes and apply them in practice;



Mr. Michael Jones, Chief Technology Advocate, Google Inc. discusses his presentation with participants of the conference.

3. Sufficient international legal frameworks exist for:
 - Information sharing
 - Prosecuting crime
4. Nations need to use existing tools and create new laws only if needed.

Surveillance

1. Maritime Surveillance is a prerequisite for maritime security;
2. There are four key strategic stakeholders who currently are actively engaged in persistent maritime surveillance: IMO under the UN, NATO and Navies, the European Defense Agency under the EU military staff and the International Maritime Bureau;
3. A comprehensive global interagency approach is essential; and
4. The key drivers for success are the mutual trust which is shared between like minded people, a positive attitude to protect and serve a larger maritime security community and a step by step approach to implement workable solutions.

Data Sharing Technologies and Infrastructure

1. The growing number of information management systems and standards will certainly create greater challenges. The systems will need to demonstrate “adaptive interoperability” (i.e. demonstrate inherent capabilities that allows information to be shared, collated and assessed from one scenario to another, from one regime

to another) in order to deal with transnational crises or threats;

2. To be globally effective, a set of overarching standards for operational reporting and technical baselines is needed; and
3. Action required - meet with key stakeholders, regional center leads to create an international maritime community of interest. Create a concept of operations for information sharing using best practices from existing cooperatives.

New to the conference this year was a Corporate Exhibition where 17 companies exhibited their latest products and services during the coffee and lunch breaks. Exhibitors were very satisfied with this new opportunity to mingle with the conference attendees in a relaxed setting.

MSC 2011 provided an excellent opportunity to explore these forward leaning concepts through a network of subject matter experts and intellectual, though provoking discussions. The conference was successful in demonstrating the need for an enhanced framework for international security cooperation and awareness and the time is right to roll up our sleeves and work toward a global security network.

Building upon the success of the conference in Kiel, the Combined Joint Operations from the Sea and the Centre of Excellence for Operations in Confined Shallow Waters are pleased to announce the 2nd Combined Maritime Security Conference 2012 to be held in Halifax, Nova Scotia, Canada from 4-7 June 2012. For further information on Maritime Security Conference 2012, please check our website at www.maritimesecurityconference.org. ■

THE MARITIME OPERATIONS WORKING GROUP

CAPT Alberto Maffei, ITA-N
Transformation Branch Head
CJOS COE

Since 2006, the Head of the Transformation Branch in the Combined Joint Operations from the Sea Center of Excellence (CJOS COE) chairs the NATO Maritime Operations Working Group (MAROPSWG), which is charged with standardizing doctrine, tactics, tactical instructions, and procedures in maritime operations to improve interoperability and the effectiveness of NATO forces.

Standardization is the key element and principal means for NATO Nations to achieve interoperability, more specifically and in accordance with the NATO approved terminology¹:

Standardization is the development and implementation of concepts, doctrines, procedures and designs in order to achieve and maintain the compatibility, inter-changeability or commonality which are necessary to attain the required level of interoperability, or to optimize the use of resources, in the fields of operations, materiel and administration; while Interoperability is the ability to operate in synergy in the execution of assigned tasks. It can be read, in operational terms, as the ability of Alliance forces and, when appropriate, forces of Partner and other nations to train, exercise, and operate effectively together in the execution of assigned missions and tasks.

Within the framework of the NATO Standardisation Organization (NSO), through its agency, the NATO Standardisation Agency (NSA), the MAROPSWG was established by the Military Committee Maritime Standardization Board (MCMSB) to initiate and develop standardization in order to enhance interoperability of NATO forces.

The MAROPSWG is the largest Maritime Standardization Board Working Group and is responsible for a wide range of tactical publications. The MAROPSWG consists of delegates of those NATO nations, NATO Strategic Commands (SCs), Partner nations, Contact Countries, NATO Operational Commands and Agencies, NATO and National Maritime Centers and NATO COEs that agree to participate. The MAROPSWG operates with four Committees: Heads of Delegation, chaired by CJOS COE; Syndicate 1 – Under Water Warfare, chaired by Canada; Syndicate 2 – Above Water Warfare and Electronic Warfare, chaired by Germany; and Syndicate 3 – Maritime Communications and Information Exchange, chaired alternatively by Norway and Denmark. Together their focus is standardizing Maritime Operations by NATO Forces to include, but not limited to, Submarine Warfare, Anti-Submarine Warfare, Above Water Warfare, Tactical Communications, and Maritime Electronic and Acoustic Warfare.

The MAROPSWG meets annually, but works throughout the year and is responsible to the MCMSB for all disciplines of Maritime Operations within the NSA Terms of Reference except Naval Mine Warfare, Amphibious Operations and Maritime Logistics matters. The conduct of Maritime Operations includes, but is not limited to, the following subject areas:

- Submarine Warfare;
- Anti-Submarine Warfare;
- Anti-Surface Warfare;
- Anti-Air Warfare;
- Strike Warfare;
- Maritime Communications and

Information Exchange Requirements;

- Electronic and Acoustic Warfare;
- Maritime Dimension of Joint Operations;
- Maritime Non Article 5 Crisis Response Operations (CRO) ;
- Information Operations (Maritime) ;
- Force Protection (Maritime) ;
- Maritime Interdiction Operations (MIO);
- Maritime Situational Awareness (MSA);
- Maritime Security Operations (MSO);
- Counter Piracy Operations;
- High North Maritime Operations;
- Maritime aspects of UAVs.

The 2011 annual meeting of the MAROPSWG was conducted from 19 to 27 January 2011 in the Portuguese Naval Academy, Lisbon, Portugal. One hundred nineteen delegates represented 17 NATO Nations, two Partner Nations (Ireland and Sweden), one Contact Country (Australia), ten NATO Commands (ACO, ACT, ASC, JALLC, JFC Lisbon, JFC Brunssum, JWC, AMC Naples, AMC Northwood, NURC), two COEs (CJOS COE and CSW COE) and two Centres (NATO Maritime Interdiction Operations Training Center – NMIOTC - and Poland Doctrine and Training Center).

The next MAROPSWG meeting will be held in the NMIOTC (NATO Maritime Interdiction Operations Training Centre) facilities, Souda Bay, Crete, Greece, from 23 to 27 January 2012. ■

¹ AAP – 06, 2010: NATO Glossary of Terms and Definitions (English and French).

MARITIME SITUATIONAL AWARENESS ACROSS BORDERS

Rear Admiral Veli-Jukka Pennala
Commanding Officer of the Finnish Navy

The Baltic Sea strategy of the European Union consists of 15 priority fields. Three of them have in a challenging way been placed under the heading “Making the Baltic Sea a Safe Area.” The strategy focuses on questions related to environmental and economic cooperation, but the security perspective is clearly present. To quote the strategy: “other forms of development will be insufficient or even totally impossible without a sense of security and confidence in maintaining the general order.” Feeling secure starts with situational awareness.

Maritime surveillance is the cornerstone of maritime situational awareness. This statement appears in the integrated maritime policy of the European Union as well. One of its objectives is to create a European network of maritime surveillance, with the task of securing safe use of the seas and protecting the maritime borders of Europe. Practical solutions, in addition to technical arrangements, are the efforts in favour of more efficient civil-military cooperation, as well as the removal of juridical obstacles that limit the exchange of information.

The concept of maritime security can be divided into naval safety and other forms of security. Under the concept, security you will find fighting criminality across borders as well as piracy. The defence aspect forms the extreme position of security ranging from preventing territorial violations to repelling naval attacks. This classification is easily made on paper. However, the dynamics of different events does not necessarily respect the boundaries of the security concept or the responsibility areas of different authorities. Therefore we need well-functioning rules nationally as well as internationally.

The national maritime cooperation between authorities is known by the name METO cooperation (maritime actors). This collaborative group that started its work as early as 1994 consists today of the Finnish Transport Safety Agency, the Finnish Transport Agency, the Finnish Border Guard and the Finnish Navy. These “main performers” also have connections of their own to other maritime actors. The cooperation referenced above was practiced following the model of the Ministry of the Interior, PTR, involving the Police, the Customs, and the Border Guard. Distinguished from the original outline, the responsibility for

preventing environmental damage remained with the Ministry of the Environment and was therefore left outside the actual METO cooperation. In its present state, the prevention of environmental damage has found its place within the multi-authority cooperation quite well. METO cooperation provides Finland with good national capacity for implementing the integrated maritime policy of the EU.

The efforts have been successful. Before the year 2007 the amount of direct financial savings was approximately 50 million euros. The most essential METO-product, its flagship, is the nation-wide recognized maritime picture, maintained by the Navy. It contains data produced by the sensors of all three authorities (AIS, radar, camera, human senses). The technical realization includes hundreds of logical connections between offices and sensors. However, the concept maritime situational awareness means more than mere sensor information. Each authority adds information to this sector independently.

The excellence of the METO cooperation lies in its entirety. It is not just a row of technical solutions, but a way of working together. This has been recognized nationally as well as internationally. The METO cooperation received the highly esteemed security award “Sea Sunday” in 2007. Internationally the METO cooperation is a model example of how you get the administrative branches of three different ministries to strive towards the same goal, instead of competing for the resources. Due to small resources and the small size of our country, the Finnish maritime actors have always strived to cooperate, but thanks to METO this cooperation has achieved a formal structure and position within the organisations.

It was logical to continue the national cooperation by looking across our borders, first concentrating on the Baltic region. We started cooperating with the Swedish Navy in 2001 under the name SUCFIS (SURveillance Cooperation Finland Sweden). Thanks to good experiences gained through this cooperation, we felt encouraged to take the next step together with the Swedish Navy and invited all the Baltic countries’ essential maritime authorities and organisations to a seminar in September 2008, where the SUCBAS initiative, i.e. maritime surveillance cooperation covering the

entire Baltic sea, (SURveillance Cooperation Baltic Sea) was introduced. In its present state SUCBAS consists of an intensive cooperation group, including eight nations. The group has been operational since 2009. On the initiative of Finland the SUCBAS model was developed further to serve as a base for the MARSUR-project (MARitime SURveillance) led by the European Defence Agency (EDA). The target of this project is to enable the exchange of information amongst European Navies. The brilliantly working, technical solution was presented in Brussels on 30 June 2011.

International cooperation has taught us that it is easier to achieve a technical solution than to reach other agreements. In addition to good will, national political processes including preparations for agreements are needed. The target is cooperation on a multi-authority basis, also internationally. Today, at the EU-level, “cross sector” thinking involves more challenges than “cross boarder” thinking. The central maritime agencies (EDA, FRONTEX, and EMSA) each have their own maritime surveillance projects that naturally spring from the individual needs of each agency. One objective (and strategic instrument) of the EU-integrated maritime policy led by DG MARE is to combine the information produced by different agencies into “a European situational awareness picture.” This objective has good chances of succeeding, especially thanks to the Lisbon Agreement, which helped eliminate, at least in the agreement texts, the pillars separating the civilian and military structures in the EU. In Finland this problem has been solved already on a national level, which is not the case even in all Baltic countries.

“Need to know, need to share” is the slogan of the SUCBAS cooperation. On a national level, we have been aware of this already for a long time. The keyword in every respect is “trust.” Especially when international cooperation is concerned, trust does not develop immediately, but only as a result of deeds and actions. Our global environment is unfortunately more chaotic and presents new and different threats. Good situational awareness is increasingly important and if you stand alone as a state, this awareness is no longer achievable. As a Navy we stand at the leading edge when it comes to developing maritime situational awareness across borders. ■



DEVELOPING MARITIME SECURITY COOPERATION IN AFRICA

LCDR Chris Lutgendorf, USA-N

African countries face a large number of threats, but very few as severe as the security of the maritime commons. For years, African leadership has focused on safety and economic development issues that look inward, leaving the security of the maritime spaces as an afterthought. Nearly ninety percent of African commerce, an amount equal to \$1 trillion per annum, flows by sea. Illegal trafficking, attacks on oil sector interests, and unregulated fishing all contribute to billions in lost revenue and are a result of poor maritime awareness and a failure to secure domestic exclusive economic zones. Of the fifty-four countries of Africa, thirty-nine are either littoral states or islands; therefore, it is confidently expected that the continent is acutely aware of the impact of the maritime domain,¹ yet little has been done. Despite a recent colonial his-

tory, competing national priorities, and challenges in maritime infrastructure development, African leaders should recognize the importance of the maritime domain and invest the necessary resources in developing cooperation between agencies, governments, regional, and international organizations. Maritime security cooperation should grow simultaneously with the development of the maritime sector and strengthen the overall security of the African maritime commons.

In order to achieve an effective level of maritime security cooperation, partners must trust each other and be able to recognize the benefits derived from any cooperative action. This foundation of trust and mutual understanding has been developing too slowly in Africa for many years, mostly due to the strong colonial history and mistrust between neigh-

boring tribes and religious groups. Colonial, tribal, and religious divisions run deep in African society and are significant determining factors in government policy and economic development. Such tension has focused domestic priorities on the growth of strong land-based armies and land-transportation routes, as well as a hesitation to form cooperative alliances outside the national government. Despite these challenges, several organizations, including the African Union (AU), the Maritime Organization of West and Central Africa (MOWCA), and the Economic Community of West African States (ECOWAS), have been able to break down some of the barriers and to lay a foundation toward cooperation. Results include increased economic cooperation and the development of several military response forces, however, these continue to be land-focused and do very little to embrace

the maritime realm. More must be done toward building maritime security cooperation through increased maritime domain awareness and information sharing. African leaders should leverage existing African partnerships and initiatives, including the use of science and technology², and examine successful regional and international partnerships while developing an African model for maritime security cooperation. Sufficient models of existing bilateral and regional cooperative partnerships exist and must be examined for use in the African context. Yet, within this discussion, competing national priorities must also be studied in order to accurately determine mutual benefits between partners.

result in the allocation of the preponderance of resources toward non-maritime programs. African leaders should embrace the importance of the maritime commons and dedicate necessary resources toward the development of maritime security cooperation initiatives.

As a result of a strong colonial past and competing national priorities, African maritime infrastructure has been crumbling for many years. Examples include the lack of major shipbuilding and repair facilities outside of South Africa and the abundance of blue water naval assets belonging to countries who border the Mediterranean Sea. It can be argued that Africa cannot begin to develop maritime security cooperation without first improving

ing competing systems, and reduce required investment by developing maritime security cooperation initiatives from the ground up. While the lack of maritime infrastructure is a concern, African leaders need to embrace this weakness as an opportunity.

Development of African maritime security cooperation will neither occur overnight nor in the short term. Regional and international partnerships such as the Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia (ReCAAP) and BLUEMASSMED were not developed overnight. However, trust and a shared purpose are common to both of them. These same principles can be applied to the development of maritime security cooperation initiatives in Africa and should guide near-term dialogue. African leaders from the AU, MOWCA, ECOWAS, and other regional organizations must embrace these principles in concert with an understanding of the significance of the maritime realm. Use of the sea for economic development and national security will only increase as limited natural resources are developed and populations continue to grow. Now is the time for African leaders and their international partners to act. Now is the time to embrace maritime security cooperation for the betterment of the African continent. ■

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A SECURE MARITIME COMMONS CONTRIBUTES TO ECONOMIC DEVELOPMENT BY PROVIDING A MEDIUM FOR TRADE AND FOREIGN INVESTMENT; A SECURE MARITIME COMMONS PROVIDES JOBS RANGING FROM HEAVY INDUSTRY TO AGRICULTURE TO FISHING; A SECURE MARITIME COMMONS PROVIDES ACCESS TO HUMANITARIAN AID THAT CAN COUNTER SOCIETAL STRIFE AND DISEASE PROLIFERATION.

Trust is not achieved in a vacuum and neither is agreement on international and domestic priorities. Many African states face significant domestic concerns, ranging from crumbling infrastructure, poor health, disease proliferation, and basic societal needs. The last concern for many states is the security of the waters off its shore; yet, that security is directly connected to many of the domestic issues previously noted. A secure maritime commons contributes to economic development by providing a medium for trade and foreign investment; a secure maritime commons provides jobs ranging from heavy industry to agriculture to fishing; a secure maritime commons provides access to humanitarian aid that can counter societal strife and disease proliferation. However, many capitals fail to make the connection between the security of the maritime commons and the economic, social, and national security issues debated by governments. Competing priorities

its maritime infrastructure. This dichotomy presents a unique opportunity to grow security cooperation and infrastructure development together, leveraging existing assets and conserving precious resources. Through bilateral and

regional agreements, African governments can “borrow the best” from what all of Africa has to offer, such as shipbuilding from South Africa and academic science and technology development from Ghana.³ African leaders can avoid duplication of technology, integration of exist-

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1. The Brenthurst Foundation, “Maritime Development in Africa,” 2010, 5.

2. Augustus Vogel, “Investing in Science and Technology to Meet Africa’s Maritime Security Challenges,” ACSS Africa Security Brief No. 10 (Washington, DC: National Defense University Press, February 2011).

3. Augustus Vogel, “Investing in Science and Technology to Meet Africa’s Maritime Security Challenges,” ACSS Africa Security Brief No. 10 (Washington, DC: National Defense University Press, February 2011).

Supporting LIFE

An innovative approach to military support in Humanitarian Assistance and Disaster Relief

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In spring 2011, the Combined Joint Operations from the Sea Center Of Excellence (CJOS COE) released a new humanitarian concept called “The Navy supports L.I.F.E.”: L.I.F.E standing for Logistics, Information, Force protection and Expertise, four key domains where the military can bring relevant and complementary support to the humanitarian effort. The purpose of the L.I.F.E. concept is to offer an innovative approach to two key challenges recurrently highlighted during large scale disasters: How to improve the efficiency of military support in Humanitarian Assistance and Disaster Relief (HADR) and how to enhance humanitarian coordination?

Benefiting from their greater cultural awareness and their vast HADR experience, humanitarian actors should be able, thanks to the daily updated L.I.F.E. STATUS, to better understand the capabilities offered by the military and find the best way to integrate this support adequately into the overall humanitarian effort.

The L.I.F.E. concept is intended to improve humanitarian coordination by fostering a better dialogue between military and humanitarian actors and by strengthening the role of the civilian Humanitarian Assistance Coordination Center (HACC).

The military organization and the information sharing processes implemented by



Japan Ground Self-Defence Force members search for the victims of the tsunami in Miyako, Iwate Prefecture, March 14, 2011. Photo: AP

the L.I.F.E. concept are specifically tailored to achieve two objectives:

- Collect and understand the current and future humanitarian needs,
- Disseminate the available military capabilities offered in the L.I.F.E. STATUS as a response.

The L.I.F.E. concept emphasizes the key role of the HACC. This center, run either by the government of the affected Nation or by The United Nations Office for Coordination in Humanitarian Affairs (UNOCHA) or a combination of both, will become the key decision maker for the L.I.F.E. STATUS validation process. Any requests for support sent by humanitarian actors, to access the capabilities advertised in the L.I.F.E. STATUS, will need to be assessed and validated by the HACC in the context of the overall humanitarian situation.

This first version of the L.I.F.E. concept was mainly focused on the Navies’ response to natural and industrial disasters, taking for granted that in those circumstances the use of Military and Civil Defense Assets (MCDA), do not conflict with the humanitarian principles

of: legitimacy, impartiality and humanity.

As recommended by different prominent international humanitarian organizations: UNOCHA, the International Committee for the Red Cross (ICRC) and the Humanitarian Aid department of the European Commission (ECHO), an updated version of the concept will address, from a joint perspective, both disasters and complex emergencies.

This new version also provides solutions to reconcile the United Nations OSLO and MCDA Guidelines with the national political wills, usually opposed in the way to use military capabilities: the UN Guidelines consider the use of MCDA as a last resort, while the governments usually want immediate tangible results. More details can be found at the CJOS COE website: www.cjoscoe.org ■

FUERZAS ALIADAS PANAMAX 11

By LCOL Gary Yuzichuk, CAN-A
CJOS COE

The annual U.S. Southern Command (USSOUTHCOM) sponsored exercise focuses on ensuring the defense of the Panama Canal, which is crucial to the unrestricted flow of global maritime commerce. From 15 to 26 August 2011, 18 nations with more than 3500 personnel and 22 ships participated in the exercise spreading from Panama to Mayport, Florida to Stennis, Mississippi, as well as Fort Sam Houston, Texas.

For the second year in a row, the CJOS COE officers actively supported activities related to their Programme of Work items while augmenting the SOUTHCOM Staff during the exercise. The exercise permitted the CJOS COE to conduct interoperability surveys with the Combined Force Land Component Command (CFLCC) headed by Colombian General Gabriel H. Pinilla. It also enhanced The CJOS COE's understanding of Cyber operations through active engagement with the SOUTHCOM Headquarters Cyber Fusion Cell, and finally enabled CJOS to assist the exercise "White Cell" with their understanding and experience in coalition operations.

PANAMAX 2011 is one of the largest exercises in the world; in addition to Panama, the following 17 nations participated: Argentina, Belize, Brazil, Canada, Chile, Colombia, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Paraguay, Peru and the United States.

The maritime, land, and air components focused on a variety of response to requests from the Government of Panama to protect and guarantee safe passage of traffic through the Panama Canal, ensure its neutrality, and respect national sovereignty. Additional goals for PANAMAX 2011 included developing and testing command and control procedures for a United Nations authorized Multinational Force operating in the global spectrum of maritime, air, land, space, and cyber operations. PANAMAX 2011 included scenarios addressing the following: visit, board, search and seizure (VBSS); Entry Control Point training; littoral operations; open water diving operations; counter drug interdictions; simulated riverine operations; multinational land synthetic operations in Colombia.

At the end of the exercise, all the components had achieved successful integration into the multinational force and were able to operate efficiently. As customary following a large live event, the next iteration of the series will be conducted using a constructive synthetic environment. PANAMAX 2012 is scheduled to be held from 6 to 17 August 2012 and will build on the lessons identified from the previous exercises. ■



A FRAMEWORK FOR ENHANCED INTERNATIONAL MARITIME SECURITY COOPERATION AND AWARENESS

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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. Given 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 coordination 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:

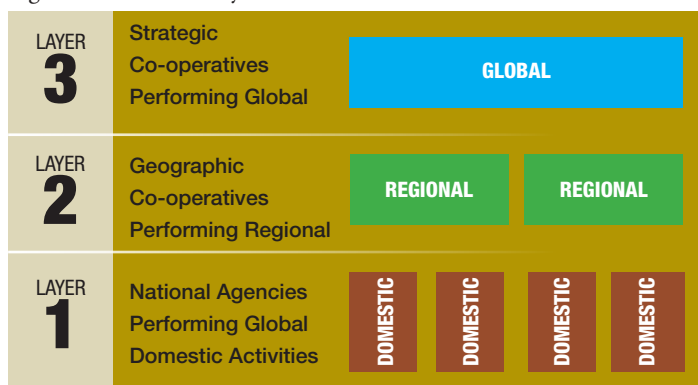


Figure 1. The Layers of Maritime Security Cooperation and Awareness (MSCA) taken from "A Framework for Enhanced Maritime Security Cooperation and Awareness" dated 27Jun11.

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 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 how 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 chal-

lenge 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:

- 1. Consolidated Legal Policy Strategies impeded by:**
 - Legal Obstacles
 - Policy Obstacles
 - Information Classification/Security Obstacles
- 2. Information Sharing**
- 3. Data/Information Standards**
- 4. Surveillance and Technology**
- 5. Commercial Interests**
- 6. Inter-Organizational Relationships**

Figure 2. Enablers for Maritime Security Cooperation and Awareness (MSCA) taken from "A Framework for Enhanced Maritime Security Cooperation and Awareness" dated 27Jun11.

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

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.

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 within clear regulatory structures. Finally, cooperation 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 interdependent systems and processes which detract from common standards. Through alignment of best practices, implementation of these enablers

force on 1 July 2004, as well as mandatory security measures, adopted in December 2002. The IMO has led the effort in coordinating repression of piracy in the Horn of Africa which is now codified in the Djibouti Code of Conduct 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”.

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.

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

The CJOS COE in concert with the U.S. Joint Staff (former U.S. JFCOM) are now examining this challenge to assure safe and 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 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.

The outcome 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 granted 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 2012.

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 to stand before the IMO General Assembly and table a resolution to establish a Convention for Maritime Security Cooperation and Awareness? ■

MULTINATIONAL MARITIME INTERNET PROTOCOL INTEROPERABILITY (M2I2)



WO2 (YOFS) Timothy Lever RM, GBR-M, CJOS COE

Coalition maritime information exchange is a complex environment demanding responsive solutions to unify planning and delivery of decisive global effect in support of operations from war-fighting to Humanitarian Assistance and Disaster Relief. Technical solutions can be time consuming and costly to install; additionally there exists a growing gap between US, Coalition, and Allied Nations in terms of current capability and future areas of technical development and investment. In the current global economic climate more must be

was developed to meet the demand for a Coalition data sharing network. The importance of Coalition collaboration was further realised immediately following 9/11 with the onset of the Global War on Terrorism (GWOT) and the resulting Operation ENDURING FREEDOM (OEF) in late 2001. The global nature of the war on terrorism fed the requirement for the development of CENTRIXS to become a global multi-national data sharing network. As OEF expanded into other Theatres and Areas of Responsibility (AOR) so CENTRIXS devel-

opment, provides global coverage. These networks, referred to as enclaves, are each built to the same network architecture design but are not interconnected. This enables cost effective and efficient implementation utilising computers, network equipment and applications which are both Commercial off the Shelf (COTS) and Government off the Shelf (GOTS); whilst preventing the inadvertent release of data between Nations who are not integral to the enclave associated with a specific operation, thus ensuring information integrity and confidentiality. Established enclaves are:

- Global Counter Terrorism Task-Force (GCTF) - multilateral 60+ Nations Supporting up to OEF.
- Combined Maritime Forces CENTCOM (CMFC) formally Cooperative Naval Forces CENTCOM (CNFC) – multilateral subset of GCTF Nations.
- Combined Maritime Forces PACOM (CMFP) – multilateral subset of GCTF Nations.
- Inter American Naval Telecommunications Network (IANTN) – multilateral between South American Nations.
- CENTRIXS-J – bilateral US and Japan.
- CENTRIXS-K – bilateral US and Korea.

In addition to the previously listed examples of multilateral and bilateral CENTRIXS enclaves, the same network architecture is used by U.S. Forces to access the NATO Information Data Transfer System (NIDTS). Whilst not strictly a CENTRIXS enclave, NIDTS makes use of the same hardware and network



done to understand and make best use of existing capabilities.

The Combined Enterprise Regional Information Exchange System (CENTRIXS)

was developed to meet the emerging demands.

Today CENTRIXS, consisting of a combination of multilateral and bilateral virtually separate networks in support of multi-national

architecture to provide US Forces with the NATO Secret Wide Area Network (NSWAN) capability.

The Maritime Multinational Internet Protocol Interoperability (M2I2) conference is a gathering of likeminded Coalition and Allied partners from Nations participating in maritime multi-national Operations and Exercises. Those attending the conference, forming a Coalition of the willing, include representatives from NATO, EU and Rim of the Pacific (RIMPAC) countries, in addition to representatives from US numbered Fleets, Combatant Commands (COCOM), OPNAV and supporting agencies such as Space Warfare Systems Command (SPAWAR), and the Defense Information Systems Agency (DISA) and the Network Operation Centres (NOCs).

The conference is a bi-annual event hosted in turn by those countries with a significant vested interest in current, and development of future maritime collaboration IP network architecture. Recent conferences have been hosted by Canada, Netherlands, and Denmark with future venues planned in Australia, United Kingdom, and United States, reflecting the true multinational nature of the conference.



Denmark Conference 2011

- Technical and Information Assurance Working Group - Tech & IA WG.
- Operations and Training Working Group — OTWG.

The ESG is composed of the senior National representatives from each member Nation, in addition to senior agency representatives for those agencies attending. Representation is encouraged at the level of OF 4, or civilian equivalent, and above. The Chairman of the ESG is directly responsible to USFFC N6 Deputy Chief of Staff/Commander Navy Cy-

The Tech & IA WG essentially address the zeros and ones aspect of any proposed solution or highlighted emergent requirement drawing on a multinational collective wealth of knowledge and experience.

The OTWG is jointly chaired by SPAWAR Systems Centre Pacific (USA) and MARLANT (CAN). Typically the WG is composed of National and agency N6 representatives from the areas of communications planning and project management, all with a collective interest in collaborative interoperability. However, the nature of work strands and discussions within the OTWG does not preclude attendance by representatives from other areas; indeed participation by National N3 and N5 representatives is strongly encouraged.

M2I2 delegates address a broad range of issues during the conference week within the formed WGs, and where overlap exists or collaboration is required, through combined breakout sessions. Attendees bring a plethora of knowledge and experience from many backgrounds enabling issues to be addressed from a variety of international perspectives. Highlighted work strands are pursued between conferences through volunteer contribution and collaboration of individuals in specific areas of expertise. M2I2 truly is an International conference addressing Multinational Maritime Collaboration issues. Through the Coalition of the willing Multinational Maritime Internet Protocol Interoperability will be achieved. ■

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THE OBJECTIVE OF M2I2 IS TO ADDRESS THE DEVELOPMENT AND IMPLEMENTATION OF OPERATIONAL TECHNICAL IP NETWORK SOLUTIONS IN SUPPORT OF ALLIED AND COALITION COLLABORATION IN THE MARITIME ENVIRONMENT

Whilst traditionally the conference main focus has been on the improvement of interoperability and collaboration in the CENTRIXS-M (maritime) and Collaboration at Sea (CAS) arenas in support of the GWOT, these are now not the sole systems addressed. The objective of M2I2 is to address the development and implementation of operational technical IP network solutions in support of Allied and Coalition collaboration in the maritime environment. In order to address the complexities associated with maritime IP collaboration systems, whilst maintaining coherency of work strands, conference members attend working groups (WG) in accordance with their specific area of interest and subject matter expertise. The three formed working groups, which sit following the first day of conference plenary briefs and National updates, are as follows:

- Executive Steering Group – ESG.

ber Forces. Whilst the ESG, or indeed the collective M2I2, has no authority over the conduct of collaboration IP networking, its purpose is to provide direction and endorsement of output from both Tech & IA WG and OTWG. Additionally the ESG can be called upon to provide intimate guidance when required by either WG, to ensure work strands remain relevant and adhere to approved operational technical guidelines and standards.

The Tech & IA WG is chaired by SPAWAR Pacific and composed of National and agency technical advisers with a vision to development and implementation supervision of approved operational technical solutions. Representatives are nominated by each Nation in attendance; generally senior technical advisers with a technical interest in CENTRIXS-M and collaborative IP networking in addition to knowledge of their own National systems and requirements.

CJOS COE's JOINT LITTORAL WARFARE CONCEPT DEVELOPMENT

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The demise of the Soviet Union and the end of the Cold War witnessed an increase in global economic interdependence and the emergence of new threats to the alliance, which have brought fundamental changes to how NATO naval forces can best be employed. Naval operations to defend Sea Lines of Communications across the North Atlantic have been replaced with maritime security operations and presence and deterrence operations at strategic distance from the European landmass. Increasingly, these missions require that NATO forces conduct sustained operations in littoral environments, which bring along a host of new challenges, while exposing naval forces to a greater array of conventional and asymmetric threats. To meet these challenges, new operating concepts for naval and joint forces are required. Not surprisingly, CJOS COE has received several requests from various nations to explore aspects of littoral warfare. In particular, the United Kingdom and the Netherlands have asked for support from CJOS COE to develop concepts for littoral operations. Indeed, for Programme of Work (PoW) 2012, CJOS COE has agreed to develop a littoral warfare concept of operation (CONOP) and to write an experimental tactic (EXTAC) for amphibious operations, which also considers the impact of hybrid and asymmetric threats. CJOS COE is currently beginning work on both of these projects and expects to deliver the required products in the coming months. The approach CJOS COE intends to take is to develop an overarching littoral warfare concept that stands as a baseline for the further development of other more detailed littoral warfare related products. This strategy will ensure consistency in doctrine and recommendations. Additionally, product development will include a joint perspective and our intent is to be collaborative with other centers of excellence and agencies to ensure the realities and varying perspectives of littoral warfare are



fully captured. Of note, the littoral warfare concept will consider a full range of threats, which can be arrayed against a joint force operating in the littoral environment. These threats include subsurface, surface, air, and land-based conventional and asymmetric forces. The concept will also consider a full range of NATO joint capabilities including air, naval, marine, riverine, special operations, and ground forces. The concept evaluates the physical and human geography and its impact on littoral operations. The examination of the environmental characteristics will include a discussion on the nature and effects of confined and shallow waters, coastal archipelagoes, choke points, and riverine estuaries. The examination of human activity will include the nature and effects of coastal maritime traffic, offshore resource exploitation, fishing, trafficking, and smuggling. The scope of the project is to develop a joint operational level war-fighting concept, which can be utilized by NATO Joint Force staffs for planning. Ultimately, it is CJOS COE's goal to support NATO transformation by developing up-to-date concepts for the employment of joint maritime forces in the littoral environment, which supports the Alliance Maritime Strategy and guides future force structure design and development of associated tactics and capabilities. ■

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DESIGN, STRATEGIC PLANNING AND OPTIMIZATION of a Framework for Enhanced International Maritime Security Cooperation

Motivation

Maritime Security has become a vital topic that does not respect boundaries per se.

Mr. Efthimios E. Mitropoulos, Secretary-General of the International Maritime Organization stated:

“Transnational maritime crimes such as piracy, illicit trafficking (weapons, drugs, money, humans or other contraband), terrorism, threats to the environment and aggressive exploitation of resources affect all nations and therefore require the collective efforts of compliant actors to counter these threats. It is evident that there is a growing need for international maritime security cooperation in these endeavors.”

Security cooperation should be integrated and embedded into a holistic approach. This approach should strive to deal with the complex system of maritime security using a systematic framework and also using experience of different actors in security issues like armed forces in robust stabilization operations such as the International Security Assistance Force (ISAF) mission to Afghanistan or civil air traffic transportation systems. This paper starts by defining complex systems, continues to detail a systematic framework called the socio-technical

system, then applying the different categories of the system to some of the challenges posed for maritime security. It embeds research areas and applications enriched with current military experiences wherever appropriate to foster discussion on supporting the issue of strategic planning and risk assessment.

Complex systems

There does neither exist a unified understanding nor definition for a complex system. The authors prefer the following definition:

“A complex system is a network of heterogeneous components that interact nonlinearly, to give rise to emergent behavior.”¹

Wellbrink² derived a taxonomy for complex systems:

- Does the system consist of autonomous agents that act in parallel?
- Is the control of the system highly dispersed?
- Do the agents engage in non-linear interactions?
- Does the system adapt and does it produce emergent behavior?

- Is the system changing its structure dynamically?
- Does the system permanently change into different equilibria?
- Does the system anticipate the future?

On first glance it appears that maritime security fits well within this taxonomy. Clearly within the domain of maritime security there are different actors (good and bad ones) that act independently and control is highly dispersed, which is one of the key challenges for a comprehensive approach. Mitropoulos envisions establishing a Global Maritime Security Network as the most beneficial form of cooperation in order to centralize information sharing on actionable intelligence. Non-linear interactions also belong to maritime security, such as a forced explosion of an oil tanker would have a tremendous non-linear impact on the environment.

Anticipation

Pirates and terrorists are highly adaptive, quickly change their tactics and their structures dynamically and thereby create new challenges because their system is constantly changing

(not reaching an equilibrium). Both sides constantly try to forecast the behavior of the other side anticipating the future.

Using multi-agent systems to simulate complex systems gives us a chance to harness the complexity by determining the main drivers, the main interaction, and feedback loops of such a system. Data farming is an appropriate method to learn more about the system and the most influential factors within the system. This method allows discovering disruptive areas within problem spaces, meaning that one can find areas of high sensitivity where small changes in input cause non-linear great changes in the output. These areas represent chances to apply more traditional methods to get a “better grip” on complex issues. Hence, an analytical approach supported by well-known methods seems to be a promising approach to learn more on the issue of maritime security and thereby allowing improvement on security.

The next piece introduces a framework to systematically research maritime security.

Socio-technical System

A socio technical system describes the interaction of people, organization and technology in order to produce a desired outcome³. The figure shows the general idea of such a system:



Figure 1: The socio-technical system

The general idea of this holistic approach is to categorize a system in three different domains: The “People” domain usually comprises human skills and abilities including training needs as well as motivational aspects of humans. In general, one could claim that the best organization with the most modern technology cannot produce high quality outcomes if people are

unable or unwilling to perform their tasks. The “Technology” domain consists of tools including IT, methods and techniques used within a certain organization to produce results. One recent military experience explains that the most sophisticated technology might not be suitable with people because its usage costs encompass too much concentration needed required for more vital tasks.⁴ The “Organization” domain consists of structures and processes. The structure of an organization certainly has to be fitted to the organization’s tasks, however very often the procedures and processes offer an astonishing potential for improvement.

The next piece addresses the challenges of improving maritime security keeping in mind the definition for complex systems and the domains of the socio-technical system.

Maritime Security Challenges

This section points out some of the challenges mentioned by Mitopoulos and indicates possible pathways within the socio-technical system’s domains to overcome difficulties.

Maritime Situational Awareness (MSA) or Maritime Domain Awareness (MDA) are key capabilities for enhanced international maritime security cooperation.

Probably the greatest challenge is the need for global and secure information sharing:

Information Sharing

People domain: Information sharing is not necessarily a given, even in the same problem area. Within the military area, this lack of willingness to share information is called the “Cave Man Problem” where everybody collects and analyses their own data in their own cave, although information sharing is organizationally favored. The question then becomes, how to convince or motivate people to change their behavior. One possible way is using game theory and “serious games” for training. In different scenarios the players could experience the consequences of bad information sharing and no or very restricted cooperation versus the opposite way.

Organization Domain: Rules, laws and regulations hinder global information sharing for maritime security. Besides the needed research on how to adapt certain procedures and laws, there should be an effort to present the value of information sharing based on valid

analytical results. These results could stem from simulation systems, such as a proposed multi agent system.

System Dynamics: System Dynamics (SD) also offer features that can help to produce analytical results on the edge of sensitive problem areas. SD models allow changing parameters on the fly immediately showing results and consequences in diagrams or tables. A simplified model should certainly parameterize the amount of information shared visualizing failure and success. This approach is well suited for “non modelers” since it fosters transparency of interactions and feedback loops within a system thereby building trust into the model and its results.

Technology Domain: The research question within this domain is how to best support global and secure information sharing. Again military expertise can help to explore better ways of designing IT systems. Armed Forces

SPEAKING A COMMON LANGUAGE THAT IS USING APPROPRIATE DATA EXCHANGE AND REPORT STANDARDS SHOULD BE ONE MAIN TRAINING GOAL.

started by using proprietary commercial software discovering that interoperability was not the focus of certain vendors. Meanwhile Armed Forces enforce the use of standards for data exchange and some began to use open source software to improve their systems quickly. Collecting and analyzing data, translating it into actionable intelligence to assess the risk is another challenge for maritime security.

People domain: All three activities (collecting, analyzing and translating) require training. Speaking a common language that uses appropriate data exchange and reports standards should be a main training goal.

Organization Domain: There are many interesting research aspects covering areas such as multilayered decision structures and multilayered analysis structures. These should be addressed from an operational design viewpoint. Actionable intelligence requires that decisions are made at the most appropriate level. A multi layered decision structure needs to

1 Mr. Efthimios E. Mitropoulos (2011), Secretary-General of the International Maritime Organization A Framework for enhanced international maritime security cooperation COECSW Forum 2011.

2 Wellbrink, Jörg (2003) “Modeling reduced human performance as a complex adaptive system”, Dissertation, Monterey, California: Naval Postgraduate School.

3 Loechel, A., Mihelcic, G., Pickl, S. (2012), “An open source approach for a military situational awareness system”, Hawaii International Conference on System Sciences HICCS 2012.

4. Hu, Bo; Leopold, Armin (2011) “Web-based Participatory System Dynamics Modeling”, Concept and Prototype Development, System Dynamics Conference 2011, Washington D.



take into account which level of the organization should “act” upon the threats posed. Especially an organizational structure supporting analysis can be derived from reach back processes established within military organizations. Current research in this domain addresses opportunities to create innovative and adaptive structures, flexible processes providing the appropriate analysis in terms of timeliness and accuracy to the decision makers on different levels. Other engineered systems like the civil air transportation system can be good examples for a further development since they underlay the same restrictions as maritime security systems.

It also appears to be vital that a central focal point like a central interagency information center supported by national agencies stores certain information to allow strategic planning and risk assessment on a global scale.

Technology Domain: Risk assessment not only requires collection of but also “dissemination” of data. Different simulation methods produce data for further risk analysis. Typical risk assessment uses methods like war gaming forecasting high potential threats even with low probability. Pattern recognition is very useful especially when analyzing incident data for common structures and procedures. Collecting all information on incidents with improvised explosive devices is a military example for such a data tool. Analyzing data geographically, looking at attack times and targets could help to produce a dynamic risk map for maritime security that supports the decision whether or not to use a certain route at a certain time. Shipping routes with minimized risks as well as patrols’ pathways with a

maximum likelihood of covering an area and detecting criminals, combining sensor information to a shared situational awareness picture are potential application areas in which pattern recognition can be used.

Summary

This paper shows that treating maritime security as a complex system can help foster knowledge as well as a better understanding of the complex nonlinear interactions and feedback loops within maritime security. The socio-technical system’s view helps to “divide and conquer” by using the different domains (people, organization, and technology) and their interaction to better understand this system. Within the people domain, the aspect of training with “serious games” is a worthwhile path to follow. The organizational domain is challenging due to the restrictions of national and international laws and restrictions. However deriving structures and processes from the military area and from the civil air transportation system could be promising ways to progress. The technological domain indicates that certain well-known analytical methods such as simulation, data farming, system dynamics and optimization can be applied to certain challenges. Methods and tools can be shared and provide an additional incentive to share information. The list of questions to be answered is growing yet represents just a small number of related issues that need addressing:

- How can we characterize *reach-back processes* in these scenarios?
- How can we establish effective and efficient data analysis?

- How can we embed techniques like sensor allocation, tracking and monitoring?
- How can we design and optimize a holistic risk assessment?
- Which role has verification and validation in their processes?
- How can we design such networks (“graph-based interoperability”)?
- How can we analyze these special complex networks (“ad-hoc networks”)?
- How can we optimize and fix such networks (“via swarming techniques”)?

These questions can only be answered if information sharing plays a central dominant role in international Maritime Situational Awareness. Global Maritime Security can be designed and optimized using risk assessment within maritime situational awareness in a comprehensive way. Strategic planning is vital for success, supporting the planning processes with these methods is the core competence of COMTESSA. ■



Maritime Choke Points and the Global Energy System

Charting a Way Forward

Charles Emmerson and Paul Stevens

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Summary points

- The global energy transport system is vulnerable to disruption at key maritime choke points such as the Straits of Malacca and Singapore, Bab Al-Mandab, the Suez Canal, the Turkish Straits and the Strait of Hormuz.
- The impact of a disruption on energy supply, prices and markets depends on its extent and duration. Perceptions and the interaction of 'wet barrel' and 'paper barrel' markets play a major role in determining price level and volatility.
- Measures closing international straits are generally illegal in peacetime, and international law requires maintaining rights of transit passage during war.
- Establishing and maintaining legal and political norms around the security of maritime choke points – involving user states, consumer states and international bodies – are essential.
- Cooperative mechanisms between coastal states can enhance confidence, while the likelihood of deliberate disruptions would be reduced by industry and government measures to mitigate their effects.
- The security of maritime choke points ulti-

mately rests on the observance of international law, and on the willingness and capacity of interested members of the international community to enforce it if necessary.

Introduction

The threat of disruption to key maritime choke points in the global energy transport system – the Straits of Malacca and Singapore, Bab Al-Mandab, the Suez Canal, the Turkish Straits and the Strait of Hormuz – has long been a fixation for strategic planners, energy companies and financial markets.

A broad range of disruption scenarios has been considered, whether in the context of political crisis and armed conflict or, latterly, stemming from international terrorism and piracy.¹ In particular, the vulnerability of sea-lanes to closure – and the ease or difficulty with which their security could be re-established – has been the subject of extended debate.² There is little doubt that the deliberate closure of internationally recognized maritime straits would in most cases be contrary to international law (the situation for man-made canals is more complex). Opinions as to the likely

effectiveness of any attempted closure vary.

Maintaining free passage of energy products through maritime choke points is an explicit national interest of major global powers.³ Europe, Japan and the United States have traditionally been most dependent on oil imports vulnerable to disruption. This may change over time as the United States becomes less dependent on imports from outside the western hemisphere, and East Asia much more so. China, which only became a net oil importer in 1993, is already more dependent than the United States on oil supplies from the Middle East.⁴

There is no doubt that disruptions to key energy choke points – whether maritime or on-shore, and whether resulting from the actions of non-state actors, inter-state political tensions and conflict, or from industrial or maritime accidents – could have serious consequences for the level and volatility of energy prices. Major disruptions to particular choke points could, under some circumstances, lead to physical supply shortages of oil and gas in some markets.⁵ The salience of choke points in the global energy economy may increase over time if production or transport be-

1. For a recent treatment of the Strait of Hormuz from a military perspective see Caitlin Talmadge, 'Closing Time, Assessing the Iranian Threat to the Strait of Hormuz', *International Security* 33: 1 (2008), pp. 82–117.

2. See, for example, Dennis Blair and Kenneth Lieberthal, 'Smooth Sailing: The World's Shipping Lanes are Safe', *Foreign Affairs* 86: 3 (2007), pp. 7–13; and Glenn Davis, Charles Dragonette and Randy Young, 'Dangers at Sea', *Foreign Affairs* 86: 5 (2007), pp. 194–95. On 5 January 2012 British Defence Secretary Philip Hammond told a policy-making audience in Washington, DC that any attempt by Iran to obstruct the Strait of Hormuz would be 'illegal and unsuccessful'.

3. In 1980, US President Carter declared the Persian Gulf a 'vital interest' of the United States. Freedom of navigation in the Persian Gulf, and through straits used for international navigation, has been

a consistent US policy, enforced by US Navy Freedom of Navigation missions.

4. See John Mitchell, *More for Asia: Rebalancing World Oil and Gas*, Chatham House Report, December 2010. China imported 2.4m bpd from the Middle East in 2010, as against imports of 1.7m bpd by the United States (and 2.4m bpd by Europe, 2.6m bpd by India and 3.6m bpd by Japan): BP *Statistical Review of World Energy* 2011, 2011.

5. The complete shut-down of Libyan crude oil production in 2011 suggests one possible pattern of consequences for supply disruption, initially mostly affecting supply for southern Europe but having a broader price impact. The impact on refineries, dependent on a particular type and quality of crude oil, could be significant, with potential second-order impacts on the availability of particular oil products.

comes more geographically concentrated, and if general market tightness weakens the resilience of the system to supply shocks.

The precise market and supply impact of any disruption depends on a range of factors: its particular location and nature, the market context at the time, and the extent and length of disruption.

This paper explores the issue of choke points in the global energy transport system and relates the vulnerability of choke points to the volatility of energy prices. It briefly discusses the international law dimensions of maritime choke points in times of peace and war, and outlines a range of policy options – beyond the purely military – which could, under certain circumstances, improve the resilience and integrity of the global energy transport system and maritime choke points in particular.

Which choke points?

The concept of a choke point derives from the military context, relating to terrain. It implies a narrow passageway that cannot easily be bypassed and that offers a ready opportunity to prevent the movement of military forces.⁶ When applied to energy trade, the concept rapidly becomes more complicated. There are relatively well-documented maritime choke points for the transport of oil, the most important of which are the Strait of Hormuz and the Straits of Malacca and Singapore.⁷

But other choke points in the global oil and gas system could also constrain the supply of products to the consumer market, provoking wider market instability. Any large-scale industrial system involving extraction, processing and distribution is bound to contain choke points which may affect the optimal functioning of the system as a whole. Refineries, in general, can act in this way (though the current global availability of refining capacity reduces that risk somewhat).⁸ Particular concentrations of assets may heighten the salience of such a choke point: the Abqaiq facility in Saudi Arabia, for instance, processes between 5 and 6 million barrels of crude oil per day.⁹ Other examples are the huge loading terminals at Ras Tanura in Saudi Arabia through which most Saudi exports normally pass, or at Kharg Island in Iran. Insufficient tanker capac-

ity could be a key constraint if disruptions to a maritime choke point caused major re-routing of oil tankers to longer routes and hence reduced availability.

Beyond these physical choke points, other factors or potential supply restrictions could also contribute to price volatility. Politically inspired sanctions, from whatever source, may further restrict supply.¹⁰ Finally, in recent times, the recrudescence of piracy, particularly in an increasingly broad maritime area off the Horn of Africa, presents a threat to steady oil supplies, and could lead to additional costs.¹¹

Choke points are more difficult to define for gas, which can be transported either by pipeline or, increasingly, in the form of liquefied natural gas (LNG), by tankers. Seaborne LNG trade is as vulnerable as seaborne oil trade to potential maritime routing problems, and disruptions to maritime choke points.¹² The growth of LNG trade (e.g. from Qatar) may increase the salience of these choke points in the energy system as a whole.

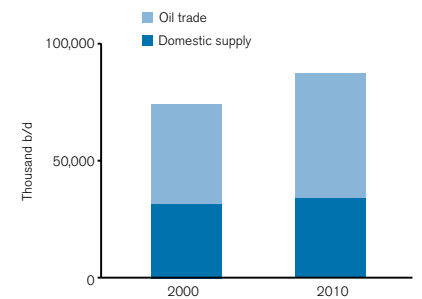
Gas pipelines may also constitute serious choke points in the distribution system for natural gas. The number of pipelines required to supply a given volume of natural gas is smaller than the number of LNG ships, creating efficiencies in transport. But this greater concentration of assets also means supplies can less easily be diverted in the event of disruption. The fixed nature of their infrastructure may make pipelines additionally vulnerable to disruption.

Twice in the last five years, disruptions in pipelines carrying natural gas from Russia to the European Union via Ukraine have led to serious physical shortages of natural gas in southeast Europe. But while the impacts of disruption to gas pipelines can be severe, they tend to be regional rather than global, with limited contagion.¹³ While oil prices are truly international, with a complex system of arbitrage meaning that changes in one region will rapidly affect prices in others, natural gas prices are regionally based and the high cost of gas transport limits the arbitrage opportunities, thus representing a partial firewall between regional markets. The subsequent analysis of the importance of maritime choke points on markets will therefore be focused on oil.

The importance of maritime choke points in global energy trade

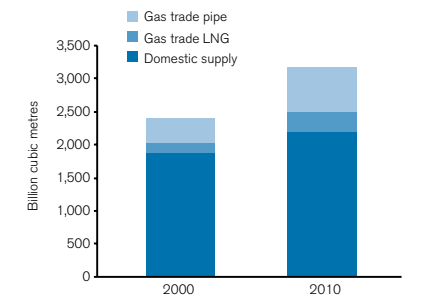
As indicated by Figures 1 and 2, international trade for both oil and gas – much of it seaborne – has increased significantly in recent years.

Figure 1: Increase in global oil trade from 2000 to 2010



Sources: BP Statistical Review of World Energy 2001 and 2011

Figure 2: Increase in global gas trade from 2000 to 2010



Sources: BP Statistical Review of World Energy 2001 and 2011

Table 1 provides estimates of daily crude oil and LNG volumes transiting several of the most critical maritime choke points: the Strait of Hormuz, the Strait of Malacca, Bab Al-Mandab, the Suez Canal, the Turkish Strait, the Panama Canal and the Danish Straits.

Overall, one-third of the world's total crude oil exports in 2010 passed through the Strait of Hormuz. There is an element of double-counting here because oil exports from the Persian Gulf bound for the East Asian seaboard may transit both the Strait of Hormuz and the Straits of Malacca and Singapore.

6. The classic example is the stand of 300 Spartans against the much larger Persian forces at Thermopylae in 480 BC.

7. The authors estimate oil transit through the Strait of Hormuz to be between 15.5 and 17.5 million bpd, and for oil transit through the Straits of Malacca and Singapore to be between 13.6 million bpd and 15 million bpd.

8. The availability of refining capacity globally does not eliminate the risk, however. This is particularly the case in the United States where there are strict product specifications that few refineries can manage.

9. In 2006 the Abqaiq facility was the subject of a broadly unsuccessful attack by al-Qaeda elements, which nonetheless caused oil prices to spike at \$2. See Khalid R. al-Rodhan, *The Impact of the Abqaiq Attack on Saudi Energy Security* (Washington, DC: CSIS, February 2006).

10. See Paul Stevens, 'An Embargo on Iranian Crude Oil Exports: How Likely and With What Impact?', EERG PP 2012/01, Chatham House, 2012.

11. See Roger Middleton, *Piracy in Somalia: Threatening Global Trade, Feeding Local Wars*, Chatham House Briefing Paper, October 2008. Middleton argues that disruption to the flow of oil off the Horn of Africa as a result of piracy could lead to additional increases in the price of oil, either through higher insurance premia for transport through the Gulf of Aden, or through re-routing of shipments along much longer routes to Europe and North America around the Cape of Good Hope.

12. Interestingly, the recent political upheaval in Egypt posed a greater threat to European gas supplies, through the possibility of the Suez Canal being closed to LNG tankers, than to oil supplies.

13. See Paul Stevens, *Transit Troubles: Pipelines as a Source of Conflict*, Chatham House Report, March 2009.

Table 1: Oil and gas transit through selected maritime choke points

| Choke Point | Estimates of crude oil transit (millions of bpd) | Estimates of LNG transit (billions of cubic feet/day) |
|-------------------|--|---|
| Strait of Hormuz | 15.5-17.5 | 3.5 |
| Strait of Malacca | 13.6-15.0 | n/a* |
| Bab Al-Mandab | 3.2-3.5 | 3.5-4.0 |
| Suez Canal | 3.5-4.5 | 3.5-4.0 |
| Turkish Strait | 2.4-2.9 | n/a |
| Panama Canal | 0.8 | n/a |
| Danish Straits | 3.3 | n/a |

Sources: Various estimates by the authors; EIA

*Estimating the exact flow of LNG through the Strait of Malacca is complicated. Since the Fukushima nuclear accident, however, transit of LNG from Qatar to Japan has increased.

Whereas there are no alternative maritime routes to the Strait of Hormuz for oil exports from the Persian Gulf, shipments through the Straits of Malacca and Singapore could be rerouted, though at additional cost, through other waterways such as the Lombok Strait. Similarly, most oil shipments through Bab Al-Mandab subsequently transit the Suez Canal. Thus disruption to the Suez Canal would have a significant impact on shipments through Bab Al-Mandab. Were Bab Al-Mandab itself to be disrupted, some oil shipments could still be made through the Suez Canal from Saudi Arabian facilities on the eastern coast of the Red Sea, north of Yemen. The availability of oil here would depend on an East-West pipeline through Saudi Arabia.

Likely future supply and demand trends suggest that the importance of these maritime choke points in energy trade will increase. The International Energy Agency's World Energy Outlook for 2011 projects crude oil supplies from the Middle East to grow from 2 million barrels per day (bpd) in 2010 to 36 million bpd by 2035, representing over 40% of global conventional oil supplies.¹⁴ The majority of this would pass through the Strait of Hormuz.¹⁵

Increasingly the destination of oil exports from the Middle East is likely to be the eastern seaboard of Asia, and China in particular.¹⁶ A large percentage of oil transiting the Strait of

Hormuz could therefore also be expected to transit the Straits of Malacca and Singapore.

Disruption prolonged over several weeks could be expected to have a market and supply impact disproportionately greater than disruption of a few days. Optimization of the global energy system – as with the global economy in general – trades systemic efficiency for systemic vulnerability to the unexpected.¹⁷ The relative inelasticity of energy consumption to price would tend to exacerbate the impacts of disruption in the short to medium term. Over the longer term, a range of other factors could mitigate them.

Although the global economy is far less dependent on oil than a generation ago, supply disruptions would have broad economic consequences, largely as a function of the extent of any price increase and prevailing conditions in the global economy. In a period of weak economic growth – with several major consumer economies on the brink of recession – a sharp oil price spike could tip the global economy into a further slow-down.¹⁸ The specific GDP impacts would vary from country to country and from region to region depending on economic structure, but there would be many more losers than winners.¹⁹

Even before any actual physical disruption, however, expectations of insecurity and potential disruption to maritime choke points could drive paper markets for oil.²⁰ Fears of disruption

to critical maritime choke points are a significant factor in local, regional and global politics. In the past, market reactions to the threat of disruption have been divergent, and sometimes contradictory. In December 2011, the day after Iranian Vice-President Mohammad Reza Rahimi warned that Iran would block the Strait of Hormuz if the European Union and the United States imposed further sanctions, the price of oil fell.²¹

The perceived risks of disruption at a particular maritime choke point depend less on physical geography and the hazards of navigation than on a range of other factors: the perceived stability and intentions of neighbouring states, the perceived ability of neighbouring states or the international community at large to prevent or deter disruption in the first place, or to mitigate it should it occur, and the applicability of legal regimes of free passage of commercial shipping in the event of some wider geopolitical instability, potentially involving one or more of the neighbouring coastal states. The fundamental challenge lies between the unpredictability on which some states may thrive, and the predictability of supply on which the global economy depends.²²

Choke points and price volatility

Two markets effectively determine the price of oil. The 'wet barrel' markets are where real barrels of oil are bought and sold on a spot or term contract basis. The 'paper barrel' markets are where promises to deliver or take delivery of paper barrels of oil are exchanged. The key determinants of oil prices overall are the interactions of perceptions within and across these two markets. The wet barrel market looks to prices in the paper barrel market for guidance on what prices might be. The paper barrel market looks to the wet barrel market to see if there is an expected shortage or surplus, and reacts accordingly.

Problems with maritime choke points, real or expected, have an impact on both markets. A loss of physical supply would affect the wet barrel market by creating shortages. The effect in terms

14. International Energy Agency, World Energy Outlook 2011, 2011. These figures are for the 'New Policies' scenario.

15. Not all oil exports from the Middle East need to transit the Strait of Hormuz. Saudi Arabia has existing pipeline capacity of 5 million bpd across the peninsula via the East-West pipeline. Iraq has the option to export oil to Ceyhan in southeastern Turkey, on the Mediterranean coast, via a pipeline with a capacity of some 1.5 million bpd. There is a further 1.6 million bpd capacity to export through the Iraq Petroleum Saudi Arabia (IPSA) pipeline, although this system has currently been cannibalized to transport gas within Saudi Arabia. Future investments in the pipeline network could, of course, further reduce the need to export through the Strait of Hormuz. The Hashban-Fujairah pipeline, circumventing the Strait of Hormuz from the west to the eastern coast of the United Arab Emirates (UAE) will have a capacity of 1.5 million bpd (40% of UAE's oil production) when it is expected to open in May/June 2012.

16. See Mitchell, More for Asia.

17. See, for example, Bernice Lee and Felix Preston, with Gemma Green, Preparing for High-impact, Low-probability Events: Lessons from Eyjafjallajökull, Chatham House Report, January 2012.

18. The economic consequences of an oil price spike depend on the starting point, some assumption about the period of price increase and assumptions about economic resilience generally and possible policy responses (e.g. an oil price increase in a period of general price inflation might encourage governments and central banks to increase interest rates). The IMF's 2011 World Economic Outlook

pointed to four estimates by academic economists of the impact of a 10% oil price increase on US GDP growth. These ranged from -0.15% to -1%: IMF, World Economic Outlook, 2011, p. 122.

19. World Bank simulations in 2011 suggested a \$50 oil price spike lasting for one year would reduce GDP by 0.4% in 2012 in middle-income countries and by 2.4% in low-income countries. Globally, while oil-exporting countries would boost their GDP by an average of 0.5%, oil-importing countries would see it reduced by an average of 1.3%. Available at: <http://blogs.worldbank.org/prospects/gdp-impact-of-oil-price-shock>.

20. In contrast to 'wet barrel' markets where physical oil is traded, 'paper barrel' markets are those where promises to deliver or take delivery of oil are exchanged.

21. WTI oil prices rose slightly on 27 December and fell on 28 December. Nonetheless, prices over the first two weeks of January 2012 have been relatively elevated compared with those of the previous two weeks. This can be partly ascribed to political uncertainties relating to the Middle East.

22. It should be borne in mind that in some scenarios where a maritime choke point was closed by a state, the responsible state would lose the possibility of exporting oil and gas itself. For example, in the case of Iran, which is highly dependent on oil exports in its balance of payments and in supporting government revenues, an inability to export would tend to count against economic and political stability. To the extent that an externally imposed embargo on oil exports is successful, however, the additional costs of attempting to block the Strait of Hormuz would be lowered.

of price and price volatility would depend on how much and what type of crude oil has been lost from supply, and how much spare capacity and/or what stocks exist elsewhere to replace the loss, and the time-frame needed to do so.²³

However, at the same time, a crisis situation around a choke point will influence perceptions and expectations in paper barrel markets. This could in itself change oil prices dramatically. The uncertain role and impact of perceptions make it very difficult to predict the precise price impact of political instability or disruption of maritime choke points.²⁴ But that very uncertainty can increase the likelihood of price volatility as a result of feedback within paper markets.

Historically, episodes of instability around maritime choke points have indeed led to supply disruptions. The 1956 Suez crisis, leading to closure of the canal, and the 1980–88 Iran–Iraq war, particularly with the outbreak of the so-called Tanker War in 1984, both threatened oil supplies.²⁵

In both cases the impact on prices was initially minimal. In 1956 this was largely because the price of oil was administered and there were no paper markets, which emerged only in the mid-1980s.²⁶ Furthermore, in the case of the Tanker War, both the United States and the Soviet Union intervened to provide naval escorts to Kuwaiti tankers – and the United States allowed Kuwaiti tankers to be reflagged as American in order to allow for the right of convoy to be asserted.

Interestingly, when Somali pirates captured three Ultra Large Crude Carriers (ULCCs) in 2009–10 there was almost no impact on the oil price even though all three tankers had been loaded at Ras Tanura in Saudi Arabia and were bound for the American market. Thus this direct threat to Western oil supplies went effectively unnoticed by the paper markets.²⁷

Choke points and international law

The commercial and strategic importance of maritime mobility in general, and of maritime choke points in particular, has been a driving force in the evolution of the international law of the sea – both customary and treaty-based – which tends to emphasize the presumption that shipping should be relatively unimpeded, and that geographic choke points should not become choke points in the international trading system.

The maintenance of the freedom of the high seas, or a *mare liberum*, articulated in 1608 by Hugo Grotius, has long been at the heart of the customary international law of the sea.²⁸ The principle has traditionally been upheld by trading nations and naval powers – successively the Netherlands, Great Britain and the United States – which saw their own best interests served by the limitation of state sovereignty, including their own, to relatively narrow strips of seas and oceans near to shore, and by affording unimpeded free movement to all-comers – both merchant and naval vessels – beyond this limit (typically three nautical miles).²⁹

Practically, the impact of such limits was that few geographic straits or natural choke points fell entirely within the territorial sea of one or more coastal states. Even in relatively constricted seas, freedom of navigation prevailed as a matter of customary international law. In cases where a strait was narrower than six nautical miles a specific legal regime could be introduced, as with the Montreux Convention (1936) governing the Turkish Straits between the Black Sea and the Mediterranean, long a point of acute geopolitical anxiety for Russia.³⁰

Other conventions served to strengthen the presumption of free and unimpeded transport through international straits; for instance, the Copenhagen Convention (1857) abolished tolls on shipping through the Danish Straits between the Baltic Sea and the North Sea. While coastal

states retained some rights, subject to some interpretation in time of war, the balance of these conventions clearly favoured the rights of shipping. The principle and practice of *mare liberum* was key.

Though international canals are not natural maritime waterways – and consequently not governed by customary international law on the freedom of navigation – legal regimes governing canals tend to reflect the principles applying to straits. The 1888 Constantinople Convention internationalized the Suez Canal, allowing free passage for shipping in both peace and war (though the canal was, in fact, closed from 1967 to 1975). Two treaties signed between the United States and Panama in 1977 established the Panama Canal as a neutral waterway open to the shipping of all countries, coming under full Panamanian control in 2000 but with the stipulations of the US–Panama treaty on neutrality and the operation of the Panama Canal still in place.³¹

From the middle of the twentieth century, an increase in the number of coastal states, and more expansive unilateral claims made by coastal states about the extent of their territorial seas – or, in the case of a declaration made by President Truman in 1945, about the continental shelf³² – led to concerns that the sea was being transformed, quite rapidly, from a single, free and open highway for commerce and mobile naval forces, to a fragmented domain, with different rules and different claims to sovereignty which could ultimately destabilize the global system as a whole and place the movement of naval forces and increasingly important sea-borne commerce at the mercy of coastal states.³³

The number of geographic straits falling entirely within the territorial sea of coastal states – and legal uncertainty around the rights of third-party navigation through those straits – would inevitably increase as states extended their territorial sea claims from three to six nautical miles,

23. A good example of this point comes from recent events in Libya. The wet barrel market lost some 1.4 million bpd of Libyan light sweet crude used in southern Europe, principally Italy. The spare capacity brought on-stream in Saudi Arabia to respond to this was some 900,000 bpd of heavy sour crude in the Persian Gulf. This created a significant price differential between light sweet crude and other crude oil prices, prompting the IEA to release 60 million barrels of oil from June 2011 in an attempt to moderate price increases.

24. Prices will be affected before there is any actual disruption, in the expectation or anticipation of disruption. There may be a price response in global oil markets linked to rising tension around Iran's nuclear programmes, for example, because of fears that the Strait of Hormuz could be affected by the consequences of any military action taken against Iran's nuclear infrastructure.

25. The Suez crisis led to supply shortages in Europe not so much as a consequence of oil itself being in short supply globally, but because the capacity to transport the same volume of oil to consumer markets was now curtailed. P. H. Frankel, 'Oil Supplies During the Suez Crisis: On Meeting a Political Emergency', *Journal of Industrial Economics* 6: 2, (1958), pp. 85–100. Frankel pointed out that the weighted average distance of oil shipments from the Persian Gulf to Europe was now forcibly increased from 4,900 miles to 11,200 miles. Europe was thus 'faced with the problem of a man who had to buy some new shirts because his laundry has changed over from a weekly to a fortnightly delivery schedule' (p. 86). In the case of the Iran–Iraq war there had been a number of attacks on vessels related to oil trade between 1980 and 1983, all of which were the result of Iraqi actions, and which mostly targeted Iranian or presumed Iranian exports. From 1984 to 1988 there were a far greater number of attacks, many of them on international shipping, of which over two-thirds were the result of Iranian action.

26. The first of the proper paper markets, NYMEX, only began trading crude oil in 1987.

27. Though this should perhaps come as no great surprise. Many of the players in the paper markets simply do not understand the international oil industry. Their responses to new information as it comes on to the market are hard to warrant. This makes predicting the price response to any threat to a maritime choke point virtually impossible. To take one example, an attack on the Abqaiq processing facility in February 2006 produced a relatively small price response because paper market traders were unaware of the central importance of the facility to Saudi exports.

28. Natalie Klein, *Maritime Security and the Law of the Sea* (Oxford University Press, 2010).

29. Grotius himself articulated the *mare liberum* principle in the context of his assertion of the rights of the Dutch to trade with the East Indies via the Indian Ocean, then claimed by Portugal.

30. The Montreux Convention, replacing the terms of the Lausanne Treaty (1923) which had demilitarized the Dardanelles, guarantees 'complete freedom of passage and navigation in the Straits, by day and by night, under any flag with any kind of cargo' (Article 2), but allows Turkey to close the Straits to warships in time of war, and to merchant ships from enemy nations in time of war. To some degree it also restricts the passage of warships, though this condition applies less to Black Sea states than to others.

31. See, for example, Mark P. Sullivan, 'Panama: Political and Economic Conditions and U.S. Relations', Congressional Research Service, May 2011.

32. US Presidential Executive Order 9633, 'Reserving and Placing Certain Resources of the Continental Shelf Under the Control and Jurisdiction of the Secretary of the Interior', 28 September 1945.

33. See Elliot L. Richardson, 'Power, Mobility, and the Law of the Sea', *Foreign Affairs* 58: 4 (Spring 1980), pp. 902–19.

or twelve, or even more. Without international agreement on the legal status of geographic straits traditionally used for navigational purposes, the principle of *mare liberum* and the practice of free navigation of commercial and naval vessels could progressively be curtailed. Disagreement between states was likely to lead to greater international tensions and potentially conflict, as highlighted in the 1949 Corfu Channel case.³⁴

In this context, coastal states and maritime states in effect struck a bargain, enshrined in the UN Convention on the Law of the Sea (UNCLOS), signed in 1982 and coming into force in 1994. Most, but not all, of the coastal states of key maritime choke points discussed above have ratified this convention. To the extent that UNCLOS codifies customary international law of the sea, however, its provisions still apply.

The UNCLOS bargain accepted twelve nautical miles as the maximum extent of a state's territorial sea but, in order to ensure freedom of navigation through key international straits, UNCLOS established a regime of 'transit passage' applicable to 'straits used for international navigation'.³⁵

This is the basic legal regime that applies to the major geographic choke points assessed here, bar international canals such as the Suez Canal (which do not fall under the definition of a strait) and the Turkish Strait (which is subject to its own pre-existing regime of navigation).³⁶

The right of transit passage through international straits under UNCLOS is articulated in Article 38 of the convention.³⁷ Although shipping exercising transit passage is subject to a number of duties, these are fairly limited (Article 39). States bordering straits can adopt various practical measures – such as the traffic separation scheme that exists in the Strait of Hormuz – to improve 'safe passage' (Article 41). They can also adopt a number of laws and regulations in the part of a strait that is within their territorial waters, as long as these are non-discriminatory and, crucially, do not have the 'practical effect of deny-

Table 2: Status of ratifications of UNCLOS for coastal states of particular international straits

| Strait/Country | Ratification status | Year |
|--------------------------------------|--------------------------|----------------|
| <i>Turkish Strait</i> | | |
| Turkey | Not ratified | |
| <i>Malacca and Singapore Straits</i> | | |
| Indonesia | Ratified | 1986 |
| Singapore | Ratified | 1994 |
| Malaysia | Ratified | 1996 |
| <i>Bab Al-Mandab</i> | | |
| Yemen | Ratified | 1987 |
| Djibouti | Ratified | 1991 |
| Eritrea | Not ratified | |
| <i>Strait of Hormuz</i> | | |
| Oman | Ratified | 1989 |
| Iran | Signed, but not ratified | 1982 (Signed)* |

Note: The United States has not signed or ratified UNCLOS, but considers it a restatement of customary international law, thereby enjoying its benefits and acting in accordance with it in practice.

*In signing UNCLOS in December 1982, Iran claimed that the benefits of UNCLOS, such as 'transit passage', did not apply to non-signatory states. In 1993 Iran introduced a Marine Areas Act, parts of which could be considered inconsistent with the law of the sea. See US Department of State Bureau of Oceans and International Environmental and Scientific Affairs, 'Iran's Maritime Claims', No. 114 in series 'Limits in the Seas', 16 March 1994.

ing, hampering or impairing the right of transit passage as defined in this section' (Article 42).

The emphasis on 'practical effect', as opposed to reference to legal principle, makes it hard for any state bordering a strait to use frivolous regulations to impede shipping through an international strait without finding itself on the wrong side of international law. Article 44 re-emphasizes the point and establishes that 'there shall be no suspension of transit passage'.³⁸ Overall, the balance of rights and duties afforded to maritime states and states bordering the straits under UNCLOS is clearly weighted towards maintaining free passage through international straits, as against allowing coastal states to exercise unilateral control over parts of their territorial waters that constitute straits used for interna-

tional navigation.

There is some debate over the extent to which environmental considerations could allow a state bordering a strait to establish potentially more constraining rules with respect to 'transit passage', in accordance with Part XII of UNCLOS³⁹ and, since UNCLOS was negotiated thirty years ago, a growing sensitivity globally to environmental concerns.

For example, states bordering the Malacca Strait have backed Malaysia's insistence that Japanese plutonium should not be shipped through it.⁴⁰ At the same time, however, some have questioned the legality under international law of Australia's compulsory pilotage regime in the Torres Strait between Australia and Papua New Guinea. It is highly doubtful whether this regime could, in any case, be taken as a precedent for other straits used for international navigation.⁴¹

But UNCLOS is not necessarily the final word, and while it creates the framework of the international law of the sea – the constitution of the oceans – it does not exclude regional or other cooperation within that framework. Indeed it encourages the establishment of cooperative mechanisms between user states and states bordering straits to improve navigation and prevent pollution (Article 43).⁴²

This provides the basis in international law for the Cooperative Mechanism for the Straits of Malacca and Singapore, established in 2006, between Indonesia, Malaysia and Singapore.⁴³ Building on several decades of cooperation, these three coastal states opted not to adopt a Regional Maritime Security Initiative (RMSI) proposed by the United States (towards which Singapore was reported as being favourable).⁴⁴ While affirming coastal state sovereignty over the waters of the straits, the Cooperative Mechanism builds confidence in the effective management of the straits as a choke point in the global maritime economy. It provides limited means for financial burden-sharing with users.⁴⁵

34. The first case before the International Court of Justice, in which the ICJ held that the right of innocent passage existed in international straits.

35. UNCLOS (1982), Part III, 'Straits Used for International Navigation'.

36. Article 35 (c) of UNCLOS expressly notes that Part III of the convention does not affect 'the legal regime in straits in which passage is regulated in whole or in part by long-standing international conventions in force specifically relating to such straits'. Article 37 further defines a strait as being 'between one part of the high seas or an exclusive economic zone and another part of the high seas or an exclusive economic zone'.

37. Although Iran, which signed UNCLOS in 1982 but has not ratified it, stated that it considered that the right of 'transit passage' only applied to states that had ratified UNCLOS, it is widely considered that most provisions of UNCLOS represent customary international law, confirming rights and duties beyond those states that have formally ratified it. 'Innocent passage' would in any case apply.

38. Article 44 reads: 'States bordering straits shall not hamper transit passage and shall give appropriate publicity to any danger to navigation or overflight within or over the strait of which they have knowledge. There shall be no suspension of transit passage.'

39. Part XII of UNCLOS is entitled 'Protection and Preservation of the Marine Environment'.

40. J. M. Van Dyke, 'Sea Shipment of Japanese Plutonium under International Law', *Ocean Development and International Law* 24 (1993), pp. 399–403.

41. Sam Bateman and Michael White, 'Compulsory Pilotage in the Torres Strait: Overcoming

Unacceptable Risks to a Sensitive Marine Environment', *Ocean Development and International Law* 40 (2009), pp. 184–203. Given the specific and widely recognized environmental conditions of the Torres Strait, including by the IMO, Bateman and White contend that compulsory pilotage here, which is in any case limited in application and enforcement, does not entail a unilateral right on the part of a state bordering a strait to insist on compulsory pilotage elsewhere.

42. Article 43 reads: 'User States and States bordering a strait should by agreement cooperate: (a) in the establishment and maintenance in a strait of necessary navigational and safety aids or other improvements in aid of international navigation; and (b) for the prevention, reduction and control of pollution from ships.'

43. At the Batam ministerial meeting in 2005, the three states emphasized the provisions of Article 43 of UNCLOS.

44. See Natalie Klein, *Maritime Security and the Law of the Sea*, p. 86; and Joshua Ho, 'Operationalising the Regional Maritime Security Initiative', *IDSS Commentaries*, May 2004. Japan was apparently prepared to contribute naval forces to the area as a means of securing a strait through which 80% of its oil from the Middle East passes.

45. The Aids to Navigation Fund in the Malacca and Singapore Straits has received support from the Nippon Foundation (a private Japanese foundation) and, both directly and indirectly, through the International Maritime Organization and the governments of South Korea, China, Greece and the United Arab Emirates.

Maritime choke points in an age of insecurity

The applicability of UNCLOS – and therefore the transit passage regime in straits used for international navigation – in time of war is debated. As noted above, the situation for international canals, not being subject to the UNCLOS transit passage regime, is somewhat different, depending on the relevant provisions of their specific governing treaties. Clarity on how different states view rights and duties concerning transit in time of war, and most particularly clarity on the part of states bordering straits, would be welcome as a means of building confidence among both user states (countries whose ships use straits for international navigation) and energy consumer states (recipients of oil and gas exported through straits used for international navigation).

Building on various conventions and treaties on the laws of naval warfare, and customary international law, the San Remo Manual on International Law Applicable to Armed Conflict at Sea (1994)⁴⁶ is itself explicit, considering that: ‘the rights of transit passage [through straits used for international navigation] ... in peacetime continue to apply in times of armed conflict’.⁴⁷

In line with the traditional protections afforded to neutrals in the laws of war, neutral shipping receives particular attention throughout the San Remo Manual. Neutral merchant vessels ‘may not be attacked’ unless they are ‘believed on reasonable grounds to be carrying contraband or breaching a blockade’ (Article 67).⁴⁸ The imposition of blockades or military zones – a potentially legal measure for one belligerent to take against another in time of war – should not impede access to the ports and coasts of neutral states.⁴⁹ As a general proposition, transit passage through international straits should not be impeded by mines ‘unless safe and convenient alternative routes are provided’, which is rarely the case in international straits (Article 89).⁵⁰

Further to the San Remo Manual it can be argued that the failure of a state to prevent acts that led to a terrorist group exploding a ship in an

international strait would violate Article 2 (4) of the UN Charter.⁵¹ If a strait used for international navigation were to be deliberately impeded, or if neutral shipping in a strait were attacked, there would be various potential practical and legal responses. Shipping could be re-flagged, to help prevent further action being taken, and to allow naval vessels of the same nationality as commercial vessels to protect them in convoy (including in the exercise of transit passage).⁵²

Depending on the nature and frequency of the attacks on its shipping, a neutral state could have a right to self-defence either singly or, in accordance with the right of collective self-defence, with its allies (Article 51 of the UN Charter).⁵³ The United Nations Security Council could deem an armed intervention necessary under Chapter VII of the UN Charter, and request members of the United Nations to enforce it.⁵⁴

There could potentially be a claim for liability after a conflict, to be determined either under the terms of a subsequent peace agreement (such as the Eritrea Ethiopia Claims Commission established by the Algiers peace agreement between those two states) or under the UN Security Council (such as the UN Compensation Commission set up following the first Gulf War).

The United Nations Security Council has, in recent years, acted to promote maritime security in the non-conflict context of multilateral anti-piracy operations off the coast of Somalia (under UNSC Resolution 1816 and then 1851 passed in December 2008).⁵⁵ And while these resolutions have been very clear in emphasizing that these actions do not create any new customary international law – and in any case apply against a non-state actor against which there is universal jurisdiction – they do demonstrate the increasing willingness of the international community to act multilaterally to protect international shipping.

Policy options

The economic and strategic significance

of maritime choke points to the global energy economy makes confidence in their security a key issue for international policy. A number of non-exclusive policy options are discussed briefly here.

In general, the risks of disruption are likely to be lowered if the expected disruption to global energy markets is itself reduced, since this would minimize the attractiveness of disruption as a strategy of state or non-state actors.

- **Alternative routes:** Making maritime choke points less salient to the overall global energy economy by building alternative means of transporting oil and gas, such as a spur line from Abu Dhabi to Oman to avoid the Strait of Hormuz,⁵⁶ or upgrading existing infrastructure and increasing its capacity.⁵⁷ The key question here is who would be expected to bear the cost for additional redundancy in the distribution system, and whether new infrastructure might create new vulnerabilities. Alternative routing, were it to reduce the risk of maritime accidents, would also potentially have a positive environmental impact.
- **Strategic stocks on a regional or global basis:** Although this is widely considered a means of enhancing the resilience of the global energy system, the record of stock releases by the International Energy Agency has tended to aggravate rather than dampen price volatility. However, a ‘ticketing’ system for the provision of emergency supplies might help overcome the characteristics, exhibited in the first and second oil shocks, of a price shock becoming generalized because of aggressive bidding on the part of companies facing well above average supply shortages.⁵⁸
- **More regular convoy protection in times of heightened tension:** This would require some collective management, perhaps by NATO or under a UN Security Council mandate. Such a plan could, however, limit the flexibility that currently characterizes the oil tanker trade. Establishing and enforcing freedom of passage

46. Though the San Remo Manual is a non-binding document it is widely considered to be the best expression of current law on this issue.

47. Article 27, San Remo Manual. Article 32 further states that ‘Neutral vessels may likewise exercise the right of innocent passage through belligerent international straits and archipelagic waters.’ Article 33 states that ‘The right of non-suspendable innocent passage ascribed to certain international straits by international law may not be suspended in time of armed conflict.’

48. Contraband is defined in Article 148 as goods that are ‘ultimately destined for territory under the control of the enemy and which may be susceptible for use in armed conflict’.

49. San Remo Manual, Part IV, Section II.

50. Neutral states would additionally be able to clear mines without committing ‘an act inconsistent with the laws of neutrality’ (Article 92).

51. Article 2 (4) of the UN Charter reads: ‘All Members shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state, or in any other manner inconsistent with the purposes of the United Nations.’

52. The neutral nationality of a vessel in time of war, however, may not only depend on its flag, and cannot by itself afford protection. Other considerations, such as its ownership and destination and the nature of its cargo, will certainly come into play in determining the legality or otherwise

of actions taken against it. See George K. Walker, *The Tanker War, 1980–1988: Law and Policy*, International Law Studies, Vol. 74 (Newport, RI: US Naval War College, 2000).

53. The Oil Platforms case (ICJ)(2003) concluded that, in the context of the Tanker War (1984–88), the US was not justified in actions to destroy various on-shore Iranian oil installations as ‘self defence’ in response to a missile attack on a US-flagged Kuwaiti tanker.

54. Article 39 of the UN Charter allows the UN Security Council ‘to determine the existence of any threat to the peace, breach of the peace, or act of aggression’.

55. These resolutions also reaffirmed UNCLOS as the framework for dealing with piracy at sea, specifically stated that these resolutions should be seen as creating customary international law, and further affirmed that authorizations provided by the UN Security Council had been provided only after a letter conveying the consent of the Transitional Federal Government (of Somalia) had been received (Article 10, UN Security Council Resolution 1851).

56. Dagobert Brito and Amy Myers Jaffe, ‘Reducing Vulnerability of the Strait of Hormuz’ in Henry Sokolski and Patrick Clawson (eds), *Getting Ready for a Nuclear-Ready Iran* (Carlisle, PA: US Army War College, 2005).

57. The Hashban–Fujairah pipeline across UAE is expected to come into service in May/June 2012.

58. See John V. Mitchell, ‘Anatomy of an Oil Crisis’, *Zeitschrift für Energiewirtschaft*, June 1982.

would ultimately depend on the willingness of UN member states to provide the means to do so. In the past this has chiefly been through US naval deployments, though given the changes in dependence on oil supplies transiting maritime choke points in recent years, other existing and emerging naval powers might now be willing to contribute to such protection.

- **Controlling the paper barrel markets:** This is a constant refrain and has attracted a lot of attention since 2008 when there was extreme price volatility. To date, the authorities have found it difficult to regulate or control such markets beyond minor changes to limit certain types of trading. The fear is that if the formal paper markets are too harshly regulated they will simply disappear into cyberspace outside regulatory control. To some extent this has already happened with the development of 'over-the-counter' trades directly between two parties.
- **Political declaration from user states, including China:** An international declaration of user states on the rights of shipping in international straits could change the calculus of any state considering an attempt to shut an international strait to neutral shipping in a time of crisis or war. Clearly the deterrence effect would depend on the precise wording of such a declaration and the identity of the signatories. A declaration issued by G20 states (a group that includes all five permanent members of the United Nations Security Council), while not binding those states to a particular course of action, would nonetheless indicate that the impact of shutting an international strait in a time of war was likely to be limited by a coherent international response (potentially involving UN Security Council action), and the political and diplomatic cost to the instigator would be high. China, as a major importer of oil and gas through straits used for international navigation, has a strong potential interest in supporting such a declaration.
- **Political declaration from coastal states:** Coastal states of choke points could themselves reaffirm the provisions of UNCLOS on transit passage and reiterate that these would continue to apply in time of tension or war. While this would be a political commitment confirming current international law, rather than a treaty with legal effect, it could help build confidence in the security of the straits, if only by demonstrating coastal states' recognition of, and therefore acceptance of, legitimate user concerns. For such a declaration to be convincing, those coastal states that have so far failed to ratify UNCLOS (see Table 2) would

need to do so. However, if the perceived option of harassing shipping in the event of tension or conflict is seen by one or more coastal states as having its own deterrent effect on others, then such a political declaration to uphold transit passage may be difficult to elicit.

- **Cooperative mechanisms:** If the political environment were more permissive, cooperative arrangements could be made between the littoral states of a strait used for international navigation, which could in turn be supported by user states. While littoral states would be likely to oppose the internationalization of straits on the grounds that this runs counter to their sovereign rights under international law, cooperative mechanisms on the model of the Straits of Malacca and Singapore could reassure user states and global oil and gas markets.
- **Support for international cooperation outside regional or individual strait frameworks:** The work of the International Maritime Organization in establishing 'soft law' can serve to build confidence around maritime regimes.
- **A specific convention on maritime choke points:** While UNCLOS will remain the fundamental framework for the law of the sea, a specific convention on maritime choke points could more explicitly recognize their importance to the global economy, and establish more clearly the rights of different parties. This would take a long time to negotiate, however, and might be viewed as actually detracting from the broader balance established in UNCLOS.

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CJOS COE ANNUAL REPORT

2011-2012 Programme of Work

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Programme of Work

Throughout 2011, CJOS COE continued to consolidate its reputation as the “Go-To” organization to wrestle with dynamic global security challenges in the joint maritime arena. An innovative and visionary CJOS COE team has fostered a broad collaborative network of subject matter experts from various international military communities, government agencies, academia and non-government organizations to maximize the collective intellectual power to provide forward leaning solutions to improve Joint and Combined operations From the Sea. We are proud to feature several of this year’s achievements in this issue of “Cutting the Bow Wave.”

Allied Interoperability Handbook

With an increase in coalition operations around the globe, there is a recognized need for an increase in interoperability between the U.S. Navy and its partners. Taking the task in hand, CJOS COE is aggressively pursuing methods to increase positive integration of foreign warships within U.S. Carrier Strike Group operations. Through an ongoing evaluation of deficiencies and observations, a checklist has been developed to aide ships working with the U.S. Strike Groups. This checklist is passed along to allied nations in order to facilitate normal day to day operations. With each new participant, the lessons learned database grows and develops, ultimately driving the future of coalition operations.

NATO Guidance for developing MUS capability

CJOS COE work related to Maritime Unmanned Systems (MUS) continues to flourish. Originally tasked back in 2008, CJOS COE has been at the forefront of aiding ACT as the primary contact for guiding NATO nations to define capability requirements and possible future deployment. CJOS representatives continue to present this guidance to other organizations to gain more traction and detailed knowledge. There was also a briefing given to the Military Committee (MC) at the end of October 2011. This briefing shed more light on future coordination amongst Allies for the implementation of these systems.

Annual CJOS COE Maritime Security Conference

In May 2011, CJOS COE hosted its 4th annual Maritime Security Conference (MSC), but the 1st combined conference co-sponsored with the Centre of Excellence for Operations in Confined and Shallow Waters in Kiel, Germany. The Conference theme was “Delivering Maritime Security and Safety in Global Partnership: Creating a Strategic Framework for Maritime Security Cooperation”. The aim of the conference was to examine how International Organizations and the emerging Regional Maritime Security Organizations can collaborate together to form a global network for maritime security cooperation. This prestigious group discussed solutions to challenge security issues that contribute to a more effective Global Network for Maritime Security Cooperation.





Maritime Command and Control/Maritime Situational Awareness (MC2/MSA)

CJOS COE received an official tasking in the summer of 2010 from the United Nations Department of Peace Keeping Operations (UN DPKO) to investigate the requirements for establishing a UN Maritime Component Command (UN MCC) ashore for UN International Forces in Lebanon (UNIFIL) and other peacekeeping operations. Two recommendations have been delivered to UN DPKO. The first recommendation outlined an integrated maritime Command and Control element as part of the joint UNIFIL HQ. Subsequent meetings rendered more requirements from the DPKO, leading to the proposed development of a generic C2 organization for a UN led maritime peace keeping operation. The goal is to determine whether a land-based command only, could meet the requirements of the Maritime Task Force in UNIFIL.



Enhanced Maritime Security Cooperation and Awareness

International maritime security cooperation and associated technical solutions lead to ad-hoc security arrangements which can not adapt fast enough to deliver a timely response to a wide 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 planning a deliberate and tailored response to control and resolve a potential security threat.

Given the unprecedented nature of transnational crimes in today's global maritime environment, increased demands for security depends on a wide 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.

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 access legitimate freedoms to operate and prosper in a safe and secure global maritime environment. The findings of these studies will be published in 2012. 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 2012.

NATO Maritime Operations Working Group (MAROPS WG)

Since 2006, the Transformation Branch Head of the CJOS COE chairs the NATO Maritime Operations Working Group (MAROPSWG), which is responsible for developing standardized doctrine, tactics, tactical instructions, and procedures in maritime operations to improve interoperability and the effectiveness of NATO forces.

The MAROPSWG is the largest Maritime Standardization Board Working Group and looks after a wide range of tactical publications. The MAROPSWG consists of delegates of those NATO nations, NATO Strategic Commands (SCs), Partner nations, Contact countries, NATO Operational Commands and Agencies, NATO and National Maritime Centers and NATO COEs that agree to participate. The MAROPSWG operates with four Committees: Heads of Delegation, chaired by CJOS COE; Syndicate 1 – Under Water Warfare, chaired by Canada; Syndicate 2 – Above Water Warfare and Electronic Warfare, chaired by Germany; and Syndicate 3 – Maritime Communications and Information Exchange, chaired alternatively by Norway and Denmark. Together their focus is to standardize the procedures used by NATO Maritime Forces to include, but not be limited to Submarine Warfare, Anti-Submarine



Warfare, Above Water Warfare, Tactical Communications, and Maritime Electronic and Acoustic Warfare.

NATO Lessons Learned

CJOS COE attended the Joint Analysis Lessons Learned Center's Conference regarding the NATO Operation UNIFIED PROTECTOR (OUP), ISAF Comprehensive Approach, and Counter-Piracy (CP) Operations. CJOS joined the discussion and preparation for way ahead vis-à-vis the leveraging of the operational experience of OUP and CP operations into established tactics, techniques and procedures as well as into the operational culture of NATO forces. The conference resulted in the wide dissemination of best practices for Joint Analysis, the Lessons Learned Process, Remedial Action processes, and supporting tools. This continuing work has improved all aspects of NATO operations through the process of codifying and operationalizing best practices assessed from deliberate analysis.

NATO Joint Operational Sea Basing Concept

CJOS COE is continuing the development of a NATO Joint Operational Sea Basing Concept, which covers the full spectrum of maritime sea basing capabilities. The concept will give NATO decision makers an alternative option when planning joint operations. The concept will highlight the maritime joint capabilities and the advantages of operating at and from the sea while working on a new Joint Sea Basing concept. CJOS will also publish an "easy-to-read" handbook to highlight the maritime capabilities that NATO can readily utilize.

Training and Education (Purple Solace)

CJOS COE continues its support of Exercise "Purple Solace". The U.S. Joint Forces Staff College (JFSC) utilizes non-U.S. officers in order to provide a "joint perspective" in support of the curriculum. This exercise happens every three months to reinforce the steps necessary to derive a mission statement, determine commander's intent and develop a concept for a crisis in a developing nation. CJOS volunteers act as Military Liaison Officers for their



respective countries, taking part in this ad hoc military structured exercise. Integrating CJOS Officers helps to build a coalition spirit and ensures all the learning objectives are met.

Humanitarian Assistance & Disaster Relief (HADR) Operations

The CJOS COE Expeditionary Operations Section is actively developing the second version of the, "Supporting L.I.F.E. (Logistics Information Force protection Expertise)" concept following extensive consultation with the International Humanitarian Community. The United Nations Office for the Coordination of Humanitarian Affairs (UN OCHA), the International Committee of the Red Cross (ICRC), the European Commission Humanitarian Aid and Civil Protection (ECHO), as well as the United States Agency for International Development (USAID), have reviewed the concept and proposed judicious additions creating a document equally informative and descriptive to both humanitarian and military communities.

The CSOS COE Expeditionary Operations section also produced a draft handbook for Strike Force NATO, compiling current HADR information for ongoing real world operations. Future activities include the presentation of the L.I.F.E. concept to the UN OCHA Consultative Group on the use of Military and Civil Defense Assets, as well as engagements with other international HADR programs such as the Qatari Hope For initiative.

PANAMAX 2011

The annual U.S. Southern Command (USSOUTHCOM) sponsored exercise focuses on ensuring the defense of the Panama Canal, which is crucial to the unrestricted flow of global maritime commerce. From 15 to 26 August 2011, 18 nations, more than 3500 personnel

and 22 ships participated in this year's exercise spreading from Panama to Mayport, Florida to Stennis, Mississippi as well as Fort Sam Houston, Texas.

For the second year in a row, CJOS COE officers actively supported items related to our POW while augmenting the SOUTHCOM Staff during the exercise. Participating in this exercise permitted CJOS COE to conduct interoperability surveys with the Combined Force Land Component Command (CFLCC) headed by Colombian General Gabriel H. Pinnilla. It also enhanced our understanding of Cyber operations as part of the SOUTHCOM Headquarters Cyber Fusion Cell and finally enabled CJOS to assist the exercise "White Cell" with our understanding and experience in coalition operations.

BOLD ALLIGATOR 12 (BA12)

BA12 is a live and synthetic scenario-driven simulation support exercise designed to train the U.S. Expeditionary Strike Group and Marine Expeditionary Brigade. The exercise is designed to train the staffs in planning and execution of an amphibious assault from a sea-base in a medium land and maritime threat.

An objective of this exercise is to revitalize the relationships between the U.S. and a large joint force that includes participation from Australia, Canada, France, Germany, Italy, Netherlands, New Zealand, Spain, and the United Kingdom. With a large participation from these nations, CJOS COE will be in the observer role to collect data for the POW on Amphibious Planning, Interoperability, Force Protection, and Sea-Basing. Moreover, CJOS COE is able to contribute to the lessons learned process concerning "International Interoperability" and serve as planners and Liaison Officers. ■

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MARITIME SECURITY CONFERENCE 2012

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DELIVERING MARITIME SECURITY IN GLOBAL PARTNERSHIP:
Identify Cooperative Strategies for Future Maritime Security Engagement.



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