MARITIME SECURITY REGIME

MANUAL

AND

ENTERPRISE PROPOSAL

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14. ABSTRACT
The unhindered ability to utilize the Maritime Domain is essential to a healthy global economy and is vital to the strategic security interests of all nations. Loss of access to this significant global highway, connecting nations, people, markets and manufacturers around the world, rapidly impacts all nations. Direct threats to ensured maritime access include disruption of commerce or movement and interference with the lawful use of the Maritime Domain and transnational crimes such as piracy and terrorism. Illicit trafficking (weapons, drugs, money, humans or other contraband) may also impact maritime access. Natural phenomena, such as severe weather, ice or geological disasters may limit access. Since these threats and events can be expected to continue it would be prudent to prepare for a future where the impact of a variety of access challenges could be prevented, mitigated or resolved. Though some nations have robust capabilities, for multiple reasons, no single nation can ensure access for the global community at large.

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Supporting Maritime Security Regimes (MSR)
The Enterprise Implementation Proposal and MSR Manual
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Supporting Maritime Security Regimes (MSR):
The Enterprise Implementation Proposal and MSR Manual

Executive Summary

The Maritime Challenge

The unhindered ability to utilize the Maritime Domain is essential to a healthy global economy and is vital to the strategic security interests of all nations. Loss of access to this significant global highway, connecting nations, people, markets and manufacturers around the world, rapidly impacts all nations.

Direct threats to ensured maritime access include disruption of commerce or movement and interference with the lawful use of the Maritime Domain and transnational crimes such as piracy and terrorism. Illicit trafficking (weapons, drugs, money, humans or other contraband) may also impact maritime access. Natural phenomena, such

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as severe weather, ice or geological disasters may limit access. Since these threats and events can be expected to continue it would be prudent to prepare for a future where the impact of a variety of access challenges could be prevented, mitigated or resolved. Though some nations have robust capabilities, for multiple reasons, no single nation can ensure access for the global community at large.

The presence of dozens of groups operating around the globe speaks to national concerns about maritime access challenges. They have many different names but are collectively referred to here as maritime security regimes (MSR). Historically, these MSRs have a wide range of capability as well as success.

The complexity and uncertainty facing the nations of each unique maritime region are compounded by the problems and opportunities of space, cyber and air domain dependencies and regional relationships. The interdependence with other domains is evident because the physical flow in the Maritime Domain is coupled with the information flow in cyberspace and the availability of space assets for weather prediction, navigation and communication.

The Maritime Security Regime Concept (Annex A) fundamentally shaped this Enterprise Implementation Proposal and MSR Manual. Reviewing the Concept's analysis, key ideas, principles and access challenge solutions will enhance application of this document.

As indicated in the title, this document proposes the dual solution that (1) proposes implementing an Enterprise[1] to provide global support to regional MSRs and (2) offers processes and approaches to directly enhance MSR capabilities. To accomplish this, Part I proposes the design, development and implementation of the MSR Enterprise. Its purpose is to offer sustained support to greatly increase MSRs cooperation including Net Enabled Collaboration. The MSR Manual, consisting of Parts II and III, addresses MSR processes and capabilities regarding building new MSRs and providing sustained global enhancement or improvement of existing MSRs. A series of Case Studies (Annex B) further confirms the dual solution substance by summarizing the corroborating findings of several existing MSRs. A sample MSR agreement is provided in Annex C and the Experiment Analysis Results, which supports the elements of this Manual, is provided in Annex D.

The value or underlying measure of success of the dual solution proposed in the central idea of the MSR Concept is its ability to contribute to improving MSR capability to resolve regional maritime access challenges. Access challenge resolution depends on the approach of the MSR as well as its capabilities and organization. The suggested MSR approach combines regional and global aspects. Adapting the supply chain construct, that traces the flow of illicit access challenges from their maritime domain activity source through several MSR regions and finally to the intended market region, is a key element of the Global Approach. This expanded MSR approach combines with the traditional MSR regional focus on access challenges utilizing the best practices of both regional and global approaches.

Under MSR leadership two primary MSR functions are required to ensure access and freedom of maneuver: an ability to *assess and understand* regional access challenges in the complex environment both regionally and globally, and the ability to generate a comprehensive MSR *response* including influencing stakeholder action. Both segments of the dual solution, the Enterprise and enhanced MSR capability, are designed to improve the MSRs response to a range of access challenges.

Part I – Design and Implementation of a "Cooperative" Enterprise that Supports Maritime Security Regimes

This section provides the first of the dual solutions of the Maritime Security Regime Concept. It will support MSRs as they address regional maritime access challenges. The Enterprise utilizes a Net Enabled Collaborative environment to interconnect MSRs and provide access to subject matter experts. To manage the complexity and potential surprises in the Maritime

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[1] An enterprise is a cooperative project undertaken, especially one that is important or difficult that requires boldness or energy. The term "enterprise" was first used to describe this construct during Multinational Experiment 5: Cooperative Implementation Planning, Management and Evaluation Concept in October 2008. It is also often led by a business organization. (http://dictionary.reference.com/browse/enterprise) The Maritime Security Regime Enterprise essential elements include interdomain relationships (cyberspace, space and air as well as account for land domains). The term Enterprise is descriptive term and does not prescribe a naming convention. MSRs themselves should name it during initial meetings.

Domain of the Global Commons, the proposed Enterprise is designed to be global, agile and adaptive.

The Enterprise also provides a range of information on request. It facilitates coordination with other authorities and agencies across the regions, reaches out to other domains and responds with capacity building assistance. Further, the Enterprise support of Regional and Global Approaches best addresses the complex and uncertain Maritime Domain environment with a broad range of educational activities including best practices with supporting inter-regional dialogue. The Enterprise proposed is also a key enabler to MSR success proposed in Parts II and III of the Manual. The Enterprise, as proposed, including its supporting elements, will not direct or restrict the regional MSR operations. Instead it offers in response to requests, sustained support to MSRs.

Successful Enterprise development and, in particular, MSR enhancement and collaboration, respond to several principles identified in the MSR Concept. Many of these were also confirmed in the MSR Case Studies. Most important among these principles is the need to build member confidence and trust. Related to confidence are two additional principles: building partnerships tailors regional requirements and the establishment of individual and mutual benefit.

Creating the Enterprise is based on a six element approach:

- **Assessment:** Conduct an assessment of "why the Enterprise is required"
- **Enterprise Design:** develop a strategic vision statement, objectives and the design of the Enterprise
- **Endorsement by Authorities:** Propose the Enterprise to national leadership and maritime organizations
- **Roadmap:** Develop an Enterprise transition plan or roadmap based on senior level national and maritime organizational guidance
- **Implement:** Implement activities supporting the Enterprise
- **Information Sharing, Management and Knowledge**

Part II – Building a MSR within the Enterprise Construct

Once nations and organizations agree to form a MSR in a given region, its capability to address regional maritime access challenges is the essential underlying measure of access success. The inherent MSR functions of assessment and response also require sound leadership if the MSR is to cope with a range of regional access challenges. Also, a case is made in the Concept that there is increasing likelihood of MSR success if it is linked to other MSRs as well as air, cyber and space domains through the global Enterprise.

Creating or enhancing a MSR is based on a flexible Six Step Methodology adaptable to iterative application as required. The first step would involve a strategic review to consider

the requirement for a MSR. The remaining steps would focus on creating the MSR and developing a vision, supporting objectives and organizational design. Following endorsement of the MSR by proper authorities, the process calls for development of a roadmap and provides for situational updating of MSR guidance when required.

Across the globe, MSRs face a spectrum of maritime challenges from high impact challenges of more severity to lower impact, more routine concerns. The challenges that a MSR addresses could be seen as a continuum and MSR organizational constructs and functions described in the Roadmap must be agile in design to reflect this range of maritime challenges. Additionally, MSR constructs are shaped by the principles of individual and mutual benefit, uniqueness of each region, and member trust.

Part III – Sustained Enhancement of MSRs

This section addresses MSR capability enhancement during sustained operations and will likely be heavily referenced by existing MSRs. The MSR vision, objectives and roadmap developed in Part II of the Manual support MSR sustained operations. As access challenges or MSR capabilities change they may require updating and enhancement.

MSR Global Approach

The Case Studies, the Base Line Assessment and the MSR Concept discussed in Part I, all point to the need to combine the strength of MSR regional expertise with global and comprehensive resources, such as collaborating with other MSRs and using the cyber and space domains. Based on these assessments the Global Approach proposes applying these resources to the supply chain construct, from the illicit activity source through relevant MSR regions to the market for the illicit trade or activity.

Case Study Recommended MSR Best Practices

The Case Study best practices closely support the MSR Concept. They primarily address improving MSR capabilities for sustained operations or enhancement. Some key recommendations include:

- Building MSR member confidence and trust is vital and often contingent on making small, iterative and focused steps.
- Focusing initially on the assessment function, including information gathering and distribution plus assessment of actual and potential future situations, is particularly valuable.
- Challenges are often best resolved by individual stakeholder action or enforcement rather than attempting more complicated group actions.

- Maritime Domain is linked to other domains, primarily cyberspace, space and air. This consideration assumes even more importance in the dense maritime environments.
- Inter-regime networking is crucial, particularly with new regimes.

Cyberspace, Space and Maritime Domain Interaction

Persistent space and cyber systems that are part of the interdomain have become an increasingly important contributor to situational awareness. The approach used in the Multinational Experiment 7 (MNE 7) Objective 3.1 Cyber Domain Methodology[2] to enhance cyber resilience[3] is adaptable to the Maritime Domain, but it is not sufficient. MSRs must also be able to fully exploit cyber and space domains. An interactive maritime-cyber response process is an ability to prevent, detect, assess and respond to noncompliant actor challenges. The proposed process exploits cyber and space domain awareness and assessments of both complaint and non-compliant actors.

When considering threats to MSR exclusive economic zones (EEZ) resources or criminal activities, MSRs should use the Global Approach to developing cyber and space domain awareness as well as using more traditional intelligence. In addition to just monitoring events occurring within the MSR region, cyber and space resources can help assess the out of region flow (i.e. Supply Chain construct), particularly the origin of and markets used by noncompliant actors engaged in both EEZ resource violations and criminal activity. The implications are clear for MSR anticipation and assessment of regional threats.

MSR Leadership Function

Many Maritime Security Regimes exist today in various forms, each with differing abilities to resolve regional access challenges. Various situations or access challenges, including cultural and capability factors, require unique approaches to access challenge resolution. These unique approaches range from federated organizations sharing information to enable individual national responses, to organizations with more unified multinational command and control functions.

In most cases MSR leadership will employ assessment or situational awareness functions as well as a response function. In addition to MSR capabilities, the scope and role of these MSR functions are also shaped by three variables in the maritime environment: the degree of access challenges or threat, the vulnerability, and the value of maritime assets at stake.

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[2] Multinational Experiment 7 is a two-year multinational and interagency concept development and experimentation (CD&E) effort to improve coalition capabilities to ensure access to and freedom of action within the Global Commons domains (Air, Maritime, Space and Cyberspace).

[3] For the purpose of this document, *resilience* is accepting the risk of an attack taking place, and rather focusing on strengthening the ability to prevent, absorb and recover from an attack.

Awareness and Assessment Function

The assessment and awareness are iterative aspects of the same process. Assessment leads to improved awareness; improved awareness allows for better assessment. These functions form a foundation for enabling a successful MSR decision and response, which may vary in tempo, approach over the range of maritime challenges. MSR assessment and awareness functions also develop products, including implications and insights, to help shape MSR decisions being proposed in the response function. Assessment can also act as a trip wire to warn of impending access challenges.

Decisions and Response Function

Responses that entail enforcement remain a top challenge for MSRs. As each region has its own unique objectives and challenges, MSRs should develop and adopt their own specific ways to respond. To achieve maritime security, a MSR requires within its membership or among stakeholders the capacity to make accurate decisions in a timely manner, to respond and convince noncompliant actors to comply or, if necessary, to enforce compliance. Part III of the MSR Manual, closes with a review the interactions between the assessment and response functions that emphasize the Global Approach aided by cyberspace and space information particularly for higher impact challenges.

Global coordination and collaboration are clear and essential aspects of improved maritime security. The dual solution of Enterprise support and strengthened MSRs that combines global resources with regional strength in a Global Approach directly enhances MSR success in responding to access challenges. A case is made in this document that the Enterprise proposal is central to this success.

Supporting Maritime Security Regime (MSR)
The Enterprise Implementation Proposal and MSR Manual

> *Objective:*
> *"An improved ability to build and/or enhance maritime security regimes in order to ensure access to and freedom of action within the Maritime Global Commons Domain"*

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Introduction

The presence of dozens of groups operating around the globe speaks to national concerns about maritime domain access challenges. They have many different names but are collectively referred to here as Maritime Security Regimes (MSRs). Historically, these MSRs have a wide range of capability as well as success. This paper addresses enhancing MSR assessment and awareness as well as providing suggestions for responding to actors when their actions are noncompliant.

The Maritime Security Regime Concept (Annex A) fundamentally shaped this Enterprise Implementation Proposal and MSR Manual. The reader should note that the MSR Concept, by design, preceded this document. This Manual represents MSR conceptual implementation

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processes to address maritime access challenges, including new applications developed during MNE 7 discovery, experimentation and analysis. This document proposes the dual solution that implements an Enterprise to provide global support to regional MSRs and offers processes and approaches to directly enhance MSR capabilities.

Part I proposes the creation of a Maritime Security Regime Enterprise as an entity that offers sustained support to encourage and facilitate collaboration between MSRs and improved ability to access information, best practices and expertise from beyond their own regions to respond to challenges in the Maritime Domain.

Parts II proposes a process for building a new MSR while Part III suggest how to enhance an existing MSR a complementary approach to enhancing MSRs, emphasizing collaboration in a global approach to regional challenges. This document proposes procedures, principles and best practices to directly enhance MSR awareness, assessment and response capabilities.

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PART I – Design and Implementation of an Enterprise that Supports Maritime Security Regimes.

Introduction

The Central Idea of the MSR Concept and this Manual is a dual approach to strengthen MSRs:

- **First, the creation of a Maritime Security Regime "Cooperative" Enterprise as an entity that offers sustained support to encourage and facilitate collaboration between MSRs and improved ability to access information, best practices, and expertise from beyond their own regions to resolve access challenges to the Maritime Domain.**

- **The second, complementary approach of the concept directly enhances MSRs, emphasizing collaboration in a global approach to regional challenges. It implements a program that provides procedures, principles and best practices to directly enhance MSR awareness, assessment and response capabilities.**

Part I proposes the first of the dual solutions of the *Maritime Security Regime Concept: A Global Approach to Regional Challenges (MSR Concept)*; how to implement an Enterprise[4] designed to best combine global collaboration with regional MSR expertise. Parts II and III describe establishment and sustainment of an MSR.

These principles, drawn from the MSR Concept support the implementation of an enterprise as described in this section.

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[4] An enterprise is a cooperative project undertaken, especially one that is important or difficult that requires boldness or energy. It often is led by a business organization. (http://dictionary.reference.com/browse/enterprise) The term "enterprise" was first used to describe this construct during Multinational Experiment 5: Cooperative Implementation Planning, Management and Evaluation Concept in October 2008. The Maritime Security Regime Enterprise essential elements include interdomain relationships (cyberspace, space and air). The term Enterprise is descriptive term and does not prescribe a naming convention. MSRs themselves should name it during initial meetings.

A potential Enterprise construct is depicted in Figure 1. It directly addresses the increasing complexity of inter-regional and interdomain challenges. The Concept makes a case that sustained Enterprise support is essential to enabling MSRs to better respond to regional access challenges.
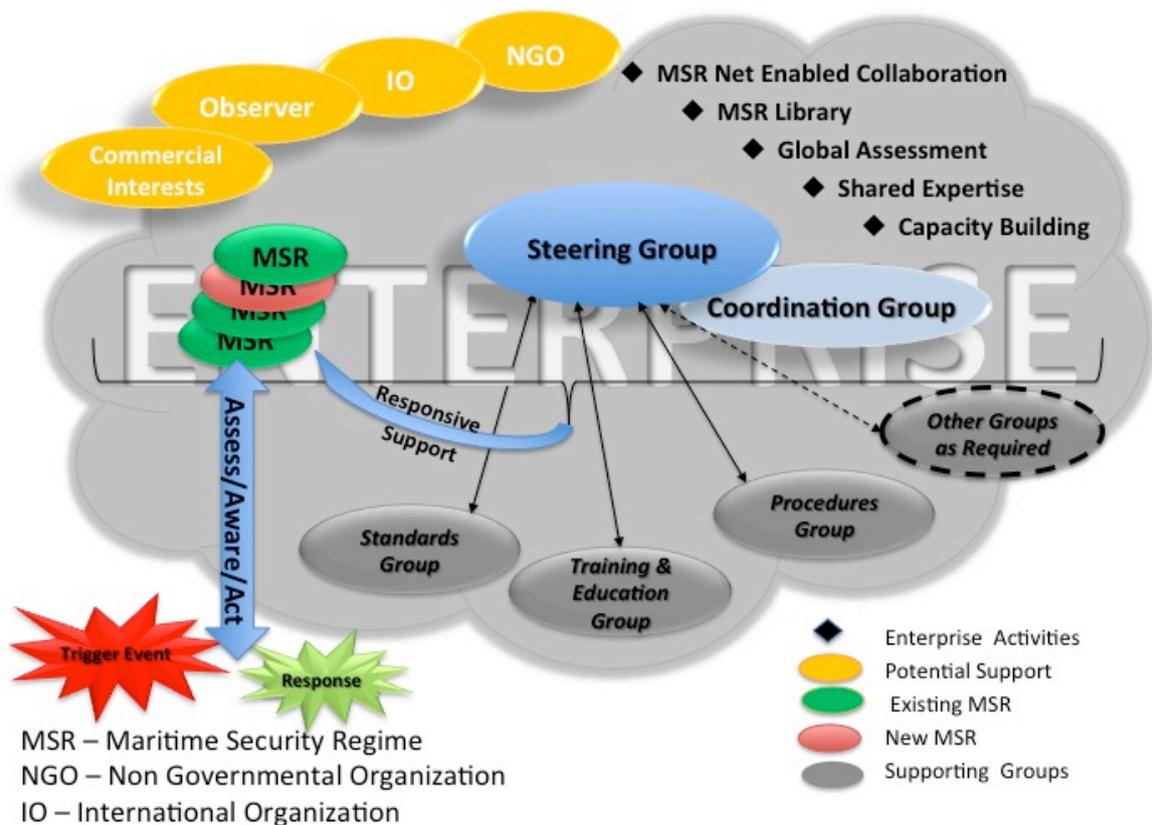
Figure 1. A Potential Enterprise Structure

Note that it is still a core MSR responsibility to assess and respond to challenges (trigger events), but MSR success is enhanced by Enterprise functions and by support from the various Enterprise groups depicted in Figure 1. A trigger event is described as a persistent

access challenge event in a given region that actors coalesce around and causes the formation of a MSR.

Creating the Enterprise employs a flexible six element approach as described in Figure 2.
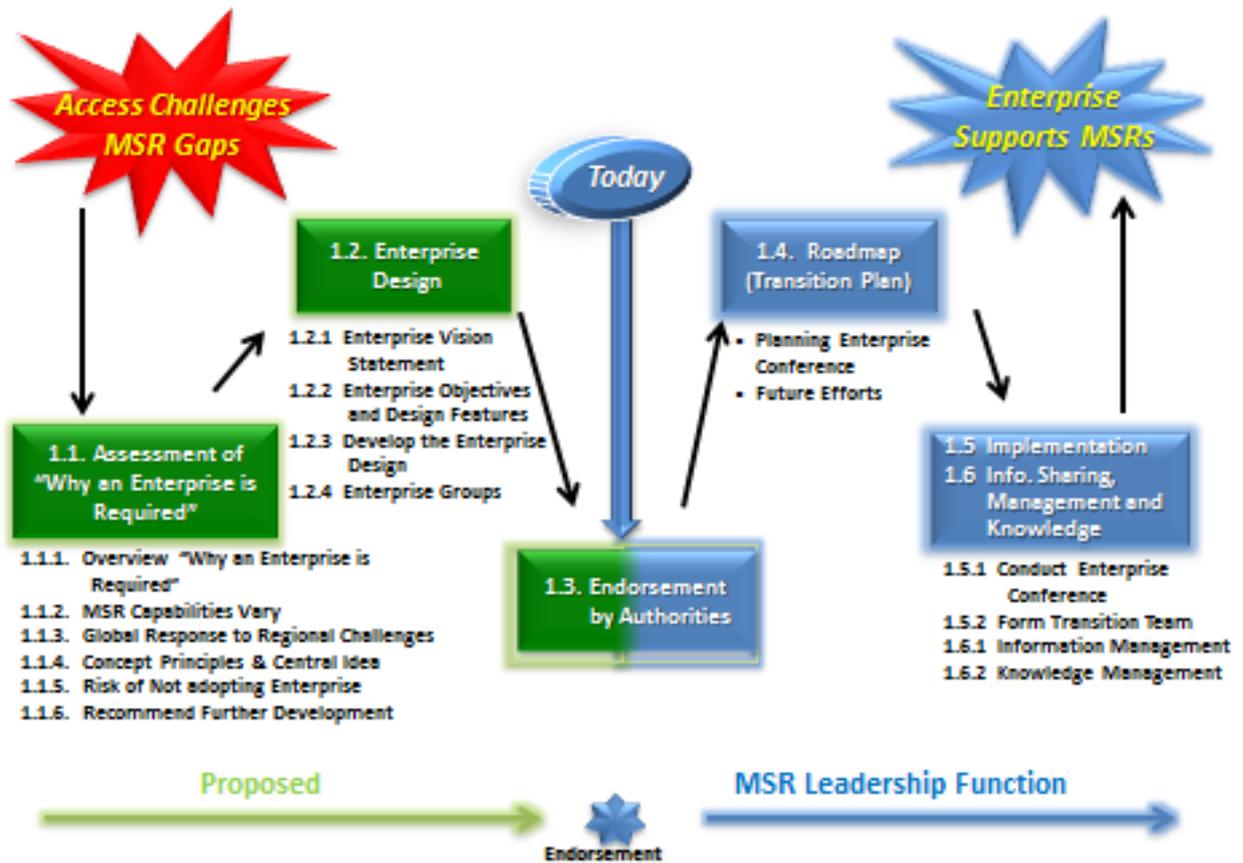
Figure 2. Process for Creating an Enterprise to Support MSRs

Based on the baseline assessment, case study results, concept analysis and two limited objective experiments, the first two steps of the six element approach have been completed. Enterprise leadership decisions and lessons learned that are identified during the implementation of the Enterprise will further shape future Enterprise requirements for the remaining elements. The six elements are described below.

1.1. Assessment of the Requirement for the Enterprise

The proposed design of the Enterprise responds to the question that was fully explored in the Concept: "Is global cooperation and support required to improve MSR ability to respond to regional maritime access problems?"

1.1.1. Overview of "Why an Enterprise is Required"

The assessment to determine if an Enterprise is required begins with a strategic review. Today, there are literally dozens of MSRs, composed of many different types of organization, each designed to respond in some manner to a maritime access challenge. At one end of the spectrum there are Navy, Coastguard, and law enforcement seeking to deal with the more challenging security issues[5]. At the other end of the spectrum are more federated MSR organizations such as Sea Surveillance Cooperation Baltic Sea (SUCBAS). Both ends of the spectrum are integral parts of a comprehensive approach[6]. Some MSRs may be small nongovernmental organizations that work in partnership with national bodies to address challenging issues such as illegal, unreported and unregulated fishing.[7] They generally serve a common purpose, offering their sponsors a way of responding to a security threat or illegal activity in the Maritime Domain.

The challenges they are facing in many maritime regions are compounded by the problems and opportunities of inter-regional relationships as well as space, cyber and air domain dependencies. The Case Studies suggest that MSRs would benefit from sharing best practices and by having the opportunity to be linked together through the Enterprise. Underlying principles, developed in the Concept, underscore the value of this Enterprise approach.

1.1.2. MSR Capabilities Vary

MSR Case Studies (Annex B), the Maritime Baseline Assessment Report, as well as the Experimentation Analysis Results (Annex D) established that MSRs and MSR-like organizations have widely differing abilities to gain maritime situational awareness, analyze access threats and to resolve regional access challenges. Also, regional partners may fail to anticipate or are sometimes slow to form an adequate response to emerging access challenges. While the underlying strength of these regional MSRs is their inherent awareness of the unique culture and associated challenges in their region, they can also greatly benefit from other MSR best practices. It is proposed that the Enterprise act as a conduit for promoting lessons learned and support the exchange of best practices.

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[5] Such as operations at the Horn of Africa

[6] Comprehensive approach. The collaborative employment of diplomatic, informational, military and economic power by civil government agencies, national and multinational military forces, international and intergovernmental organizations, nongovernmental organizations and other relevant actors in a coordinated, integrated and coherent manner in order to achieve unity of effort toward a common goal towards a common goal. (MNE 7 Lexicon)

[7] *Through the Net. The Implementation of the EU Regulation to prevent, deter and eliminate IUU Fishing.* Environmental Justice Foundation (2012), www.ejfoundation.org/reports. IUU stands for Illegal, Unreported and Unregulated (IUU) fishing. IUU fishing is a global phenomenon, occurring in virtually all fisheries from shallow coastal waters to the deep oceans. Accurate data on the scope and scale of IUU fishing is hard to come by as it is in essence a clandestine activity. However it has been recently estimated that the total annual value of IUU fishing worldwide is between US$10bn and US$23.5bn, accounting for a significant proportion of global catches.

1.1.3. The Requirement for a Global Approach to Regional Challenges

One result and underlying insight of the Baseline Assessment Report, Case Studies, and Concept analysis is the value of linking MSRs to increase collaboration with other regions and domains. The nature of maritime environment is increasingly global, stressing the importance of a Global Approach to what were once mostly regional solutions. While a Regional Approach to MSR challenges is still a sound baseline, it is no longer sufficient.

Examples of global factors indicating the requirement for a Global Approach include:

- Case studies of MSRs indicate they may not identify the existence of common inter-regional concerns or may not be aware of corresponding best practices and solution sets developed by other MSRs.

- In general, shipping operations and commerce are global, cutting across regions, and are increasingly cyberspace and space dependent.

- Threats to the flow of commerce in the supply chain increasingly span many regions and force MSRs to also assess and act globally a well as within their region.

- MSRs as well as noncompliant actors will increasingly use and interact in the cyber and space domains. For example, commerce flow in the Maritime Domain is often automated and directly coupled to the flow of information in the Cyber Domain. Additionally, shipping flow and control is reliant on global space assets for maritime navigation and communication. MSRs need to use these domains as part of their Global Approach.

The Enterprise can help MSRs address all of these global factors by linking MSRs for better cooperation regarding best practices, standardized operating procedures and enhanced awareness of global commerce and access challenges.

1.1.4. Concept Principles and Central Idea Suggest Sustained Support

Further in regard to the question "Why is an Enterprise required?" a review of the MSR Concept's underlying principles underscores the value of the Enterprise approach. Many of the principles, such as building confidence and establishing mutual benefit and building partnerships are long-term challenges that are best addressed by sustained Enterprise support of MSR dialogue and education with more mature MSRs.

The Concept's Central Idea proposes that its fundamental goal is to enhance a MSR's ability to assess and respond to regional maritime challenges using a dual solution to support the MSRs directly and by employing a global Enterprise solution.

1.1.5. Risks of Not Adopting the Enterprise

> *Forming an Enterprise to support the Global MSR Approach is an important opportunity and key to MSR success.*

Successful implementation of the ideas and approaches proposed in Parts II and III to support MSRs is much less likely without the sustained support of the Enterprise. In short, the procedures and best practices of this portion of the dual solution are less likely to be incorporated. Without an Enterprise, Parts II and III will become outdated documents infrequently referenced. Risks of not adopting an Enterprise include these.

- Access threats and the nature of the maritime environment are increasingly global; so independent or regional MSR operation may be too narrow in the absence of Enterprise global support.
- MSRs operating independently may not mature as rapidly.
- Without global assessment and awareness, MSRs may respond too slowly or with an inadequate response.
- MSRs lacking internal resources are less likely to successfully seek or obtain the capabilities of other stakeholders.

Combined, these risks will increase the likelihood of delayed or failed MSR response to maritime challenges.

1.1.6. Recommend Approving Further Development of the Enterprise Proposal

In summary, the Enterprise proposal addresses identified MSR gaps[8] by emphasizing the global linking and collaboration with and between MSRs including the utilization of other domains.

1.2. MSR Enterprise Design

Once the Enterprise strategic review is completed and further development approved, the initial design of the Enterprise should consider the following elements.

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[8] See Multi National Experiment 7, Outcome 1 Baseline Assessment Results dated 31 March 2011.

1.2.1. Develop an Enterprise Strategic Vision Statement[9]

To garner support for the Enterprise formation a short strategic vision statement that is convincing and inviting is required to MSRs that may want to join the Enterprise. The vision statement concisely summarizes the why, what and how of the Enterprise proposal. It emphasizes the key ideas of the Concept and this proposal.

The vision should consider the following aspects:

- **The Maritime Access Challenges and MSRs Today.** The unhindered ability to operate within the Maritime Domain is essential to a healthy global economy and is vital to the strategic security interests of all nations. Today dozens of Maritime Security Regimes (MSRs) are in place across the globe. They have a range of capabilities to address access challenges of varying complexity and threat. An underlying strength of MSRs is their inherent awareness of the regions uniqueness and its associated challenges. Too often they operate independently while facing an increasingly global challenge.

- **The Enterprise Provides for MSR Requests.** The Enterprise will employ a sustained approach that supports MSRs in a net enabled collaborative environment. To manage the complexity and potential surprises in the Maritime Domain of the global commons develop an Enterprise that is global, agile and adaptive to support MSRs as they address maritime access challenges.

- **Enterprise Provides MSR Support not direction.** The Enterprise, including its proposed supporting elements of a Steering Group and Coordination Group, will not direct or restrict regional MSR operations.

- **Enterprise Activities.** The Enterprise must provide information on request, facilitate coordination with other authorities and agencies across regions, reach out to other domains and respond with capacity building assistance. Further, the Enterprise approach best addresses the complex and uncertain Maritime Domain with a broad range of educational activities including best practices with supporting inter-regional dialogue.

- **Conduct Periodic Conferences.** Leadership of an established Enterprise will periodically conduct MSR conferences that explore maritime challenge issues. These meetings may also explore policy and decision-maker level review of the Enterprise's vision, objectives and design.

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[9] *Strategic Vision*: a description in broad terms of the situation as it would fulfill political objectives. This strategic vision provides the long-term perspective for the Enterprise effort.

1.2.2. Enterprise Objectives and Design Features

Enterprise objectives are largely based in achieving MSR core abilities to maintain maritime access. The Enterprise is designed to support achieving these objectives.

- **Prime Enterprise Objective – Facilitate Global Support to Regional MSR Challenges.** Without creating a directive role, the Enterprise provides sustained MSR support featuring a Global Approach emphasizing collaborative interaction with other MSRs and domains. This support offers global resources tailored to the region.

  Enterprise design feature: Offer MSRs the full range of Enterprise supporting capabilities and links.

- **Support Timely MSRs Responses.** Regional uncertainty implies the requirement for persistent assessment to enable timely and effective responses. Additionally, in an interdomain and inter-regional environment, the limits of independent or isolated MSR responses are apparent. This includes the need to identify likely response capabilities earmarked earlier in the process and to facilitate support from a wider selection of nations and organizations.

  Enterprise design feature: Seek ways to assist MSRs' ability for more effective and more measured responses through building sufficient maritime awareness including capitalizing on inter-regional and interdomain capabilities.

- **Assist Identifying Key Stakeholder Response Capability.** Improve MSR decision response capability by better identifying likely response abilities of stakeholders. Also, include linking the MSR to other MSRs for advice and support.

  Enterprise design feature: Support identifying key stakeholder abilities as well as linking MSRs to other MSRs and to other global commons domains.

- **Assist MSR Maritime Situational Awareness and Understanding.** Enhance the MSRs' capabilities to improve Maritime situational awareness and understanding through facilitation of global information exchange.

  Enterprise design feature: Foster persistent regional maritime situational awareness in particular with regard to the movement of maritime commerce or resource exploitation as a baseline, in order to identify noncompliant activity in the maritime, space and cyber domains. It remains a major challenge to maintain awareness of all maritime activities including that of noncompliant actors.

- **Support MSR Assessment Capabilities.** Enhance the MSRs' capabilities to assess the maritime situation through collaboration facilitated by the Enterprise.

  Enterprise design features: Foster Maritime Domain assessment capabilities of MSRs by supporting the collaboration of the MSR members in sharing national and organizational assessment results or by assisting in the establishment of an assessment function within the MSRs.

- **Implement Procedural Options.** Develop and implement decision-making processes, especially regarding funding and capability building by outlining a set of commonly accepted business rules. This could include conflict resolution options for those members that cannot agree to the majority.

  Enterprise design feature: Identify and define rules for membership and business operations on the basis of majority consensus.

- **Other Enterprise Design Features**
  - Provide MSRs a flexible approach to build new and enhance existing regional frameworks that better meet these objectives.
  - Outline principles and procedures for successful MSR establishment or enhancement and sustainment based on best practices from case studies of existing MSRs.
  - Improve Maritime Domain security by including a menu of MSR access challenge solution options.
  - Identify and explore new methods for identifying common issues of MSRs. For example, build a common agenda checklist.

1.2.3. Develop the Enterprise Design

Enterprise success is measured in a MSR's ability to ensure access in the Maritime Domain through, awareness, assessment and the capability to adequately respond to access and security challenges.

Keys to sustained MSR support by the Enterprise are five complementary and interconnected activities depicted in Figure 3.
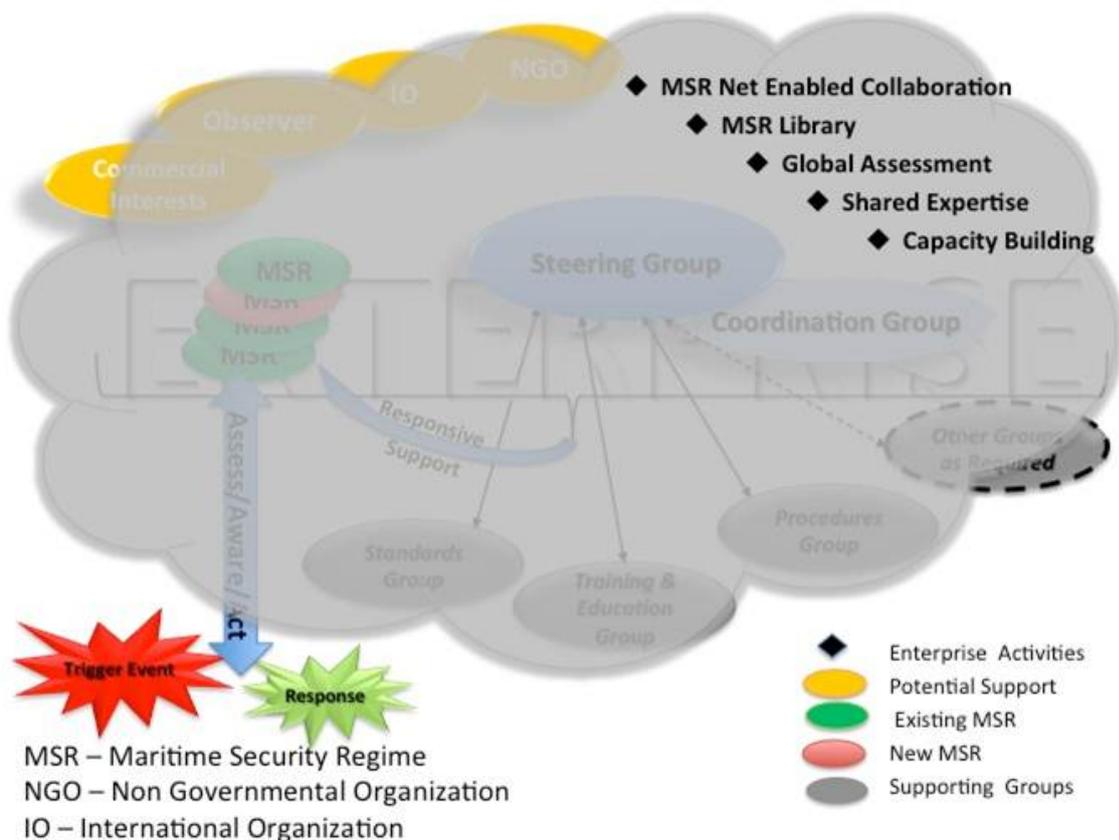
Figure 3. Enterprise Activities – A Global Approach to Regional Challenges

These are the activities depicted in Figure 3.

- Enterprise Net Enabled Collaboration designed to support MSR dialogue including exchange of information, building enhanced awareness and communicating alerts of access challenges or problems. MSRs and the elements of the Enterprise are interconnected and able to interact in a timely manner with each other as well as other interdomain sources.

- MSR library that offers links and direct means to access a repository of knowledge for all MSRs including relevant information such as:
  - Historical examples
  - Best Practices
  - Current or recent access incident reports
  - MSR and Subject Matter Expert contact information.

- Enhance MSR awareness by improved collaborative assessment.

- Shared expertise about related activity of interest to MSRs.

- Capacity Building that promotes MSR enhancements through advocacy for partnering, mentoring and increased membership.

Collectively or individually these enterprise functions will support MSRs with information, expertise and possible response options to current and emerging challenges by offering greater understanding, wider information sharing and expertise about related activities within the Enterprise.

1.2.4. Enterprise Groups

Figure 4 depicts examples of the groups that could be created to support the Enterprise.
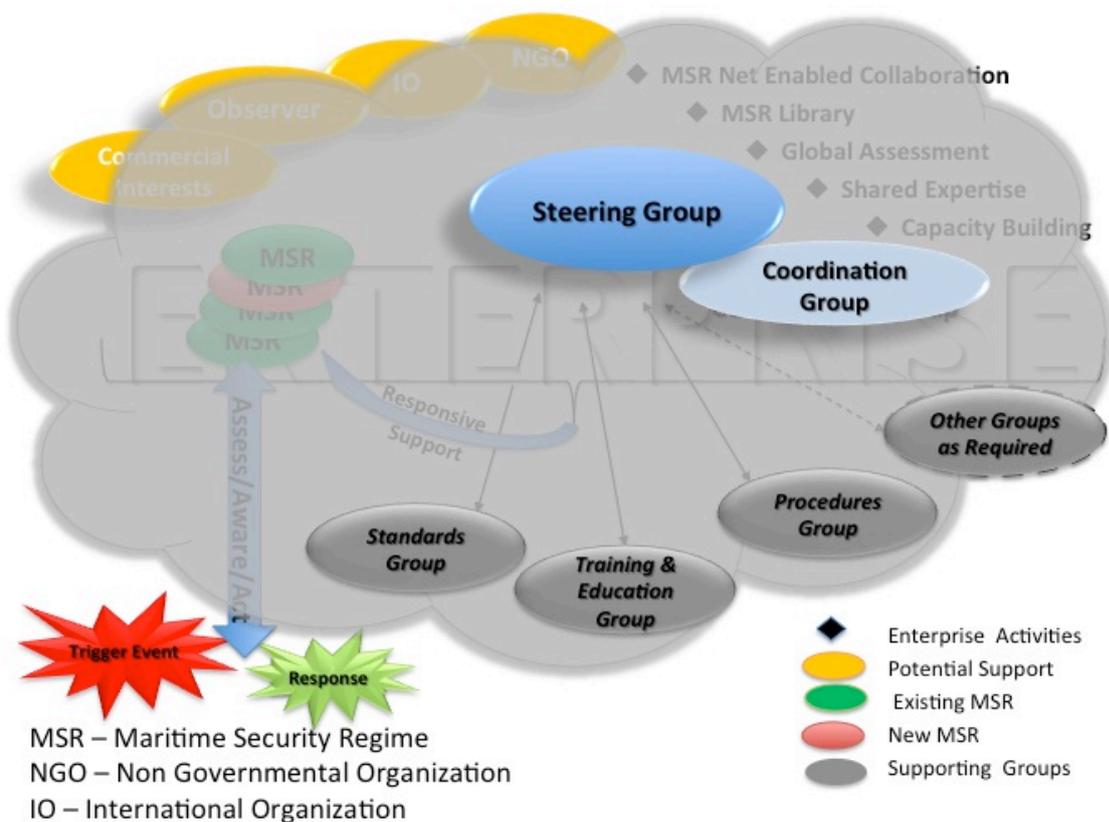
Figure 4. Enterprise Organization

Enterprise groups and their responsibilities and roles may include:

Steering Group. This group is led by a Chairman and is composed of members whose role is to provide guidance and make decisions on strategy and planning on behalf of their respective MSRs with which they will liaise as necessary. They represent and guide the Enterprise functions and the supporting components including the Coordination Group and several subgroups depicted above. The Steering Group also leads the Enterprise MSR Conferences.

The Enterprise Conferences are periodic face-to-face meetings of senior MSR representatives to explore regional MSR issues and challenges and to exchange information. Participants include a Steering Group and its Chairman and supporting groups in the field of operations, technical requirements, legal questions, or other special areas of concern as required.

Conference objectives and roles may include:

- Guide MSR Conference detailed planning, and execution.
- Direct Conference agenda items and design the Conference sessions for the Chairman.
- Select "hot topics" to be discussed during the Conference and in the Net Enabled Collaboration environment.
- Develop and articulate appropriate and acceptable Enterprise and Subgroup names.[10]
- Support and enable maritime capacity building activities.
- Provide a networking forum for the MSRs.
- Develop MSR advocacy policy in order to generate political will, improve MSR partnering and mentoring, and increase membership.
- Develop suggested Enterprise member conflict resolution processes.
- Guide the Enterprise library of best practices (lessons learned), MSR concept and MSR Manual publication updates.
- Ensure support for MSR education and training.
- Act as an advocate for consensus building for new laws or regulations concerning emerging access challenges.
- Guide MSR assessment support including early warning trip wire functions.

Coordination Group. This group supports the Steering Group by conference preparation and the meetings as well as maintaining the Enterprise net enabled collaboration and knowledge repository. This Group should be organized by the Enterprise Steering Group according to their requirements.

Primary roles for the Enterprise Coordination Group include:

- Supporting the Enterprise Steering Group and its Chairman to facilitate networking of the MSRs including net enabled collaboration. Additionally:
  - Maintain the Enterprise library of best practices (lessons learned) including MSR concept and MSR Manual publications and other pertinent documents.
  - Support education and training of MSRs.
  - Support maritime capacity building activities.

- Provide MSR Conference detailed planning, and execution:

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[10] The term Enterprise are descriptive terms and do not prescribe a naming convention. MSRs themselves should name them during initial meetings.

- Develop Conference agenda items and design the Conference sessions for the Chairman.
- Be the conduit for "hot topics" to be discussed in the Conference and in the Enterprise Net Enabled Collaboration.

- Future roles could include:
  - Support MSR assessments including early warning "trip wire" functions.
  - Be alert to and report MSR crisis events and access challenges.
  - Elevate immediate action items to the appropriate Enterprise Steering Group leadership.
  - Maintain awareness and knowledge about related inter-regional and interdomain activities.
  - Support MOU development in anticipation of future action**.**

Other Groups. The Enterprise Steering Group is also supported by a number of subgroups, which may include groups to address standards, training and education, procedures and other topics as required. These groups may meet as sub-conferences of the MSR Conference to address topics of interest to that group.

Other Possible Participants. Other possible participants in the enterprise may include International Organizations (IO)[11], nongovernmental organizations (NGO)[12] and other observers with an interest in Maritime Security such as commercial interests[13] (shipping companies or port operators).

1.3. Endorsement of the Enterprise by Relevant Authorities

Obtaining endorsement of relevant authorities requires building a MSR community of interest. This is an iterative process that includes:

- Establishing an Enterprise transition team to build national consensus and support for the Enterprise proposal.
- Enterprise legitimacy should be explored through a bottom up approach by the participating MSRs and through top down endorsement by international maritime organizations.
- Build consensus among key nations, existing MSRs and maritime organizations (IMOs, shipping organizations and commercial organizations).
- Conduct Enterprise endorsement progress assessments on a regular basis. The goal is initial assessment of advocates, level of ambition, and political will.

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[11] E.g., International Maritime Organization (IMO), International Maritime Bureau (IMB), African Maritime Safety and Security Agency (AMSSA).
[12] E.g., Environmental Justice Foundation.
[13] E.g., Commercial companies such as Maersk, Baltic and International Maritime Council (BIMCO) and Lloyds of London.

- Initiate reviews of the Enterprise proposal by national and international organizational authorities.
- Obtain political advice of national level decision makers and maritime organizational leadership.
- Develop specific products designed to support the leadership decision-making process.
- Utilize ongoing maritime security conferences, experiments and exercises to explore and improve the MSR Concept and MSR Manual.
- Seek endorsement by relevant authorities including publicizing previous endorsements in order to attract other members of the community of interest to join the Enterprise.
- Develop products for media sources to influence the narrative.

1.4. Develop an Enterprise Implementation Roadmap

The Enterprise strategic roadmap[14] (or transition plan) steps include: Planning, scheduling, funding and supporting a kickoff meeting to establish the Enterprise.

Developing the Enterprise roadmap will best be completed by a maritime security organization with the resources to invite the various MSRs, MSR like organizations and others from the community of interest. Potential future Enterprise development efforts could include refining MSR Enterprise support and coordination by exploring the following options.

- Improving maritime global situational awareness using an Enterprise.
- Deriving MSR Maritime Domain situational awareness information resource requirements and required capabilities for a common operational picture (COP) designed to support the range of MSR operational requirements.
- Linking to interdomain support sources.
- Building and evaluating Enterprise processes to support MSR assessment activities and alerting or acting as a tripwire to potential or actual regional maritime challenges.

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[14] Strategic Roadmaps. Possible sets of coherent sub-steps derived from the Strategic Objectives. They each indicate an overarching approach to guide the Enterprise efforts. The achievement of all of the sub steps that comprise a Strategic Roadmap marks the attainment of the intended state. It also provides a preliminary idea of the constraints as well as of the possible resources, time frames and synchronization requirements.

1.5. Enterprise Implementation

The European Maritime Surveillance Networking (MARSUR) and the Centre of Excellence for Operations in Confined and Shallow Waters (COE CSW) are working toward conducting events in 2013 that will further the process of Enterprise Implementation.

Implementation using the roadmap includes enhancing member advocacy of the Enterprise proposal, attracting new members, and must be supported by senior level national and maritime organizational commitment. Conducting an initial conference and establishing a transition team are important implementation steps.

1.5.1. Conduct the First Enterprise MSR Conference

Some recommended agenda items for the first Conference include:

- Establishing a rotational framework for the guidance and administration of the Enterprise:
  - Determine procedures for and elect a Chairman,
  - Determine term length for key positions and functions,
  - Set a Conference interval time frame, including selecting a lead organization for events scheduled in the near future, and
  - Determine technical points of contact to coordinate required Enterprise IT and IT security.
- Establish legal agreements, including information sharing agreements and MOUs.
- Develop Terms of Reference for the Enterprise:
  - Establish and agree upon rules, regulations and membership criteria,
  - Establish a procedure for adjudicating new membership requests, and
  - Establish procedures for arbitrating differences or disputes between Enterprise members.

1.5.2. Establish an Enterprise transition team to undertake recommendations and agreements from the initial Enterprise MSR Conference. Transition team tasks include:

- Refine inter-regional MSR communication processes and net enabled collaboration.
- Identify Enterprise educational and leadership challenges and resources.
- Facilitate MSR education on a range of maritime access challenges.

1.6 Enterprise/MSR Information Sharing, Information Management and Knowledge Management

MSR Information Sharing, Information Management and Knowledge Management are important capabilities for a successful global Enterprise. The strength of the Enterprise depends on MSR collaboration and informal as well as formal information and knowledge exchange.

Setting up a new MSR or enhancing already established ones in an Enterprise as described in this Manual requires an early and detailed vision of how to implement, upgrade and tailor the Information Sharing processes to the specific requirement as requested by the MSR. Encouraging and supporting internal and external Information Sharing policies is a function of the Steering Group. Although the Enterprise will meet periodically, the importance of proper information sharing is a continuous activity. Consequently, either the Chairman or the Enterprise Coordination Group should provide MSR Information Sharing and Knowledge Management support.

1.6.1. Enterprise Information Management for MSRs

Dedicated Information Management is one of the important factors for successful MSRs, particularly in light of the Global Approach to access challenges. The design of an appropriate Information Management policy and especially from the first steps of cooperation onwards, the Information exchange procedures, must be tailored to bilateral or multilateral requirements of the involved MSRs. The benefits of Information Management are very much dependent on the willingness of the partners to share information.

Much previous work on information sharing has determined that an effective information management plan will ensure that trustworthy information becomes visible and accessible to all, for near real-time use. Additionally, the plan should define adequate transmission security regulations for the intended lines of communication and systems.

Because differing national regulations and policies regarding the dissemination of information and related security principles are in force, methods for information sharing should be considered as early as possible. Existing conventions of content-related information security regulations such as "need to know" have to be recognized as well as approach-related regulations like "need to share in MSR collaboration." Such conventions need to be reconsidered in order to identify one commonly agreed way ahead to ensure the smartest possible internal and external approach for comprehensive sharing and safeguarding information. Various existing Information Management policies already provide very detailed guidance and solutions for all decision levels. Case studies indicate that an initial approach for MSR or inter-MSR information sharing is found in a series of small iterative steps to build confidence.

1.6.2. Enterprise Support of MSRs Knowledge Management

Information or knowledge has a limited lifespan. Certain types of information, especially when coupled with analysis, becomes knowledge. It is best obtained or generated near its source, within the region of the MSR.

Such knowledge is also widely used in developing "lessons learned" or "best practices" archives. In this regard, knowledge management has more enduring value. These lessons learned archives are valuable for replicating processes as associated with building or enhancing existing MSRs. Consequently, one of the bodies of the Enterprise should be designated to take responsibility and support MSR information and knowledge flow. The Enterprise should also address knowledge management in its training and education function.

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PART II – Building a MSR within the Enterprise Construct

Introduction.

The following principles, drawn from the MSR Concept, support building a MSR as described in this part of the document and sustaining a MSR as will be described in Part III.

MSR Concept Principles that support Building a MSR within the Enterprise Construct

- *Generate Confidence among MSR Members. Generating confidence and trust among members over time in turn builds a willingness to cooperate. The willingness of members to cooperate for the achievement of common goals within a collective body is directly related to their mutual confidence, which in turn leads to the generation of trust in their ability to coalesce.*

- *Build MSR Partnerships. Build partnerships tailored to secure the regions maritime resources and commercial needs with an appropriate level of security enforcement or response capability.*

- *Establish Individual Stakeholder and Mutual Benefit. For an organizational entity to be viable there should be acknowledged individual (national) as well as mutual benefit.*

- *Each MSR is Unique and Must Be Agile and Make Its Own Policy Decisions. There are two factors that establish this uniqueness. First, there is a wide diversity of challenges and the evolving operating environment in maritime regions of the world. Each is uniquely complex and marked with uncertainty where different cultures, viewpoints and interpretations exist. Second, there is a wide variation in the capabilities of MSRs.*

- *Support MSR Compliant Actors. The MSR must act in accordance with the United Nations Convention on the Law of the Sea (UNCLOS). Its central goal is freedom of access in the Maritime Domain, principally for all actors that comply with international norms and standards.*

- *Support a Comprehensive Legal Framework. MSRs support a comprehensive legal framework using both national and international law balanced by an assertive application of the law – "law in action." The MSR must back its legal framework using well-organized cooperation and trust to achieve a shared agenda.*

- *Enable Planning and Decision-Making in a Complex MSR Environment. MSR planning and decision-making must be designed for the complex environment including a wide variety of civilian governmental and private participant interests. An underlying challenge is the combination and interaction of these numerous partners, cultural differences, interdomain factors, inter-regional partners and regimes facing threats of similar complexity and interactions. In the multitude of varying scenarios of the Maritime Domain, MSR decisions should include responses using the range of diplomatic, economic and military considerations striving to prevent and minimize access challenges using a comprehensive approach.*

Figure 5. Overview: Building a MSR within an Enterprise

Once nations and organizations agree to form a MSR in a region, the ability to successfully address regional maritime access challenges is the essential overarching measure of ensured access success. Two inherent MSR functions are required to ensure success: first, an ability to assess and understand regional access challenges in the complex environment and, second, the ability to execute a comprehensive MSR response including influencing stakeholder action. An underlying insight of the Concept is the increasing likelihood of MSR success if it collaborates with other MSRs in the Global Enterprise and utilizes capabilities of the cyber, space and air domains. Figure 5 provides an overview of the process of building a MSR within an Enterprise.

National and organizational efforts, including Enterprise support, should be engaged in a coherent and coordinated manner. Indeed, no single instrument of power alone can effectively solve a complex maritime access challenge.

Similarly, addressing challenges only at sea may not fully resolve a problem because the root causes of many maritime access challenges originate ashore. While it is not a purpose of this document to set MSR policies including land policies, it is vital to understand the inherent connection between the land and maritime domains in order to succeed in resolving MSR challenges.

2.1. Determine the Requirement to Form or Enhance a MSR

Creating or enhancing a MSR is based on a flexible Six Step Methodology depicted in Figure 6, which begins with a strategic review to establish or confirm the requirement for collaboration and to determine the level of ambition of this collaboration. This process should be adapted as needed to meet the unique access situation.
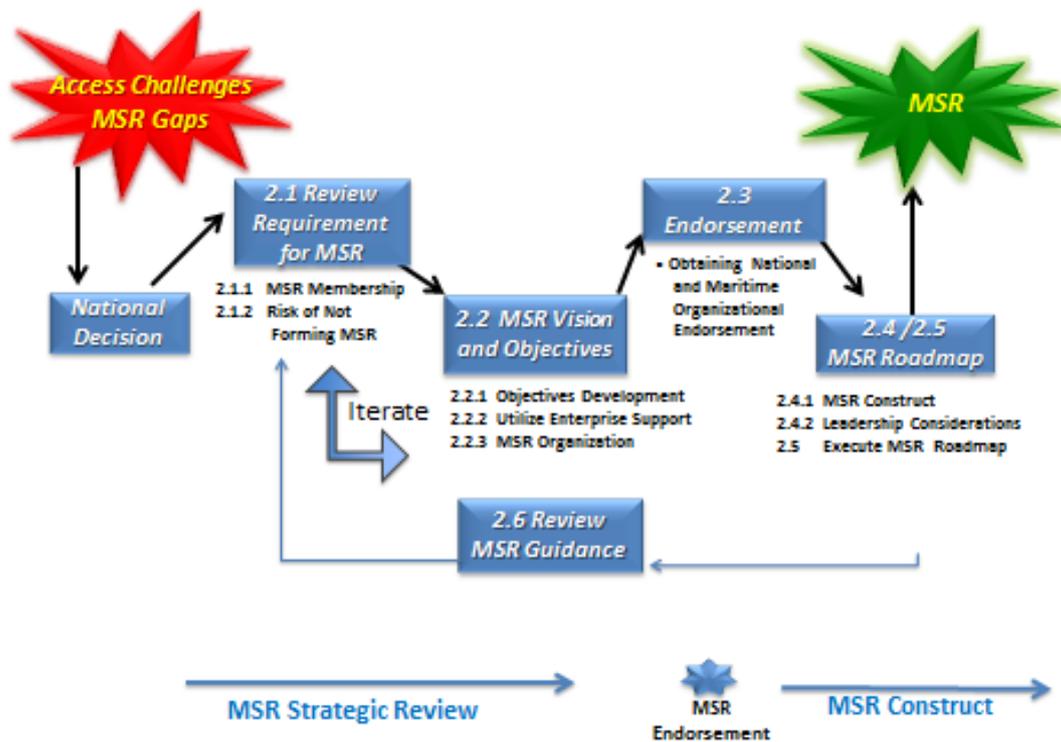
Figure 6. Process for Building a MSR within an Enterprise

In this process model it might be assumed that the interested stakeholders, mostly sovereign, nations have already made their individual decision that merging their efforts could enhance the regions capability to successfully respond to a maritime access challenge. Nevertheless, it is valuable for the stakeholders to consider the underlying causes of their mutual interest to consider forming an MSR. Collaboration will then begin with a collective review of the individual assessments to achieve a common understanding of the access challenges and enhance each stakeholder's situational awareness.

It is important that this initial review or assessment be a collaborative effort starting with the process of establishing stakeholder trust and confidence in the potential MSR. Given the constraints of national and organizational regulations, sharing information is often a challenge but it is vital to a better understanding of the maritime access situation and associated root causes. Building trust and confidence will be a reoccurring theme of Parts II and III.

Note that as shown in Figure 6, steps 2.1 and 2.2 may be iterated as necessary to address both group assessment and stakeholder political views.

There are several related elements to the initial requirement to establish a MSR. They may include these.

- **Access challenge analysis**
  - Determine the current access challenges and stakeholders capabilities, strengths and limitations to respond to the threat.
  - Identify historical background of access challenges or instability, such as past tensions, and potential local, regional, and global consequences.
  - Conduct identification and analysis of each cluster of root causes of the access challenge, including national, regional or international perspectives designed to shape the MSR operation at sea.
  - Determine the vulnerability and value of key maritime assets involved, examining the regional environment including cyber and space domain aspects.
  - Identify applicable best practices as established by other MSRs and by accessing the Enterprise.

- **Assess the level of ambition of MSR stakeholders**
  - Determine each stakeholder's level of ambition regarding response options to the access challenges.
  - Develop a common level of ambition for the MSR.
  - Identify potential conflicts this level of ambition could create between MSR stakeholders, with neighboring stakeholders or the global community of interest.
  - Review possible MSR stakeholder conflict resolution approaches.

- **Identify potential additional stakeholders and their likely contributions based on their level of ambition**
  - Clarify main actors and interest or identity groups, their leadership, and brief description of their perspectives regarding the access challenge.
  - Assess key actors, capabilities and priorities.
  - Define benefits by stakeholder and likely mutual benefits between stakeholders.

- **Develop possible approaches for challenge resolution**
  - Consider employing multiple lines of approach to the challenge instead of a single less flexible solution. It should include options that might be acceptable to a majority of stakeholders.
  - Determine required MSR interdomain support and capabilities to respond to and resolve challenges identified.

- **External factors**
  - Determine if outside stakeholder involvement is desirable.
  - Assess proposed approaches through risk assessment.[15]

- **Identify available MSR capabilities required and their availability**
  - Identify the most suitable resources for resolving maritime challenges. The military is normally in a supporting role.
  - Identify MSR required interdomain support and capabilities to respond to and resolve challenges.
  - Determine required MSR external support from the Enterprise or external stakeholders.

2.1.1. MSR Membership

MSR members or stakeholders may include nations, organizations and private companies that share a common interest in addressing maritime security challenge. Some interested stakeholders may not reside in the same region as the maritime problem. A MSR could either be initiated or enhanced by the regional members or it could emanate from interested external states or organizations with interest in resolving an access challenge. Figure 7 provides a depiction of categories of MSR stakeholder and identifies the likely functions or roles they may perform.

MARITIME SECURITY REGIME			
Stakeholders		**Leadership**	
		Assessment Function	**Response Function**
Regime Member Nation	Regional Partner		
	Non Regional Partner		
Non Regime Member Nation	Regional or Non Regional Stakeholder		
Other Regime Inter-Regional Coordination			
Key Enabler: Interdomain Support *Maritime, Cyber, Air, Space, Land*			

Figure 7. MSR Stakeholder Functions

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[15] There are numerous Risk Assessment models and processes available and specific approaches to risk assessment are not addressed in this Manual.

The MSR could use regional resources with or without the transfer of authority by the involved stakeholders as well as resources from those not regionally located to fulfill required capabilities. Alternatively because some MSR stakeholders have limited maritime capabilities, the MSR might rely on interested external stakeholders to provide these capabilities. The required capability in this situation could also reside with non-regime contributors willing to cooperate with the MSR. The figure completes the list of stakeholders by including the possibility of other MSR and domain interactions. For convenience, these regional organizations are called MSRs noting that some regions may choose more informal or ad hoc organizational constructs.

2.1.2. Risk of Not Forming a MSR

The MSR review should include a risk analysis of the likely access challenge developments and impact in the absence of the proposed MSR. This analysis should address:

- The impact of best and worst case scenarios.
- Events that could aggravate or improve the access situation.
- The ability of regional actors to deal satisfactorily in an ad hoc manner with the access challenge.
- Whether external region stakeholders will assist in resolving access challenges if a MSR is not formed.

2.2. Develop Strategic Vision and Associated Objectives

The strategic vision is a short description of the region's maritime access situation and the MSRs general guidance using a Regional and Global Approach to respond to these challenges to reach a successful maritime access position. It provides the long-term perspective for the MSR effort and guides the MSR objectives development.

2.2.1. Objectives Development

Strategic Objectives are based on the review results but specifically address the vision statement guidance. These objectives will be presented together with the timeframe considered necessary for their realization. Often, reaching each strategic objective will require the commitment of resources by interested stakeholders. Majority-based decisions will enable both timely and resolution-oriented responses, including preventive initiatives.

The vision and objectives will also guide sustained operation of MSRs. The following objectives are general examples that can be adapted to the actual MSR access challenge:

MSR Main Objective. Creating or improving MSR stakeholder's capabilities to resolve regional maritime access challenges using both Regional and Global Approaches is the central MSR objective. Access challenge resolution shapes the approach of the MSR and in

particular its functions and organization. Under the guidance of MSR leadership function, two inherent MSR functions based in the Concept are required to ensure access and freedom of maneuver: an ability to assess and reduce the uncertainty of regional access challenges, particularly in the complex environment, and the ability to execute a comprehensive response incorporating appropriate stakeholder actions.

MSR Assessment Objectives

- **Enhance MSR Maritime Situational Awareness and Understanding.** Regional uncertainty creates a requirement for persistent assessment to enable timely and effective responses. This requires fostering the development of persistent maritime situational awareness in particular with regard to the movement of maritime commerce in order to help identify noncompliant activity.

- **Support and Utilize Global Assessment Capabilities.** Foster maritime domain assessment capabilities of MSRs by seeking collaboration within and between MSRs to share national and organizational assessment results within the Enterprise. Encouraging the establishment of assessment within the MSRs will promote this effort

- **Identify interdomain related objectives.** As part of the Global Approach, identify cyber, air, and space domain relevant objectives in support of access to the maritime commons.

MSR Response Objectives

- **Identify Key Stakeholder Response Capabilities.** Identifying the capabilities of various stakeholders along with their willingness to employ those capabilities is necessary to developing the likely responses of MSR members and other key stakeholders.

- **Foster Timely MSR Responses.** Regional uncertainty creates a requirement for persistent assessment to enable timely and effective responses. Additionally, in an interdomain and inter-regional environment, the limits of independent or isolated MSR responses are increasingly evident. This includes the need to identify likely response capabilities earlier in the process and to provide support from a more global selection of nations and organizations. MSRs must seek ways to enable more effective and more measured responses through building sufficient maritime awareness including capitalizing on inter-regional and interdomain awareness and response capabilities.

- **Utilize Enterprise Support to Assist the Global Approach.** MSRs should fully utilize Enterprise support including MSR net enabled collaboration, links and direct

means to access a repository of knowledge, advocacy of the value of MSRs, and enhance MSR awareness.

- **Ensure Flexible Response.** Planning multiple lines of approach to maritime access challenges should include trying several ideas in iterative fashion instead of searching for an overarching total solution. The more convoluted and changing construct of complex problems does not lend itself to simple problem resolution approaches.

- **Other Objective Development Considerations.**
  - Fully utilize Enterprise support including MSR net enabled collaboration, links and direct means to access a repository of knowledge and to build advocacy for the value of Maritime Security Regimes and to enhance MSR awareness.
  - To enhance the chance of success, build confidence and trust by emphasizing a series of small steps and specific or focused objectives.
  - Update the review or assessment of the MSR access challenge as necessary insuring the vulnerability of the key maritime assets being challenged is analyzed in terms of the anticipated threat or challenge.
  - Consider the potential level of contributions and intended national or organizational role within the MSR.

2.2.2. Utilizing Enterprise Support

The Enterprise could be used to support the review and development of the vision and objectives. Enterprise support activities and functions that could be considered include these.

- Net collaboration with other MSRs,
- Contacting other domain subject matter experts,
- Dialogue with Enterprise functional entities
- Utilizing the Enterprise library of best practices.

2.2.3. The Overall MSR Organizational Structure

The initial MSR organizational proposal may be general and not require detailed information. It should be structured to consider regional conditions, the Global Approach and the vision guidance and it must support the proposed MSR objectives. It is recommended that the MSR organizational construct be focused on the functions and capabilities of persistent assessment and agile responses. Nations with established working relationships might be able to form this organizational construct with less formal agreements.

2.3. Seek Endorsement

Once the review, strategic vision, supporting objectives and initial MSR organizational structure have been developed, they should be presented to national leadership for endorsement.

2.4. Develop MSR Roadmap

The Roadmap[16] implements the MSR vision and associated objectives. The intent is to produce a single roadmap that in turn is supported by the successful implementation of a number of individual organizations' activity or program plans. The roadmap is comprised of a set of agreed sub-tasks or sub-objectives for each MSR objective, including relative priority and the intended sequence for achieving them. The MSR Roadmap development normally does not provide detailed planning. Figure 8 depicts a notional MSR roadmap.
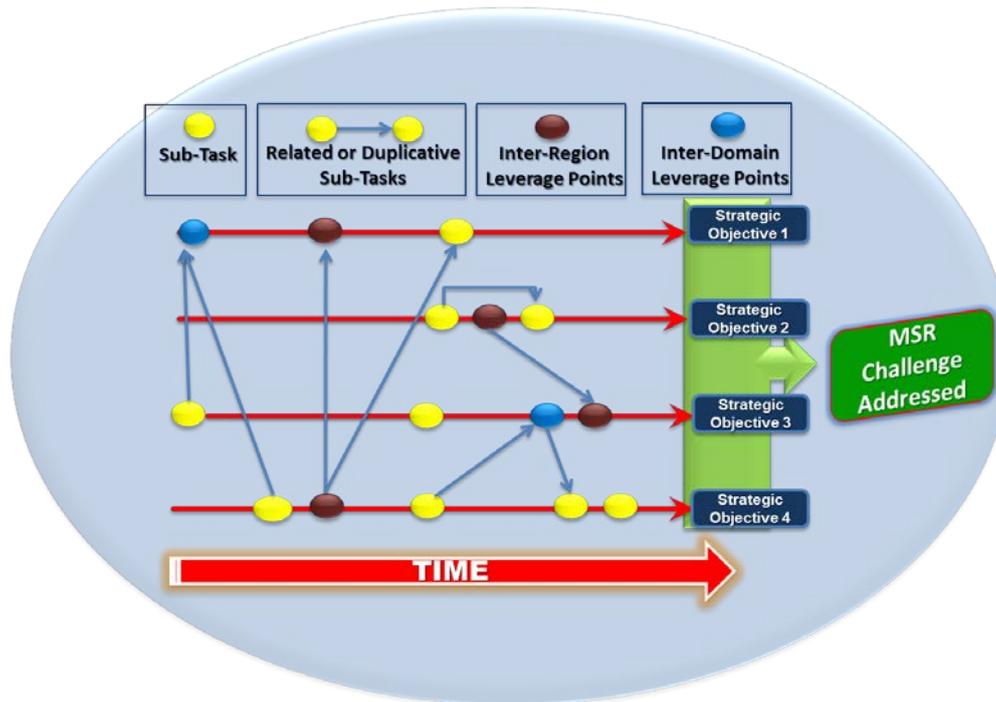
Figure 8. Notional MSR Roadmap

The MSR roadmap is a function of the MSR organization and its actual objectives specific to each situation. Using Figure 8 as a notional roadmap, consider:

- Assumptions should underpin the development of the roadmap.

- For each objective derive associated sub-tasks that must be achieved along its path. Only a limited number of sub-tasks should be considered for each objective.

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[16] Strategic Roadmap is a possible sets of coherent sub-tasks derived from the Strategic Objectives. The roadmap presents an overarching approach to guide the MSR's efforts. The achievement of all of the sub-tasks that comprise a Strategic Roadmap marks the attainment of the transition state. It also provides a preliminary idea of the constraints as well as of the possible resources, time frames and synchronization requirements.

- Because several sub-tasks can be combined across the objectives, contradict one another, equal themselves out or be redundant, a cross optimization of sub-tasks should be explored.

- Identify potential inter-region and interdomain leverage points in the sub-tasks, which are potential collaboration points that may assist sub-task achievement.

- The roadmap is assessed in terms of risks, costs, resources, feasibility, coherence, pertinence, political acceptability and reversibility as well as of the consequences and possible evolutions after response action completion.

2.4.1. Develop MSR Operational Construct

In most cases, empowered representatives from the MSR members willing to consider a maritime access challenge will engage in high level bilateral or multilateral consultations enabling timely decision-making. Participating nations and organizations will often form or use a MSR to manage activities, and the MSR design will normally include an assessment and a response function. The application of parameters such as regional culture, existing capability, political level of ambition and economic environment will impact the MSR functions, scope, size and tasks. Since each of these considerations is regional and situation specific, they are unique and cannot be fully explored in this section.

From an operational view of the access challenge, the design and scope of the MSRs organization can be considered. As depicted in Figure 9, MSRs are facing a spectrum of maritime challenges from high impact challenges of more severity to lower impact routine concerns. The operational MSR construct and its functions must be agile and able to adjust to this continuum of potential access challenges and it should support the requirement for organizational structures as outlined in paragraph 2.2.3.
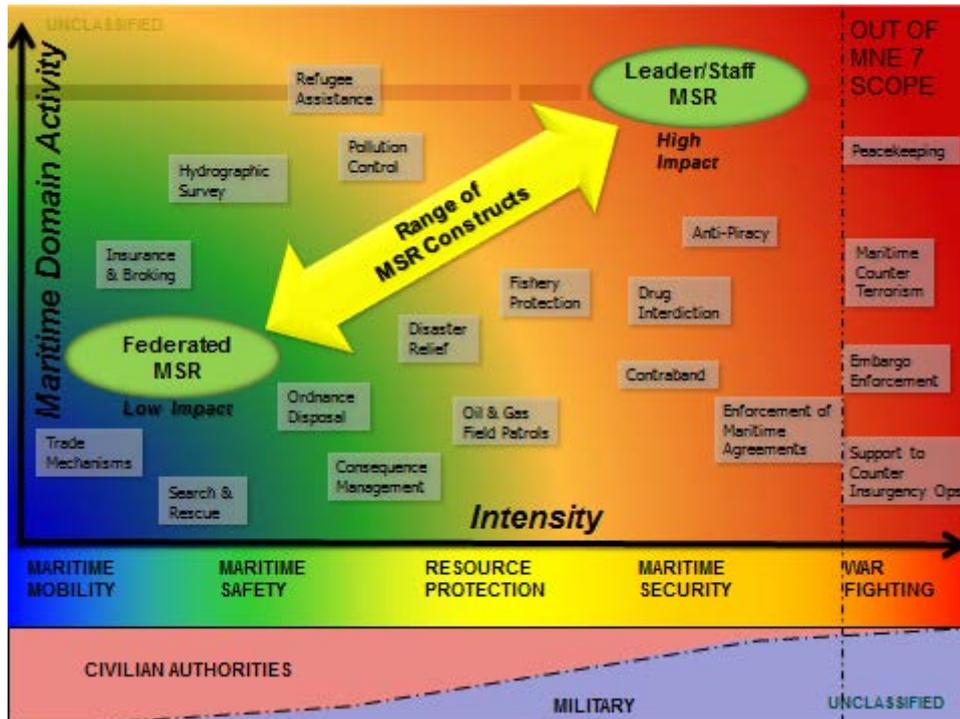
Figure 9. MSR Construct and Access Challenges

To assess the degree of access challenge impact the MSR may consider the threat, value of the maritime asset (human risk and cost) and the assets vulnerability. Figure 9 depicts a simplified two-dimensional view of intensity and types of noncompliant activity that MSRs may face. As the access challenge intensity increases (blue to red), impact on assets increases.

These factors considered together will help shape the MSR organizational construct. For example, a low degree of threat or access challenge resulting in low impact will reduce the tempo and intensity of MSR activity and its roles. It can result in a more federated organization such as the Baltic Sea MSR. In a federated structure, the functions could be more routine and less time sensitive. Assessment, for example, would be more oriented to an alert or trip wire approach designed to monitor possible future maritime challenges. Those individual MSR nations or members best able to provide regional responses would be trusted to do so.

However, when the degree of threat and the vulnerability as well as the value of the maritime assets are high, the intensity and pressure of MSR operations and its tempo increases. This calls for a more unified MSR organization (though it may delegate responsibility to highly distributed units or teams) with increased activity and roles for the MSR leadership, and the supporting functions of assessment and response. Also at the high end of the access challenge intensity spectrum, the organizational functions of assessment and response as well as its leadership would respond to shorter time constraints and emphasize timelier or even persistent assessments and responses.

2.5. Execute MSR Roadmap

The roadmap must be implemented in practice in order to establish a functioning MSR. Executing the MSR roadmap is a function of the MSR organization selected and its actual objectives and cannot be detailed here because it is MSR specific.

2.6. Review MSR Guidance

The MSR Vision, Objectives and Roadmap may require revision as the maritime challenges, MSR capabilities or the environment change. MSR national leaders and stakeholders should remain alert to assessment indicators of fundamental changes from the MSR Leadership function. Periodic reviews with MSR leadership should be considered.

Part III – Sustained Enhancement of MSR Capabilities

Introduction

Part I proposed design and implementation of the Enterprise in a long-term role to support MSRs operation. Part II focused on building a MSR. Part III addresses enhancement of MSR capability during sustained operations. It is based on using principles from the MSR Concept and case studies provided by various nations found in Annex B. In addition, all national and organizational efforts, including Enterprise support, need to be engaged with the MSR Regional and Global Approaches in a coherent and coordinated manner.

The following principles, along with those presented in Part II, drawn from the MSR Concept, are particularly applicable to the sustained enhancement of MSR capabilities.

MSR Concept Principles that support Sustained Enhancement of MSR Capabilities

- ***Monitor MSR Fatigue.*** *An established MSR must be continually assessed for signs of MSR fatigue. Fatigue is a political symptom that may be demonstrated by an individual or combination of partners, each for their own reasons.*

- ***Conduct Persistent MSR Awareness and Assessments to Monitor Complex Challenges.*** *The complex and evolving challenges in the operational environment of the maritime regions demand frequent monitoring and re-assessment. What was true about a perceived problem yesterday may have changed and the political, economic and military stance of the MSR must adapt to accommodate or risk losing operational effectiveness.*

Central to that MSR and Enterprise interaction is the mutual goal of employing the Global Approach as well as MSR Regional Approach.

The MSR vision, objectives and roadmap that were previously developed may require updating as access challenges or MSR capabilities change. In a more complex situation it may also be prudent to revisit Part II as the situation dictates.

The capability of a MSR to address regional maritime access challenges over time is the essential underlying measure of access success. Figure 10 depicts the series of activities required for sustained MSR enhancement. Given the context of appropriate MSR leadership, two inherent MSR functions are required to ensure success: an ability to assess and understand regional access challenges in the complex environment, and the ability to execute a comprehensive MSR response including influencing stakeholder action. The underlying insight of the Concept is the increasing likelihood of MSR success if it collaborates and uses

the resources of other MSRs as well as other domains. Part III provides an application framework that explores how to best use these resources – the Global Approach.

Figure 10. MSR Sustained Enhancement

3.1. Defining the Global Approach

The Case Studies, Base Line Assessment and the MSR Concept all point to the need to combine the strength of MSR regional expertise with several global and comprehensive resources, such as collaborating with other MSRs, and particularly the use of cyber and space domains.

The strengths of combining Regional and Global Approaches are best realized through the application of the Supply Chain construct and fully utilizing interdomain resources (see Figures 11 and 12).

3.1.1. Supply Chain Construct and Example

In global commerce, the maritime domain is a vital part of the supply chain from source or producer to market or consumer. The maritime portion of the supply chain involves special challenges and requires collaborative action. In the example depicted in Figure 11, MSR B collaborates with MSRs A and C to view the access challenge in a Global Approach across the supply chain from source to market. MSR application of the Supply Chain construct traces the flow or chain of illicit challenges to maritime access from its source through several MSR regions to the market for the illicit trade on activity.

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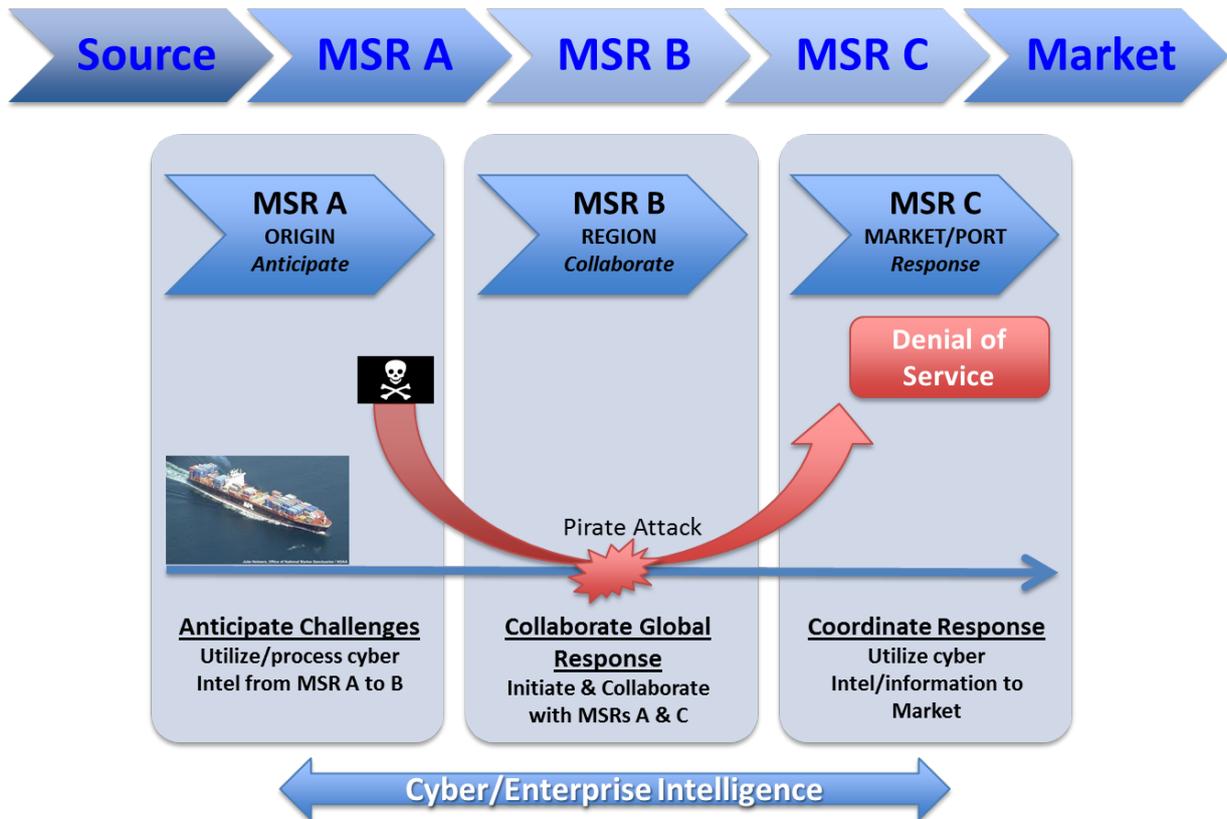
Figure 11. Illegal Maritime Activity Example and Global Approach

MSRs should use cyber and space domain input as well as more traditional intelligence to monitor threat origin, transit and "markets" used by noncompliant actors, such as pirates, as well as their operations while in the MSR region. By also monitoring compliant shipping flow before it enters the MSR area of interest, the MSR should be able to proactively predict threat activity.

Multiple MSR approaches are possible, but all generally emphasize better anticipating and tracking illicit activities as well as responding across a range of economic, diplomatic and enforcement options.

Figure 12 graphically depicts the integration of MSR functions and leadership, the Enterprise, and the combination of Regional and Global Approaches. These functions and approaches are supported by the MSR Enterprise using five basic activities: MSR Net Enabled Collaboration, MSR Library, Global Assessment, Shared Expertise and Capacity Building.

The MSR may be able to perform its functions or achieve capabilities on its own, but the Enterprise is available on request to provide additional support.
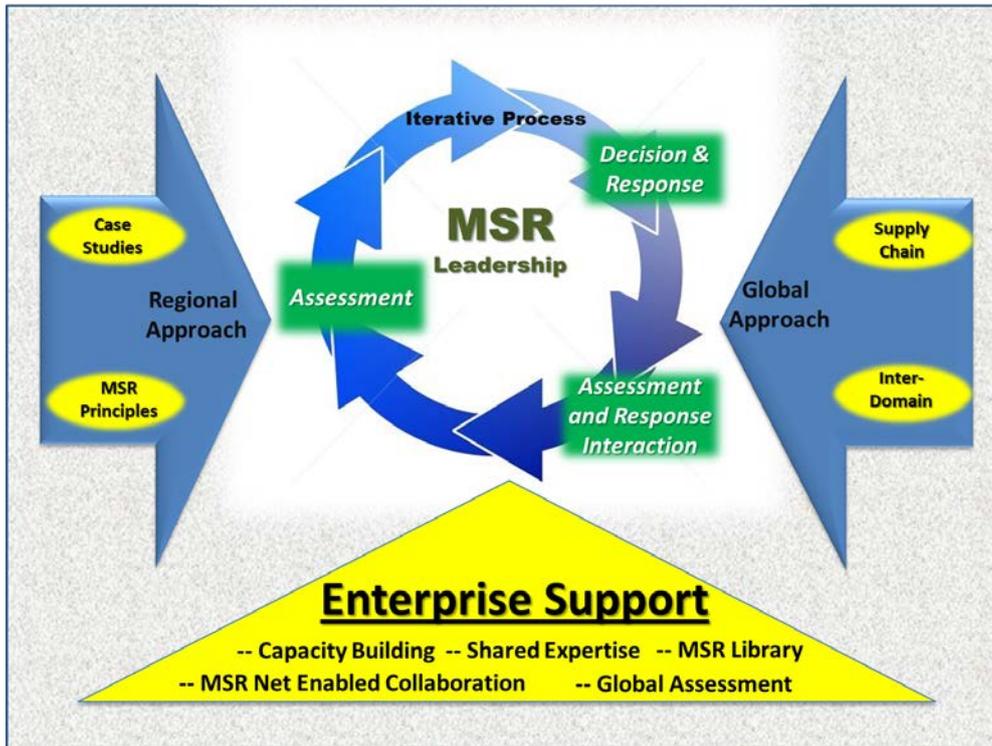
Figure 12:   MSR Functions, Regional and Global Approaches and Enterprise Support

3.1.2. Interdomains – Maritime Domain Interdependence with Space and Cyber Domains

Today, Maritime Domain access success depends to a great degree on many other domains such as land, air, space and cyberspace. Operations in the maritime domain are almost impossible without satellite communication and space based navigation, which are important elements of the Global Approach. In MNE 7 the focus was on access challenges in space (Outcome 2) and cyberspace (Outcome 3). Outcome 4 studied the interdomain interdependencies.

From MNE 7: "Cyberspace in itself is no respecter of physical boundaries, hierarchy or the level of user; indeed, its freedom of use is its main attraction. Nations and international bodies are rapidly developing their cyber capabilities to maximize the benefits that accrue in a safe and secure manner. Many now have national cyber strategies that focus on ensuring security and resilience within their own nations. However the pace of innovation and change in cyberspace makes it almost impossible to fully understand this domain and the resultant risks associated with being at the leading edge. Issues such as the ease of achieving anonymity, combined with the low barriers to entry, make cyberspace a very attractive (and

profitable) domain in which to operate for a significant percentage of the population–both good and bad."[17]

The Space Domain is similar to the maritime in that both are physical domains; however, space has no upper boundary and no internal borders. Anyone who can access the Space Domain is free to operate within it. Space becomes relevant in the maritime domain for navigation and communication satellites as well as other sensors for surveillance.

Cyber and Space Domain interdependencies with the maritime domain will be further explored in Sections 3.3 and 3.4

3.1.3. MSR Collaboration

Though not directly applied in this document, the elements of the *comprehensive approach* offer good advice to MSRs for collaboration with its stakeholders and other MSRs. They have a great deal in common with MSR collaboration which is stressed in the MSR Concept and is a key supporting function of the Enterprise. Most maritime access challenges affect many different areas of society simultaneously. Appropriately, the response to these challenges should incorporate those same sectors including all interested governmental departments and commercial interests as well as international and nongovernmental organizations. The MSR leadership should align the various interests and capabilities of all stakeholders to achieve the best possible synergy in addressing access challenges. Once the collective efforts have been thus harmonized each stakeholder should address relevant audiences to broaden the effects as much as possible.[18]

3.2. MSR Regional Approach

The Supply Chain construct is a means to highlight the need for MSR global collaboration. The MSR Regional Approach is also based in some key underlying principles. As established in the central idea and principles of the MSR Concept, Enterprise operations and collaboration depend on establishment of confidence, trust, individual and mutual benefit, and agility in a complex environment. These principles are clearly outlined in the MSR case studies and recommendations. The MSR approach to access challenges is discussed further in Sections 3.5 to 3.8 in regard to MSR leadership, assessment, responses and their interactions.

3.2.1. Regional Case Studies

As part of MNE 7 development of solutions related to Maritime Security Regimes, a set of six Regional Case Studies representing a variety of maritime security challenges in the global commons of the Maritime Domain were commissioned. Case Studies are as follows:

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[17] MNE 7 Access to the Global Commons, Outcome 3 Cyber Domain, Objective 3.5 Cyber Situational Awareness, Concept of Employment for Cyber Situational Awareness Within the Global Commons (Version 0.5) dated 2 Apr 2012, Page 8

[18] This approach has been studied and experimented in detail in MNE 5 under the term "Comprehensive Approach (CA)" including the "Whole of Government Approach" and "Unified Action."

- Maritime Organization of West and Central Africa (MOWCA) – led by the Combined Joint Operations from the Sea Centre of Excellence.
- Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia (ReCAAP) – led by the Combined Joint Operations from the Sea Centre of Excellence.
- Wider Mediterranean Region – led by the Italian Navy General Staff.
- Arctic Region – led by Norway supported by Denmark.
- Sea Surveillance Cooperation Baltic Sea (SUCBAS) – led by Finland supported by Sweden.
- Gulf of Aden / Western Indian Ocean – Led by Norway.

Each of these case studies was commissioned in order to methodically identify the cause and effect mechanisms for both successful and unsuccessful efforts of existing MSRs. The insights and best practices from these case studies were leveraged as empirical and historical context for the development and experimentation of maritime security in MNE 7. The insights and findings from MNE 7 were used to create this MSR Manual. The case studies analyzed their respective region's politics, culture, operations and economics, along with other assessments of the regional security threats. Each study culminated with a gap analysis of that each MSR's effectiveness and suggestions for their way ahead. Abstracts of these case studies are presented in Annex B.

3.2.2. Access Challenges and Case Study Overview

The MSRs described in the Case Studies were established and conducting sustained operations to meet a variety of maritime challenges. Some were designed to resolve specific access challenges (reactive), such as piracy or illicit trafficking and others were established to resolve potential future challenges (proactive). For example, ReCAAP was established to respond to piracy challenges. The Arctic Council and SUCBAS are examples of proactive initiatives where there are no current perceived threats. Furthermore, some were either established to meet a single challenge or to respond to multiple challenges, and some were established for more operational challenges and without clearly a manifested threat or challenge.

The studies also show that MSR success (establishment, operation, response) is more likely when members are composed of nations with relatively homogenous values, norms, social culture, political culture, religion and economic structures. The challenge becomes even more complex when a large number of dissimilar external actors are involved in the MSR.

These are the recommendations developed from a review of the case studies. They primarily concern MSR capabilities for sustained operations and they closely support the MSR Concept and this Manual. A major finding derived from the case studies concerns building confidence and trust during sustained operations.

Case Study Recommendations

- Building confidence and trust are iterative processes where one starts with dialogue (preferably in face-to-face meetings) that evolves into cooperation. Successful MSRs usually limit the scope of MSR objectives and utilize small steps on practical issues. MSR success then further builds mutual confidence, which again increases trust that in turn improves results in a repeating cycle. Over time the MSR becomes more competent in performing its mission and with improved confidence among its members it may be able to successfully respond to more challenging tasks. Building trust takes time and cannot be rushed. Another recommendation is the value of focusing, particularly initially, on the assessment function (information gathering and distribution plus assessment of actual and potential future situations).

- Limiting the scope of MSR objectives and employing small initial steps while avoiding ill-defined or unrealistic goals. Limited economic and political risk also lowers the threshold to obtaining political support, and increases the likelihood of early Maritime Domain access challenge success. That in turn encourages further and greater confidence and commitment from stakeholders. ReCAAP and SUCBAS are examples of a high level of political support mainly because its members limited the scope of their endeavor. A complimentary recommendation is to consolidate success before expanding or enhancing the MSR objectives. In short, success breeds success.

- Challenges often are best resolved by individual stakeholder action or enforcement rather than attempting more complicated group actions. For example in ReCAAP and SUCBAS enforcement is left to the individual stakeholders. This is possible because the regional member states have political will combined with maritime enforcement capabilities. Affiliated external stakeholders may provide enforcement capabilities when regional members are not able to do so. Whether a MSR is able to include an element of enforcement via a coalition or is limited to an assessment function that relies on federated or external coalition response is dependent in the context of MSR maturity level and particularly mutual trust.

- The Maritime Domain is linked to others domains, primarily cyberspace and air. This consideration assumes even more importance in the dense maritime environments such as the Mediterranean or in certain maritime choke points.

- Inter-regime Enterprise-supported networking is crucial with new regimes.

3.3. Cyber and Maritime Domain Interdependencies

3.3.1. Cyberspace Overview

There is no agreed upon lexicon or taxonomy that supports cyberspace activities across nations, agencies, organizations, industry and academia. MNE 7 therefore produced a

Campaign Lexicon to support a common understanding of these terms for the purpose of addressing them in the context of MSR.

- **Cyberspace:** A global commons domain within the information environment consisting of the interdependent networks of information technology infrastructures, including the internet, telecommunications networks, computer systems and embedded processors and controllers.

- **Cyberspace Security:** The conditions and actions which contribute to a safe, resilient and reliable cyberspace in which government, business and individuals can operate with confidence.

- **Situational Awareness (SA):** The human perception of the elements of the operational environment within a volume of time and space, the comprehension of their meaning and the projection of their status in the near future.

Persistent space and cyber systems that are part of the interdomain have become an increasingly important contributor to situational awareness and MSR responses. Using a Global Approach, MSR assessment and awareness functions are not just information and knowledge sharing activities that focus on problems or noncompliant actors in the region. Instead, awareness and assessment functions should inform the leadership and response functions of the implications of related problems outside the region. Cyber Domain activity is vital to MSR assessment and situation awareness, acting as must act as a proactive trip wire to impending maritime challenges.

In regard to Cyber Domain:

- The approach used in MNE 7 Objective 3.1 Cyber Domain Methodology to enhance cyber resilience is adaptable to the Maritime Domain: It argues that cyber-attacks will likely be carried out notwithstanding attempts to deter them: "To a large extent, warning of pending attacks may go unnoticed until after an attack has taken place, and after the fact it will be arduous to prove its point of origination. When traditional deterrence is no longer an option, other preventive or protective measures must be considered. This concept (i.e., Cyber Domain Concept) promotes resilience: accepting the risk of an attack taking place, and rather focusing on strengthening the ability to prevent, detect, absorb and recover. There are certain universal mitigating measures with 'guaranteed effect': making your systems more resilient to cyber-attacks."[19]

- However, enhancing the resilience of the Cyber Domain (and probably the Space Domain as well) is a valuable "reactive" addition to the Maritime Domain approach but it is not sufficient in itself.

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[19] MNE 7 Objective 3.1 Methodology. DRAFT (version 0.3). Executive summary.

- Rather than directly attacking MSR-related cyberspace and space assets, it remains likely that most MSR threats (including pirates, terrorists and criminals) will simply exploit them. In so doing the cyber domain of the MSR may not show direct illicit utilization or attack. In such cases MSR cyber situational awareness must include capabilities to discern between normal and anomalous operation.

3.3.2. MSR Cyber Situational Awareness

Maintaining cyber situational awareness is vital to MSR assessment and response in regard to access challenges. From MNE 7 Outcome 3 consider these insights regarding the urgent need for a cyber SA framework of common principles and norms of behavior:

"The effective use of cyberspace is reliant on the trust, confidence and assurance to share information between users – whilst this is achievable in smaller, local groupings or sectors where the mutual benefit is obvious, it is not so easy to do at a higher (international/global) level. There is therefore, an increasing need for common principles, understanding and norms of behavior to be established amongst stakeholders and users to enable the trust and security issues to be addressed.

Such policies and norms of behavior need to be reinforced by an ability 'see' what is happening in cyberspace: an understanding/visualization of what 'normal' or 'good' looks like, an ability to detect and analyze anomalies and to integrate such information in a useable, presentable manner, i.e. SA of cyberspace.

No single model or framework for cyber SA currently exists as each nation focuses on their own national interests and requirements. However, given the inability to impose geospatial boundaries on cyberspace, there is an urgent need to establish relationships, trusted alliances and healthy operating cultures with industrial partners and international counterparts."[20]

"Key deductions from the strategic context:

- At all levels, a realization that protecting virtual assets and networks is just as important to their interests as protecting physical assets, economies and lives.

- A cyber adversary will exploit the full range of tactics, and techniques using cyber technologies in novel and ingenious ways. They will contest for influence, and incite and use proxies to conduct actions on their behalf to avoid attribution. Nations and organizations must understand more than just the technical aspects of the Cyber

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[20] MNE 7 Access to the Global Commons, Outcome 3 Cyber Domain, Objective 3.5 Cyber Situational Awareness, Concept of Employment for Cyber Situational Awareness Within the Global Commons (Version 0.5) dated 2 Apr 2012, Page 8

Domain; unusual behaviors outside the Cyber Domain itself may well be indicative of potentially malicious activity within it.

- To preempt such threats an understanding of the cyberspace baseline (normality) is fundamental to detecting, identifying and analyzing any anomalies in regard to that baseline.

- Some regulation in the form of standards will be necessary to ensure the quality (timeliness, accuracy and richness) meets a minimum level necessary to add value to the SA picture. Market forces will identify those standards that work.

- Cyber SA is but one piece of the picture, to be integrated with SA generated in the other domains – Maritime, Land, Air and Space, and Electromagnetic. The interdependence of these domains is complex, the boundaries, if applicable, indistinct, and activities within each overlap. However the provision of cyber SA will provide actors using cyberspace greater warning time in which to enact mitigation/resilience measures within cyberspace as well as enhancing their wider 'global' SA and the decision making based on it."[21]

Note the foregoing discussion from Cyber Situational Awareness Outcome 3.5 is oriented primarily to cyber defense but also may be adapted to the use of cyberspace by MSRs to anticipate and respond to access challenges.

3.3.3. MSR Cyberspace and Maritime Implications

What are the Cyber Domain implications for MSR assessment and response functions?

- A resilience process for cyberspace-attacks includes the ability to prevent, detect, absorb and recover from access denial events.

- A response process for maritime threats includes an ability to prevent, detect, assess and respond to noncompliant challenges. This process also relies on cyber and Space Domain awareness and assessments of both compliant and noncompliant actors in a Global Approach.

- The familiar theme of trust among stakeholders regarding MSR operations and collaboration is also essential when engaging cyber entities.

- Cyber situational awareness should establish what is normal and expected cyberspace environment and what is not, including a potential cyber anomaly that may aid MSR ability to anticipate maritime access challenge developments.

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[21] Ibid. Page 12.

- MSRs must be able to fully exploit cyber and space domains in their operations as well as make them more resilient or survivable. A key portion of that exploitation begins with cyber situational awareness and cyber system resiliency.

- The vulnerability impact of MSRs discussed in Part II (Section 2.4.1) explores from low intensity to high. It's clearly important to exploit cyberspace and space resources in high intensity challenges. The likelihood of cyber attack may be even greater in low intensity impact cases, and MSRs should anticipate.

- MSRs should monitor key domain operations globally aided by the Enterprise and then be able to exploit noncompliant operations by adding the cyber and Space Domain inputs to traditional assessment and awareness functions.

3.4. Space System Capabilities and Maritime Domain Interdependencies

MSRs should strive to utilize cyberspace and unclassified space resources to gain global as well as regional awareness and assessment. As part of the Global Approach to MSR collaboration, the collective use of traditional intelligence with space and cyber knowledge is essential to anticipation, often using the supply chain construct, starting at port of departure, and MSR response options including in the intended illicit market or port.

According to Guy Thomas, United States Coast Guard Science and Technology Advisor, it is vital to proactively assess and respond throughout the supply chain and that requires persistent awareness, particularly in the Space Domain.
 "Early indications and warning are critical, although the heretofore emphasis on port surveillance systems indicates that there is a lack of understanding of the criticality of early indications and warning, and the need for it throughout the supply chain, preferably with the surveillance of the supporting shore infrastructure across the seas. The Columbian drug smugglers certainly know this. They go to extraordinary lengths to hide their preparations to ship drugs in a variety of means because they aware of the relative ease of tracking a ship for great lengths from source to market if it is identified as a vessel of special interest at its point of departure."[22]

 "Furthermore, persistent use of space, cyberspace and more traditional intelligence data would allow governments (and MSRs) to accomplish a perceived need to change their mode of operation from being reactive to being proactive. This means that a sensor must be focused on the area of interest (AOI) for a large percentage of the time, if not continuously, in order to have ready situational awareness of an AOI regardless if there are targets or not. Basically,

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[22] Thomas, Guy. *International Collaboration is THE Silver Bullet, Global Space Partnership-Collaboration in Space for International Global Maritime Awareness (C-SIGMA)*, page 4. Accessed at http://www.bing.com/search?q=%22International+Collaboration+is+THE+Silver+Bullet%22&qs=n&form=QBRE&pq=%22international+collaboration+is+the+silver+bullet%22&sc=0-0&sp=-1&sk=.

one does not know whether anything of interest is happening unless one is looking. Developing baseline time histories of what are normal operations in AOIs is critical to understanding what is normal and what should be considered an anomaly and perhaps suspect."[23]

3.4.1. Future Space Capabilities Supporting MSR Operations

The following assessment of the potential for space system collaboration is further detailed by Guy Thomas in an article titled "Global Space Partnership – Collaboration in Space for International Global Maritime Awareness (CSIGMA)". It suggests that unclassified space systems are now a primary means of gaining maritime SA. "There is no single silver bullet, not now, nor in the foreseeable future, however maritime nations of the world, working together, can make the seas much safer and more secure from noncompliant actors, be they smugglers, polluters or pirates. One of the primary steps nations can take would be to create a global space partnership (GSP) initially focused on the maritime domain. Such a concept has been under informal discussion for some time by many people."

"The author has studied the situation in depth and has come to believe unclassified space systems will play a major role in any effective maritime awareness system. It is realized that space systems cannot do it all and collaboration and coordination with terrestrial systems as well as the mining and analysis of semantic data contained in hundreds, if not thousands, of databases is also needed. It will take international collaboration and cooperation on an unparalleled scale to assure the safe, secure use of the world's oceans.

Indeed, this effort may need to be managed by an agency of the United Nations such as the IMO for the Maritime Domain. The greatest need, as well as the greatest opportunities for international collaboration, is to focus on the technology required to detect, identify and track vessels from port of departure to well offshore and back to port." [24]

3.4.2. Current Space Capabilities and MSR Operations

The objective is to primarily focus on the many near-term opportunities of using these unclassified space capabilities (Figure 13) while suggesting that the longer-term intent presented by Mr. Thomas might well be a future MSR Enterprise topic of interest. His "The Silver Bullet" article gives a concise picture of the future potential if nations collaborate in the use of various space resources but it also has implications for today's more limited MSR space operations:

"The types of sensors currently within ports and in coastal areas, such as radars, various types of cameras and self-reporting systems, are well known. Acoustic sensors and other nontraditional sensors, such as the passive coherent location sensor, which exploits the

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[23] Ibid pg 7.
[24] Ibid pg 2.

reflections of the emissions of non-radar transmitters to determine an object's location, also have roles. However, many who have studied the need to detect, identify and track vessels well offshore believe those tasks can best be accomplished, from both cost and utility views, by space-based Earth observation systems, many of which already exist in the commercial and civil world."[25]

Regarding current space capabilities Mr. Thomas suggests: "In the last few years there has been a revolution in space-based Earth observation systems and, led by space-based Automatic Identification System (AIS),[26] their utility over the world's waterways has increased dramatically. These capabilities impact not only safety and security needs but also significantly assist economic and environmental stewardship. Many maritime authorities and nations in the various corners of the world are beginning to recognize this utility, and the potential contributions of space-based Earth observation systems to global maritime awareness is of growing interest to the world's naval and law enforcement forces, as well as to ship operators, brokers, environmental preservation groups, and others in the maritime industry. It is widely recognized that no one country or even an existing coalition of countries has the stature, breadth and depth to protect oceanic commerce and the maritime environment."[27]

Figure 13 is a depiction of AIS detections from a single pass of an early unclassified space-based commercial Earth observation system. Current systems are much more sensitive.
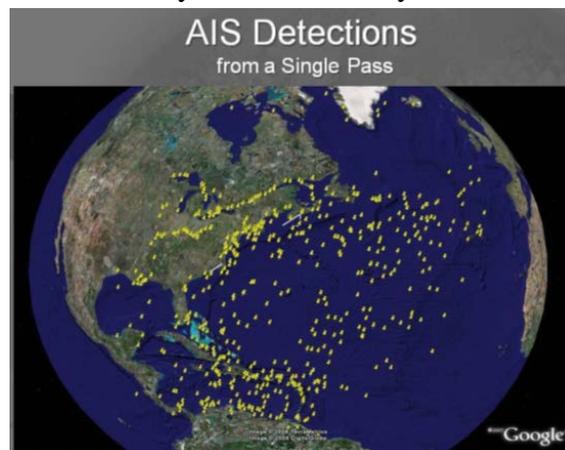
Figure 13. AIS Detections from a Single Pass[28]

[25] Thomas , Guy: "Collaboration in Space for International Global Maritime Awareness (C-SIGMA)"
C-SIGMA Abstract, Page 1.

[26] The Automatic Identification System (AIS) is defined as an automatic tracking system used on ships and by vessel traffic services (VTS) for identifying and locating vessels by electronically exchanging data with other nearby ships and AIS Base stations. AIS information supplements marine radar, which continues to be the primary method of collision avoidance for water transport.
[27] Thomas Guy: "Collaboration in Space for International Global Maritime Awareness (C-SIGMA)"
C-SIGMA Abstract, Page 1.

[28] Thomas, Presentation: Collaboration in Space for Global Maritime Awareness (C-SIGMA). Unpublished working papers.

3.4.3. Applying Space Capabilities to Support Current MSR Operations

Rapidly developing unclassified space capabilities offer tangible near-term opportunities for improvements in MSR maritime awareness and have direct application to Global and Regional Approaches. Mr. Thomas also provides the following thoughts: "As indicated above one of the most promising classes of systems for pervasive ocean surveillance is that provided by satellites operated by a broad range of US and foreign government and civil organizations. However, as we have indicated earlier, no one system or even type of systems can do it all. This is true even when considering the most sophisticated space systems."

What works in Europe might not in Africa or some parts of South America. What works in the northwest Pacific might not work off of Australia and New Zealand. It is the global collaboration of the MSRs where the real value will be recognized.

Another critical element is automated analysis tools. Several organizations are working on building dynamic data analysis tools focused on the maritime domain and these tools need to be assessed as part of the utility of the various surveillance systems."[29]

3.5. MSR Leadership Function

A MSR's capability to address regional maritime access challenges over time is the essential underlying measure of access success. Under MSR leadership, the two supporting MSR functions of the Concept central idea are again required to ensure this success: an ability to assess and understand regional access challenges in the complex environment, and the ability to execute a comprehensive MSR response including influencing stakeholder action. Clearly MSR leadership is integral to its operation and operations including adjusting to type of access challenge that may range from routine to a significant threat.

3.5.1. MSR Collaboration across Regions and Domains – Global Approach

The underlying insight of the Concept and Manual are the increasing likelihood of MSR success if it collaborates with other MSRs as well as the cyber and space domains using the Supply Chain Construct of the Global Approach. The Enterprise is designed to promote and enable MSR collaboration for a Global Approach.

MSR collaboration and confidence may be addressed in three layers of MSR activity each with its own challenges, information exchange, collective and persistent MSR assessment and inter-regional and interdomain responses.

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[29] Thomas. Unpublished working papers.

- The 1st level of collaboration and confidence in MSR operations is net enabled collaboration and access to maritime information. It is a requirement for enabling a cohesive culture within a MSR. Technical communication solutions are readily available and widely applied in the current Maritime Domain but are not sufficient by themselves to establish MSR success and action. In fact stakeholder confidence at this level of cohesion is a valuable building block including the role of the global awareness and assessment. The leadership role is to foster this confidence among MSR stakeholders so they will be willing to share important and timely information.

- The next level directly addresses MSR collaboration persistent assessment and response. MSR cooperation and activity exist in the complex problem environment where persistent cooperative assessment is vital. The leadership role here should include identifying and making a series of small steps to gradually build MSR common agendas, regardless of the level of access challenge. Successfully assessing MSR challenges collectively will, in itself, build confidence through collective understanding. So confidence by those requiring access in the Maritime Domain will directly accompany the MSR ability to reduce uncertainty and deal with setbacks as well as successes.

- The third and most ambitious MSR layer of collaboration is inter-regional and interdomain MSR cooperation through the networking of the MSR to better define and apply a Global Approach to a common problem. They may specifically address limited inter-region and interdomain common agendas and challenges. Leadership objectives should include the use of the Enterprise to encourage the MSR to apply a Global Approach that includes other domains as appropriate. Balancing MSR regional expertise with the global Enterprise approach is a key task for MSR leadership.

3.5.2 MSR Leadership Adjusts to the Extent of Access Challenge

MSR leadership and its two supporting functions are shaped by the type and impact of the access challenge.

For example a more routine access challenge of less risk will reduce the tempo and intensity of MSR operating functions. It can result in a more federated organization whose functions are more separated and less time sensitive. Assessment would play a less vital role except as an alert function for new challenges. Additionally, the response functions would be more directed at routine operations. Those individual MSR nations or members best able to develop the actual level of shared awareness and provide regional responses would be trusted to do so. The leadership role in this case, particularly regarding assessment, is to insure the MSR remains alert to new access developments or challenges, including collaborating with neighboring or related MSRs.

However, when the degree of threat and the vulnerability as well as the value of the maritime assets are high, the tempo and pressure upon MSR operations and its functions increases.

This calls for a more unified MSR organization to deal with increased activity. Also at the high end of the access challenge spectrum the organizational functions of assessment and response as well as MSR leadership would respond to shorter time constants and emphasize timelier or even persistent assessments and responses.

3.5.3. Building Stakeholder Trust and Empowerment

While the organization context discussed above would exhibit a range of leadership approaches from federated to more unified leadership, both would emphasize leadership by trust and empowerment[30] of those closest to the access challenge. It is important to note that empowerment is a direct demonstration of trust by the stakeholders and leadership of the organization. In the federated case, because its components may be more separated or distributed, the MSR organization trusts that the nations or stakeholders nominated and empowered to respond will do so appropriately and in a timely manner. In the case of high tempo operations associated with high impact challenges, trust and empowerment of those on scene becomes even more important. As discussed in the case studies, trust is built in results achieved step by step over time. It enables empowerment that can then increase trust.

3.5.4. MSR Leadership Considerations

To achieve maritime security the MSR members require the capacity to respond to and convince noncompliant actors to comply or if necessary, enforce compliance. Based on common inter-regional and interdomain awareness, MSR members can agree on common issues and allocate capabilities for achieving the solutions. This includes the identification of potential responses and required assets or capabilities.

A potential or likely MSR approach should consider these points.

- The review should consider multiple lines of approach through a risk analysis approach.
- MSR may require interdomain support and capabilities to respond to and resolve challenges identified.

3.5.5. MSR Leadership Interaction with National Leaders

When existing MSR guidance is overcome by events or capability gaps, the MSR leadership will interact with MSR national leaders to update the MSR vision and objectives.

3.6. Awareness and Assessment Function

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[30] Empowerment. A management practice of sharing information, rewards, and power with employees so that they can take initiative and make decisions to solve problems and improve service and performance.

The terms assessment and awareness are iterative aspects of the same process. As part of the MSR's two functions, this function forms a foundation for enabling a successful MSR decision and response process. As will be the case in the Response Function the approach and role here varies with the range of maritime challenges and their impact. The assessment function goal is to determine implications and then make recommendations using the following procedures.

- Define the root cause of the challenge and its implications to access. MSRs should strive to achieve a persistent regional awareness through a shared and collaborative assessment capability that is steeped in the region's uniqueness and focused on challenges within the region.
- Assessment is developed as part of an overall approach that anticipates a set of iterative assessments connected to MSR responses particularly in higher impact challenges.

- Assessment is enabled or limited by available assessment resources. The MSR should utilize the Enterprise for assistance.

- Apply the Global Approach using the access challenge Supply Chain including the exploration and collaboration with inter-regional and interdomain activities. The MSR may request Enterprise support for a global review of proposed assessments.

- Consider the likely concerns and support of the surrounding regions.

- Adjusts the detail and frequency of assessments based on the challenge impact level (high/low).

Collaborative assessment by MSR stakeholders is a key precursor to coherent decisions and responses. Conducting stakeholder assessment individually and then combining the results rarely achieves the required consensus between stakeholders. In addition to enabling planning and response processes, a collaborative assessment will update a description of the environment, which will be used during evaluation to help identify trends and progress towards MSR goals. Because assessment is often an early process in MSR activity, the approach used is particularly important to build confidence and trust.

Anticipating Access Challenges. MSR assessment and awareness functions must include culminating products that include implications and insights regarding MSR decisions being proposed by the response function. Assessment can act as a trip wire to impending access challenges enabled by the Global Approach. It should anticipate and provide warnings of possible access challenges.

3.7. Decision and Response Function

Responses that entail Enforcement remain a major challenge for MSRs. To achieve maritime security, a MSR requires within its members or stakeholders the capacity to respond and convince noncompliant actors to comply or, if necessary, enforce compliance. The MSR decisions and responses plan should consider the following combinations:

- Addressing the root cause of the challenge and implications to find the most effective response approach.

- Plan and execute the response as part of a sequence of distributed actions, particularly for higher impact challenges. The response could also consider more indirect approaches of the supply chain construct to go beyond the immediate area of access challenge, such as national denial of services or trade for noncompliant actors attempting ports of call.

- Using the Enterprise, the MSR should identify the most suitable resources and stakeholders for resolving challenges.

- Based on common global awareness the MSR stakeholders should consider requesting support from other MSRs or domain capabilities and responses.

- General acceptance by the region and commercial interests of the executed response including the perceived support from the larger community of interest must be taken into consideration.

- The severity of the access challenge impact, including the threat level, regional vulnerability to the challenge.

If the access challenge impact is assessed as high and the MSR stakeholders proposed responses (or series of responses) are acceptable, then the designated stakeholders will proceed. Consider a similar access challenge assessment of high impact, but the stakeholders are not able to execute the proposed MSR response plan. In this case the MSR will likely explore external stakeholders or shift response emphasis to more indirect responses such as denial of markets and ports or use of cyberspace approaches.

3.8. Assessment and Response Functions Interaction

3.8.1. High Risk Challenges

Conducting a series of small MSR responses distributed throughout a region supported with persistent assessment will usually be more productive than attempting an initial time consuming analysis and detailed deconstruction searching for a major solution to access problems that are difficult to define and changing.
Assessments are also tailored to enable iterative MSR responses including identifying common agendas with other MRSs and incorporating pertinent domain and interdomain capabilities.

As introduced in Section 3.3, Cyber and Maritime Domain Interdependencies, MSRs should monitor key domain operations globally aided by the Enterprise and be able respond to noncompliant actions as appropriate both in and outside the MSR region. Implied is the necessity for the assessment and response functions to be closely coordinated, including national responses at the appropriate points. Given national support, MSR response options can be expanded to include economic, political as well as enforcement activities.

3.8.2. Lower Risk Challenges

In low impact cases where the access challenges may not involve noncompliant actors, a more loosely federated organization could be utilized and the nature of the MSR responses could be more routine. In such cases response considerations should shift more to cost considerations where a balance is developed between the impact on the maritime environment and the associated costs of the challenge. Also, for more limited and short-term challenges a simple organization will be required with coordinated action supported by standing procedures. In this case short-term activities might also evolve into long-term security cooperation.

While the function of assessment in this environment may be less critical it is important for the MSR leadership to remain alert for changes or trends emanating in other regions or MSRs as well as other domain cues.

List of Annexes

Annex A – Maritime Security Regime Concept

Annex B – MSR Case Studies Abstracts

Annex C – Sample MSR Agreement

Annex D – Experimentation Analysis Results

Maritime Security Regime Concept

27 September 2012

Contributors:

Denmark

Finland

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Major Supporting Organizations:

COE CSW

CJOS COE

Executive Summary

Maritime Security Regime Concept

"A Global Approach to Regional Challenges"

The Maritime Challenge

The unhindered ability to utilize the Maritime Domain is essential to a healthy global economy and is vital to the strategic security interests of all nations. Loss of access to this significant global supply chain that connects nations, people, markets and manufacturers around the world quickly expands to impact all nations.

Direct threats to ensured maritime access include disruption of commerce, interference with the lawful use of the Maritime Domain, and transnational crimes such as piracy and terrorism. Illicit trafficking (weapons, drugs, money, humans or other contraband) may also impact maritime access. Natural phenomena such as severe weather, ice or geological disasters may limit access. Since these threats and events can be expected to continue it would be prudent to prepare for a future where the impact of a variety of access challenges could be prevented, mitigated or resolved. Though some nations have robust capabilities, no single nation can ensure access for the global community at large.

The complexity and uncertainty facing the nations of each unique maritime region are compounded by the problems and opportunities of cyber, air, and space domain interdependencies and regional relationships. The interdependence with other domains is evident in that the physical flow in the Maritime Domain is coupled with the information flow in cyberspace, a physical connection to the air domain, and the reliance on space assets for navigation and communication.

Today's MSR Abilities

Maritime Security Regime (MSR) is the term used to describe a group of states and/or organizations acting together, with an agreed upon framework of rules and procedures, to ensure security within the maritime environment.[31] Today there are dozens of MSRs that exist in many forms. They have widely differing abilities to gain maritime situational awareness and analyze access threats as well as address or resolve their regional access challenges. Regional partners are sometimes not able to respond adequately or in a timely manner. Fortunately a MSR's underlying strength is its members' inherent awareness of the unique culture and associated challenges of their region.

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[31] A regime can be broadly defined as a set of explicit or implicit "principles, norms, rules and decision-making procedures around which actor expectations converge in a given issue-area." Krasner, Stephen D. (ed.) 1983. International Regimes, Ithaca, NY: Cornell University Press. Page 1.

This Concept was developed as an outgrowth of Multinational Experiment 7 (MNE 7).[32] As observed during development of this Concept, MSRs often meet their regional access challenges independently without seeking assistance from other MSRs or domain experts. An underlying insight of the Concept is that the global linking of MSRs to other regions and other domains can enhance the ability of the MSR to mitigate their own regional access challenges. Specific evidence of the need for linking MSRs includes: (1) Current MSR case studies[33] that suggest common agendas between MSRs are likely occurrences; (2) Threats to the flow of commerce that span many regions; (3) Shipping organization operations that are global, cutting across regions, and are largely cyberspace dependent; and (4) the interdomain[34] use of cyberspace and space by noncompliant actors that may adversely impact an MSRs' interests. While a regional approach to MSR problems is sound, it is clear that the nature of maritime access challenges is potentially global in scope and impact. This calls for a global and agile framework that is designed to support regional challenges.

Improving the existing MSR's ability to address regional maritime access challenges is the essential measure of success. Two inherent MSR functions are required to ensure access and freedom of maneuver: an ability to *assess* and understand regional access challenges in the complex environment and the ability to implement a comprehensive MSR *response* including influencing stakeholder action. Most previous work focused on a specific access challenge or a specific region and often with a landward view from the sea. This concept takes a broader view.

Central Idea - "A Global Enterprise Response to Regional MSR Challenges"

The Central Idea of this concept is a dual approach to strengthen MSRs:

- **First, the creation of a Maritime Security Regime Enterprise[35] as an entity that offers sustained support to encourage and facilitate collaboration between MSRs**

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[32] Multinational Experiment 7 is a two-year multinational and interagency concept development and experimentation (CD&E) effort to improve coalition capabilities to ensure access to and freedom of action within the Global Commons domains (Air, Maritime, Space and Cyberspace).

[33] Case studies were conducted on several MRSs with differing abilities. Abstracts can be found in the accompanying Manual Appendix 2.

[34] Interdomain is literally between domains. Domain interrelationships apply to the use of interdomain in this concept: "The important conceptual point is based upon the fact that operational interrelationships across the geographies of space, air, maritime, and cyber are growing in scope and complexity." Global Commons and Domain Interrelationships: Time for a New Conceptual Framework by Mark E. Redden and Michael P. Hughes, National Defense University Strategic Forum, Nov 2010. Page 2.

[35] An enterprise is a cooperative project undertaken, especially one that is important or difficult that requires boldness or energy. The term "enterprise" was first used to describe this construct during Multinational Experiment 5: Cooperative Implementation Planning, Management and Evaluation Concept in October 2008. It is also often led by a business organization. (http://dictionary.reference.com/browse/enterprise) The term Enterprise is descriptive term and does not prescribe a naming convention. MSRs themselves should name it during initial meetings.

and improved ability to access information, best practices, and expertise from beyond their own regions to resolve access challenges to the Maritime Domain.

- **The second, complementary approach of the Concept, directly enhances MSRs, emphasizing collaboration in a global approach to regional challenges. It implements a program that provides procedures, principles and best practices to directly enhance MSR awareness, assessment and response capabilities.**

Successful Maritime Security Regime Enterprise (hereafter referred to as the Enterprise) and, in particular, MSR operations and collaboration also depend on several underlying principles. Key among them is the principle of building member mutual confidence and cohesion. Important to building confidence is employing a series of small group activities or goals that will in themselves create confidence. Cohesion is fostered by another principle based on establishing individual and mutual stakeholder benefit. Willingness to participate in a MSR depends on establishing benefit to the stakeholders.

Dual Approach Solution Set

The Concept presents a range of solutions that are grouped by the dual approach as either Enterprise solutions or Direct MSR solutions. There are also several solutions that underlie both the Enterprise and MSRs. These solutions can be tailored to the region and employ coordinated global support, incorporating the inter-regional and interdomain resources and assistance. Because a MSR has the most articulate understanding of the unique local maritime access challenges and responses, the Concept emphasizes that the MSRs can best select potential solutions for their specific access challenge.

The Enterprise Solutions

The proposed global Enterprise supports regional MSRs. To manage complexity and potential surprises in the maritime operating environment the Enterprise that is global, agile and adaptive is proposed to assist MSRs in responding to and mitigating regional maritime access challenges.

Key to MSR support by the Enterprise is five complementary functions (not to be confused with MSR functions described elsewhere). These functions are external to the MSR and provide: (1) Net enabled collaboration of the MSRs, (2) MSR library of best practices, lessons learned, and procedures, (3) Global Assessment to enhance MSR awareness (4) Shared expertise, and (5) Capacity building to promote MSR enhancement.

It is important to recognize that the Enterprise does not have a governance function and would not direct or restrict regional MSR operations.

Direct MSR Solutions

Direct MSR solutions should create or enhance MSR capability to ensure access and freedom of maneuver.

Consider the type of MSR roles and its organization. The MSRs will generally perform two primary roles under leadership: *assessment* (supporting improved awareness) and *response*. The type of specific organization selected by a MSR will vary with the degree of access challenge. If the challenge is at the high end of the maritime challenge scale (perhaps high value shipping that is also vulnerable), the MSR could address both assessment and response functions utilizing an appointed leader and a staff. However, at the low end of the access challenge scale (for example, low threat with low vulnerability assets), leadership and supporting tasks could be executed separately in a federated manner.

MSR assessment functions are not just information and knowledge activities that narrowly focus on problems or noncompliant actors in the region. The assessment function looks for implications that may act as a trip wire to impending maritime challenges

To achieve maritime security, MSRs require the capacity to respond to convince noncompliant actors to comply or, if necessary, to enforce compliance. At times, nonregional stakeholder capabilities will be needed to respond or address maritime access challenges and opportunities.

The Concept emphasizes that cooperation between regional MSRs is often vital to assure access and security. This improved ability can be accomplished directly by a MSR developing a collaborative framework using its own initiative or it can be facilitated by the Enterprise.

The Concept's solutions explore how MSR success is further enhanced when it is complimented by the capabilities of the other domains of the global commons (space, cyber and air). The solutions explored in this Concept are further detailed in the "Enterprise Implementation Proposal and MSR Manual" (hereafter referred to as the MSR Manual).

All nations share a common interest in ensuring access to the Maritime Domain. The Enterprise approach presented in this Concept is a critical step in institutionalizing the ability for stakeholders to build or enhance MSRs.

With Enterprise support, the MSR functions of inter-regional collaboration and interdomain interaction become feasible. Additionally, by supporting an educational program, the Enterprise enables the training effort that provides procedures, principles, and best practices that support MSRs success.

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I.   Introduction

Background

This concept was developed as an outcome of Multinational Experiment 7. As observed during development of this Concept, MSRs often meet their regional access challenges independently without seeking assistance from other MSRs or domain experts. An underlying insight of the Concept is that the global linking of MSRs to other regions and other domains can enhance the ability of the MSR to mitigate access challenges.

The majority of global commerce is shipped by sea. All coastal nations and even many noncoastal states rely on maritime shipping for their critical resource needs. The unhindered ability to operate within the Maritime Domain is essential to a healthy global economy and is vital to the strategic security interests of all nations. In global commerce, the maritime domain is a vital part of the supply chain[36]. Loss of access to these global highways connecting nations, people, markets and manufacturers around the world would have a significant adverse impact on nations. The challenges to unfettered access to the global maritime commons are increasing.

> The Maritime Domain of the Global Commons for the purpose of the Concept consists of all sea areas within which every nation has freedom of access and action in accordance with international law (treaty and customary law).

The technologies for exploitation of maritime resources on and under the seabed have improved significantly so that today many nations claim interests in these resources even far from their own coastlines. These claims often overlap, leading to disputes.

In the last decade the challenge of piracy has reemerged in a new form where ships are no longer taken for their cargo but for ransom. Crews are taken hostage and the enormous sums are demanded for their release. The costs of insurance, ransoms, loss of use of seized ships, added security, and rerouting around hazardous areas, as well as the danger to mariners, all impact access to the maritime global common and contribute to safety at sea and increasing the overall cost of goods.

Even though actions within the Maritime Domain are extensively regulated, some nations differ in their interpretation of these regulations and levels of enforcement vary by region. These differences run the gamut of disagreements between nations over territorial jurisdiction, the right to conduct customs inspections, collection of fees, and even the definitions of Inland Passageways and what constitutes Innocent Passage[37]. Often these differences are adjudicated peaceably. However, disagreements sometimes lead to actions or threats that im-

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[36] Supply Chain construct traces the flow or chain of friendly or illicit challenges to maritime access from its source through appropriate MSR regions to the market for the trade on activity.

[37] Innocent Passage: Ships of all states, whether coastal or landlocked, enjoy the right of innocent passage through the territorial sea. Passage is innocent so long as it is not prejudicial to the peace, good order or security of the coastal state. It shall take place in conformity with UNCLOS and other rules of international law. (UNCLOS Part II, Articles 17-19)

pede ensured access through the supply chain. Direct threats to ensured access include disruption of commerce movement and interference with the lawful harvesting of marine resources, as well as transnational crimes such as piracy and terrorism. Depending on the policies of the nations in a region, illicit trafficking (weapons, drugs, money, humans, or other contraband) may also impact maritime access. In addition, natural phenomena, such as severe weather or ice, may limit access in the Maritime Domain.

Today, achieving access to the Maritime Domain is increasingly part of a larger and more comprehensive issue: it is interdependent with and relies on access to other domains of the Global Commons, such as air, space and cyberspace (termed interdomain in the Concept). Actions to ensure access in the Maritime Domain must account for these interdomain relationships. Consider one of many examples; the global economic system and national strategic security is critically dependent on the security of container sea transportation and what is most vital and at risk is its supporting cyber network. Surprisingly, many that utilize the global commons do not seem to be aware of the dependency of shipping container automation on the supporting information backbone[38], nor are many of them willing or able to ensure its security.

The impact of limiting access includes increased costs associated with restrictions on the free flow of commerce, increased risks to life and property, and interference with the lawful harvesting of natural resources.

Although some nations may have the capability, capacity and most importantly, the will, to address specific threats, no single nation can ensure freedom of movement for the global community at large. The collective efforts of nations and organizations are needed to counter access threats in the Maritime Domain. This suggests an endeavor or undertaking of some scope–forming new, and enhancing existing, MSRs by linking them together in a global Maritime Security Enterprise.

> A **Maritime Security Regime** is a group of states and/or organizations acting together, with an agreed upon framework of rules and procedures, to ensure security within the maritime domain.

The MSR Manual, developed as a follow on to this concept, provides additional detail and offers a context that supports the establishment of the Maritime Security Enterprise to support MSRs. It also presents a selection of case studies regarding maritime security initiatives around the globe that are used to support the development of best practices.

II.   Purpose of the MSR Concept

The fundamental goal of the Concept is to enhance a MSR's ability to assess and respond to regional maritime challenges using a dual approach to support MSRs either directly or by employing a more global solution through Enterprise support.

The Concept is intended to accomplish the following:

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[38] Persistent space and cyber systems that are part of the interdomain have become increasingly important contributors to situational awareness. See MSR Manual for further discussion.

- Describe the nature of the access challenges and their implications for MSR capabilities.

- Identify the key capabilities that MSRs require to ensure maritime access.

- Present principles for successful MSR establishment or enhancement and sustainment, including best practices derived from existing MSR case studies.

- Provide new ideas that stretch our current capabilities to more global solutions.

- Offer a flexible menu of MSR solutions to improve Maritime Domain access.

This concept has three potential audiences. First, it is written to give executive level decision makers in national governments and organizations a thorough basis for a decision to build, join, or enhance existing MSRs. Second, it is directed towards the existing MSRs and their leadership with the intention of offering them a construct to improve the performance of their MSR through collaboration with other MSRs in a global Maritime Security Enterprise. A third important group includes international and commercial organizations who are interested in the Enterprise development and who should be engaged in the development of MSRs and the Enterprise.

III.   Scope of the MSR Concept

The Concept recognizes that many regional challenges may have global implications and that MSRs may seek global support for solutions such as those offered by the Concept.

Maritime Security is an international and interagency, civil and military (generally in a supporting role) activity to prevent or mitigate the risks and, when necessary, respond and counter the threat of illegal or threatening activities in the Maritime Domain. While this Concept concentrates on the access threat of unlawful use of the Maritime Domain, it also addresses the potential for MSR's to respond to natural disasters or incidents and their consequences as members deem fit to do so.

Other items that scope and shape the Concept include:
- **Policy.** It is a fundamental assertion of the Concept that it does not prescribe how a MSR should select or address membership criteria.

- **Context.** The Concept addresses access within established international norms and standards in both the current and potential future operating environments, characterized by uncertainty, complexity, globalization, and rapid change.

- **Procedural Scope.** The Concept explores access challenges, the central idea, and possible solutions that support implementing the central idea. The MSR Manual provides an Enterprise Implementation Proposal as well as more specific procedures for MSR stand-up and sustained enhancement in an Enterprise supported framework.

- **A Collaboration Construct.** The Concept explores the global commons' problem space and suggests a construct that will facilitate the cooperation of existing MSRs to enhance maritime security.

- **Time Horizon.** The Concept addresses the future of MSRs but does not set a specific timeframe.

- **International Law.** The existing international legal framework (agreements, treaties, and laws) is considered fixed for the purposes of the Concept. However, research into these frameworks may result in recommendations for policy changes and perhaps considerations for modifications to current law. It should be noted that with consensus, laws can quickly be changed or altered to meet the needs of compliant actors; however, gaining consensus among multiple state entities may prove difficult and could demand considerable effort.

IV. <u>Nature of the Problem and MSR Implications</u>

Real-world events that restrict access to the Maritime Domain are occurring regularly across the globe, including unilateral assertion of national sovereignty, piracy, terrorism, and illicit trafficking, as well as natural disasters. These events can be expected to continue with potentially adverse consequences. Therefore, it is prudent to prepare for a future in which some nations, transnational or nonstate actors, or other events increasingly restrict freedom of maneuver within or restrict lawful access to the Maritime Domain.

External Challenges. The Concept first identifies external environmental and threat challenges to access in the Maritime Domain and presents associated implications for each that shape the Concept's central idea, supporting principles and solution menu. The Manual specifically addresses these challenges and offers new solutions to take advantage of the associated implications.

- **Uniqueness and Uncertainty.** The maritime environment is dynamic and complex and uncertainties abound. The variety of national interests and regional interactions make each situation unique; there is no "one size fits all" framework. Also included are unpredictable natural phenomena such as a tsunamis or manmade incidents that may trigger a MSR response. Inter-regional connections and interdomain relationships (space and cyberspace in particular) further complicate the situation. Regimes also face threats of similar complexity where noncompliant actors are increasingly using cyber capabilities (tracking and monitoring) to target commercial shipping.

  > *Implication.* The *MSR response to the variety of challenges must be agile and adaptive. Fundamentally, national interests and regional interactions can create a level of uncertainty that makes assessing the Maritime Domain an ongoing challenge suggesting persistent or iterative reviews that may include a more global view. Within the constraints of national or organizational requirements, MSRs should share a persis-*

tent awareness and capability[39] *to mitigate the uncertainty inherent in complex situations. This collective examination is a crucial first step to evolving a shared understanding of the problem and is a prerequisite for collaborative action by nations and other organizations.*

- **Information Access.** Many communities and regions cannot access vital maritime security information, such as shipping activity, even though the technology to gather this information is readily available. Also regions too often operate unaware of other similar or supportive activity globally.

> *Implication. The flow of maritime information in the cyber domain is based on ready access to existing, maritime information, which for many users is unavailable, due to lack of technology, affordability of access, or unwillingness to share information. To address this challenge, an approach or means to access maritime information for all participants in the maritime domain is needed. This information should be related to maritime security first, but could be extended to MSR best practices and to the management of MSRs.*

- **Pervasive Connectivity.** An increasingly networked society presents both challenges and opportunities. The near-instantaneous transfer of information can inform potential adversaries of MSR capabilities and activities while the narrative[40] (the story that is told after the event) about those events may be used to shape false perceptions about the events themselves.

> *Implication. The flow of information in the cyber domain provides powerful opportunities and challenges for the nations in the region. It should be utilized to better exchange maritime security related information on a global scale. Noncompliant actors may possess surprising situational awareness and cyber capabilities. Perhaps as important, the narrative in the cyber domain must not be allowed to be dominated by noncompliant nations or actors, further complicating MSR response and success.*

- **Diffusion of Technology.** The ability of noncompliant actors to obtain technologies, including space and cyber capabilities, will further enable them to challenge maritime access.

> *Implication. A MSR's success will be increasingly challenged by noncompliant actors utilizing multiple domains adding additional risk to MSRs success. This will require MSRs to enhance their own technologies to enhance their own capabilities and counter those of noncompliant actors.*

- **Use of Cyber, Air and Space Domains to Counter Challenges in the Maritime Domain by Noncompliant Actors.** The use of these domains by noncompliant actors is

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[39] Capability: The entirety of a system that delivers an output or effect. It will most likely be a complex combination of Doctrine, Organization, Training, Materiel, Leadership development, Personnel, Facilities and Interoperability (DOTMLPFI) to deliver the required output. *NATO: MC0550 – MC Guidance for the Military Implementation of the Comprehensive Political Guidance, 6 June 2006*

[40] See Controlling the Narrative section in NATO MULTIPLE FUTURES PROJECT – Navigating towards 2030.

increasing. To counter this, MSRs must develop the capability to protect and use these domains as well. Also important is the MSR opportunity to selectively compliment actions in one domain by action in another and to combine them at the optimum time and manner. It is a global application of all domain capabilities to regional maritime access problems. For example MSR enforcement could be led by cyber actions timed to thwart or reduce the disruptive impact of noncompliant actions.

> *Implication. MSR assessments and responses must be aware of and able to utilize interdomain capabilities to increase the scope and capacity of MSR activity. Proposed solutions and global frameworks should assist the MSRs in obtaining this capability.*

- **Noncompliant National and Transnational Challenges.** Rising powers in a multipolar world, empowered by their thriving economies or driven by competition for increasingly scarce resources, will assert national influence to garner greater control over portions of the Maritime Domain or to make territorial claims that may run counter to international laws, norms and practices.

> *Implication. MSRs must be capable of taking group action of sufficient size and strength to counter the actions of a noncompliant actor and where necessary seek the support of other MSRs.*

- **Stability Ashore Impacts Stability at Sea.** Interconnectivity or spillover between the land and sea domains is pervasive, particularly in regions endowed with offshore resources such as oil, fishing or minerals. Non-compliance challenges emanate from the shore. For example, instability stemming from lack of governance and widespread poverty sets the conditions in which piracy can thrive. Both the threat and actual practice of piracy have profound impacts on access to the Maritime Domain.

> *Implication. MSRs can react to access challenges at sea, but their actions are also intertwined with events ashore. Noncompliant actors will use shore-based capabilities to complicate MSR activities and intentions. Fostering national stability is not a MSR responsibility but stability may lie at the heart of solving many access challenges, especially from nonstate actors. An enterprise approach could perform an advocacy function to build international consensus to address the instability ashore.*

- **Resource Competition.** Population growth combined with a demographic shift to urban and coastal environments will increasingly stress declining global water, food and energy resources. Competition for resources, particularly food and energy, may cause nations to abandon or question their compliance with international law, practices and norms that ensure access to the Maritime Domain.

> *Implication. Formerly compliant nations may become noncompliant to ensure the welfare of their populations. This will stress regional relationships and could lead to the need for an establishment of a MSR. Also the situation could lead to the degradation or breakup of existing MSRs. To minimize this impact, MSRs must clearly identify these challenges, assess them at an early point and undertake preventative measures.*

An enterprise could seek international support to address resource requirements of regional MSR members.

Internal Challenges. In addition to external challenges, there are challenges that are internal to the MSR itself.

- **Independent Operation of Existing MSRs.** Too often MSR activities are conducted in regional isolation from other regions and MSRs fail to take advantage of support from other domains, such as space and cyber.

    Implication. There is limited support available to existing MSRs and there is a hazard of them operating independently against increasingly sophisticated challenges that emanate from global challenges. Therefore, without interfering with the individual MSR's responsibility for its region, MSRs need the ability to exchange information and share best practices and address access challenges with a global approach that is further explored in the Manual.

- **Lack of Cooperation.** There is a lack of common purpose among the different regional communities entrusted to ensure access to the Maritime Domain including fisheries control, customs, harbor police, coast guard, navies, maritime safety organizations, etc. A frequent lack of authority to act further complicates the problem. This may also lead to hesitancy to share information.

    Implication. Regional agencies often operate with insufficient information sharing and limited mutual support and thus have an incomplete awareness of the challenges. The creation of a MSR could mitigate this problem. It should build confidence and facilitate cooperation among its members to ensure the exchange of relevant information. An enterprise approach could provide best practices from other MSRs.

- **Budget Challenges.** Some powers continue to reduce the number of military and law enforcement assets as the expense of building, maintaining and operating maritime forces, systems and infrastructure increases. This is in contrast to the sustained growth of sea borne trade and increased commercial shipbuilding that has doubled since 1990.

    Implication. There will be a reduced on-scene presence of dedicated maritime forces capable of patrolling regime areas of responsibility and protecting maritime commerce. This loss of capability may be offset by other more persistent interdomain capabilities such as cyber and space capabilities that will become increasingly important contributors to situational awareness. Additionally, the response could utilize police, coast guard or naval forces in whatever mix is deemed most efficient.

- **Need for Greater Agility.** As the world evolves towards a more multipolar and global geopolitical construct, greater agility will be required by nations to respond to uncertain challenges. Nations with an interest in ensuring access to the Maritime Commons must guard against losing the initiative when responding to access challenges.

> *Implication. A proactive awareness function coupled with MSR political influence can prevent crises and avoid reactive enforcement. The potential destabilizing effect of these strategic trends and challenges in a globalized, multipolar world can be countered by agreements in accordance with internationally recognized laws among nations with common interests.*

Problem Statement

From the above discussion it is clear that nations and organizations with maritime interests will be faced with ever-greater challenges to maritime access.

The operational challenge is thus: *How can nations or organizations better anticipate, deter, prevent, protect against, and respond to potentially increasing disruption or denial of access to the global common domains (maritime, air, space, and cyber) and ensure freedom of access within them?*

The Concepts' central idea, supporting principles, the MSR construct discussion and MSR solutions that follow describe a potential response to this problem.

V.   Central Idea: "A Global Enterprise Response to Regional MSR Challenges"

The Central Idea of this concept is a dual approach to strengthen MSRs:

- **First, the creation of a Maritime Security Regime Enterprise as an entity that offers sustained support to encourage and facilitate collaboration between MSRs and improved ability to access information, best practices, and expertise from beyond their own regions to resolve access challenges to the Maritime Domain.**

- **The second, complementary approach of the concept builds and directly enhances MSRs, emphasizing collaboration in a global approach to regional challenges. It implements a program that provides procedures, principles and best practices to directly enhance MSR awareness, assessment and response capabilities.**

States, international and local organizations, national authorities and private companies who share a common objective; to ensure access to and freedom of maneuver within the Maritime Domain, may form or enhance current Maritime Security Regimes. They will do so in accordance with international law.

The nature of Maritime Domain access challenges is now global in scope and impact. Increasingly the complexity and uncertainty of each region of the Maritime Domain is compounded by the problems and opportunities of interdomain dependencies and inter-regional relationships.

The Enterprise. First, these complex challenges call for a global and agile organization that is designed to respond to regional challenges–an Enterprise whose components are available to MSR requests for support. Key to the Enterprise support and its coordination are the introduction of five new mutually supporting functions. These functions are external to the MSR and provide: (1) Net enabled collaboration of the MSRs, (2) MSR library of best practices, lessons learned, and procedures ,(3) Global Assessment to enhance MSR awareness (4) Shared expertise, and (5) Capacity building to promote MSR enhancement. *It is important*

to recognize that the Enterprise will not have a governance function and will not direct or restrict the regions MSR operation.

The other portion of the Concept's dual approach is a more direct effort to sustain MSR enhancement supported by a global approach. MSRs are the primary building blocks of the concept. Underlying both approaches are MSR principles founded on member confidence and trust; focused on achieving individual and mutual benefit; and attuned to supporting maritime access.

MSR Functions. The primary functions required for a MSR to ensure access and freedom of maneuver and success are:

- **Awareness and Assessment.** MSRs should create a persistent regional awareness through a shared assessment capability to better meet the challenge of uncertainty of the complex Maritime Domain environment. MSR awareness and assessment must be steeped in the region's unique and complex culture and focused on challenges within and around the region. Their assessment activity and scope will vary to meet the range of MSR challenges. Those MSRs operating in a more routine environment will operate at a lower tempo than those facing serious challenges. Their assessment products are based on a common MSR agenda, are sensitive to cultural awareness and national interests, and look to address mutual access challenges. Individual MSRs should also interact with other MSR awareness and assessment functions and interdomain experts either directly or through the Enterprise. Their assessment goal is to identify measures to prevent or minimize access denial challenges.

- **Response.** MSRs require stakeholder capabilities to respond or take actions when necessary to address maritime access challenges and opportunities. MSR responses will require a willingness to respond collectively and/or to rely on external stakeholder action. These stakeholders may not be regional MSR members. MSR responses may entail the full range of capabilities from national or federation support including combinations of direct enforcement action, as well as employing political pressure and influencing public opinion by narrative. They are designed to first prevent or deter crises while simultaneously developing the underlying will to employ maritime enforcement capabilities if needed. Backed by the required policy support, MSRs or stakeholders will, when necessary, enforce applicable international law. Each access challenge will be unique, requiring agile decision-making and flexible response often with inter-regional coordination and the utilization of interdomain capabilities.

VI. Supporting Principles

These principles amplify the Concept's central idea. They are the basis for successful MSRs and, when applied to Maritime Domain situations, facilitate problem resolution. These principles address Enterprise, MSR establishment, MSR sustained operation and MSR policy considerations. In many cases they can be applied to inter-regional and inter-domain relationships.

Gaps. The supporting principles are organized around four gaps as they were identified in a separate baseline assessment.[41]

- **Level of Institutionalization:** a lack of functional maritime security cooperation in crucial areas of the world contributes significantly to the current maritime security deficit.

- **Capability and Willingness:** a situation where the regional security regime does not have the capability or political will to address a specific problem.

- **Disputes and Legal Interpretations:** the clash of interests between coastal states who aim for increased influence and jurisdiction over maritime areas and maritime states who wish to maintain the status quo of maximum freedoms of navigation in accordance with the United Nations Convention on the Law of the Sea (UNCLOS).

- **Threats and Vulnerabilities:** there is a clear gap between present naval capabilities on one hand and the challenges in the Maritime Domain on the other. The increase in piracy, drug trafficking and terrorism at sea during the last couple of decades bears witness to that gap.

Principles. Application of these principles will help mitigate these gaps:

- **Generate Confidence Among MSR Members.** MSR activity is primarily collective not individual. The willingness of members, including commercial maritime organizations, to cooperate within the collective body of the MSR is directly related to their mutual confidence leading to trust in MSR ability to coalesce in the achievement of common goals. As highlighted in several MSR case studies, cooperation during a series of low intensity events will facilitate an increased willingness to pursue more complex issues. In successful MSR opera-

> **Supporting Principles**
> - Generate Confidence among MSR Members
> - Build MSR Partnerships
> - Establish Individual Stakeholder and Mutual Benefit
> - Each MSR is Unique and must be Agile and Make its Own Policy Decisions
> - Enable Planning and Decision-Making in a Complex MSR Environment
> - Monitor MSR Fatigue
> - Support MSR Compliant Actors.
> - Support a comprehensive legal framework
> - Complex Challenges Require Persistent MSR Awareness and Assessments

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[41] Multi National Experiment 7, Outcome 1 Baseline Assessment dated 31 March 2011. *"An improved ability to build and/or enhance maritime security regimes in order to ensure access to and freedom of action within the Maritime Global Commons Domain."*

tions, collective responses and willingness to cooperate becomes an iterative process with mutual confidence and trust as a cornerstone.

The MSR must explore its range of confidence building activities and decisions that spring from and in turn generate additional trust. This may include: establishing shared agendas from the strategic or political level to the working level: identifying mutual benefit and common purpose or action for members and commercial users: developing and using common MSR procedures normally based in the realm of a common agenda: assessment of the complex maritime challenges: and supporting timely resolution of Maritime Domain access disputes and associated legal interpretations. This principle also applies to Enterprise operation and success.

Building trust and common approaches are essential for building effective partnerships. These require an iterative process with one following the other. As nations recognize that their common interests and common objectives in maintaining free trade are underpinned by ensured access to the Global Commons, they can begin to work together toward these common objectives, building confidence and leading to mutual trust. With increased confidence and mutual trust they can become committed and effective partners in maintaining global access.

- **Build MSR Partnerships.** Such partnerships must be tailored to secure the regions maritime resources and commercial needs with an appropriate level of security enforcement capability. The overarching benefit of building improved partnerships is the regime stakeholders' inherent capability and willingness to make the necessary maritime responses on behalf of compliant members and users of the Maritime Domain. The partnership must include those attuned to the local region and utilize timely and persistent assessments to address maritime security issues before they expand into major problems. Timely responses will be vital.

For MSR partnerships to succeed, an adequate resource and capability commitment must be available and employed to meet non-complaint actor challenges. These partnerships may include other MSRs or individual nations.

These factors will help enable MSRs to endure.

- For an MSR to endure it should be joined by key regional states in forums appropriate for the region.

- Each MSR is unique and has its own challenges, culture, individual characteristics, and objectives. MSRs should adopt their own specific structure, procedures and approaches within the guidelines of the UNCLOS.

- Establishing a MSR is primarily a political endeavor. Successful MSRs result from long-term efforts based in diplomatic and economic agreement with military or law enforcement support, as needed.

- The MSR may also provide points of entry for members and supporting organizations to train, advise, and assist in the building of new capabilities. Confidence building activities with new members could establish an avenue to bring noncompliant actors into compliance.

- MSRs that are overly dependent on external international communities of interest for their long-term success may be at risk. It remains a MSR decision as to the best blend of required external capability support.

The goal is to establish increased long-term MSR capabilities that seek to build MSR cohesion while degrading the cohesion among noncompliant actors.

- **Establish Individual Stakeholder and Mutual Benefit.** For a MSR or the Enterprise to be viable there should be acknowledged individual (national), as well as mutual, benefit to improve Maritime Domain freedom of maneuver for participating members and organizations as well as private companies.

MSR stakeholders will normally first establish the individual political benefits of joining a MSR. Benefits they may consider include the assurance of maritime security, the attainment of comprehensive maritime information, and confidence in the MSRs' assessment and response ability.

- **Recognize Each MSR is Unique—It Must be Agile and Make Its Own Policy Decisions.** Two primary factors establish this uniqueness. First, there is a wide diversity of challenges in the evolving operating environment found in maritime regions of the world. Each is uniquely complex and marked with uncertainty where different cultures, viewpoints and interpretations exist. Second, there is wide variation in the capabilities of MSRs. Both factors call for MSRs to be established and then operate within disparate political and strategic contexts over time, addressing each situation on its own terms.

A MSR should employ an agile framework in response to this complex environment. It has to be agile in its assessment of the challenges as well as in its actions to protect and enforce regional maritime security. Agility in turn depends on confidence among the MSR members closest to the maritime access problem. An agile MSR should be able to transition from simply responding to an initial problem (reactive immature MSR) to a more permanent and stable framework (mature proactive MSR), which can maintain persistent awareness and address the root MSR problems regarding actions by noncompliant actors. The MSR, as it matures, should guard against the loss of agility.

- ❖ **Enable Planning and Decision-Making in a Complex MSR Environment.** MSR planning and decision-making must be designed to handle a wide variety of civilian governmental and private participant interests. An underlying challenge is the effective combination and interaction of these numerous partners with their cultural differences. This is further complicated by the existence of interdomain factors, a variety of inter-regional partners and dealing with other regimes facing threats of similar complexity. In the multitude of varying scenarios, MSR general planning considerations will include regional as well as global responses by the range of diplomatic, economic, law enforcement, and military con-

siderations. Initial plans and decisions will often be countered and must then be adapted to meet new challenges that expand across regions and domains. To meet the potentially asymmetric nature of threat actions, MSR planning processes must be direct and adaptive to enable responsive decision-making.

MSR Planning and associated decision-making in a complex environment uses a comprehensive approach[42] that could include any or all of the following conditions/requirements:

- The long-range goal of the MSR is to have the capacity to respond to and convince noncompliant actors into compliance and if required, enforce compliance.

- Use multiple lines of approach to maritime access challenges including trying several ideas in iterative fashion instead of more lengthy and detailed deconstruction of complex problems that may not lend themselves to a single comprehensive approach.

- MSRs should identify the most suitable resources for resolving challenges with militaries normally act in a supporting role.

- Using all tools of the MSR's participants including informational (cyberspace), diplomatic, economic (including sanctions and embargoes), law enforcement and military action.

- Persistent assessment to match the adaptive, trial and error nature of complex environment solutions where problems are often obscure and difficult to define and even more difficult to resolve.

- Regional Maritime Domain access challenges are suited to on the scene assessment and local exploitation of opportunities by those who best know the culture and its problems.

- **Monitor MSR Fatigue.** An established MSR must be continually assessed for signs of MSR fatigue. Fatigue is a political symptom and may be demonstrated by an individual or combination of partners, each for their own reasons. Left untreated it could hinder MSR cohesion by the withdrawal of one or more MSR members.

- **Support MSR Compliant Actors.** The MSR must act in accordance with UNCLOS. Its central goal is freedom of access in the Maritime Domain, principally for actors complying with international norms and standards. Timely resolution of maritime regional disputes and legal interpretations are important. They also build confidence and partner trust. MSR

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[42] Comprehensive approach. The collaborative employment of diplomatic, informational, military and economic power by civil government agencies, national and multinational military forces, international and intergovernmental organizations, nongovernmental organizations and other relevant actors in a coordinated, integrated and coherent manner in order to achieve unity of effort toward a common goal.

legal shortfalls may include unclear or insufficient authorities and mechanisms to enforce the international and often national legal framework in exclusive economic zones (EEZ) and on the high seas. The MSR must have legitimacy, credibility, and be supported by the international community of interest.

- **Support a Comprehensive Legal Framework:** MSRs support a comprehensive legal framework using both national and international law complemented by an assertive application of the law sometimes referred to as "law in action"." The MSR must back its legal framework using well-organized cooperation and trust to achieve a shared agenda.

- **Conduct Persistent MSR Awareness and Assessments to Monitor Complex Challenges.** The complex and evolving challenges of the maritime regions in the global operational environment demand frequent monitoring and reassessment. What was true about a perceived problem yesterday may have changed and the political, economic, and military stance of the MSR must adapt to accommodate, or risk losing operational effectiveness.

  - The Maritime Domain challenges are characterized by uncertainty, complexity, rapid change, and the increasing use of cyber and space domains by both compliant and noncompliant actors.

  - The complex and possibly asymmetric nature of problems will challenge and surprise the MSRs, complicating their responses and actions if not prepared.

  - Events may unfold continuously and branch in unforeseen directions, each influenced by the preceding, and each in turn shaping the next event.

  - The MSR needs a proactive capability for flexibility and adaptation to a changing operational environment. It should be able to request additional support from another MSR or utilize the Enterprise.

  - An essential element of the MSR is its dedication to reducing the uncertainly of the problem and the operating environment. In particular, viewing the situation from the noncompliant actor's frame of reference may provide important insights.

  - In periods of little or no clear challenge or problems the MSR must not reduce its awareness or assessment efforts. Its continuity provides the regime with time to pursue confidence building activities and lead time to better respond to potential crises.

VII. <u>MSR Constructs</u>

This section will describe the requirements to establish MSRs, their functions, membership, and evolution to maturity. It also presents a conceptual model of the enterprise framework. **Elements of an MSR**

Establishment of a MSR must address five elements.

- First, they require a specific common objective or interest as the reason for the establishment. In this case the common objective is related to maritime security challenges.

- Second, they require members. These members can be a combination of nations, international and nongovernmental organizations, and private companies.

- Third, the MSR requires a framework of rules and procedures, using UNCLOS and adherence to international law as overarching guidance.

- Fourth, it must possess the capabilities to respond as necessary to enforce compliance in a maritime region. In this context, it proposes gaining improved maritime situational awareness[43] through the persistent assessment of access challenges.

- Finally, there is a requirement for authority allocated to these MSRs by their members and also the acceptance of this authority by stakeholders and the international community of interest.

Figure 1 depicts the construct of a Maritime Security Regime. For convenience, all these regional organizations are called MSRs, however, some regions may choose other more informal or ad hoc organizational constructs.

Figure 1. MSR Stakeholders and Functions

[43] *Situation awareness* is viewed as "a state of knowledge," and *situation assessment* as "the processes" used to achieve that knowledge. Endsley, Mica R. "Theoretical Underpinning of Situation Awareness: A Critical Review." *Situation Awareness Analysis and Measurement.* Ed. Ensley, Mica R. and Garland, Daniel J. 2000, p 19. Endsley, Mica R. 2000). Page 19.

MSR Functions

Figure 1 identifies types of stakeholders and functions of a MSR. The MSR's primary functions include providing improved maritime situational awareness, through persistent shared *awareness and assessment* and *response* to address noncompliant activity. Other functions include establishing a *framework for inter-regional coordination* between regimes and the ability to *coordinate interdomain support activities,* particularly in the cyber and space domains. The fifth function, *creating a framework of rules* (not depicted in the figure), serves at the foundation on which the other functions are based.

- Interested parties responding to an access challenge would form a leadership nucleus. This leadership nucleus would establish the "why´s and how's" of self-governance. To be a functional MSR, that is to be able to resolve the maritime access problem behind the creation of the regime, the MSR performs five functions, of which the first two are inherent. **MSR Shared Awareness and Persistent Assessment.** Awareness and assessment of the maritime noncompliant access challenges and defining the access denial implications to the region.

- **Response and Enforcement Capabilities.** A tailored response backed by a capability for enforcement with a clearly defined authority to act is a vital addition to the "tool box" for MSR responses. Capabilities vary by MSR but range from MSR joint response to the more likely case of a key member or a few members responding with the needed capability. Response can be internal or external to the MSR.

- **Framework for Inter-Regional Coordination.** There is a requirement for process and procedures for the collaborative efforts between two or more MSRs.

- **Coordinate Interdomain Support Activities.** Achieving access to the Maritime Domain is increasingly part of larger and more comprehensive issue: it is interdependent with and relies on access to other domains of the Global Commons, such as air, space and cyberspace. Actions to ensure access in the Maritime Domain must account for these interdomain relationships.

- **Creating a Framework of Rules.** A MSR requires a framework of rules and procedures, using UNCLOS and adherence to international law as overarching guidance that must be agreed upon and adhered to by the members.

MSR Membership

MSR stakeholders come from the maritime community of interest, nations, organizations, and private companies. They come together to create or enhance a MSR based on a common interest around a maritime security challenge in a specific geographical region[44]. As depicted in Figure 1 above, there are generally three types of members. The first are *regime member na-*

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[44] Krasner, 1983

tions that are regional partners. Second are regime members who are *nonregional partners*. Nonregional partners are interested parties that do not reside in the geographical location of the maritime problem area. Third are *nonregime member nations* who can be either regional or nonregional stakeholders with an interest in the regional problem. A MSR could either be initiated or enhanced by the regional members or it could emanate from interested external states or organizations that foresee mutual benefits, such as external nations coming together to counter piracy in the waters adjacent to Somalia. The MSR could be formed by a combination of both regional and nonregional entities.

Most actors and organizations have an interest in ensuring access to the Maritime Domain according to established rules. Based on their degree of interest, they can be categorized in three groups:

> **1.** Actors interested in ensuring access and freedom of action according to established rules,

> **2.** Actors interested in ensuring access and freedom of action thereby challenging established rules, and

> **3.** Actors with no interest in ensuring access and freedom of action or limiting access and freedom of action.

This paper addresses MSRs that support group (1) as well as providing suggestions for responding to noncompliant actors in groups (2) and (3).

MSR Evolution to Maturity Over Time

MSR actions will evolve over time to meet new common agendas and challenges as well as to include new capabilities. The example depicted in Figure 2 illustrates how, for a given region, the functional entities of a MSR could evolve from completely external towards more internal to the region.
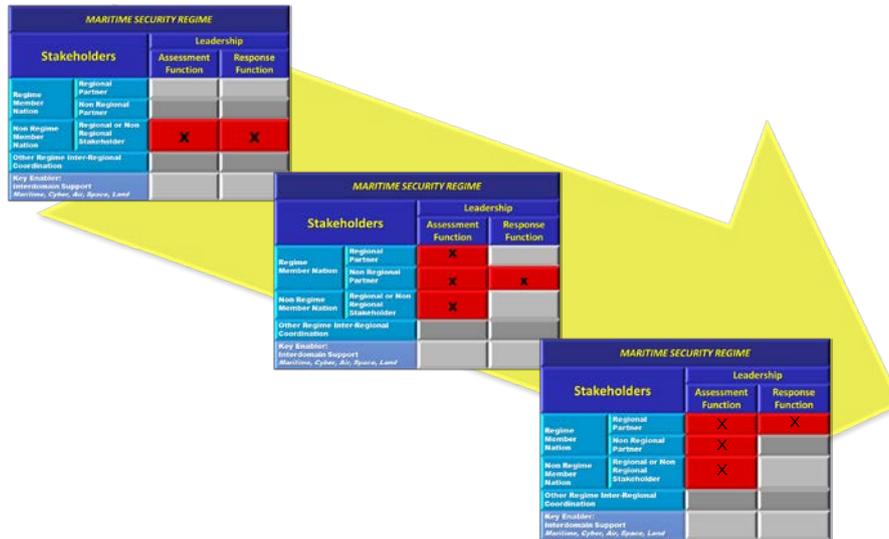
Figure 2. MSR Evolution

In this case a MSR could be started with the contribution of nonregime member nations who are regional or nonregional stakeholders. These external stakeholders can provide awareness and assessment and capabilities that enable initial response. A second maturation step could expand to include the contribution of regional and nonregional partners who are regime member nations. All partners and stakeholders could contribute to assessment and with a strong contribution of nonregional partners with response capabilities. The desired mature MSR end state could be regional MSR members gaining the ability to share assessment results from multiple sources (MSR members, nonregional members, and non-MSR members) and regional MSR partner developing their own response capacity. An initial observation based on a review of MSR case studies is that long-term MSR stability, reducing the risk of external actor fatigue, and overall success, are better achieved when regional regime partners take the lead in MSR response. That being the case, a maturing MSR should gravitate towards shared awareness and a diminishing external response capability requirement. In any case, it remains the decision of each MSR as to the degree with which it relies on external actors.

Conceptual Model of the Enterprise Framework

Figure 3 is a pictorial view of the Enterprise Construct.

• The outer ring depicts the overarching context of global commons access and the interrelation of the domains.

• The inner circle represents the inter-regional relationships of two MSRs (MSR A and MSR B) shown linked by a common agenda where two inner most circles representing MSRs overlap. This is the area of collaboration that can be supported by the Enterprise.
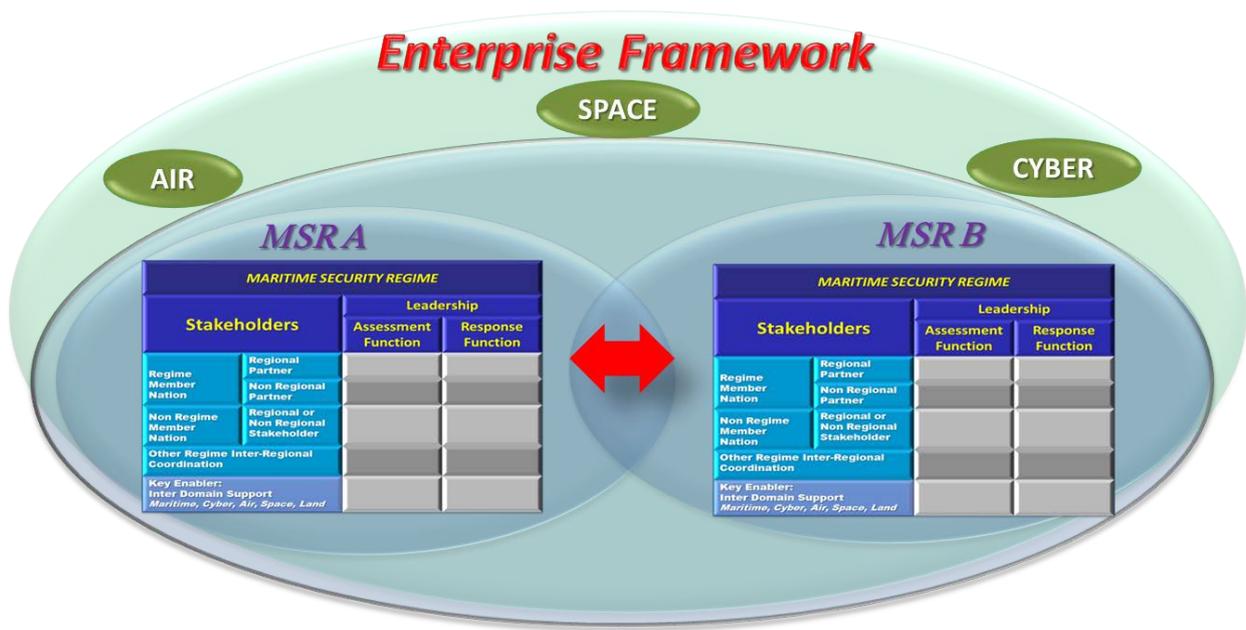
Figure 3. Enterprise Framework

VIII. Solution Menu for Enterprise and MSRs

This section presents a group of solutions that support the development, enhancement and sustainment of the Enterprise and MSRs. Solutions are based primarily on the central idea and the supporting principles. Each solution is designed to improve Enterprise or MSR capabilities, focusing specifically on persistent shared awareness and assessment capabilities and tailored MSR response capabilities including a viable enforcement capability.

Solutions are grouped into the following categories from general or supportive solutions to more specific MSR solutions: Underlying Enterprise and MSR Solutions, Enterprise Solution, Regional MSR Establishment Solutions, and MSR Enhancement Solutions. Because regional MSRs are normally more knowledgeable regarding their access challenges, this section is presented as a menu of solutions that a MSR can select from and adapt to their specific needs.

Underlying Enterprise and MSR Solutions

These solutions, which apply to both the Enterprise and to MSRs, are based on two supporting principles.

- **Generate Confidence among MSR Members** Building confidence and cohesion is best achieved in an iterative process of small steps that gain momentum with each positive exchange and favorable interaction. MSR collective action and confidence may be viewed in three MSR activities that are increasingly challenging. First is information exchange supported by a communications network of operations; second, collective persistent assessment; and finally, the interaction and collective responses and action of multiple MSRs conducting inter-regime and interdomain operations.

- **Information Exchange.** The 1st level of cohesion and confidence in MSR operations concerns regime communication and access to maritime information. It is a basic requirement for enabling a cohesive culture within a regime. Technical communication solutions are not the issue. They are readily available and widely applied in the current Maritime Domain but are not sufficient by themselves to establish MSR success and action. In fact regime member confidence at this level of cohesion is a valuable building block toward achieving global awareness. Only with this confidence will MSR members be willing to share more important and timely information. -

- **Collective Persistent Assessment.** MSR persistent assessment is a critical activity to building awareness and understanding of the MSR access challenges and responses in a complex environment. Identifying and forming common agendas may often enhance it. In the complex problem environment where persistent cooperative assessment is vital, MSR cooperation and trust are essential. Collectively assessing complicated MSR challenges successfully will, in itself, build confidence. Finally confidence among those seeking better access in the Maritime Domain will directly enhance the MSR ability to reduce uncertainty and deal with setbacks as well as successes.

- **Inter-regime and Interdomain Operations.** The third and most ambitious MSR activity layer is inter-regional and interdomain MSR cooperation, including the networking of two or more regimes to resolve a common problem. The Enterprise should specifically address supporting MSRs as they pursue limited inter-region and interdomain common agendas and challenges.

Confidence and trust is central to cohesive MSR action and success. Confidence can be enhanced through application of many of the other Concept principles and in particular the next one, the identification of mutual benefit.

- **Establish Individual Stakeholder and Mutual Benefit.** For a MSR or the Enterprise to be viable there should be acknowledged national and mutual benefit concerning the maintenance of Maritime Domain freedom of maneuver among the participating states and organizations. Without establishment of mutual benefit, regime motivation for action and cooperation will flounder and resource commitment will fade. Mutual benefit among MSR members may be achieved by building an acknowledged common agenda and objectives. Acknowledged mutual benefit is best achieved through "win-win" or compromise negotiation.

Benefits may be at different levels and may mean a different outcome to each actor. For example, actors guaranteeing canal passage may be seeking different benefits than shipping companies involved in secure canal passage. States external to the region may join a MSR because of clear mutual benefit to ensuring access through vital straits[45] and sea-lanes in the

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[45] Straits Used for International Navigation: Straits that are used for international navigation between one part of the high seas or exclusive economic zone and another part of the high seas or exclusive economic zone. The

region while the benefit to regional actors may be seen in increased commerce within the region. Mutual benefits are also present when mutual threats or challenges are identified and are in turn linked to common interests.

Enterprise Solution – Global Support for MSRs

MSRs are the primary building block to insure access in the Maritime Domain through awareness, assessment and the capability to elicit timely, effective responses.

While a regional approach to MSR problems is sound, it is improved by recognizing that the nature of maritime access challenges are increasingly global in scope and impact. This calls for a global and agile structure that is designed to support regional challenges–an Enterprise. As described under the central idea, its five functions , available to MSR requests for support, include : (1) Net enabled collaboration of the MSRs, (2) MSR library of best practices, lessons learned, and procedures ,(3) Global Assessment to enhance MSR awareness (4) Shared expertise, and (5) Capacity building to promote MSR enhancement.

It is important to recognize that the Enterprise would not have a governance function and would not direct or restrict the regions MSR operation.

Note that it is still a core MSR responsibility to assess and respond to challenges, but MSR success is enhanced by Enterprise functions and with support from the various Enterprise groups depicted in Figure 4 and described below.

regimes of transit and innocent passage apply depending on the nature of the strait. See UNCLOS PART III articles 34-45.
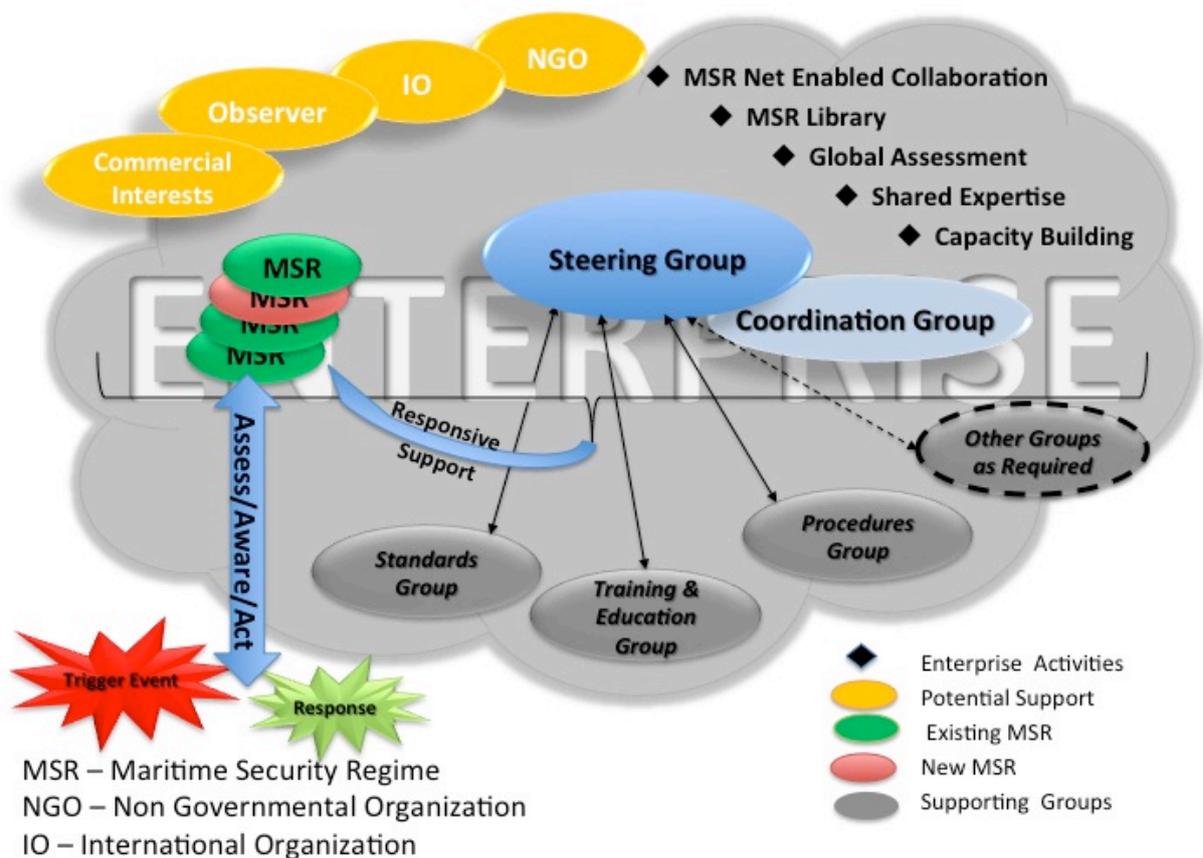
Figure 4. Enterprise Functions and Activities

- **The Enterprise Steering Group.** This group is led by a Chairman and is composed of members whose roles are to provide guidance and make decisions on strategy and planning on behalf of their respective governments or organizations with which they will liaise as necessary. They represent and guide the Enterprise functions and the supporting components including the Enterprise Coordination Group and several subgroups depicted above. The Enterprise Steering Group also leads the Enterprise MSR Conferences.

The Enterprise Conferences are periodic face-to-face meetings of senior MSR representatives to explore regional MSR issues and challenges and to exchange information. Participants include the Steering Group and its Chairman and supporting groups in the field of operations, technical requirements, legal questions, or other special areas of concern as required. Conference objectives and roles may include:
- Guide MSR Conference detailed planning, and execution.
- Discuss "hot topics" during the Conference and in the Net Enabled Collaboration environment.
- Develop and articulate appropriate and acceptable Enterprise and Subgroup

names.[46]
- Support and enable maritime capacity building activities.
- Provide a networking forum for the MSRs.
- Develop MSR advocacy policy in order to generate political will, improve MSR partnering and mentoring, and increased membership.
- Develop suggested Enterprise member conflict resolution processes.
- Guide the Enterprise library of best practices (lessons learned), MSR concept and MSR Manual publication updates.
- Ensure support for MSR education and training.
- Act as an advocate for consensus building for new laws or regulations concerning new access challenges.
- Guide MSR assessment support including early warning trip wire functions.

- **The Enterprise Coordination Group.** This group supports Conference preparation and the meetings as well as maintaining the Enterprise net enabled collaboration and knowledge repository. This Group should be organized by the Enterprise Steering Group according to their requirements.

Primary roles for the Enterprise Coordination Group include:

- Supporting the Enterprise Steering Group and its Chairman to facilitate networking of the MSRs including net enabled collaboration. Additionally:
  - Maintain the Enterprise library of best practices (lessons learned) including MSR concept and MSR Manual publications and other pertinent documents.
  - Support education and training of MSRs.
  - Support maritime capacity building activities.

- Provide MSR Conference detailed planning, and execution:
  - Develop Conference agenda items and design the Conference sessions for the Chairman.
  - Be the conduit for "hot topics" to be discussed in the Conference and in the Enterprise Net Enabled Collaboration.

- Future roles could include:
  - Support MSR assessments including early warning "trip wire" functions.
  - Be alert to and report MSR crisis events and access challenges.
  - Elevate immediate action items to the appropriate Enterprise Steering Group leadership.
  - Maintain awareness and knowledge about related inter-regional and inter-domain activities.
  - Support Memorandum Of Understanding development in anticipation of fu-

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[46] The term Enterprise is descriptive term and do not prescribe a naming convention. MSRs themselves should name it during initial meetings.

ture action**.**

- **Other Participants.** Other possible participants in the enterprise may include International Maritime Organizations (IMO), observers, nongovernmental organizations and others with a common interest. Commercial interest, such as shipping companies or port operators, are potential stakeholders, but may only become interested when they realize the potential financial impact of access challenges

As depicted on the left side of Figure 4, the Enterprise responds to and supports the MSRs. The MSRs and the Enterprise Coordination Group are all interconnected and able to interact in a timely manner with each other as well as other interdomain sources. MSRs can generate queries for information, raise issues, or alert the Enterprise to access challenges or events. MSRs assess activity within their region, focusing on trigger events[47], and respond as necessary.

Regional MSR Establishment Solutions

The MSR standup or enhancement solutions focus on the two general capabilities of the Concept central idea, persistent awareness and assessment and decision and response capability. Along with the Enterprise proposal these solutions form the dual approach of the central idea. MSRs are shaped by a wide variation in their capabilities and regional challenges. When nations decide to establish a MSR they may be operating within evolving political and strategic contexts. As a result they will address each unique situation on its own terms. In some cases the maritime access challenge may be minor and of short duration, perhaps warranting a more informal and temporary MSR organization. In other cases major challenges may require a more enduring MSR.

To establish the MSR, members may elect to invite a wider community of interest to join the MSR and to participate in the development of a common agenda, a defined level of ambition, and identification of challenges and available capabilities.

Many of the aspects of the solutions presented for a single MSR apply to the inter-regional and interdomain cases (particularly cyberspace). Adjacent or issue related regions and regimes may be sources of common access challenges.

MSR Enhancement Solutions

The final group of solutions addresses MSR enhancement. Today many MSRs already exist, so most work will be focused on enhancing existing MSRs to resolve the gaps in their capabilities. The solutions presented in this section are best practices and ideas that are explored in more detail in the MSR Manual. They are grouped in three organizational or functional areas: MSR Leadership, Persistent Assessment and Awareness, and MSR Decision and Re-

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[47] A triggering event is described as a persistent access challenge event in a given region that actors coalesce around and causes the formation of a MSR. The term was first used during Multinational Experiment 5: Cooperative Implementation Planning, Management and Evaluation Concept, October, 2008.

sponse. A common theme of each is to take advantage of the Enterprise and other sources to employ a global approach to the regional challenges.

- **MSR Leadership.** The type of leadership chosen for a MSR will vary across the spectrum of the access challenge.

If the access challenge is at the high end of the scale (for example, major maritime threats are present and significant regional vulnerabilities exist), and is one the MSR would persistently address, the MSR leadership could consist of an appointed leader and a full time staff. If it is at the low end of the impact scale (for example, low threat with low vulnerability assets), the MSR might be more federated or simplified. For example, its leadership tasks could be executed separately, guided by a Chairman coordinating more formal guidance.

MSR operations and functions are not stagnant, they change over time. When existing MSR guidance or roles are overcome by events or capabilities then the MSR leadership should interact with its national leaders to adjust the MSR vision and objectives.

- **Persistent Assessment and Awareness Function.** Assessment and awareness are iterative aspects of the same process. The objective of this function goes beyond enhancing MSR situational awareness regarding Maritime Domain access issues. MSR assessment and awareness functions are more than just information and knowledge activities that narrowly focus on problems or noncompliant actors in the region. These functions must also lead to an appropriate MSR response often with global aspects that resolves the problem. MSRs maintain awareness and knowledge about the region, including maritime shipping location and tracks, appropriate related inter-region and interdomain activities, and lessons learned.

  - **Importance of Culture and Region Uniqueness.** Assessment products should be sensitive to cultural awareness, as well as national interests, and be focused on addressing access challenges. The assessment goal is to make recommendations to prevent or minimize access denial challenges.

  - **MSR Assessment Approach.** Because assessment is often an early process in MSR activity, the approach used is particularly important. MSR case studies highlight that the assessment approach must build confidence and trust through a series of small steps. Examples of successful MSR approaches gleaned from MSR case studies include:

    - Establish a mutual agreed common goal
    - Structure activities divided into clear progressive steps
    - Recognize that success lead to more success
    - Establish continued development procedures
    - Develop and maintain the routines
    - Keep the operator in focus
    - Meet face-to-face.
    - Implemented technology after the cooperation has been established and trust is already growing–first we work together to build trust and then we begin to share and use common technology
    - Use existing systems in a distributed/federated way

- ▪ Determine mutual benefit and how each partner contributes to that.

  - **Exchanging Information.** Few MSR issues approach the importance of this problem. The MSR members may exchange MSR assessment results that match established MSR agendas among its individual MSR members. Exchanges would be conducted within the constraints of national or organization requirements. This requires information sharing capability and is enhanced by interoperable systems. With this information exchange, a common MSR situational picture can be developed. Less capable regime members may initially require support in their information collection and dissemination efforts. Based on shared awareness, the MSR members can agree on possible responses and allocate capabilities for achieving solutions, including the identification of potential actors and assets required.

  - **Additional Information Requirement.** MSR internal assessments may also lead to the identification of additional information requirements. The MSR can interact directly with other MSRs or with the Enterprise for information support. If requested the Enterprise and the Enterprise Coordination Group can assist by identifying other activities that can contribute to resolving MSR information gaps.

    - ▪ **Inter-region Awareness.** The inter-regional cooperation between MSRs should include the exchange of assessment results. As within a single MSR, information sharing capability and interoperable systems between MSRs will aid this effort. With this information exchange a more complete common situational picture and assessment can be developed.

    - ▪ **Inter-region and Interdomain Assessment.** MSR awareness and assessment functions often include both inter-regional and interdomain aspects. As described in the principle concerning planning and decision-making in complex environments, an underlying challenge is the effective combination and interaction of numerous partners of cultural differences. This is further complicated by the existence of interdomain factors, a variety of inter-regional partners and dealing with other regimes facing threats of similar complexity. The Enterprise can provide an important supporting role in this area. It is further explored in the MSR Manual.

  - **Anticipating Access Challenges.** MSR assessment and awareness should result in products that include implications and insights regarding MSR decisions that best reflect the members' interests and meet the challenges of the access problem. Assessment can act as a trip wire, allowing timely response to prevent or at least reduce the duration or effect of an impending access challenge.

- **MSR Decision and Response Function.** As each region has its own peculiarities and challenges, MSRs should develop and adopt their own specific procedures for decision and response. To achieve maritime security, the regions require the capacity to respond and convince noncompliant actors to comply or if necessary, enforce compliance.

Often key stakeholder capabilities will be needed to respond to maritime access challenges and opportunities. MSR responses will depend on a willingness of its stakeholders. Some stakeholders may not be regional MSR members. Responses may entail the full range of capabilities from national or federation support including combinations of direct enforcement action, indirect approaches (i.e. port state control), as well as political pressure and influencing public opinion by narrative to first prevent or deter crises while simultaneously developing the underlying will to employ maritime enforcement capabilities if needed. Backed by the required policy support, MSRs or other stakeholders will, when necessary, enforce applicable international law. Each access challenge will be unique, requiring agile decision-making and flexible response often with inter-regional coordination and the utilization of interdomain capabilities.

Specific MSR response activities could include these.

- **Enterprise Support.** MSR decision bodies may use the supporting Enterprise including the Enterprise Coordination Group, lessons learned and best practices based on the studies of other successful MSRs.

- **MSR Response Participation.** The MSR should invite communities of interest to develop a common response approach within the MSR as well as inter-region and interdomain responses when appropriate. This approach consists of an agreed upon common agenda, a well-defined proactive level of ambition and the identification of gaps and available stakeholder capabilities as well as the definition of specific rules and procedures to be acted upon.

- **Categorize Maritime Domain Challenges.** Distinguishing access challenges in temporary or long-term categories may be helpful. For more limited and short-term challenges, a simple organization may be sufficient with coordinated action supported by standing procedures. For longer term or more difficult challenges that are evolving, the next step might be to identify additional concerned actors through a stakeholder analysis. In this case short-term activities might mature into long-term security cooperation.

- **Flexible Lines of Approach.** The MSR should consider flexibly pursuing multiple lines of approach to address large maritime access challenges vice attempting time consuming analysis and detailed deconstruction of access problems.

- **MSR Resources.** MSRs should identify the most suitable resources for resolving challenges. They should consider all tools available to the MSR including the Enterprise support, interdomain capabilities (especially space and cyberspace), as well as all available diplomatic, information, military, and economic support. Based on common inter-regional and interdomain awareness, the MSR members can then agree on common issues and then allocate resources for achieving the objectives.

- **Interdomain Capabilities.** MSR may require interdomain capabilities to respond to and resolve challenges identified. There is great need for MSRs to utilize inter-domain capabilities for information exchange and awareness. Additionally, assets from air and space domains are required for surveillance and communication.

- **Mitigation of Limited Resources.** Maritime resources may be limited during an access challenge. There may be reduced on-scene presence of dedicated maritime forces capable of patrolling regime areas of responsibility and protecting maritime commerce. Persistent space and cyber systems that are part of the interdomain and have become an increasingly important contributor to situational awareness may mitigate this. When action is required, a rapid maritime response capability will still be needed. The response could utilize police, coast guard or naval forces in whatever mix is deemed most efficient and effective. Interdomain enforcement so-lutions should be considered once the enabling technologies are developed.

- **MSR Agility.** Each region and MSR has its own peculiarities, challenges and ob-jectives, and may develop its own specific procedures and frameworks. In re-sponse to the complex environment a MSR should employ an agile framework that can quickly adjust to circumstances. To respond to regional maritime security and regional access challenges it has to be agile in its assessment of the challenges as well as in its actions. Persistent awareness, aided where possible by the Enter-prise, supports agility. It should not be overly centralized in decision-making, but rely on distributed and on-scene assessment and awareness of the challenges of noncompliant actors that are also increasingly operating across all domains and multiple regions of the Maritime Domain. Assessment should also take advantage of other MSR knowledge and expertise through inter-regional cooperation. As the MSR matures over time it must continue to guard against loss of agility.

IX.   Implications of Adopting the Concept

- The implications and capabilities required to implement the Concepts' dual approach primarily concern the Enterprise proposal because institutionalizing enhanced MSR procedures and best practice products depend significantly on Enterprise Support. There may be an increase in the number of new MSRs generated, in part, by Enter-prise activity.

- MSR requests for information may initially burden the Enterprise organization.

- Over time, successful implementation of the Enterprise may lead to a stronger man-date for International Maritime Organization engagement. Alternatively, it may lead to the UN Convention on the Law of the Sea seeking a mandate for a new enterprise, concerned with enforcing security on the high seas.

- The Concept should be a living document. The continued exploration, analysis and evolution of the Concept and its Supporting Principles rest heavily on the presence of Enterprise activities and support.

X. <u>Risks of not Adopting the Concept</u>

The greatest risk to the success of MSRs would occur if the Enterprise is not formed and for the MSRs to then continue to operate as they always have, while the challenges continue to increase as noncompliant actors continue to improve their own capabilities.

These are among the more important risks faced by MSRs.

- Because engagement with the Enterprise is a voluntary endeavor, the MSR members may fail to participate sufficiently to make any significant improvement in maritime access.

- MSR members fail to establish creditability in the region because members lack confidence and trust in each other and do not engage the Enterprise or other MSRs adequately.

- MSR members may fail to adequately share information to assess regional access challenges in the complex environment or may fail to assess its implications leading to costly failure.

- When confronting access challenges in the region, MSR members may not seek Enterprise assistance to better obtain sufficient maritime capability to create a creditable response capability.

- Failure to establish the Enterprise Steering and Coordination Groups sufficiently may handicap MSRs coordination and limit their overall effectiveness.

- If the concept's emphasis on inter-regional MSR and interdomain coordination is not followed, MSRs may not be able to adequately meet growing global access challenges.

- Members may hesitate to form or enhance their MSR because they are not fully aware of growing maritime access challenges and dangers and may be unaware of the Enterprise resources available to support them.

- Members not using an Enterprise may hesitate to form or enhance their MSR because they are not fully aware of growing maritime access challenges and dangers due to lack of knowledge of growing threats originating from outside their own region throughout the supply chain.

XI. <u>Outlook</u>

All nations share a common interest in ensuring access to the Maritime Domain. The dual approach of a Maritime Security Regime Enterprise and enhanced MSR collaboration in a

global approach offers the best opportunity to meet the Maritime Domain access challenges of the future. The Enterprise and MSR solutions presented in this Concept, if adopted, will improve the ability for actors to build or enhance maritime security and ensure access to and freedom of action within the Maritime Global Commons.

With Enterprise support, the MSR functions of inter-regional collaboration and interdomain interaction become feasible in addressing maritime security challenges. Additionally, by supporting an educational program, the Enterprise enables the training effort that provides procedures, principles, and best practices that support MSRs success.

This Concept is only a beginning but it provides a viable path to the future, particularly if the Enterprise is successfully established. The step following Enterprise formation could be the promotion of an international organization such as the United Nations/International Maritime Organization to provide leadership and constructive diplomacy to enhance effective security in the Maritime Domain of the Global Commons.

Annex B – MSR Case Study Abstracts

As part of the Multinational Experiment 7's a broader study of six MSRs was conducted in order to methodically identify the cause and effect mechanisms for both successful and unsuccessful efforts. The studies analyzed the region politically, culturally, operationally, and economically, with other assessments of the regional security orders and threats. This culminated with a gap analysis of the regions (MSR's) effectiveness and suggestions for their way ahead.

Maritime Organization of West and Central Africa (MOWCA) – Led by the Combined Joint Operations from the Sea Centre of Excellence

This study's overall assessment is that MOWCA's grand solution of creating a regional coast guard from a limited operational starting point was a laudable idea, but overly optimistic; the current, widespread operational deficit prevents any success from regional collaboration. While the current effectiveness of the MSR is low, its improvement and direction is quite positive. A key take-away is the value of networking between developing MSRs and established ones. This helps to fast track best practices and avoids tempting mistakes. This effort must concurrently develop mature networks and mutual support among other sectors of their own government, e.g. judiciary, commerce, law enforcement, inter alia, in order to align government efforts. Most importantly, an MSR must start with or quickly develop a credible maritime security capacity. With this, smaller-scale, localized MSRs' collaboration builds confidence and trust in its return on investment, creating political, economic and cultural stability. Finally, this "bottom-up" process builds a larger, regional MSR with a record of sustained success.

Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia (ReCAAP) – Led by the Combined Joint Operations from the Sea Centre of Excellence

This study's overall assessment is that ReCAAP has achieved a high degree of operational success by building a simple and efficient information sharing network in the maritime security sector. This basic set up empowers the legitimate, national authorities to effectively interdict criminals, while avoiding any perceived encroachments on sovereignty. Concurrently, it builds political and professional confidence between the participating governments with each year of sustained security improvement. ReCAAP also demonstrates empirical creativity by studiously tracking and analyzing maritime security data enabling the member governments to proactively adjust their policing efforts. ReCAAP's success has been exported by the UN's International Maritime Organization, most notably with the Djibouti Code of Conduct. However, although very successful in its intended scope, ReCAAP does have a limitation; it is a reactive effort by nature, which ultimately will only treat the symptoms of the problem. ReCAAP could expand its effectiveness by supporting efforts countering the inland centers of gravity of the piracy, though

this is likely untenable, politically. Overall, ReCAAP is an outstanding example of an effective MSR.

Wider Mediterranean Region – Led by the Italian Navy General Staff

The Mediterranean region, inclusive of its western and eastern approaches, typifies the threats (e.g., terrorism, pollution, smuggling, illegal immigration, national crisis) and the challenges (complex environment where different religions, cultures, economies and societies live together) in creating a Maritime Security Regime (MSR). Moreover, as a crucial crossroads for the maritime trade and the global economic flows, the Mediterranean Sea is something like a lab where maritime security initiatives could be assessed and fruitfully enhanced.

The presence of many differences hinder the achievement of an overarching harmony in the maritime security field; nevertheless, the shared understanding of how the common welfare is directly related to the preservation of peace and security in the region, often pushes Mediterranean nations to peacefully contextualize, through "ad hoc" agreements, their individual requests in the broader framework of collective benefits, in order to improve the wellbeing and the global safety.

The achievement of a truly overarching solution could be then reached through a daily process of dialogue and cooperation, and through regional initiatives that are a valid framework to enhance mutual trust and overtake those prejudices that frequently hamper teamwork and mutual aid. This will develop a progressive ability to operate together, starting from simple items (such as the standardization of data sharing procedures) and then moving step by step to more complex ones (e.g. establishment of common legal frameworks). Specifically, Navies are, thanks to their vision and expertise, the most suited player to act as integrators among all the actors involved in the field of maritime safety and security.
Regional initiatives, such as 5+5, ADRION (Adriatic – Ionian Initiative) and V-RMTC (Virtual Regional Maritime Traffic Centre) or its transnational evolution, the T-RMN (Trans Regional Maritime Network), are well-chosen examples of encouraging enterprises that, starting from a basic level of cooperation, can hopefully evolve into more complex structures and finally become real and complete MSRs.

Arctic Region – Led by combined efforts of Finland and Sweden with representation from MNE 7 Outcome 1 contributing nations.

Although there are no existing MSR in the Arctic one can see the contours of a nascent regime there as states that border the region have taken a proactive stance towards Arctic peace and stability and cooperation. This is highlighted by the high level of Arctic institutionalization that has evolved since the end of the Cold War, giving rise to a complex web of multilateral and

bilateral networks, organizations and forums with a strong support for legal and institutional frameworks for governance in the region.

The Arctic states have hitherto refrained from entering into substantial legally binding agreements, preferring a much looser form of cooperation that generates confidence and trust. The main benefit from this is that it allows for dialogue between states with different foreign policy outlooks without compromising their national interests or legislative power. In addition, starting off with small manageable steps towards cooperation – from environmental protection to the binding agreement on search and rescue – the Arctic Council has developed confidence and trust among its members, increasing their willingness to act together over time and reducing the potential for future conflict. Also, such arrangements are more adaptable as it allows for more flexibility in introducing innovative arrangements and are easier to adjust than complex bureaucracies in a timely manner to changing circumstances.

Sea Surveillance Cooperation Baltic Sea (SUCBAS) – Led by combined efforts of Finland and Sweden with representation from MNE 7 Outcome 1 contributing nations.

The Baltic Sea Region is a highly heterogeneous area in economic, environmental and cultural terms, yet the countries concerned share many common resources and also interdependent. Actions in one area can very quickly have consequences for other parts, or the whole of the region. Therefore, the area could be a model of regional co-operation where new ideas and approaches can be tested and validated.

Each country is responsible for its own national recognized maritime picture. Other maritime agencies may contribute to the SUCBAS cooperation with caveats.

All resources contributed by the participants will remain under full command of the nations respectively, unless otherwise decided.

SUCBAS focus, the region's safety and security environment, will continue to experience significant changes in the coming years.

Maritime traffic is expected to increase, thus increasing the risk of accidents and vulnerability to pollution.

The expansion and deepening of EU cooperation in criminal matters means that regional activity in combating crime should focus on intensified practical cross-border cooperation.

As an example, there are around 2500 ships at sea in the Baltic at any given time, accounting for 15% of the world's cargo transportation. Forecasts indicate that the amount of cargo shipped in the Baltic will double by 2015 especially in the eastern part of the region, due to economic growth.

Cooperation already exists, but should be strengthened to make the region a world-leader in maritime safety and security. In this field, SUCBAS aims to strengthen and expand the existing cooperation with regard to sea surveillance, thus emphasizing the multinational aspect, based upon the principle of consensus.

The practical aim of the cooperation is to develop a concept, a technical solution and procedures to generate a robust and cost-effective regime to share sea surveillance information. Information fed into the regime is a national responsibility, and as such owned by the contributing party.

The sea surveillance cooperation reveals threats and avoids incidents that might jeopardize the general maritime safety, security and environment. It requires capabilities to position and identify targets, share information through a recognized maritime picture with members to minimize or stop the risks of incidents. Finally, the region must be prepared for the expected increase in extreme weather events as a result of climate change.

Gulf of Aden / Western Indian Ocean -- Led by Norway**.**

The Gulf of Aden /Western Indian Ocean region is vulnerable to a range of threats to maritime security and freedom of navigation. In the last three decades shipping has been threatened by both state and non-state terrorism, sea denial efforts, and piracy. Presently, due to geopolitical tensions in the area it seems utopian to envisage a regional regime based on international consensus able to handle the whole range of threats. Therefore the focus was on efforts to manage and prevent piracy, in other words there are functional limitations to the potential regional regime.

The regional actors are limited either by a total lack of naval and relevant civilian capabilities (most African states) or by political will to take on responsibility for maritime security beyond their territorial waters (most Arab peninsula states). Arguably, the first set of actors has small stakes in the flow of international trade through the area while the second set of actors depends on maritime security for their export of oil.

Therefore, the present and emerging regime is imposed on the region by external actors who provide both the means for implementation of operations and the political ambition, the resources and the skills needed to build a regional regime. A relevant question is whether the regional actors, states as well as regional institutions (the AU, GCC), have the political will to utilize all actions given in a mandate (i.e. attacks on pirate bases ashore). The explanation for the passivity in this regards are political considerations rather than legal ones.

The external actors are fragmented and there is no one authority in charge of their combined efforts. However, it would seem that slowly and incrementally a broad consensus has developed regarding the need to build up local capabilities. The same is true in regards of information exchange amongst the various maritime forces at sea.

Efforts to build local and regional capabilities do not seem to have reached a sufficiently mature status to contribute to the decline in pirate attacks or their success rates. However, these efforts should be continued as present solutions are neither optimized nor sustainable for a long term.

Annex C – Sample MSR Agreement

C-1

MODEL MARITIME INFORMATION SHARING AGREEMENT

MEMORANDUM OF AGREEMENT/UNDERSTANDING

BETWEEN

_____

_____

_____

Represented By _____

AND

_____

_____

_____

Represented By _____

CONCERNING[48]

_____

_____

_____

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[48] Indicate the title of the agreement, such as "Concerning the Sharing of Maritime Information" etc.

INTRODUCTION

The Introduction outlines the reasons for the agreement. This is a good place for historical background. For example: "Countries A and B have enjoyed a long history of cooperation on security matters and this agreement furthers those goals…"

SECTION ONE

DEFINITIONS

1-1   It is wise practice to define precisely the meaning of any words or phrases which may be unique to the subject matter of the agreement or which may be used in a unique manner within the agreement. The more common the term, the greater the need to define its precise meaning for purposes of the MOU. For example: Define maritime security in detail. It may be helpful to define the phrase in terms of what it is not. For example, does maritime security include maritime safety? If not, say so.

1-2   This is also the place to describe acronyms.

SECTION TWO

PURPOSE

2-1   The purpose of this data sharing agreement is …

Considerations:
- This section should flow naturally from the background information contained in the Introduction. It describes broadly and in general terms what the document is designed to achieve.
- If the Agreement is between nations, this would be a good spot to list the specific entities within the nation that will be involved in information sharing.

SECTION THREE

SCOPE

3-1   Define any limitations of the commitments so that the agreement cannot be misunderstood. This ensures that the document cannot be interpreted to apply to a situation that was not intended. This section frequently contains negative statements specifically identifying those areas which are not to be covered.

Considerations:

- Specifically define the geographical and/or functional area to be covered.

- Specify what type of information will not be covered. For example, if you do not intend to disclose classified or personal information, state it here.

SECTION FOUR

APPLICABLE DOCUMENTS

4-1   If the parties agree that certain documents shall apply, they should be described here.

SECTION FIVE

RESPONSIBILITIES

5-1   Every agreement requires that each of the parties undertakes to do something either in support of the common purpose, or in exchange for something that is to be undertaken by another party/participant. Several provisions may be required to identify exactly what undertakings are being made by each signatory.

Considerations:

- This section should cover the rights of each state as well as duties of each state.

- Discuss the various types of information that will be shared and any limitations on further dissemination of that information.

- Address the frequency and duration of information exchanged. Is this a continuing obligation, or on an as-needed or requested basis?

- Describe the security measures that will be taken to ensure the protection and privacy of data that is shared, particularly when commercial and personal information is involved. Recommend a provision that states: "Neither party shall use the information provided under this Agreement for any purpose other than that set out in the Agreement."

- Include the methods for transfer of and sharing of data. It is safer to "push" information than to "pull" information. The former offers better control and should be the preferred method of transfer.

- If commercial, proprietary, or personal information is to be shared, include provisions describing what specific information is to be shared and how it will be safeguarded and eventually purged from any systems on which it is stored.

- Advocate for consent of, and notice to, those whose information will be shared.

SECTION SIX
FINANCIAL PROVISIONS

6-1   If expenses will be involved, this section should detail who is responsible for them. Financial provisions must comply with the law and regulations of the parties involved.

SECTION SEVEN
LEGAL CONSIDERATIONS

7.1   The Legal Advisor should include legal authorities and any considerations raised by the Agreement, including specific provisions of law that apply.

SECTION EIGHT
COMMENCEMENT AND DURATION

8-1   It is important that there is no misunderstanding as to the day on which the responsibilities specified in the document begin. In most cases, this will be either the date of last signature, upon final notification of completion of ratification procedures by the parties/participants, or on the last day of an agreed period (e.g. 30 days) after these actions have been completed.

8-2   It is also important to clearly establish the length of the commitment. For example: "This MOU shall continue in force for a period of 5 years, but may be extended for further periods of ___ years if the parties should mutually agree to do so."

SECTION NINE
MODIFICATION AND DISPUTES

9-1   One or both parties may wish to modify the document at some time in the future. A procedure for any proposed modifications should be included.

9-2   The parties should anticipate the possibility that at some stage during the course of the commitment, they may disagree on how a provision should be interpreted. Where a disagreement cannot be resolved informally between the parties, the matter must be determined in accordance with this provision. This provision must specifically preclude the jurisdiction of any court of law, national or international, and should identify the appropriate negotiation authority and process.

SECTION TEN

TERMINATION

10-1 Every agreement should contain a provision identifying the procedure and consequences for premature termination. Where appropriate, cost considerations will be addressed so that there can be no doubt as to what costs will be borne by the party seeking to bring the commitment to an end before the moment identified in the provision dealing with duration.

SIGNATURE BLOCKS

 A signature block is to be prepared for each of the parties.

ANNEXES

Any appropriate attachments should be included as an annex. For example:

Sample Annex A   Detailed list of the information requirements. Use this Annex as a menu from which to choose data that will be shared.

Sample Annex B   Technological Requirements for Data Transfer

Sample Annex A

A. INFORMATION ABOUT NATIONAL MARITIME SURVEILLANCE SENSORS

1. Positional information of land-based (static) <u>AIS sensors</u> including latitude/longitude/height (information required for range prediction tools)

2. Positional information of land-based (static) <u>LRIT sensors</u> including latitude/longitude/height

3. Positional information of land-based (static) <u>radar sensors</u> including latitude/longitude/height

4. Positional information of other land-based (static) sensors: <u>electro-optical and acoustical</u> including their latitude/longitude/height

5. Type and orbital information of <u>space-based</u> sensors used for MSA

B. DATA ABOUT MARITIME VESSELS ROUTINELY DETECTED BY SENSORS IN SECTION A ABOVE

1. Ship identity (name and registry details)

2. Location (position, course, speed, and time)

3. Reporting command, source quality indication (i.e. position accuracy, timestamp accuracy, level of confidence in the source, etc.), and technical data

C. REFERENCE INFORMATION ABOUT VESSELS AS ROUTINELY DETECTED BY SENSORS IN SECTION A ABOVE

1. Ownership structure and relationships between companies, registry information

2. Imagery of the ship

3. Cargo information including risk classification

D. SHIPS INVOLVED IN MARITIME EVENTS (INCLUDING EVENTS INVOLVING THEIR CARGO OR CREW/OWNERS)

1. Any incidents, violations, detainments, and inspections

2. Suspected illegal activities

3. Company owner and operator of the ship involved

4. Master of the ship involved

5. Names and nationalities of crew members involved

6. Cargo involved: origin, destination, owner

7. Any additional information gained about the vessel (i.e. by inspection or boarding)

E. INFORMATION ABOUT NATIONAL MARITIME ASSETS

1. Deployment schedules of national assets

2. Routine patrol areas of national assets

F. INFORMATION ABOUT NATIONAL MARITIME AREAS OF FOCUS

1. Fishing areas, including seasonal openings and closings

2. Exclusion zones

3. Anchorage areas

4. Replenishment areas

5. Oilrigs

6. Ship routes and Vessel Traffic Surveillance (VTS) areas

G. INFORMATION ABOUT AND FROM NATIONAL MARITIME PORTS

1. Port characteristics including maximum vessel length and depth, SOLAS ISPS compliance, and a point of contact for port security

2. Facilities in place, i.e. tugs, customs, police, shipping agents, cargo consignees

3. Running list of vessels in port and at anchor

4. Running list of vessels scheduled

5. Cargo information, i.e. customs in/out clearance and general description by IMO codes from the Cargo Manifest, evidence of related Bill of Lading, evidence of any Charter Party of the vessel

6. Historical data gathered by port authorities

H. INFORMATION ABOUT SHIPPING COMPANIES

1. Contact information for beneficial owner, commercial operator, and registered owner. Information regarding those responsible for compliance with IMO SOLAS conventions

2. Information regarding incidents and violations, including those placed on Black/Grey lists

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Annex D – Experimentation Analysis Results

The Enterprise Implementation Proposal and MSR Manual is the product of a yearlong solution development and experimentation campaign.

- The central idea of the MSR Concept was validated by a panel of maritime security experts in December 2011.

- In June 2012, the three parts of the Enterprise Implementation Proposal and MSR Manual were validated in a second experiment conducted as a scenario-based assessment game.

- Participants for these experiments represented a wide variety of organizations from the Maritime Community of Interest, including experts in: Commercial Maritime Interests, Coast Guard Operations, Law Enforcement, Maritime Policy, International Law, Maritime Security Regime Operations, Intelligence, Military Operations, Commercial Shipping, National Governments, Intelligence and Academia.

- Subject matter experts for both experiments came from the countries of Belgium, Canada, Denmark, Finland, France, Germany, India, Italy, Liberia, Netherlands, Norway, Poland, Romania, Singapore, Spain, Sweden, Switzerland, Tunisia, the United Kingdom and the United States.

The December 2011 experiment was conducted as an expert seminar to validate the gap analysis, central idea and the guiding principles. This provided the framework for the refinement of the concept and the base for the development of the Manual.

In June 2012, the core idea of having an Enterprise as a method for cooperation, coordination and information sharing between MSRs (Part 1, MSR Enterprise Formation) was accepted. Furthermore, the subject matter experts found that having the Global Enterprise available to assist the MSRs members with lessons learned and information (Part 2, MSR Formation, and Part 3, MSR Enhancement / Sustainment) was beneficial.

The experts recommended the following insights incorporated in the MSR Manual:
- Present the proposed process as descriptive, rather than prescriptive guidance, with the MSR members encouraged to accomplish the important steps in an iterative cycle tailored to the unique situation in their region.

- Include a bottom-up approach in the implementation of the Enterprise.

- Incorporate the "supply chain" terminology that is in use and well understood by various global industries and organizations.

- Provide a more detailed discussion of how the Enterprise can assist in MSR Formation and MSR Enhancement / Sustainment.

- Discuss more completely how building trust (and confidence) could be achieved and not to ignore the personal process inherent in building trust in favor of technical solutions.

- Provide a more detailed explanation of interdomain issues because they are of great importance to all parts of the document.

In general, the experts found both the ideas and the guidance presented in the documents to be relevant and sound. They provided several important suggestions which were incorporated in the final versions of the documents. They felt the implementation of the key ideas would have a positive impact in addressing current and future maritime access challenges. Several experts offered to assist in the transition efforts for the proposed solutions.