

International Network for Autonomous Shipping

UK Code of Practice Update

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Trondheim

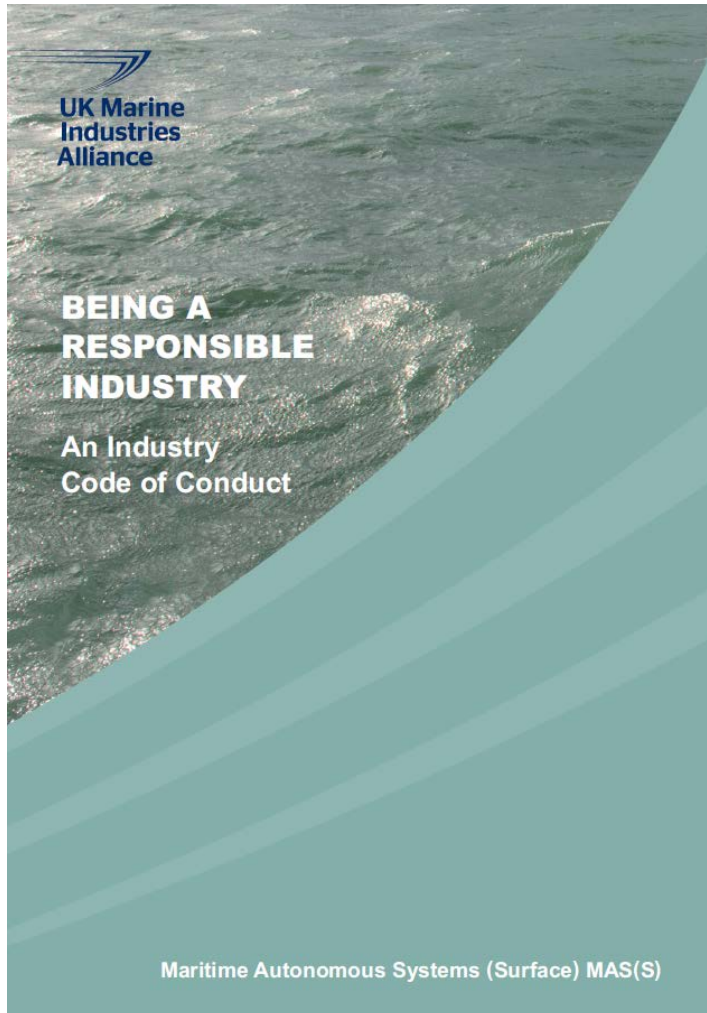
9 May 2018



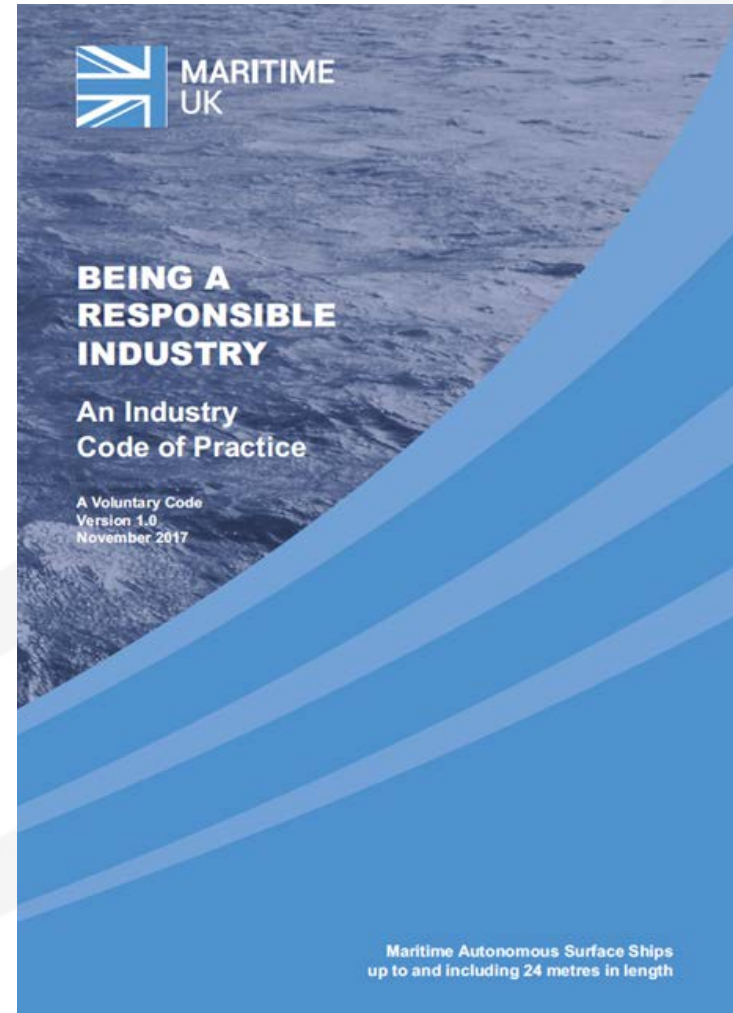
UK Industry Codes

- **Pan industry agreement on aspects of MASS development, design, production and operation**
- **Best practice**
- **Assurance**
- **Safety and professionalism**
- **Training, conduct and personal responsibility**
- **Compliance and self-regulation**
- **Improved communications within the industry and the wider maritime community**

Codes of Conduct & Practice



Published March 2016



Published November 2017
Version 2.0 due Autumn 2018

Lloyds Register



Foresight review of robotics and autonomous systems

There's a revolution. Smart, connected machines are acting as tools to support us, working alongside us or alone, making independent decisions and even learning.

ShipRight Design and Construction

Additional Design Procedures

LR Code for Unmanned Marine Systems

February 2017



Working together
for a safer world



Working together
For a safer world

Cyber-enabled ships

ShipRight procedure assignment for cyber descriptive notes for autonomous & remote access ships

A Lloyd's Register guidance document

Version 2.0, December 2017



www.lr.org/cyber

Registration and Identification

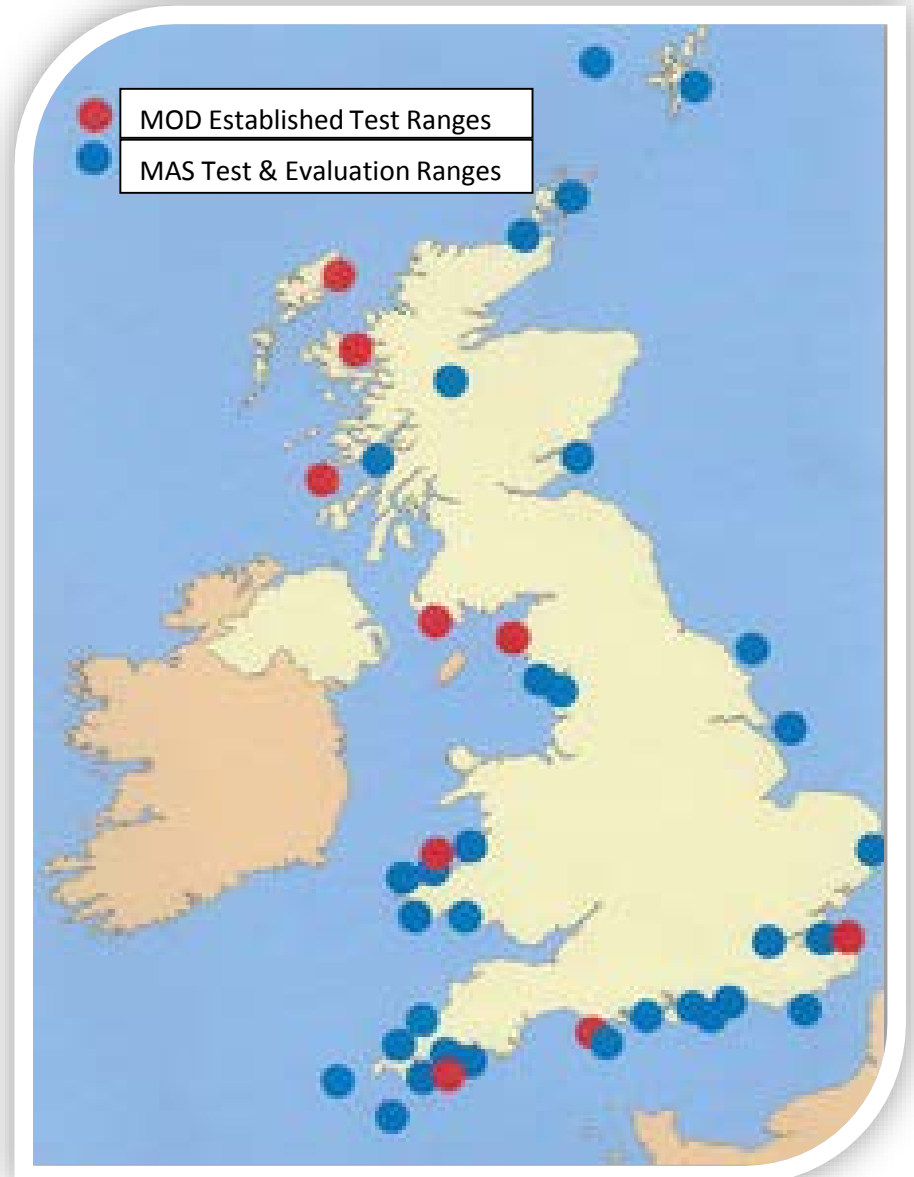
- **Ongoing work by the MASRWG with UK Ship Registry**
- **Requirements (greater than 500 GT):**
 - **Proof of ownership**
 - **Vessel material state**
 - **Safety management system**
 - **Tonnage certificate**
- **Insurance aspects**
- **A route to certification and registration for MASS to UKSR**

Current UK MAS Test and Evaluation Sites

UK MAS RWG compilation of Test and Evaluation Sites (53) to be incorporated into a UK MAS Directory with supporting facility contact, facility capabilities and waterspace authorisation directives.

Includes:-

- **MOD established ranges**
- **UK administered and approved sites.**
- **UK operators, ASV, Atlas, AutoNaut, Liquid Robotics, Thales.**
- **Others including Academic and Scientific research.**



Operational Areas - Directory

- **Location, site designation and coordinates**
- **Local authority contact details**
- **Calendar availability (Mon to Fri etc)**
- **Chart availability and detail (depth contour, bathy data, tide diamonds, sea bed etc)**
- **Additional discussion with Hydrographic Office for charting detail**
- **Land based facilities availability (base/control station, communications fixed & mobile, launch and recovery etc)**

Operational Areas - Directory

- **Normal marine activity and traffic density (ferries, sailing, other water sports)**
- **Weather and Sea state statistics**
- **Suitable for trial activities (specify types USV, UUV and UAV, individual and combined trials)**
- **Environmental constraints (and contacts)**
- **Operational constraints (and contacts)**
- **Others: local and specific attributes or constraints**
- **SME and Trial report reviews**

MASS Regulation Challenges

- **Harmonised Definitions**
- **Application**
- **Common Standards**
- **International Consensus**
- **Flexibility, Innovations & Mutual Trust**
- **Legal Precedents**
- **Education of Mariners**

Equivalence

- **Equivalence is critical as it identifies the issues and presents solutions**
- **Two clear issues will need addressing:**
 - Sight; and
 - Sound
- **Critical question**
 - To what extent can technology replace human attributes?
- **The MASRWG investigated every clause of the Instruments (COLREGS, SOLAS, STCW and MARPOL).**
- **Conclusion was that there is a need for change but it is not as extensive as it might appear.**
- **Happy to discuss summary documents with IMO**

Summary

- **IMO are about to embark on a very important body of work as they start the scoping exercise for MASS.**
- **The pace of change is dramatic.**
- **Technological advances are likely to outpace regulatory development.**
- **The development of MASS should not be held up by the work IMO are undertaking.**
- **Patience will be critical and expectations must be sensitively managed.**
- **While this work continues at IMO, ships will continue to ply their trade safely and efficiently across the globe; and**
- **MASS will begin to find their place in the natural order.**
- **There will be change but this is important, necessary and not a threat.**
- **The human element is as critical today as it has always been.**
- **The skills of the seafarer may develop but are as important as ever.**

Discussion

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