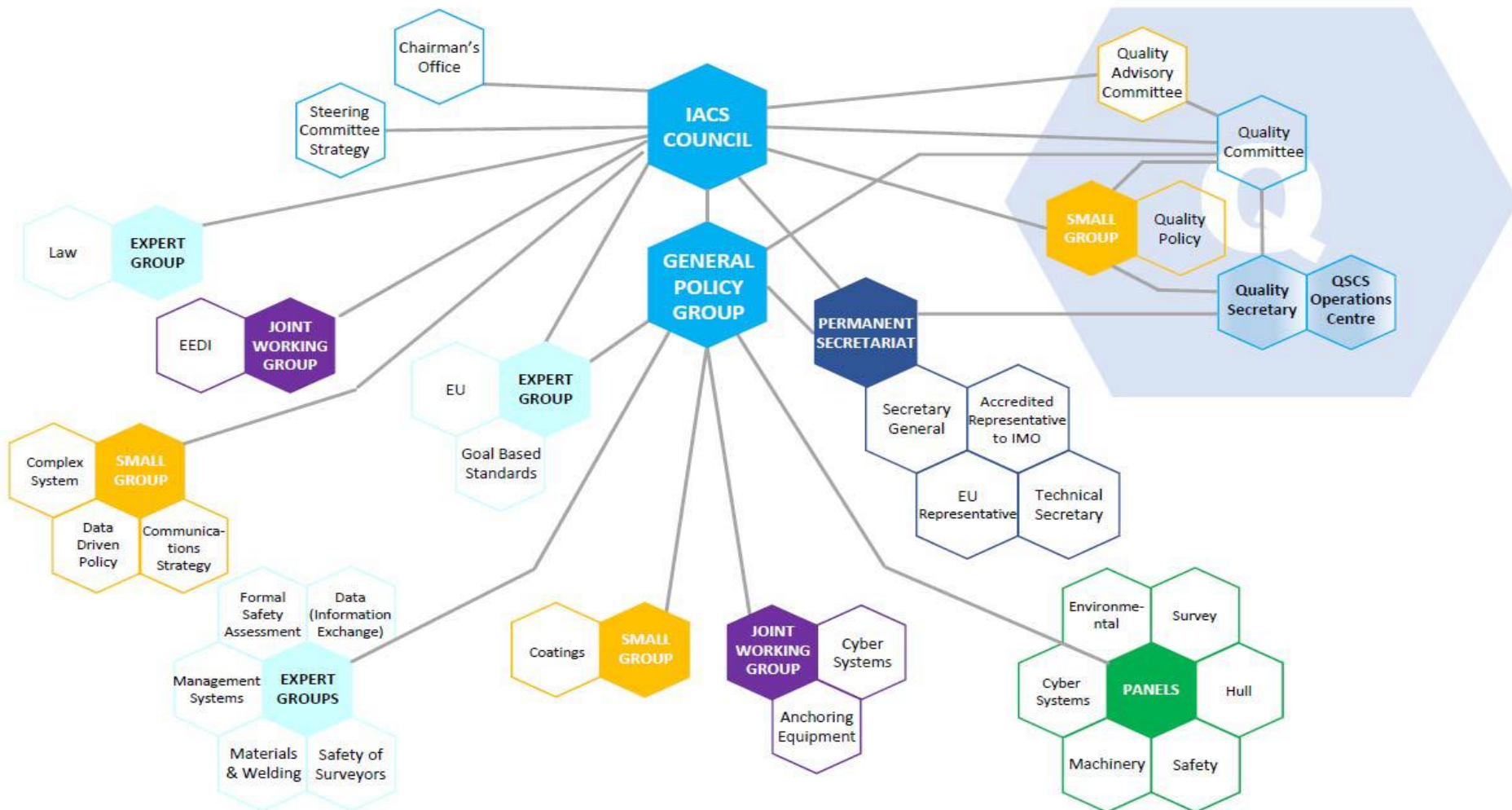


IACS high level Position on MASS

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Maritime Autonomous Surface Ships (MASS) introduce a need for a new level of technical requirement development in shipping.

The correct deployment of technology may enhance safety, increase environmental protection and optimise ship design and overall performance of shipping.

IACS will demonstrate its capability in various discussion forums supported by its own technical contribution and will be a trusted partner of the regulators and industry alike.

IACS will identify gaps and emerging areas of regulation and look to demonstrate competence through the development of robust requirements and processes.

IMO has started its work on the “Regulatory Scoping Exercise” at the Maritime Safety Committee (MSC). The Legal Committee (LEG), Marine Environment Protection Committee (MEPC) and Facilitation Committee (FAL) also embarked on the discussion on “unmanned” autonomous ships. The IMO is also initiating its discussion at MSC on development of Guidelines on MASS trials.

A new task for development of terminology related to automation of Maritime Autonomous Surface Ships (MASS) has been launched in ISO/TC8/WG10 on Smart Shipping.

There are several other streams of work related to MASS where IACS could be invited, or should actively seek engagement.

IACS understands that RSE is not a forum for technical discussion but aims to establish a similar understanding of technology among IMO members.

- The first step of RSE (Assessment of IMO instruments on application to MASS) which started from February 2019, MSC 100 agreed that the work will be performed by Member States with the possibility of engagement of NGOs in supporting roles. IACS confirmed its engagement in the initial review and relevant technical discussion on SOLAS Chapter II-2 aiming to support Japan (the lead Member State).
- The second step of RSE (Analysis of the most appropriate way of addressing MASS operations) starting from September 2019 is considered to be more crucial.

IMO Work – Development of Guidelines on MASS trials

- This is the “real” test ground for the technology.
- IACS expects to derive vital safety information in relation to ship control and engineering systems, together with the results of risk assessment that will be shared by IMO members at subsequent sessions of the relevant Committees and Sub-committees

ISO Work – TC8/WG10 and others

- Work at ISO may be more pertinent to the Classification.
- IACS is to establish close liaison with ISO on this subject.
- IACS participate ISO project on MASS terminology on MASS and provide comments.
- IACS also participate EMSA working group on MASS.

Noting the importance of MASS related issues for shipping industry, IACS has included this agenda item in its strategic Action Plan:

- Review all IACS Resolutions and Recommendations with the aim at identifying and addressing possible requirements that may hinder technical development on Smart ships/intelligent ships/MASS, and monitor regulatory development in the area (2017-2018);
- Address possible requirements that may hinder
- technical development on Smart ships/intelligent ships/MASS, and contemplate a need to reform the existing IACS Resolution structure to accommodate Smart ships/intelligent ships/MASS and how to best complete such a reform process (2018-2019);

Internal review of all IACS Resolutions (2017)

- As a result of this review, 191 of IACS Resolutions (not including CSR) were identified as requiring a human presence on board ship (this is in line with the current international regulatory regime, taking human presence on board for granted). To bring it into context the total number of IACS resolutions are 408 (not including CSRs) this this means that 47% of IACS Resolutions (not including CSRs) were identified as requiring a human presences on board.
- As a first step review was aimed at identifying the barriers for the fully autonomous ships. Requirements which may hinder technical development of fully autonomous ships were mainly identified in IACS Resolutions related to machinery, electrical systems, safety systems, hull structures, and survey procedures.
- Identification of consequences for other degrees of autonomy is not yet initiated.

Pilot project for selected IACS Resolutions (2018)

- IACS pilot project was performed with the aim to attempt to modify the following IACS Resolutions to be applicable for the fully autonomous (self-navigating) ships:

UR S8 Bow doors and inner doors

UR F32 **Fire** detecting system for unattended machinery spaces

UR Z18 Periodical survey of machinery

UR M75 Ventilation of emergency generator rooms

- The purpose of the project was to reveal as many barriers as possible and to facilitate a discussion on priority and relevance of requirements for various levels of autonomy.

Basic principles for drafting new and revised IACS Resolutions (2018)

As a result of the IACS review, the following general principles for drafting IACS Resolutions were agreed to:

- avoid introducing new hindrances for MASS in new Resolutions.
- consider if hindrances for MASS can be reduced when amending existing IACS Resolutions.
- when drafting new Resolutions, or amending existing ones, consider to include a statement opening up for special consideration if more extensive automation than normal is suggested.
- consider carefully the need for new or amended IACS Resolutions that allow more extensive automation provisions.

Establishment of IACS ad hoc small group - Task Force/MASS (January 2019)

- TF/MASS established for technical support and advice to IACS Safety Panel and GPG with regard to IMO RSE on MASS.
- In particular, TF/MASS is tasked to:
 - Conduct RSE for SOLAS Ch.II-2 in collaboration with leading Member State, and develop draft IACS comments.
 - Review RSE results for other class related IMO instruments such as SOLAS Ch.II-1, etc. and develop draft IACS comments.
 - Review relevant papers and develop draft IACS position on MASS for use by the IACS bench at the ISWG meeting.

IACS leadership or participation in external meetings/activities:

- Tripartite 2017 (November 2017) – IACS presented a presentation “Intelligent ships: Concepts, rules and prospects”.
- IACS/Industry Technical Meeting before MSC 99 (May 2018) – IACS contributed to a brief/discussion with stakeholders regarding common terminology for levels of autonomy for ships.
- IACS participation in the IMO WG on Maritime Autonomous Surface Ships (MASS) established by MSC 99 (May 2018).
- IACS participation in the IMO Correspondence Group on a regulatory scoping exercise (RSE) for the use of Maritime Autonomous Surface Ships (MASS) established by MSC 99 (May – September 2018).

- Tripartite 2018 (October 2018) – IACS presented a presentation “Autonomous Ships”.
- IACS participation in the IMO Working Group on Maritime Autonomous Surface Ships (MASS) established by MSC 100 (December 2018).
- IACS participation (as a supporting NGO participant) in initial review of SOLAS Chapter II-2 within the first step of IMO RSE on MASS (February 2019 – September 2019). Current status: IACS (Safety Panel with TF/MASS) has finished initial review of SOLAS Chapter II-2 under the lead of and in collaboration with Member State Japan.

- IACS use its knowledge and expertise and engage closely with the IMO and industry in forming the future of safe shipping:
 - IACS participated in IMO WG at MSC 101 (June 2019) and MSC 102 (May 2020), and in IMO ISWG on MASS (September 2019).
 - IACS monitored the development of Guidelines on MASS trials initiated by MSC 100, and provide IACS comments.
 - IACS continued its active participation in IMO RSE on MASS (February 2019 – February 2020).
 - IACS will monitor ISO/TC8/WG10's work programme on development of new ISO standards on MASS terminology and concepts for ship autonomy announced by ISO at MSC 100, and provide IACS comments.

- IACS participation (as a supporting NGO participant) in 2nd step RSE on SOLAS Chapter II-2 under the lead of and in collaboration with Member State Japan. And provide comments to other relevant 2nd step RSE result other SOLAS chapters and ILLC.
- IACS will participate MSC 102 , IACS puts further MASS initiatives related to IACS Resolutions on hold pending further development at IMO level which may take place after final consideration on the results of the first and second steps at MSC 102 (May 2020).
- IACS will participate ISO/TC8/WG10 Smart Shipping, and collaborate on draft standard ISO 23860 MASS terminology and relevant standards. *The approach to terminology shall avoid proprietary and unvalidated concepts, particularly with respect to risk and design.*

- IACS will participate EC MASS expert group on *EU Operational Guidelines on test areas for MASS*.
- IACS will deliberate on matters of identifying the assurance challenges (not necessarily solutions at this stage) of complex systems, and software with autonomy for classification societies and ROs that may arising from the accommodation of MASS in IMO instruments.

Thank you for your attention!