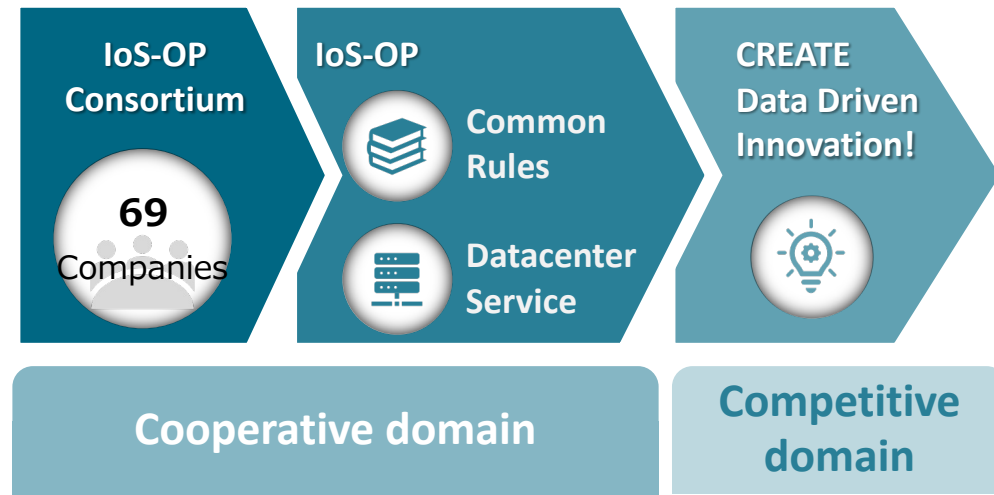


Internet of Ships Open Platform

Introduction to IoS-OP

What is IoS-OP

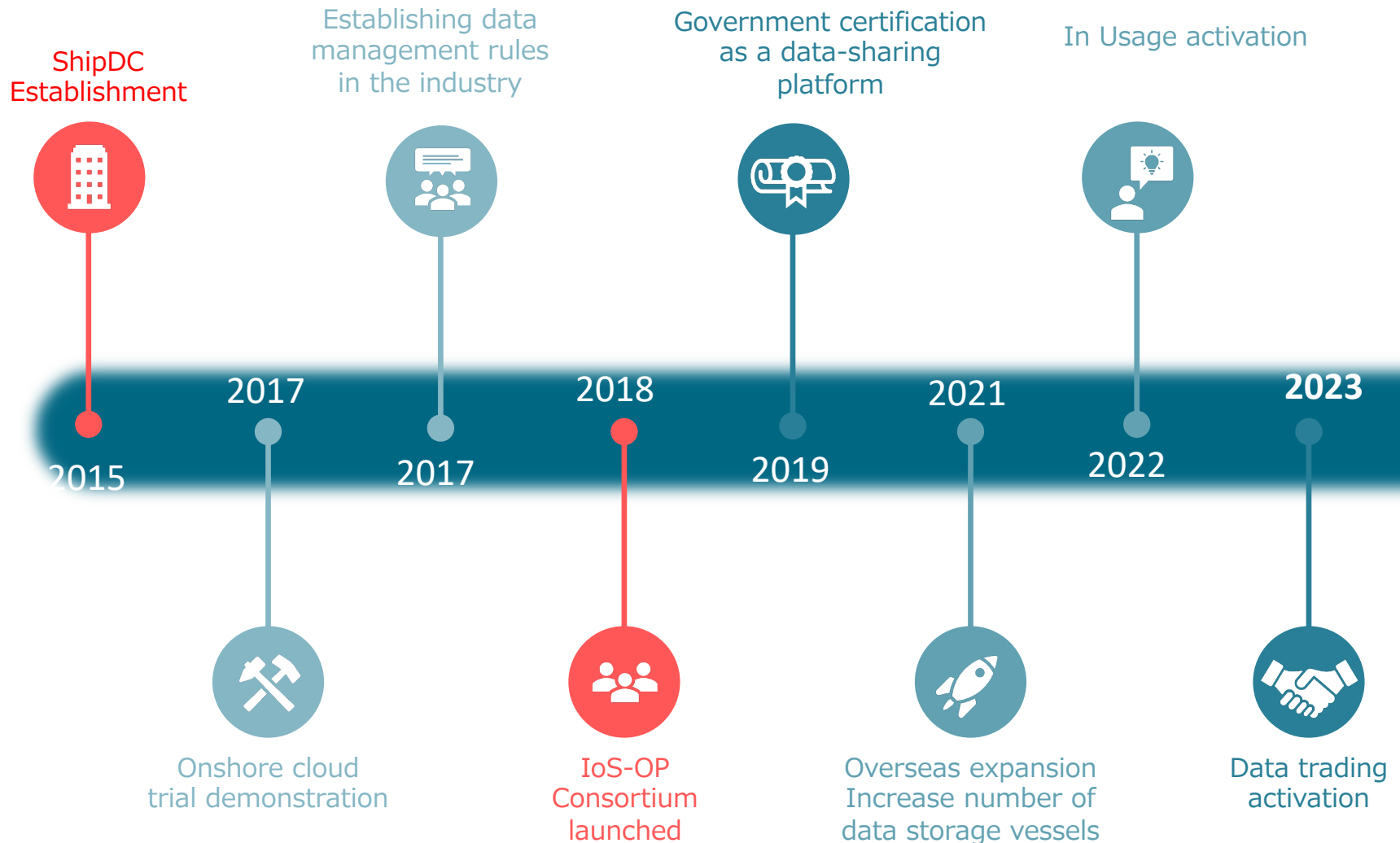
- ShipDC provides an IoS-OP scheme with common rules for data sharing and data centers for land-based data storage as cooperative areas.
- By utilizing a fair and structured data-sharing platform based on the IoS-OP scheme, it is possible for related parties to see the same data and use it for business process improvement.



At the IoS-OP

- data sharing based on access rights
- Shearing data collection costs among beneficiaries
- Reliable data storage that cannot be tampered

ShipDC and IoS-OP



Why IoS-OP was established

- Some companies started to use data from vessels to optimize operational efficiency and maintenance.
- The need for standardizing this data emerged due to variations in data specifications among equipment manufacturers.
- Common rules were deemed necessary because the legal framework for data usage, security, and data handling was not clear.

Thus, industry stakeholders facing common challenges came together and established it for the purpose of addressing the above issues.

Standardization

- ShipDC recommends ISO 19847 compliance to the Platform Providers who provide shipboard data collection servers.

ISO19847: Shipboard data servers to share field data at sea

- The ShipDC shore data center is equipped with functions that automatically assign 19848 codes to the sensor data names utilizing AI.

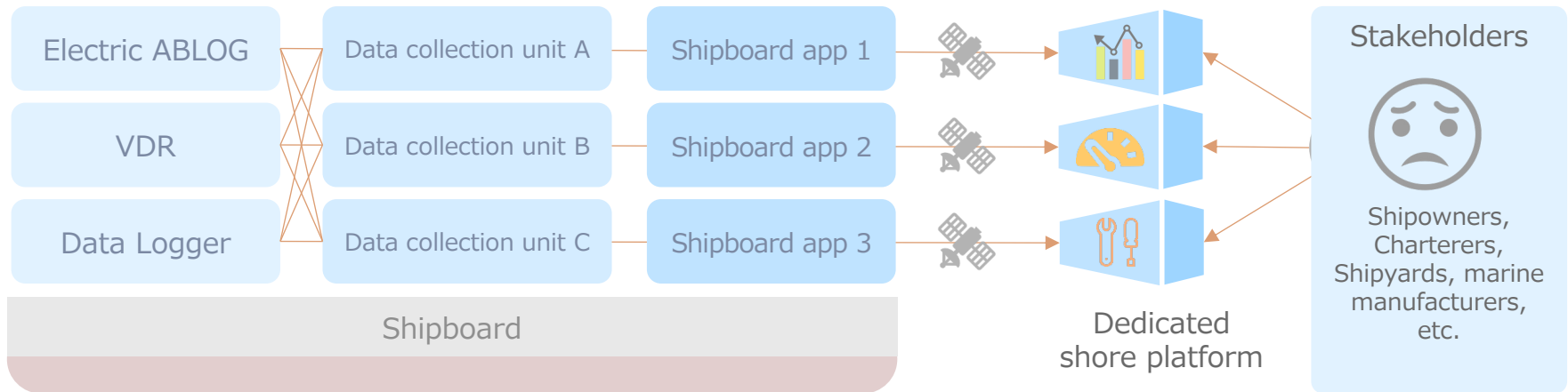
ISO19848: Standard data for shipboard machinery and equipment

These standard technologies and IoS-OP provide the following advantages to users.

- Optimization of server installation costs and ship-shore communication costs
- Reduction of security risks through easy-to-manage shipboard network configuration
- Reduction of the effort to introduce shipboard apps
- Improved convenience through name unification of not only the shipboard systems but also data use on the shore and solution services
- Realization of data sharing with effective data governance through a centralized shore data center

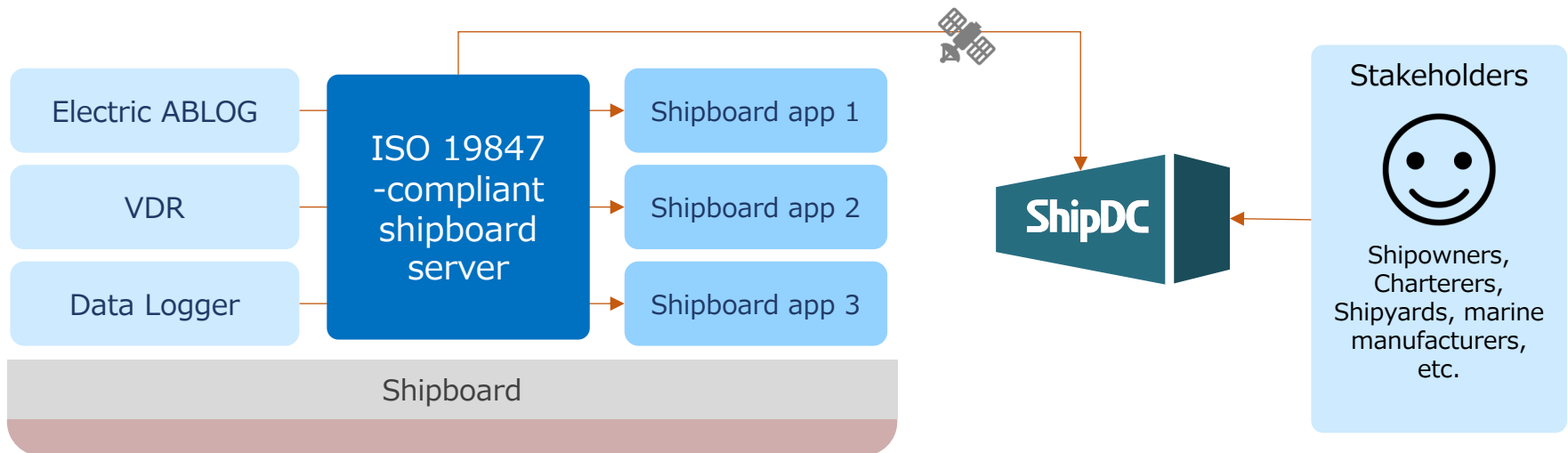
Before

Closed Platform, mainly closed use by each company, and systems and data are dispersed...

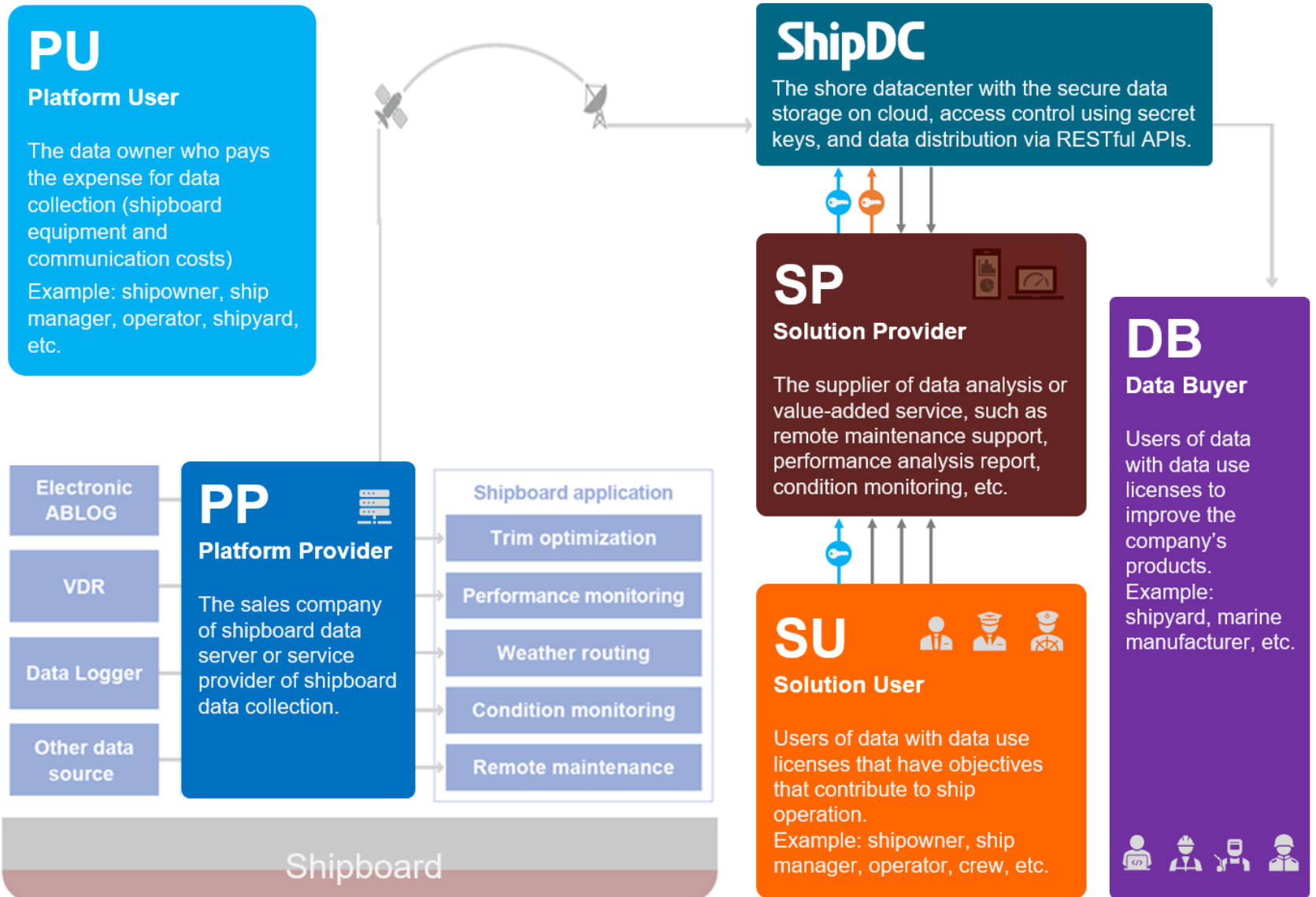


After

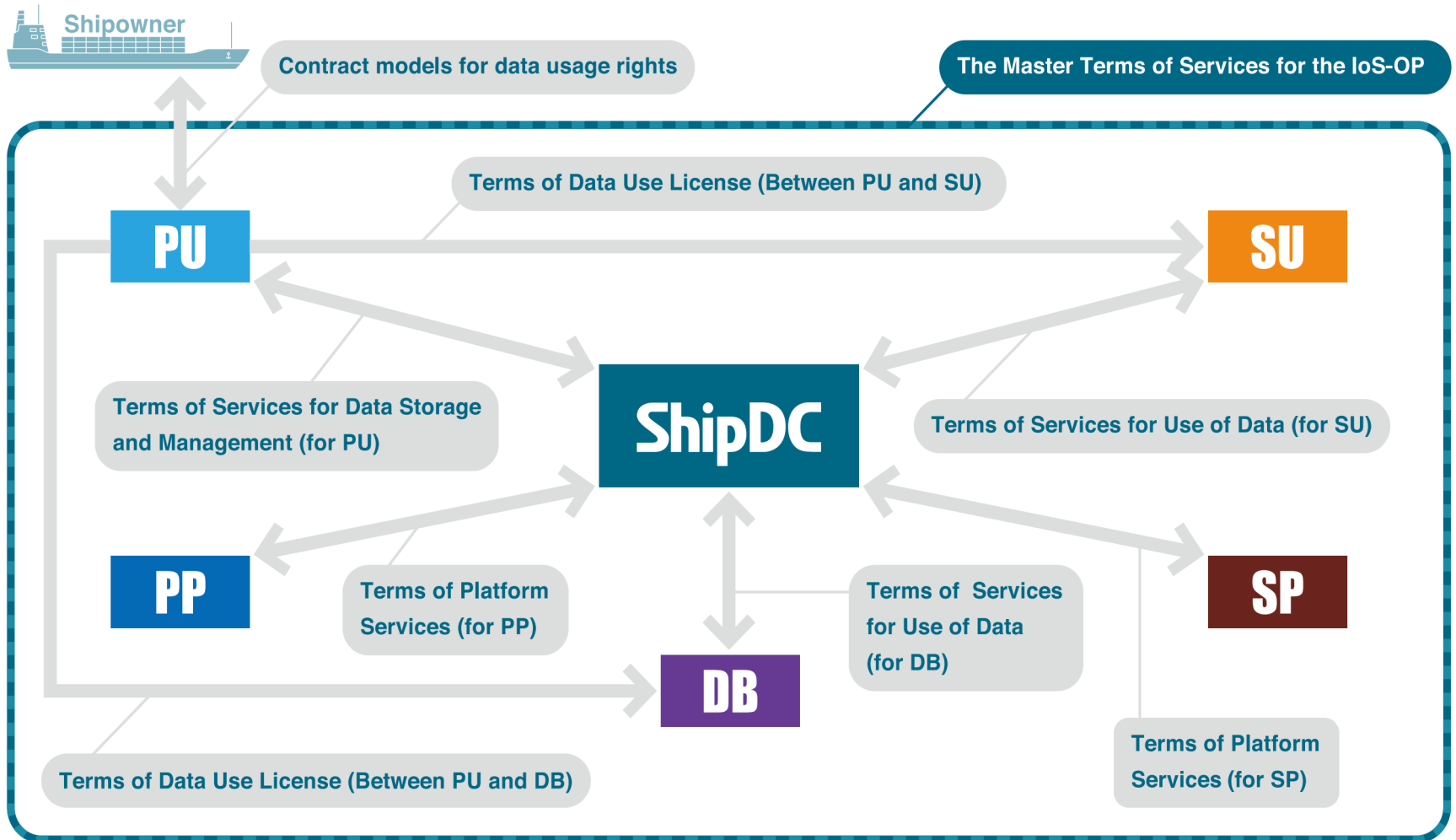
ISO 19847-compliant shipboard servers streamline operations, allowing stakeholders to focus on their expertise, simplifying data access, and reducing costs, while enhancing accessibility for stakeholders.



IoS-OP defined roles of stakeholders



Data Handling Framework



Use cases of IoS-OP

Data sharing between multiple shipowners and charterers



- Data from 4 companies can be obtained with one interface
- Easy to identify data with ISO19848 standard names
- Real-time monitoring is possible immediately without installing a separate data collection device

Data sharing between shipyards and shipowners



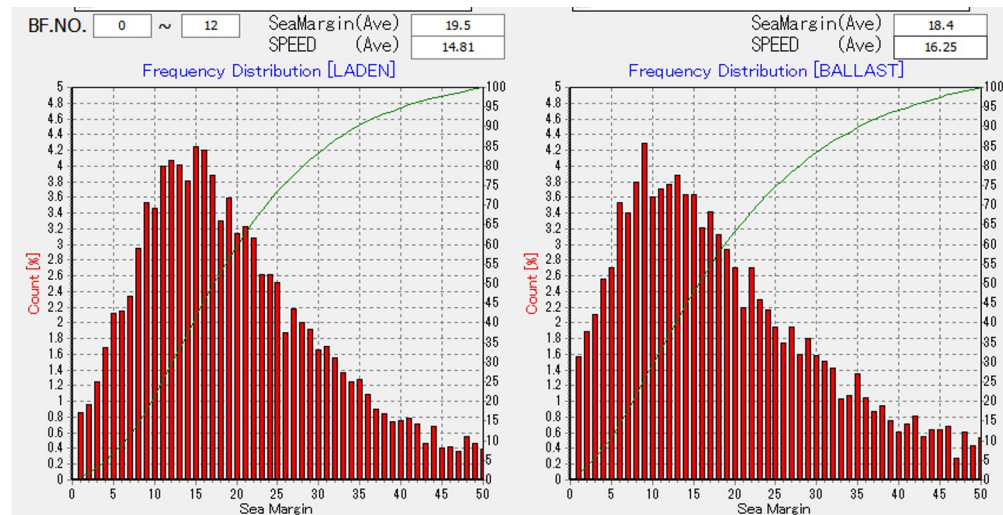
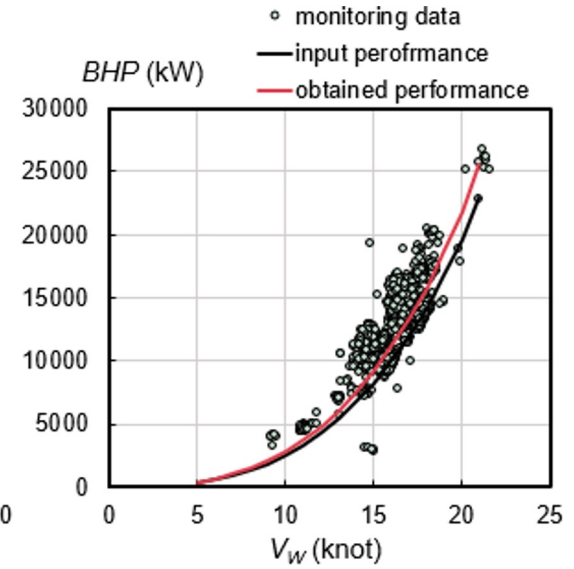
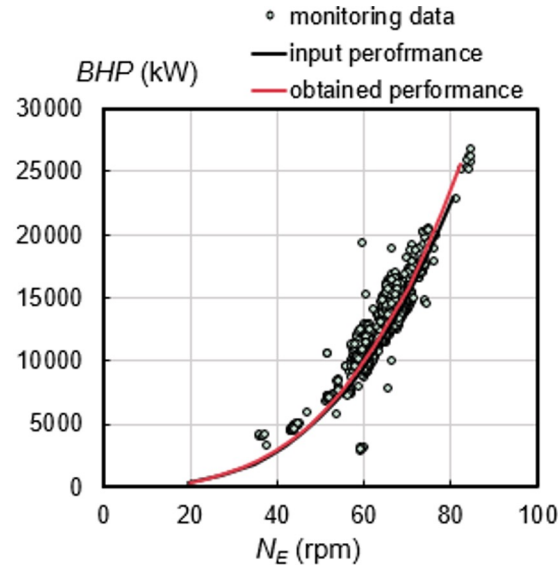
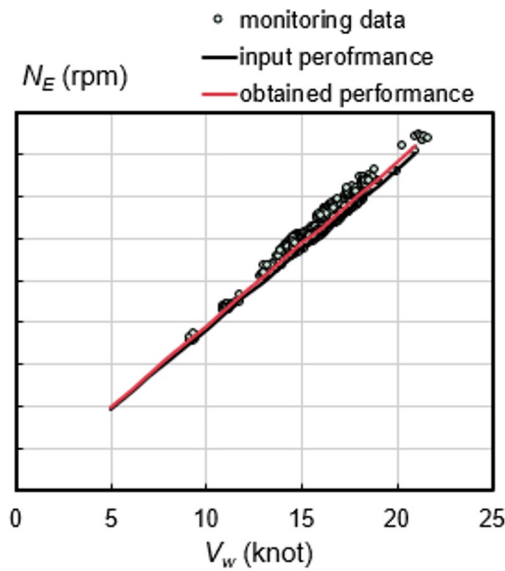
- Adopt data collection server registered in ShipDC and monitor the performance of own-built ships
- Used through a shore application registered with ShipDC to verify the effect of energy-saving additions

Used by shipowners to improve their own business



- Select a data collection server and application registered in ShipDC and start monitoring the main engine performance of your own ship

Use cases of IoS-OP



Shipboard Data Collection Server

Provider (Registered PP)



配電制御の革新を続ける

Terasaki Electric Industry

TMIP



Product information :

<https://www.terasaki.co.jp/business/ship/tmip.html>



Alpha Ori Technologies
Pte .

SMARTShip



Product information

<https://www.alphaori.sg/products/smartship/>



MaSSA
The Maintenance System
for Seaworthy Sailing Ability

BEMAC Co., Ltd.

MaSSA -One



Product Information:

<https://www.massa-one.com/>



Mitsui E&S Shipbuilding Co.

**Fleet Transfer
Fleet Monitor**



Product information :

<https://www.tsuneishi.co.jp/mes-s/business/dx-monitoring/monitoring.html>

FURUNO

Furuno Electric Co., Ltd.

FOP



Product information :

<https://www.furuno.com/jp/marine-dx/data/>




Smart Ship© Hub

**Smart Ship© Hub
Remote**



Product information : <https://smartshiphub.com/ship-remote-vessel-condition-monitoring-predictive-diagnostics-maintenance.php>

Onshore solution provider (registered SP)



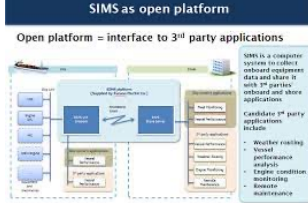
Fleet Intelligence
NAPA Ltd.



ClassNK CMAXS
ClassNK Consulting Service



ONE
OCEAN NETWORK EXPRESS
IBIS PLUS
Ocean Network Express



SIMS as open platform
Open platform – interface to 3rd party applications
SIMS is a computer system to collect onboard equipment data and share it with 3rd parties onboard and shore applications.
Candidate 3rd party applications include:
• Weather routing board
• performance analysis
• Engine condition monitoring
• Alkaline maintenance

Ship Data Viewer
NYK Line



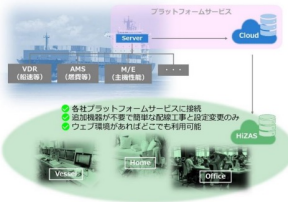
Tsuneishi Shipbuilding Co., Ltd.



Nautilus Labs
Nautilus Labs Inc.



Nabtesco Corporation



HiZAS VDA
Vessel Data Analysis
Hitachi Zosen Corporation



Optimum Ship Routing Safety Status Monitoring
Capt's DOSCA JS
Weathernews Inc.



CMP-MAP
Chugoku Paint Co., Ltd.



seawise
seawise Co., Ltd.



SALVIA-OCT-web
National Maritime Research institute



Smart Ship
Smart Ship© Hub



FOCUS
Mitsui O.S.K. Lines

Member of IoS-OP



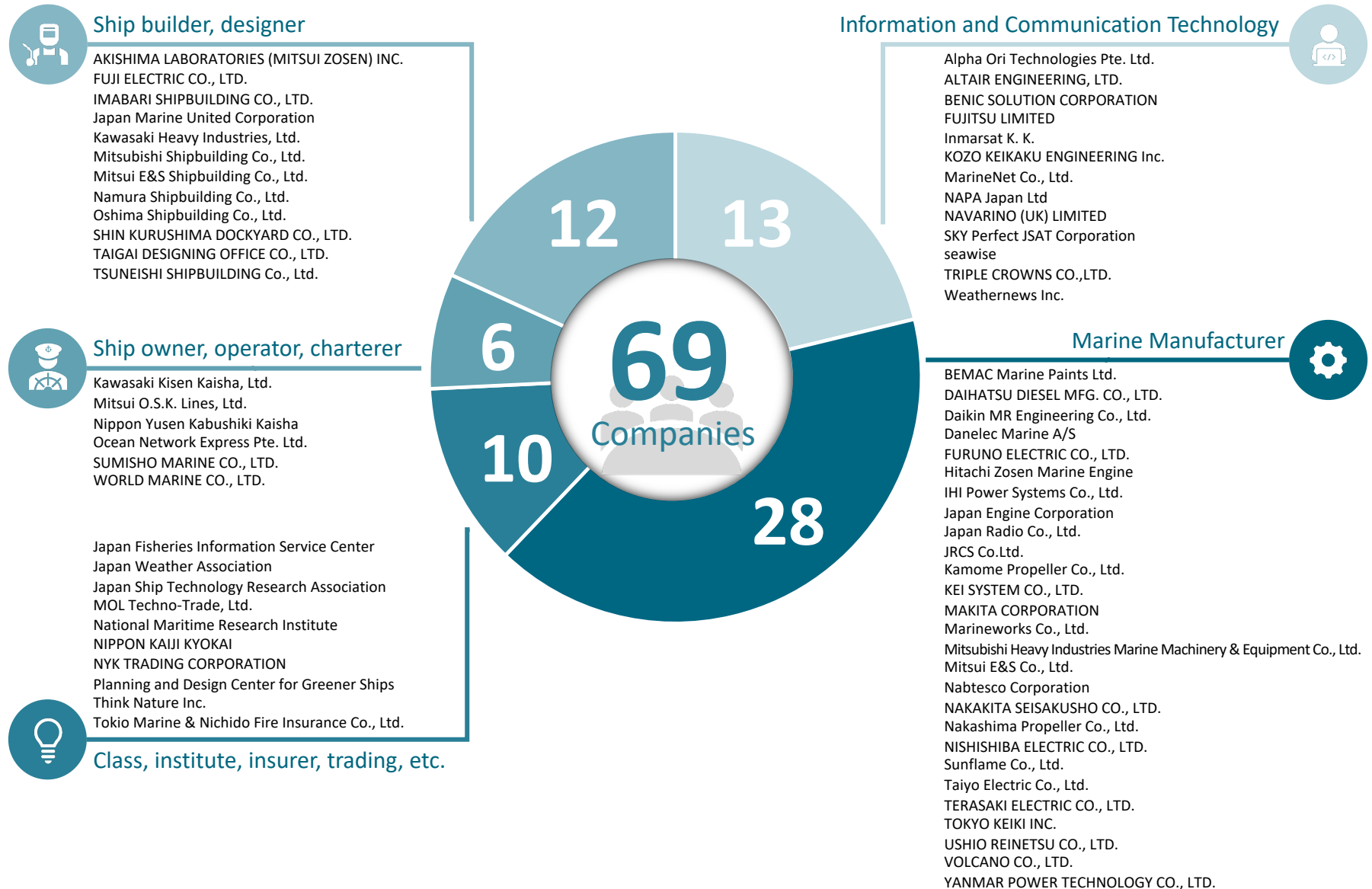
Hitachi Zosen Marine Engine



Marine Electronics marineworks



Various Business Categories in IoS-OP Members



Ship builder, designer

AKISHIMA LABORATORIES (MITSUI ZOSEN) INC.
 FUJI ELECTRIC CO., LTD.
 IMABARI SHIPBUILDING CO., LTD.
 Japan Marine United Corporation
 Kawasaki Heavy Industries, Ltd.
 Mitsubishi Shipbuilding Co., Ltd.
 Mitsui E&S Shipbuilding Co., Ltd.
 Namura Shipbuilding Co., Ltd.
 Oshima Shipbuilding Co., Ltd.
 SHIN KURUSHIMA DOCKYARD CO., LTD.
 TAIGAI DESIGNING OFFICE CO., LTD.
 TSUNEISHI SHIPBUILDING Co., Ltd.



Ship owner, operator, charterer

Kawasaki Kisen Kaisha, Ltd.
 Mitsui O.S.K. Lines, Ltd.
 Nippon Yusen Kabushiki Kaisha
 Ocean Network Express Pte. Ltd.
 SUMISHO MARINE CO., LTD.
 WORLD MARINE CO., LTD.

Japan Fisheries Information Service Center
 Japan Weather Association
 Japan Ship Technology Research Association
 MOL Techno-Trade, Ltd.
 National Maritime Research Institute
 NIPPON KAIJI KYOKAI
 NYK TRADING CORPORATION
 Planning and Design Center for Greener Ships
 Think Nature Inc.
 Tokio Marine & Nichido Fire Insurance Co., Ltd.

Class, institute, insurer, trading, etc.

Information and Communication Technology



Alpha Ori Technologies Pte. Ltd.
 ALTAIR ENGINEERING, LTD.
 BENIC SOLUTION CORPORATION
 FUJITSU LIMITED
 Inmarsat K. K.
 KOZO KEIKAKU ENGINEERING Inc.
 MarineNet Co., Ltd.
 NAPA Japan Ltd
 NAVARINO (UK) LIMITED
 SKY Perfect JSAT Corporation
 seawise
 TRIPLE CROWNS CO.,LTD.
 Weathernews Inc.



Marine Manufacturer

BEMAC Marine Paints Ltd.
 DAIHATSU DIESEL MFG. CO., LTD.
 Daikin MR Engineering Co., Ltd.
 Danelec Marine A/S
 FURUNO ELECTRIC CO., LTD.
 Hitachi Zosen Marine Engine
 IHI Power Systems Co., Ltd.
 Japan Engine Corporation
 Japan Radio Co., Ltd.
 JRCS Co.Ltd.
 Kamome Propeller Co., Ltd.
 KEI SYSTEM CO., LTD.
 MAKITA CORPORATION
 Marineworks Co., Ltd.
 Mitsubishi Heavy Industries Marine Machinery & Equipment Co., Ltd.
 Mitsui E&S Co., Ltd.
 Nabtesco Corporation
 NAKAKITA SEISAKUSHO CO., LTD.
 Nakashima Propeller Co., Ltd.
 NISHISHIBA ELECTRIC CO., LTD.
 Sunflame Co., Ltd.
 Taiyo Electric Co., Ltd.
 TERASAKI ELECTRIC CO., LTD.
 TOKYO KEIKI INC.
 USHIO REINETSU CO., LTD.
 VOLCANO CO., LTD.
 YANMAR POWER TECHNOLOGY CO., LTD.

How to join in IoS-OP

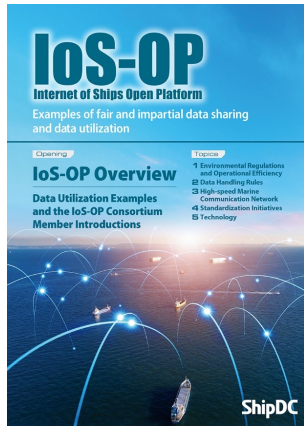
To participate in the IoS-OP Consortium, you must join Ship Data Center. We are seeking members who support the purpose of our activities and wish to take part in activities together with Ship Data Center. Be sure to read the Ship Data Center member terms and conditions when applying.

Ship Data Center members are primarily classified by sales as follows.

- A) **Gold members** : companies with group consolidated sales of 100B JPY or more
(annual membership fee: 900,000 JPY)
- B) **Silver members** : companies with group consolidated sales of 10B JPY or more and less than 100B JPY
(annual membership fee: 600,000 JPY)
- C) **Bronze members** : companies with group consolidated sales of less than 10B JPY
(annual membership fee: 300,000 JPY)
- D) **Green members** : government institutions, local municipal organizations, universities and other educational and research institutions
(annual membership fee: 150,000 JPY)

In addition to the annual membership fee, an initiation fee is required during the first fiscal year (two years of the annual membership fee). (Taxes are not included in the fees)
Moreover, the membership term is from January to December of each year.

Publication Contact



ShipDC Homepage “News & Topics”

https://www.shipdatacenter.com/pdf/IoS-OP_202304_EN.pdf



ShipDC Homepage: <https://www.shipdatacenter.com/en>

ShipDC: contact@shipdatacenter.com

Daiji Aihara: aihara@classnk.or.jp



A person wearing a white lab coat is holding a rolled-up document. The background is a blurred laboratory setting with various pieces of equipment and papers.

THANK YOU

for your kind attention