World Maritime Day 2023

WEBINAR

REPORT

28 September, 2023 | 1600hrs

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Executive Summary

The report outlines the key highlights of the Maritime Research Centre's (MRC) webinar conducted on World Maritime Day 2023. It commences by acknowledging India's maritime significance, underscored by its extensive coastline and the Sagarmala project's efforts to modernize ports. The report underscores India's transformation into a maritime nation and its strategic emphasis on maritime capacity development and sustainability.

The proposal details the objectives of the World Maritime Day webinar, focusing on aspects such as shipping safety, maritime security, and marine environmental conservation. The MRC's dedication to advancing ocean knowledge and fostering cross-sector collaboration is underscored. The report introduces the prominent participants and guests, including Rear Admiral Amit Vikram and Mr. Anis Pankhania.

Significant outcomes from the event are summarized, with a notable emphasis on the Underwater Domain Awareness (UDA) Framework. The UDA framework is designed to improve understanding of the undersea domain, encompassing security, resource exploration, conservation, and commercial activities. The report highlights the framework's horizontal and vertical constructs, emphasizing the comprehensive nature of underwater awareness.

Enclosure 2 provides a structured overview of the webinar, detailing the sequence of presentations and the contributions of notable speakers, including Dr. Arnab Das, J. Cathrine, Divya Rai, Deepak Kumar, Romit Kaware, Khwahish, and Shlok Nemani.

Enclosure 3 offers succinct summaries of each fellow's presentation during the webinar, covering topics like marine spatial planning, safeguarding the Indian Ocean, climate change's impact on oceans, sediment management in the Indian Ocean region, the role of local communities in biosphere reserves, and digital transformation in aquaculture.

The report includes insightful remarks from distinguished guests who commend the MRC's initiatives and emphasize the importance of digital transformation, innovation, and collaboration in addressing ocean and underwater domain awareness. Rear Admiral Amit Vikram highlights Marpol's significance in addressing marine pollution and the critical role of maritime trade and key trade routes in global commerce. Shridhar Prabhuraman, MRC's Deputy Manager, extends gratitude to all participants for their valuable contributions to the webinar.

In summary, the report provides a comprehensive overview of the World Maritime Day webinar, showcasing the vital themes, discussions, and outcomes of this event organized by the Maritime Research Centre.

Background

About the Maritime Industry in India

India's maritime geography is rich, it has a 7,517 km-long coastline, where lie nine coastal states that are home to several ports that handle some 1,400 million tonnes of cargo every year. India being peninsular, its maritime linkages have historically involved trade, religion, and culture; these early associations, however, were severed over time. In more recent years, since 2014, the focus on maritime capacity development and outreach has grown manifold with national policies being dedicated to the development of the maritime sector.

Approximately 95% of India's merchandise trade is done through seaports. The Government of India planned to modernize the country's ports through a project called Sagarmala. It is the flagship programme of the Union Ministry of Shipping and Waterways to promote and develop ports in the country by harnessing India's 7500 km-long coastline and potentially navigable waterways. Sagarmala is considered to be a game-changer for the maritime sector due to its focus on port-led development.

India is emerging as a maritime nation in the world

In the 21st century, India is emerging as a maritime nation with a significant strategic push for maritime capacity and capability building. There has been a significant shift towards the maritime domain in the areas of strategic security and sustainable growth, and the government is placing a high priority on the blue economy and maritime security. Therefore, India stands at the brink of a remarkable transformation today, with both global and domestic cues highly favorable and we as a nation seem to be in a sweet spot. The country is perfectly poised to embark on a new phase of growth, owing to favorable political, economic, demographic, socio-cultural, and other circumstances.

Proposal

On the occasion of World Maritime Day 2023, the Maritime Research Centre (MRC) intends to organize a webinar where the participants will discuss the importance of enhancing the Maritime Domain in today's world. It is worth noting that the 'World Maritime Day' is a global observance day, created by the United Nations (UN), via the International Maritime Organization (IMO). The participants will also highlight the maritime industry's contribution to the world economy, especially in shipping. Some of the key objectives of the webinar are to emphasize the significance of shipping safety, maritime security, and the marine environment. The maritime sector, which includes shipping, ports, and the people that operate them, has to play a significant role in helping the Member States to improve conditions for increased employment, prosperity, and stability ashore by promoting trade by sea; uplifting the port and maritime sector as wealth creators both on land and, through developing a sustainable blue economy, at sea.

MRC is committed to advancing knowledge and understanding of the ocean. Through its research initiatives, MRC aims to address the challenges facing marine ecosystems, promote sustainable practices, and contribute to evidence-based decision-making for ocean management. MRC's recent webinar successfully brought together experts from the policy and technology fields, fostering an invaluable exchange of knowledge and insights on the crucial topic of marine resource management. By gathering policymakers and technology specialists in the same forum, the event created a unique platform for cross-sector collaboration and dialogue. Participants engaged in fruitful discussions, exploring innovative approaches and solutions to address the

challenges associated with the sustainable utilization and conservation of marine resources. The webinar facilitated a deeper understanding of the complex interplay between policy frameworks and technological advancements, highlighting the need for integrated strategies that harmonize environmental conservation, socio-economic development, and technological innovation.

Participations

The participants and guests for the webinar came from diverse field, including:

- **Rear Admiral Amit Vikram (Retd)** - Campus Director, D.Y. Patil Aakurdi Campus

- **Shri Anis Pankhania** – Senior Representative from Capgemini Technology Services India Ltd

- **Shri Praful Talera** – MRC Adviser on Blue Economy

- **Dr (Cdr) Arnab Das** – Founder and Director of Maritime Research Center, Pune

- **Mr. Shridhar Prabhuraman** – MRC Deputy Manager

- **J Cathrine** – Research and Publication Head

- **Ms. Nishtha Vishwakarma** - Communication and Advocacy Lead in MRC

- **Divya Rai** – Handling Geopolitics and International Relations

- **Deepak Kumar** – MRC Research Intern

- **Romit Kaware** – MRC Research Fellow

- **Khwahish** – MRC Research Fellow

- **Shlok Nemani** - MRC Research Fellow

<u>Outcomes</u>

Structure of the report:

- Introduction of UDA Framework: The report introduces the concept of Underwater Domain Awareness (UDA) and its multifaceted significance, spanning from security and resource exploration to conservation and commercial activities.

- Horizontal and Vertical Constructs of UDA: It outlines the horizontal and vertical constructs of the UDA framework, emphasizing technology, infrastructure, and acoustic capacity, and the hierarchy involved in establishing a comprehensive UDA.

- Webinar Structure: A structured overview of the webinar is provided, detailing the sequence of presentations, including welcome addresses and remarks by notable guests.

- Fellows' Presentations: Detailed summaries of each fellow's presentation are presented, covering topics such as marine spatial planning, safeguarding the Indian Ocean, climate change's impact on oceans, sediment management, local community involvement in biosphere reserves, and digital transformation in aquaculture.

- Remarks by Distinguished Guests: The report includes insightful remarks by distinguished guests, commending the MRC's initiatives and emphasizing the importance of digital transformation, innovation, and collaboration in addressing ocean and underwater domain awareness.

Key Outcomes:

- UDA Framework: The UDA Framework is a key focus, with an emphasis on the need for precise data to support various economic, environmental, and military endeavors. The framework is discussed in both horizontal and vertical constructs, detailing the technology, infrastructure, and acoustic capabilities required for comprehensive UDA.

- Webinar Structure: The report outlines the structure of the webinar, detailing the sequence of presentations, and contributions from MRC fellows, including their respective topics and roles.

- Fellows' Presentations: Summaries of fellows' presentations are provided, with highlights on the importance of topics such as marine spatial planning, safeguarding the Indian Ocean, climate change's impact on oceans, sediment management, the role of local communities in biosphere reserves, and digital transformation in aquaculture.

- Remarks by Distinguished Guests: Notable guests' remarks are highlighted, acknowledging the importance of digital transformation, recognizing the benefits of advanced technologies, and underscoring the significance of initiatives like Marpol and the role of maritime trade in the global economy.

Underwater Domain Awareness (UDA) Framework

The concept of Underwater Domain Awareness (UDA) in a more specific sense will translate to our eagerness to know what is happening in the undersea realm of our maritime areas. This keenness for undersea awareness from the security perspective, means defending our Sea Lines of Communication (SLOC), coastal waters and varied maritime assets against the proliferation of submarines and mine capabilities intended to limit the access to the seas and littoral waters. However, just the military requirement may not be the only motivation to generate undersea domain awareness. The earth's undersea geophysical activities have a lot of relevance to the wellbeing of the human kind and monitoring of such activities could provide vital clues to minimize the impact of devastating natural calamities. The commercial activities in the undersea realm need precise inputs on the availability of resources to be able to explore and exploit them for economic gains effectively and efficiently. The regulators on the other hand need to know the pattern of exploitation to manage a sustainable plan. With so much of activities, commercial and military, there is significant impact on the environment. Any conservation initiative needs to precisely estimate the habitat degradation and species vulnerability caused by these activities and assess the ecosystem status. The scientific and the research community need to engage and continuously update our knowledge and access of the multiple aspects of the undersea domain.

Fig. 1, presents a comprehensive perspective of the UDA. The underlying requirement for all the stakeholders is to know the developments in the undersea domain, make sense out of these developments and then respond effectively and efficiently to them before they take shape of an event.
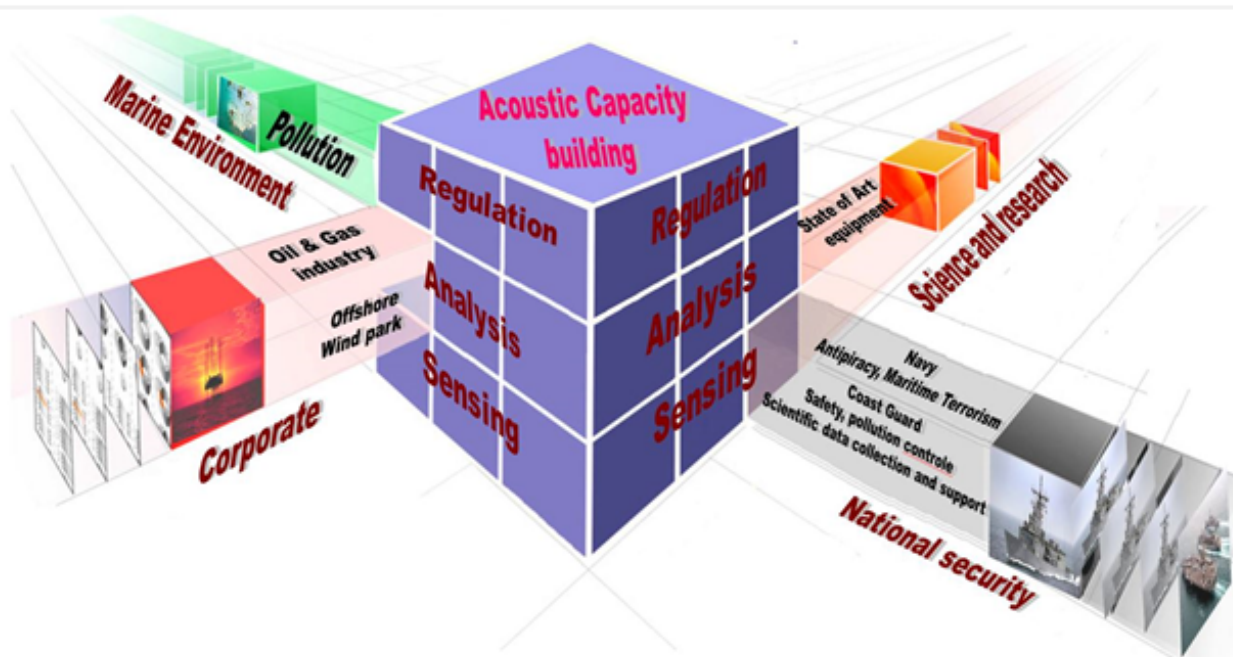
Fig. 1 Comprehensive Perspective of Undersea Domain Awareness

The UDA on a comprehensive scale needs to be understood in its horizontal and vertical construct. The horizontal construct would be the resource availability in terms of technology, infrastructure, capability, and capacity specific to the stakeholders or otherwise. The stakeholders represented by the four faces of the cube will have their specific requirements, however the core will remain the acoustic capacity and capability. The vertical construct is the hierarchy of establishing a comprehensive UDA. The first level or the ground level would be the sensing of the undersea domain for threats, resources, and activities. The second level would be making sense of the data generated to plan security strategies, conservation plans and resource utilization plans. The next level would be to formulate and monitor regulatory framework at the local, national, and global level. The figure above gives a comprehensive way forward for the stakeholders to engage and interact. The individual cubes represent specific aspects that need to be addressed. The User-Academia Industry partnership can be seamlessly formulated based on the user requirement, academic inputs and the industry interface represented by the specific cube. It will enable more focused approach and well-defined interactive framework. Given the appropriate impetus, the UDA framework can address multiple challenges being faced by the nation today. Meaningful engagement of Young India for Nation Building, probably is the most critical aspect that deserves attention. Multi-disciplinary and multi-functional entities can interact and contribute to seamlessly synergize their efforts towards a larger goal. The UDA Framework as proposed above has been formulated jointly by the Maritime Research Centre (MRC), Pune and M/S NirDhwani Technology Pvt Ltd (NDT). The focus is on all the three aspects namely Policy, Technology & Innovation and Human Resource Development. More details are available in the MRC website https://mrc.foundationforuda.in/.

Webinar Structure

4:00 pm- 4:05 pm -   Welcome address by Dr (Cdr) Arnab Das, Founder and Director of MRC

4:05 pm- 4:15 pm -   Opening remarks by Rear Adm Amit Vikram (Retd), DY Patil Group L&T Representative

4:15 pm - 4:30 pm -   Presentation by J. Catherine, Head- Research and Publication on 'Marine Spatial Planning'

4:30 pm- 4:45 pm -   Presentation by Divya Rai, MRC Fellow on 'Safeguarding the Indian Ocean: Navigating Multilateral Partnership for Underwater Domain Awareness'

4: 45 pm- 5:00 pm -   Presentation by Deepak Kumar, MRC Intern on 'Role of UDA in mitigating effects Climate Change on Oceans'

5:00 pm-5:15 pm -   Presentation by Romit Kaware, MRC Fellow on 'Sediment Management in the Indian Ocean Region (IOR)'

5:15 pm- 5:30 pm -   Presentation by Khwahish, MRC Fellow on 'Importance of local community in Biosphere Reserves'

5: 30 pm- 5: 45 pm -   Presentation by Shlok Nemani, MRC Fellow on 'Digital Transformation in Aquaculture'

5: 45 pm- 5: 55 pm -   Comments by other dignitaries

5: 55 pm- 6: 10 pm -   Closing remarks by Anis Pankhania, Senior Representative from Capgemini Technologies Services Limited

6: 10 pm- 6: 15 pm -   Vote of Thanks by Shridhar, MRC Representative

Fellows Presentation

J Cathrine

J Cathrine discussed the concept of marine spatial planning (MSP) and its importance in achieving blue economic goals and sustainable ocean management in India and the Indian Ocean region. She highlighted the ecological significance of the ocean, the challenges it faces, including overfishing, pollution, and climate change. She also emphasizes the need for MSP to prevent conflicts and manage ocean resources. The presentation also covers global developments in MSP, the steps involved in MSP implementation, and its adaptive nature. The Indian Ocean region, with its diverse population and resources, is a critical area for MSP, and regional collaboration is encouraged through organizations like IORA. India has been taking steps to develop MSP, including collaborations with Norway and the G20's focus on the blue economy. MSP aims to optimize economic productivity from ocean-based industries while ensuring sustainability.

Divya Rai

In her presentation, Divya Rai discusses the importance of the Indian Ocean region, highlighting its significance in global trade, as well as its abundant natural resources. She emphasizes the various underwater threats facing the region, including climate change, overfishing, pollution, and coral bleaching. These challenges necessitate international cooperation, sustainable fisheries management, and the development of marine-protected areas.

She introduces the Underwater Domain Awareness (UDA) framework proposed by the MRC, which aims to address the policy and technology needs for acoustic capability enhancement. This framework is essential for effective capacity and capability development in the maritime domain, aligning with the vision of "security and growth for all in the region."

She also focuses on the importance of safeguarding the Indian Ocean for small island developing states (SIDs). These SIDs play a significant role in the economic, environmental, and geopolitical landscape of the region. They offer access to valuable resources and serve as crucial way stations for naval and commercial vessels, affecting global trade and security. Protecting and supporting these SIDs is essential for ensuring regional stability and sustainability.

Deepak Kumar

Deepak Kumar introduces his work on the impact of climate change on oceans. He discusses the significance of the oceans in storing heat, freshwater, and carbon and how they are affected by climate change. He highlights issues such as ocean warming, oxygen depletion, and acidification, as well as challenges in data coherence. He emphasizes the alarming rates of change in ocean conditions, particularly in terms of ocean acidification. He also touches on sea level changes and their impact, focusing on tropical cyclones in the Indian Ocean region. The Indian Ocean is a hotspot for tropical cyclones, and he distinguishes between cyclones and severe cyclones based on their location. Overall, his research delves into the various consequences of climate change on oceanic systems and highlights the need for comprehensive study and policy interventions.

Romit Kaware

Romit discusses sediment management in the Indian Ocean Region, highlighting the need for a comprehensive framework that encompasses policy and technological interventions. Sediment management includes activities like sediment transport studies, understanding sediment texture, and their applications. He explains the importance of sediment transport studies, which impact coastal zones, navigation, aquaculture, and more. The unique characteristics of the Indian Ocean Region require a tailored approach. He also emphasizes the significance of sediment texture for various applications, such as sediment-bearing pressure, the benthic ecosystem, and abiotic element detection. Acoustics play a key role in the proposed framework, aiding in data collection and capacity development. The framework involves policy and technological interventions, a source-path-receiver model, and a two-share module for decision-making in sediment management. The use of acoustic systems and digital modeling techniques is also discussed for efficient sediment management.

Khawish

Khawish, with a background in international relations, economics, and anthropology, discusses the importance of biosphere reserves with a focus on the Sindhudurg area in India. She explains that biosphere reserves aim to integrate sustainable use with biodiversity promotion, emphasizing their value as local solutions to global issues. The methodology for her research is qualitative, based on secondary data sources, literature reviews, and a case study of Sindhudurg. Sindhudurg is described as a coastal district with rich biodiversity, including marine life, coral reefs, mangroves, and diverse avian species, but it faces threats due to climate change and population pressure. She suggests that the implementation of a biosphere reserve in Sindhudurg can help address conservation challenges. She highlights the social, political, social-cultural, and socio-economic importance of biosphere reserves, emphasizing their role in involving local communities, sustainable solutions, and cultural preservation. The findings suggest that biosphere reserves should focus on conservation, research, monitoring, and education. She also stresses the significance of traditional knowledge and wisdom in the sustainability of biosphere reserves. She recommends that policy interventions for biosphere reserves should involve local communities and consider the context and livelihoods of the people in the area.

Shlok Nemani

In his presentation, Shlok explores the concept of digital transformation within the maritime industry, particularly focusing on the blue economy, marine planning, and disaster management. They emphasize the crucial role of APY analysis (Production, Area, and Yield) in this transformation. He introduces the UDA framework, which aims to pool resources and promote research and technology to support various aspects of the maritime industry, such as the blue economy. Digital transformation is presented to generate employment opportunities, contribute to economic growth, and enhance resource utilization. Key objectives of digital transformation include data processing, process automation, remote monitoring, and predictive management, with a focus on advanced data analytics and IoT solutions for the blue economy. The potential for growth, the need for innovation, opportunities in seafood demand, and challenges like climate change and disease outbreaks are discussed in the context of aquaculture. APY analysis is highlighted for its significance in providing valuable insights to policymakers, farmers, the government, and analysts, ultimately aiding in optimizing resource usage and productivity. He also underscores the importance of IoT and ML technologies for yield enhancement and the creation of yield maps to evaluate farmers' performance.

Remarks by Guests

Dr. (Cdr) Arnab Das
Founder and Director, Maritime Research Centre, Pune

He acknowledges World Maritime Day and the importance of promoting events related to the underwater domain. He emphasizes the significance of digital transformation in underwater space and its often-overlooked importance. The Maritime Research Center (MRC) operates based on five pillars: research, skilling, academic courses, innovation, and policy. The fellows presenting during the event cover diverse disciplines, highlighting the need for a multidisciplinary approach. The distinguished guests include Rear Admiral Amit Vikram, representing academia, and Mr. Anis Pankhania from the IT industry. Their participation underscores the importance of collaboration and engagement in promoting digital transformation and awareness in the maritime domain.

Shri Anis Pankhania
Senior Representative of Capgemini Technology Service India Ltd

Shri Anis Pankhania acknowledges the importance of digital transformation in addressing challenges related to ocean and underwater domain awareness. He highlight the benefits of adopting new technologies and moving away from legacy infrastructure, emphasizing improved sustainability. The challenges mentioned include cybersecurity risks, budget constraints, environmental regulations, technology choices, skill shortages, and intellectual property issues.

He commends the MRC team for their insightful presentations on World Maritime Day and recognizes the need for a clear vision and urgency in digital transformation. They discuss the positive impact of digital platforms in various sectors and how these advancements can enhance safety, security, sustainability, efficiency, and productivity. He also mentions AI, machine learning, IoT, cloud, and advanced technologies like GenAI as crucial tools for ocean and underwater data analysis, which can contribute to environmental sustainability and national security.

Rear Admiral Amit Vikram
Campus Director, D.Y.Patil Aakurdi Campus

Rear Admiral Amit Vikram commends the MRC's initiative in maritime domain awareness and expresses support for their efforts, particularly in engaging students in their mission. He highlights the significance of World Maritime Day, also known as Anant Chaturdashi, and emphasizes the importance of Marpol (the International Convention for the Prevention of Pollution from Ships) in addressing marine pollution.

He elaborates on the history and importance of Marpol, which was adopted in 1983 and is crucial for protecting the marine environment. He discusses the role of flag states and port states in enforcing regulations. The focus for this year's World Maritime Day is on reducing plastic litter, promoting clean marine fuel production, and addressing carbon footprints in the maritime domain in alignment with COP 27 and 28 goals.

He also underscores the global significance of maritime trade, emphasizing that over 80% of global trade by volume and 70% by value is transported by sea. They highlight the efficiency of containerization in moving goods and the historical relevance of key trade routes, such as the Suez Canal, Panama Canal, and strategic chokepoints like the Strait of Hormuz and the Strait of Malacca. They briefly touch on ancient civilizations using seafaring trade routes, including the Indus Valley civilization, and reference historical texts that mention maritime trade.

Shridhar Prabhuraman
Deputy Manager at MRC

Shridhar Prabhuraman expresses gratitude to all participants for making the webinar a success. He reflects on the diverse presentations that covered marine spatial planning, geopolitics, sediment management, biosphere reserves, and aquaculture, showcasing the complexity and interconnectedness of the maritime domain. The Indian Ocean is celebrated as a symbol of history, culture, and exploration. The webinar concludes by marking World Maritime Day with a deep appreciation for the ocean's significance.

Glimpses from the Webinar

Rear Admiral Amit Vikram (Retd)

Shri Anis Pankhania

Shri Praful Talera

Dr (Cdr) Arnab Das

Mr. Shridhar Prabhuraman

Ms. Nishtha Vishwakarma

MRC MARITIME RESEARCH CENTER
FOUNDATION FOR UNDERWATER DOMAIN AWARENESS

NIR DHWANI TECHNOLOGIES

WEBINAR ON

WORLD MARITIME DAY

ESTEEMED GUESTS

REAR ADMIRAL AMIT VIKRAM (RETD)
Campus Director,
D.Y. Patil Aakurdi Campus

SHRI ANIS PANKHANIA
Senior Representative from
Capgemini Technology Services India Ltd

SHRI PRAFUL TALERA
MRC Adviser on
Blue Economy

DR (CDR) ARNAB DAS
Founder & Director
Maritime Research Center, Pune

PRESENTATIONS BY

J. CATHRINE
Head
Research & Publication

DEEPAK KUMAR
MRC Research Intern

ROMIT KAWARE
MRC Research Fellow

KHWAHISH
MRC Research Fellow

SHLOK NEMANI
MRC Research Fellow

INDIA HAS A 7,517 KM-LONG COASTLINE

MARITIME INDUSTRY IN INDIA

RICH MARITIME HISTORY

APPROXIMATELY 95% OF INDIA'S MERCHANDISE TRADE IS DONE THROUGH SEAPORTS

1,400 MILLION TONNES OF CARGO EVERY YEAR

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