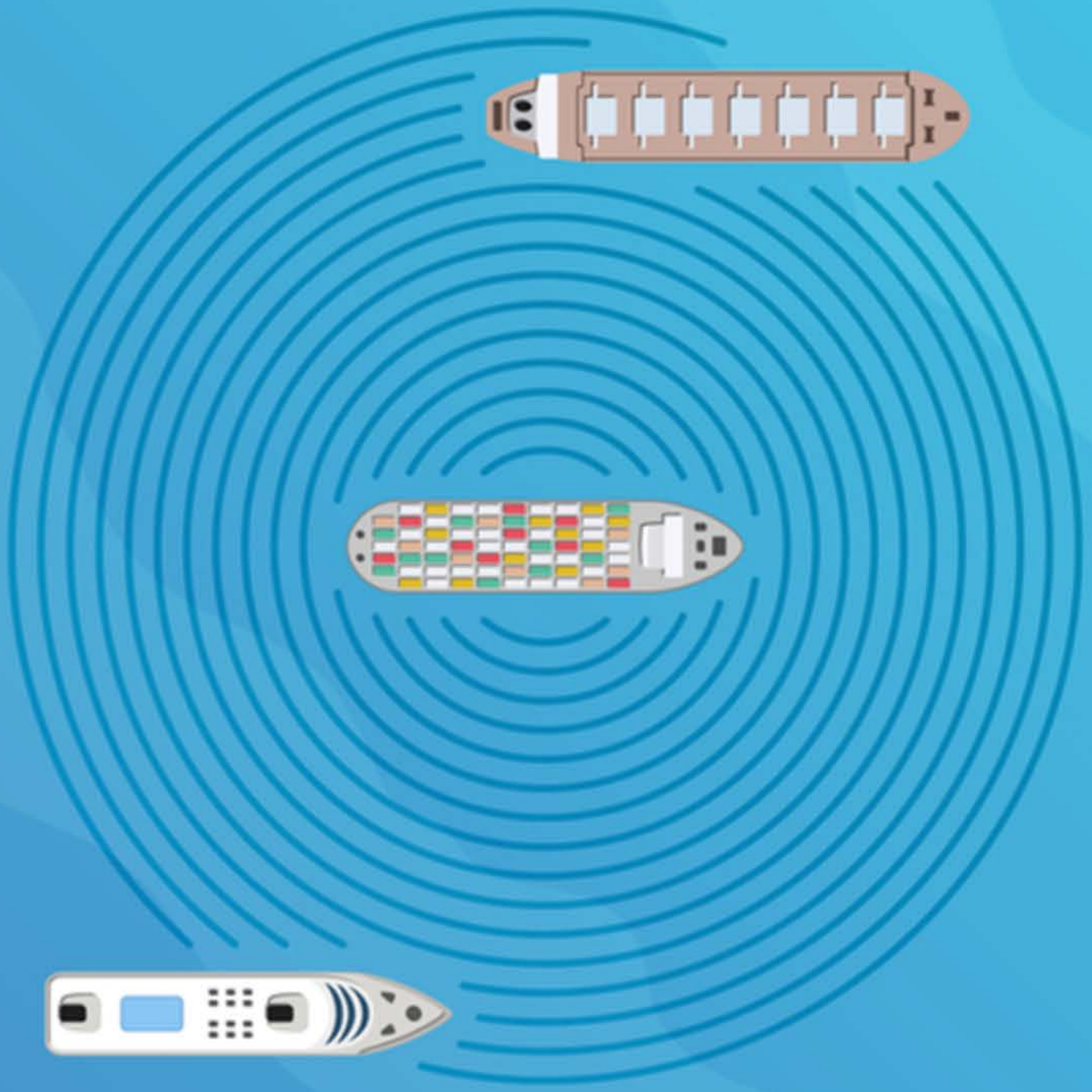


Autonomous Ships – Putting the Human in the Headlines

The Joint IMarEST Maritime Autonomous Surface Ships (MASS) Special Interest Group (SIG) and MASSPeople Working Group Report

September 2024

INSTITUTE OF MARINE Engineering, Science & Technology

MASSPeople

How and why are IMarEST and MASSPeople Collaborating?

This collaboration marks a pivotal moment in the commitment to fostering innovation within maritime transport, with a keen focus on ensuring current technology advancements benefit not just the industry, but society at large.

The heart of this collaboration lies in a shared vision: to champion a human-centric approach in the maritime sector. As the industry stands on the brink of a technological revolution, with automated and autonomous solutions promising to redefine maritime transport, there's a crucial need to ensure that these technologies are developed and implemented with the utmost consideration for safety, commercial viability, and environmental sustainability.

IMarEST's MASS SIG and MASSPeople have come together to tackle these challenges head-on. By pooling their collective expertise and resources, they aim to steer the conversation and actions towards solutions that prioritize human well-being, efficiency, and the protection of our marine ecosystems. This initiative is not just about leveraging new technologies for the sake of innovation; it's about making sure that these advancements serve a greater purpose—enhancing the maritime industry in a way that is inclusive, sustainable, and forward-thinking.

This collaboration is a call to action for stakeholders across the maritime industry to join forces in this noble endeavor. By embracing a human-centric approach to the development and implementation of automated and autonomous technologies, we can ensure the creation of maritime transport systems that are not only advanced but are also safe, commercially viable, and environmentally responsible. The partnership between MASSPeople and the IMarEST is a beacon of hope for the future of maritime transport, symbolising a united effort to navigate the challenges of tomorrow with wisdom, empathy, and innovation.

Foreword by IMarEST MASS SIG Chair – Neil Salter

Welcome to this joint IMarEST MASS SIG and MASSPeople Working Group Report.

There has been clear progress made at many levels regarding the acceptance and acknowledgement of the growing MASS sector. Many of these developments are not unique to MASS but serve to better prepare the maritime industry to accommodate the MASS sector in a way that improves safety and security for all mariners. We cannot afford to rest or be complacent, we must continue to engage in this process, to contribute to the ongoing discussion, to use our collective expert knowledge and experience to shape the maritime environment as best we can.

With that, I invite and encourage you to read our brief report. Where you have questions, I encourage you to challenge and contribute to the ongoing discussion by logging into IMarEST Connect and visiting our Connect page.

Foreword by MASSPeople Chair – Gordon Meadow

The MASSPeople working group contribution to knowledge is assisting the international community to safeguard progression in the technology-people partnership, underpinning the workforce's changing needs, and providing recommendations on new competency standards for consideration by the International Maritime Organisation. The group is focusing on the capabilities of operators, and other persons involved in the operation of Maritime Autonomous Surface Ship's / Maritime Autonomous Ship System's (MASS).

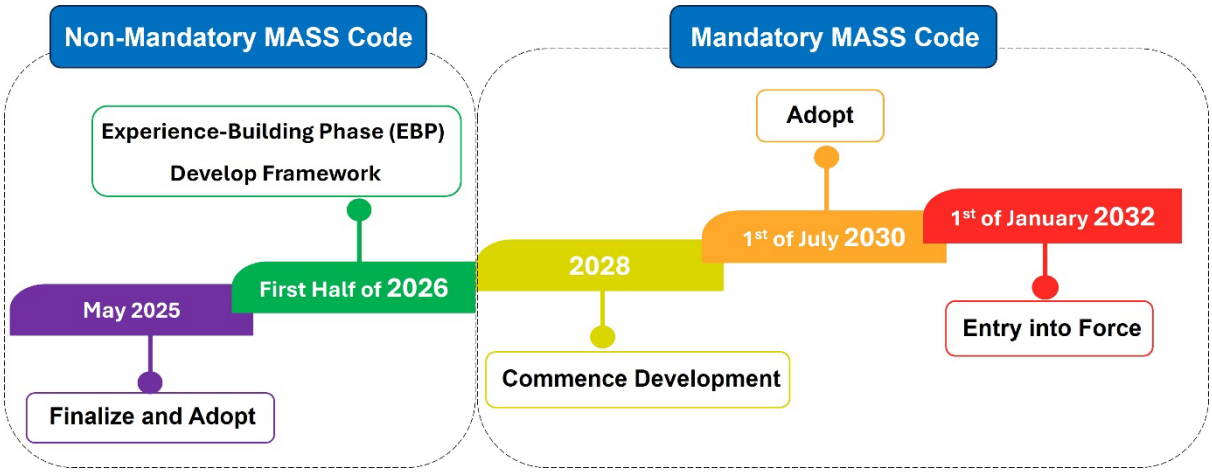
The MASSPeople working group work with IMarEST as an IMO NGO, and with the IMarEST's MASS Technical leads to review, support sponsorship of papers to the IMO. The most recent IMO submission was entitled '*Bridging Competency Gaps for MASS Operators in Alignment with the STCW Framework*' for consideration by the IMO's Intersessional Working Group on Maritime Autonomous Surface Ships [2nd Session], on 15th September 2023. The group are currently working on a new submission for early 2025 incorporating workforce behaviours (performance markers) into competency assessment in MASS.

IMarEST MASS SIG and MASSPeople Joint Update

IMO/(MSC)/ISWG/MASS (9th – 13th September 2024)

The Intersessional Working Group (ISWG) on Maritime Autonomous Surface Ships (MASS) (Maritime Safety Committee (MSC)/ISWG/MASS), chaired by Mr. Henrik Tunfors (Sweden), held its third session from 9th to 13th of September 2024 at the International Maritime Organization (IMO) in London. The Secretariat delivered a presentation to the group outlining the outcome of MSC 108 and MASS-JWG 3, summarising the information provided in document MSC/ISWG/MASS 3/2. The MASS Correspondence noted further progress made regarding the development of the draft MASS Code with the intent of submitting its report to MSC 110 taking into account the outcome of the Intersessional MASS Working Group as well as MSC 109 (as per Figure 1).

Figure 1: Revised Road Map for the development of a MASS Code agreed by the Committee.



The Institute of Marine Engineering, Science and Technology (IMarEST) delegation participated in the working group discussion. In attendance, IMarEST MASS SIG Member and MASSPeople Chair, Gordon Meadow CMarTech FIMarEST, Dr Lorenzo Casarosa - IMarEST Policy and Professional Engagement Manager, and Juan Dorje Palbar Misas - PhD Candidate in Maritime Cybersecurity. Also supporting the delegation were Kirsty Lynch, Jevon Philip Chan PhD and Dr Caitlin Bentley from MASSPeople. MASSPeople's current work is centred on the development of an IMO submission regarding the incorporation of behaviours into the assessment of both competency in MASS and the impact on system performance. This ongoing work is scheduled for release later in 2024.

Summary of ISWG Discussion (9th – 13th September 2024)

The following chapters were discussed by the group in consideration of part 3 of the draft IMO MASS Code:

- **Chapter 17 - Safety of Navigation:** The ISWG agreed upon both new functional requirements and associated Expected Performances (EPs). A great deal of focus was placed on ensuring availability of necessary data for an Autonomous Navigation Systems (ANS) and for systems used for remote navigation in a machine-readable format. In this regard ANS'S EPs for the contribution of safe navigation were stated for Voyage Planning, Situational Awareness, Collision and Grounding Avoidance, Route Execution and Monitoring and Override and fallback response.
- **Chapter 20 - Fire Protection, fire detection and fire extinction**: The ISWG agreed differentiation between Remote Operations Centre (ROC) and a vessel in fire response and preparedness. It was highlighted that means for fire detection should be provided in all spaces onboard with a fire risk, as well as using different detection sources so that the EP highlighted in a fire response could be fulfilled.
- **Chapter 23 Search and Rescue:** The ISWG reviewed the extent to which a MASS should be obliged to render assistance to persons in distress at sea in adopting a pragmatic approach and highlighted that a MASS should not be exempt from the requirements of SOLAS regulation V/33.
- **Chapter 28 - Emergency Response**: the ISWG considered the deletion of this chapter as operational elements are sufficiently covered in existing instruments.
- **Dissemination of the Hazard Identification (HAZID**) Tables were highlighted as essential to draft EP and functional requirements.
- The ISWG considered introducing a new chapter in the draft MASS Code addressing **delegation of Master's responsibilities** in the context of MASS.

Written by MASSPeople Research Associate, Juan Dorje Palbar Misas, PhD Candidate in Maritime Cybersecurity. Edited by Neil Salter, MASS SIG Chair and Gordon Meadow, MASSPeople Chair.

If you would like to find out more information on how to join IMarEST as a member, please visit us at www.imarest.org/group/maritime-autonomous-surface-ships.html.