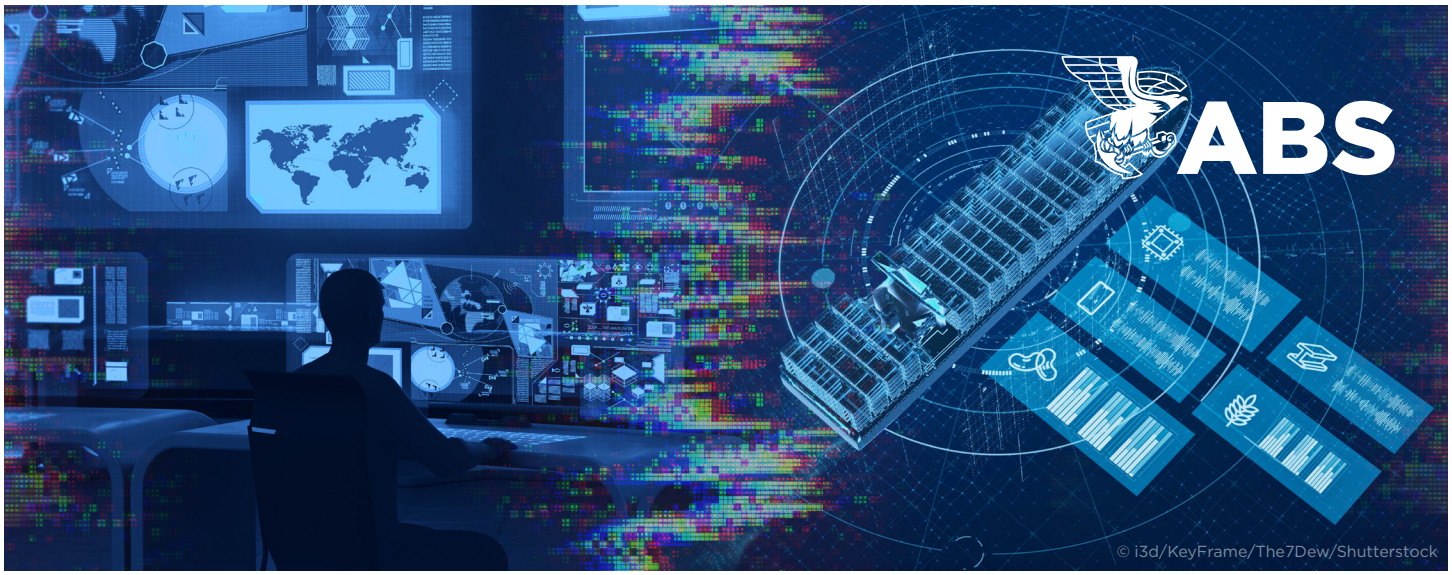


AUTONOMOUS AND REMOTE-CONTROL FUNCTIONS

Guidance designed to assist marine vessels and offshore units in safely utilizing autonomous and remote-control functions.

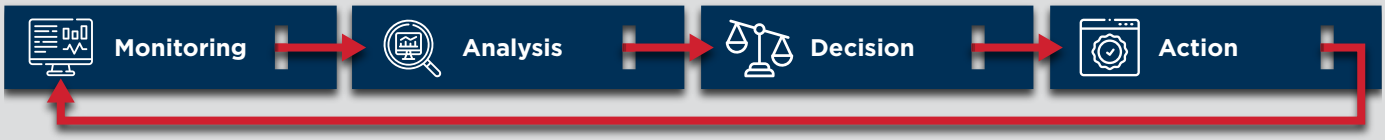
Interest in autonomous and remote-control functions has greatly increased in the commercial and government sectors as a means to improve operations and automate work performed onboard ships.

Technological advancements in connectivity, sensors, data analytics, machine learning and artificial intelligence (AI) have enabled the implementation of such functions in the marine and offshore industries.

Autonomous functions should not be equated with unmanned operations. The ABS *Guide for Autonomous and Remote-Control Functions* focuses on the implementation of functions instead of fully autonomous and unmanned vessels.

A **Function** is defined as a group of tasks, duties and responsibilities necessary for vessel operation, safety of life at sea or protection of the marine environment. An **Autonomous Function** is a function where all 4 stages in the operational decision loop is performed by systems.

OPERATIONAL DECISION LOOP



A **Semi-Autonomous Function** is a function where there is human dependency in either the Decision or Action stage.

Autonomy Levels		Integration and Application to Decision Loop			
		Monitoring	Analysis	Decision	Action
1	Smart	S	S	H	H
2	Semi-Autonomous	S	S	S/H	S/H
3	Autonomous	S	S	S	S

Note: H — Human, S — System

A **Remote-Control Function** is a function controlled in real-time from a remote location (either located on shore or on another vessel).

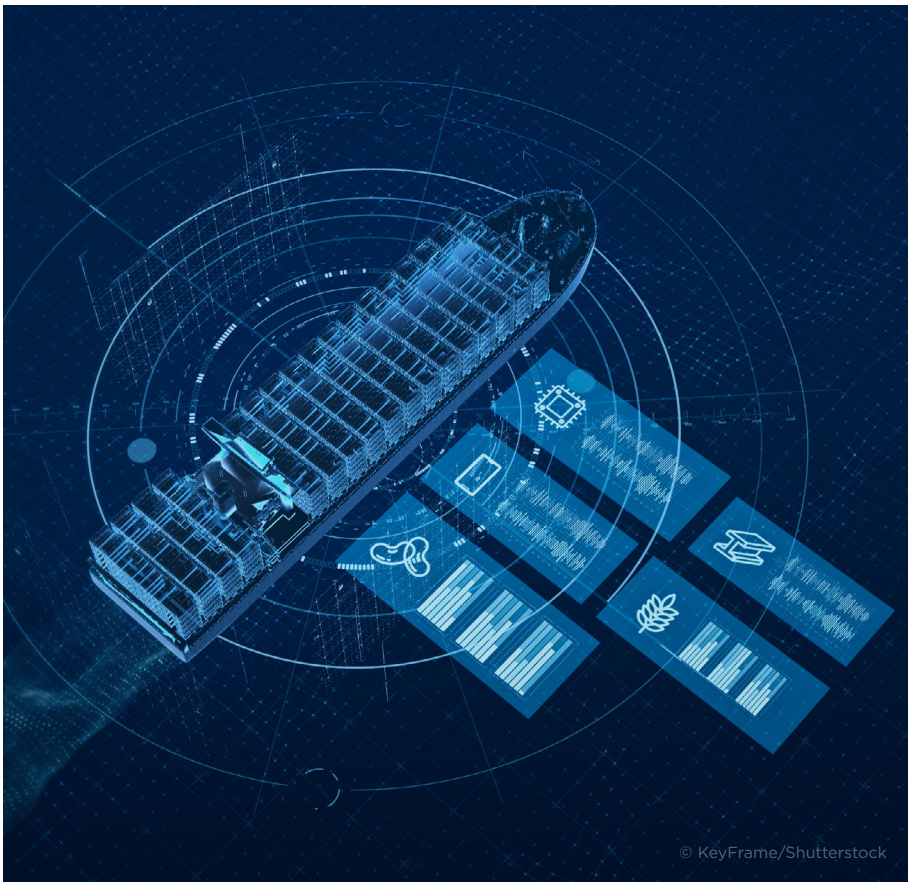
AUTONOMOUS AND REMOTE-CONTROL NOTATIONS

The ABS *Guide for Autonomous and Remote-Control Functions* provides a framework for the implementation and recognition of autonomous and remote-control functions.

The Guide offers two notations to marine vessels and offshore units fitted with permanently installed autonomous or remote-control functions that comply with the Guide requirements. The Guide also provides guidance on the critical technical considerations in implementing these functions. Recognition of the functions by way of notations informs the Flag Administration and various authorities on the technical feasibility of the function. Due to the connected and software intensive nature of autonomous and remote-control functions, data integrity, cybersecurity and software quality are emphasized when implementing these functions.

Development of international regulations pertaining to autonomous and remote-control operations are currently in progress. The International Maritime Organization (IMO) completed the MASS (Maritime Autonomous Surface Ships) Regulatory Scoping Exercise in May 2021. The completion of this exercise is the first step towards the development of statutory regulations, which are expected to be released in 2028.

ABS works closely with stakeholders in the maritime and offshore industries to support the advancement of autonomous and remote-control functionality.



Download the Guide today at www.eagle.org/autonomy

NOTATIONS:

- AUTONOMOUS (Function Category, Operations Supervision Level)
- REMOTE-CON (Function Category)

OPTIONAL NOTATIONS:

A full list of optional notations is available from ABS at www.eagle.org.

Learn more about ABS services in Autonomy and Digital Innovation by visiting www.eagle.org/autonomy.

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