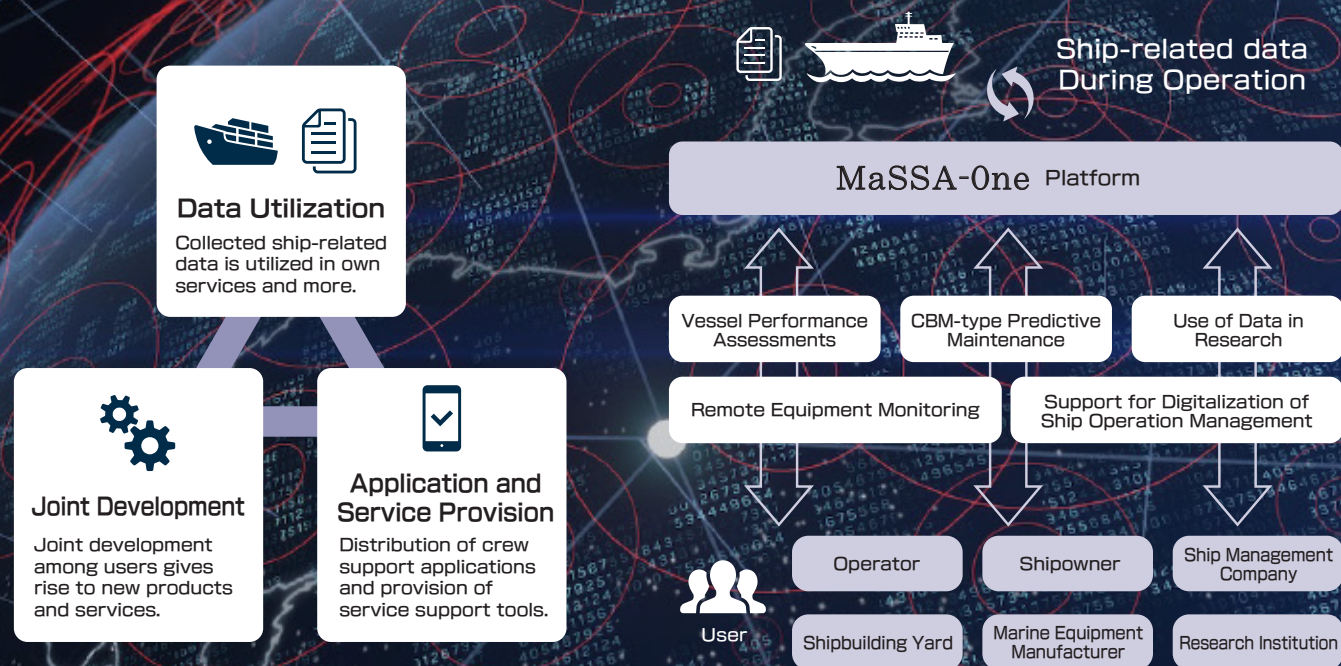## An Open Platform Usable by Anyone

We develop the MaSSA-One platform to share ship-related data and provide beneficial applications, thus fostering an ecosystem that benefits all participating users.

Ship-related data During Operation

MaSSA-One Platform

Vessel Performance Assessments

CBM-type Predictive Maintenance

Use of Data in Research

Remote Equipment Monitoring

Support for Digitalization of Ship Operation Management

Data Utilization
Collected ship-related data is utilized in own services and more.

Joint Development
Joint development among users gives rise to new products and services.

Application and Service Provision
Distribution of crew support applications and provision of service support tools.

User

Operator

Shipowner

Ship Management Company

Shipbuilding Yard

Marine Equipment Manufacturer

Research Institution

MaSSA
the Maintenance System
for Soundness Sailing Ability

[MaSSA] CONCEPT BOOK

BEMAC

MaSSA

The **Ma**intenance system for **S**oundness **S**ailing **A**bility.

Aiming to realize "a ship that never stops".

MaSSA collects data of ships voyage to enable confirmation of operation status and equipment status.
Furthermore, it utilizes condition-based maintenance (CBM), remote support from onshore offices, automatic ship operation/navigation technologies and more to help prevent equipment breakdowns, maritime accidents and other such problems, ensuring that the ship reaches its intended destination as scheduled.

Shipboard and land platforms that realize MaSSA

「MaSSA-One」

MaSSA-One collects and stores a wide array of data on the ship's engines, cargo handling, voyages and more, and shares the data with the onshore offices to provide ship voyage support applications.

AT SEA — **Ship-to-Land Communication** — **ON SHORE**

- ECDIS
- Speed Log
- Wind direction Speed sensor
- GPS

→ **Voyage data recorder**

- Main engine
- Diesel engines, auxiliary
- Boiler
- Sensors

→ **Alarm monitoring system**

→ **Cargo handling data recorder**

→ **Other sensors**

IoT Data Server

Onshore Server

Shipboard Crew Support Applications

We create shipboard application environments to support ship's crew performance

Onshore Monitoring and Information Analysis Applications

Sophisticated data analysis and ship voyage support applications are provided for the onshore office

Application Development and Service Provision

- Equipment Monitoring
- Troubleshooting Support
- Maintenance Support
- Ship Voyage Support
- Failure sign detection

User

- Shipowner (Ship Management Company)
- Operator
- Shipbuilding Yard
- Marine equipment manufacturer

01
Real-time visual display of ship-related data and provision of crew support applications.

- Various ship-related data collected via the IoT Data Server can be confirmed in real time from onboard the ship.
- Installation of applications to support the ship's crew.
  MaSSA-One provides the applications that enables appropriate and speedy recovery response on board and supports efficient operation in the event of trouble.

02
Sophisticated data analysis at the onshore office

- Collected ship-related data is utilized in the development of applications for responding to problems and malfunctions, maintenance support, and more.
- Enables more advanced onshore analyses in response to problems in order to determine their causes.
- Facilitates optimized management of shipboard equipment by using condition-based maintenance (CBM) rather than time-based maintenance (TBM).

03
Flexible responses to a wide range of needs.

- Users can choose from a lineup of continually developed applications, selecting only those they wish to use.
- Applications from other companies as well as service collaborations (via ISO APIs) are also available.
- MaSSA-One onshore servers are capable of coordinating with other types of onshore servers.