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ISO TC 8/SC26

Secretariat: SAC

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Ships and marine technology — Publish-subscribe architecture on ship-shore data communication — General requirements

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Foreword

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This document was prepared by Technical Committee ISO/TC 8 *Ships and marine technology*, Subcommittee SC 26, *Smart shipping*.

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Introduction

Information and Communication Technology (ICT) plays an increasingly important role in assuring effective and secure data communication in the marine industry. In this context, there is a growing need for an architecture that not only enables interoperability between applications and systems onboard vessels, but also supports real-time streaming services within ships. Moreover, data communication between ship and shore is provided in real time to support decision-making as integrated information by collecting and analysing data.

In order to expand the usage range between relative entities and to improve the ship's performance, it is important to standardize the message format transmitted from the ship side server to the shore side server.

Existing International Standards on managing data that ~~is~~are derived from ship or shore have been used in the industry such as:

- the IEC 61162 series for the digital interfaces of navigational equipment within a ship;
- ISO 19847 for shipboard data servers;
- ISO 19848 for standard data for shipboard machinery and equipment;
- ISO 23807 for asynchronous time-insensitive ship-shore data transmission.

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However, it is recommended to establish a message communication system that shall respond flexibly to the various message formats derived from relevant sectors such as smart shipping, smart ports, smart logistics, etc. Furthermore, utilizing a communication protocol optimized for satellite communication can be considered, even in a situation where communication is intermittently disconnected. Furthermore, it should be highlighted that the data model is designed with scalability to accommodate future expansions related to eco-friendly technologies and environmental regulations.

This document defines a publish-subscribe architecture to facilitate widespread data utilization. It enables many-to-many communication by allowing data to be transferred through registered topics. It provides a ~~more~~ dynamic, batch-based messaging structure.

This document provides general requirements for publish-subscribe communication, including security requirements, topic naming definitions, message format, and functional requirements for data management.