An update on Smart Ship Application Platform Project

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Vision: data sharing in the maritime industry

Shipping
- Safety operation
- Vessel performance analysis
- Fleet operation optimization
- Weather routing

Shipyard
- In-service performance analysis of delivered ships
- Feedback to new ship design

Manufacturer
- Remote condition monitoring
- Remote diagnostics
- After service support

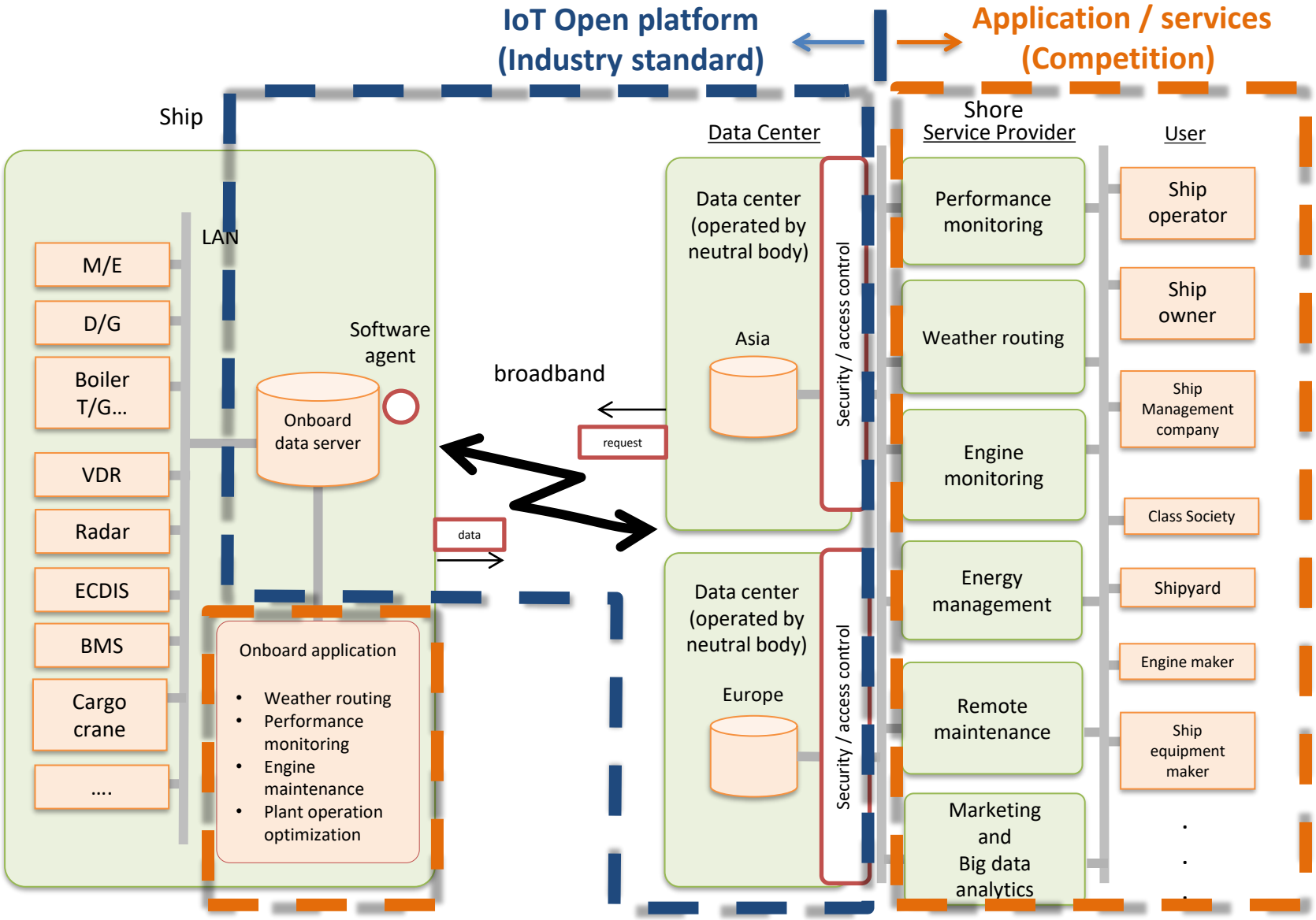
Class Society
- Utilization in class inspection

Insurance
- New services

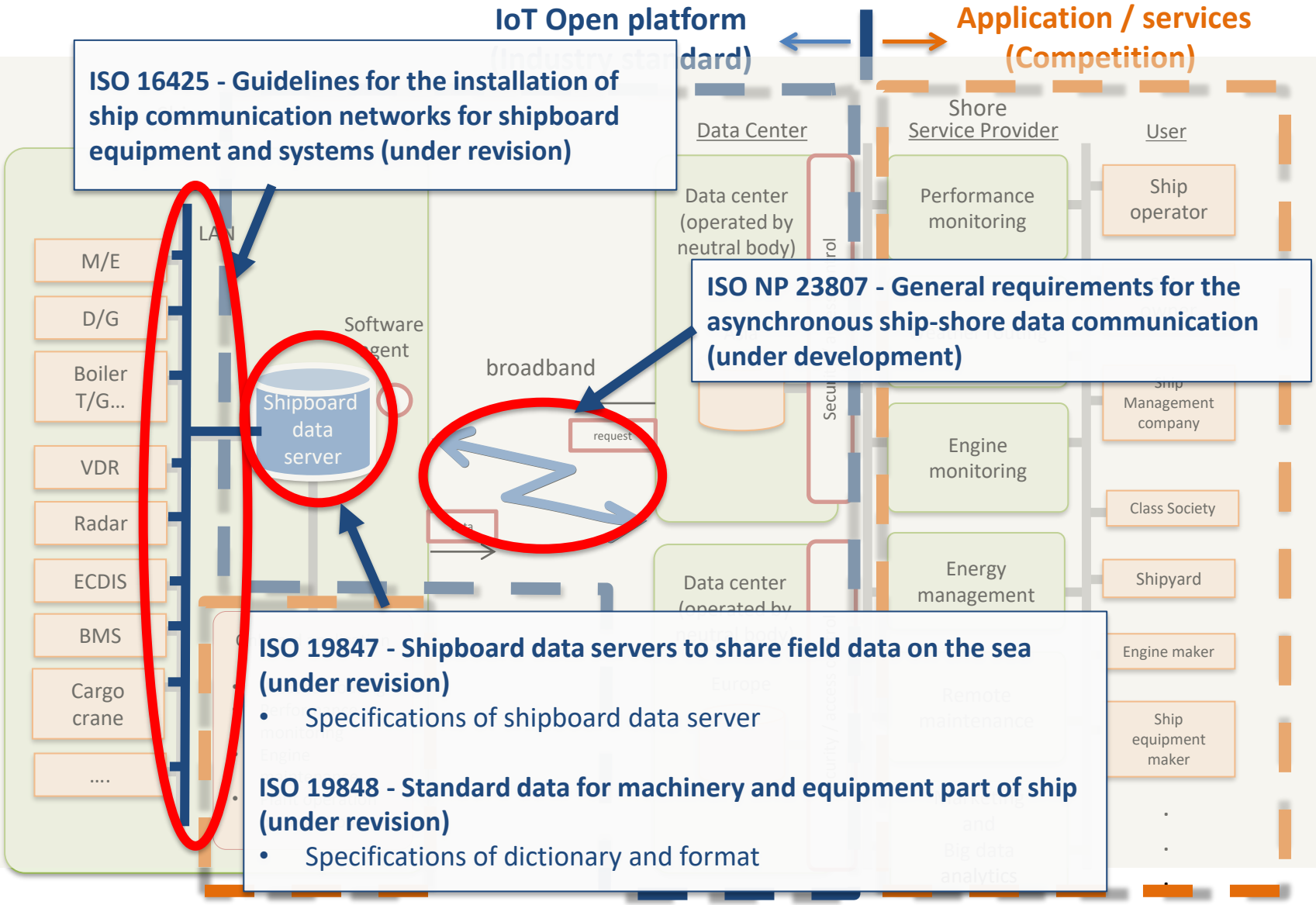
Regulatory use
- Data reporting

Open platform

Open platform for data sharing in maritime industry



Open platform for data sharing in maritime industry



SSAP3 Project (Oct 2018 – Sep 2020)
(Smart Ship Application Platform 3)

SSAP
SMART SHIP APPLICATION PLATFORM

- Participants
  - 56 organizations
- A research project in JSMEA

JSMEA Japan Ship Machinery and Equipment Association

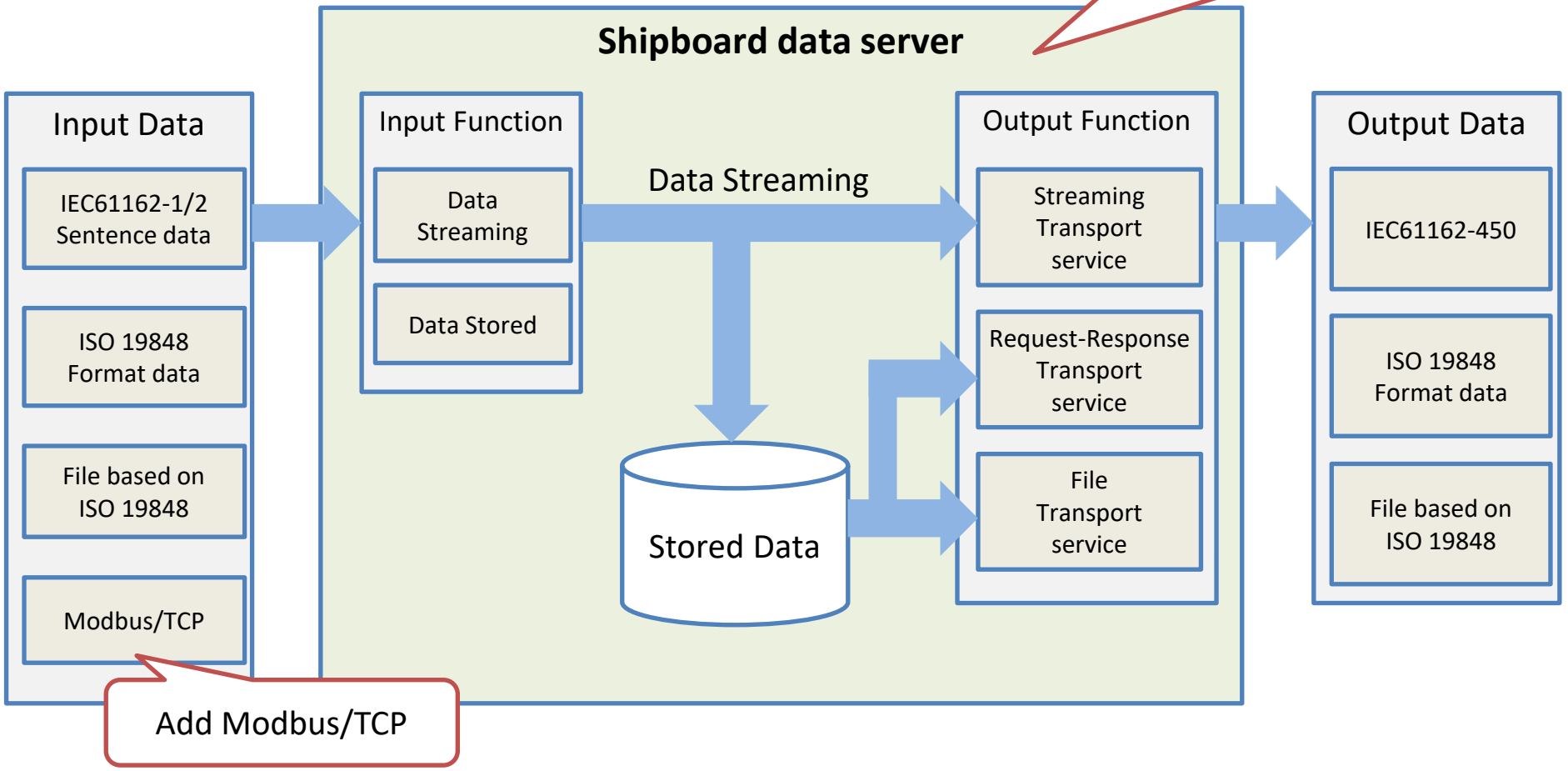
- Action items (WG)
  - Ship-shore data communication for ISO 23807 (WG1)
  - Cyber security for ISO 19847 (WG2)
  - Data catalogue (WG3)
  - Test methods of ISO 19847 (WG4)
  - Test & inspection methods of ISO 16425 (WG5)
  - Public relations
- Cooperation with JSTRA, official representative of Japan in ISO/TC8

JSTRA

Updates on ISO NP 19847

Additional Specifications of shipboard data server

- Update test requirements
- Update data calculation functions
- Add cyber security requirements



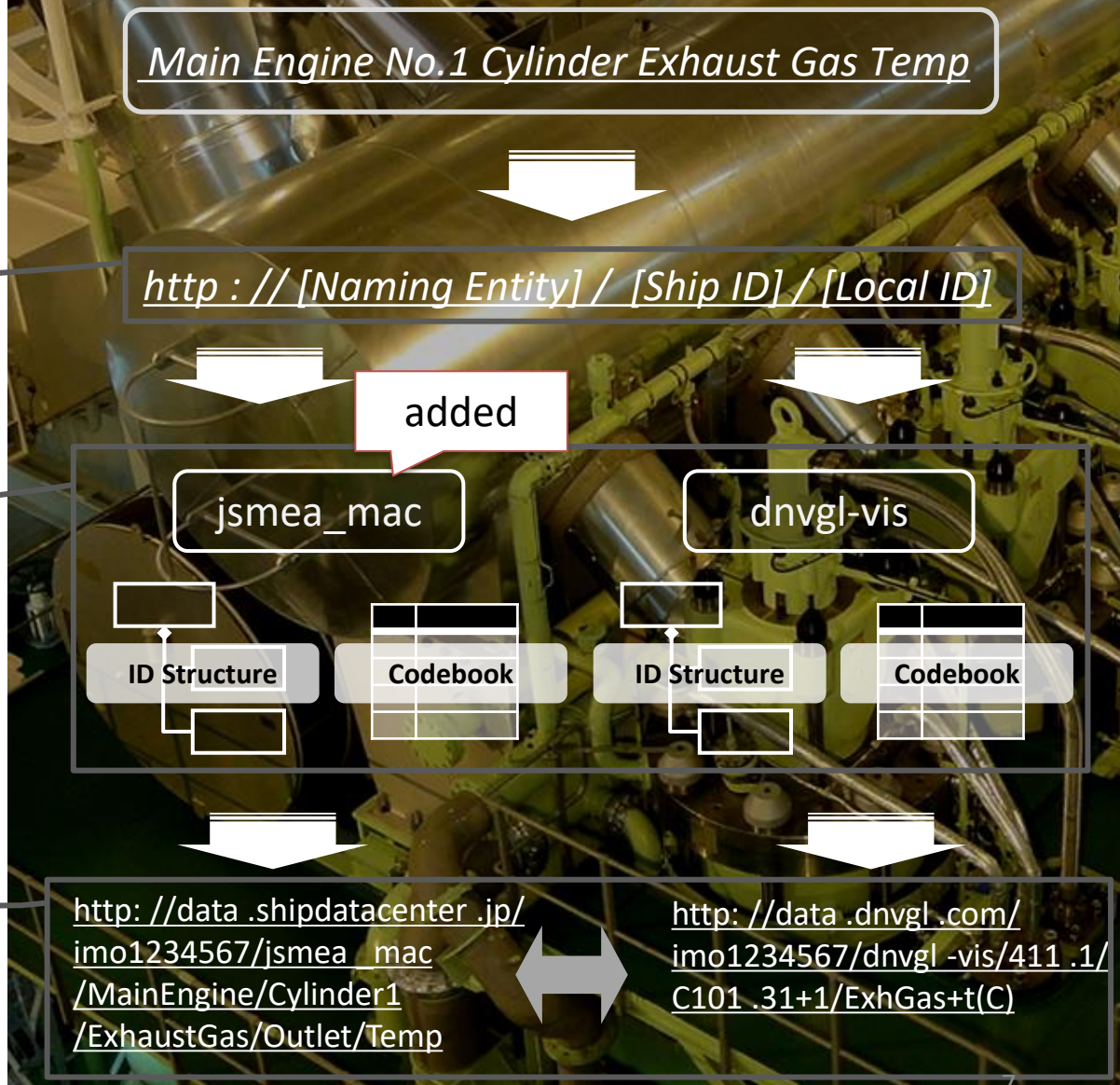
Standard Codebook and Standard ID
Update on ISO NP 19848

Standard data for machinery and equipment of ship

Standard

- Standard naming structure
  - URL style hierarchical ID
  - Globally ID consists of naming entity, ship ID and Local ID
- Codebook
  - Multiple naming rules can be applied to allow domain diversity
  - Naming rule defines how to compose Local ID
- Standard ID
  - Standard ID can be defined for interoperability and data catalogues

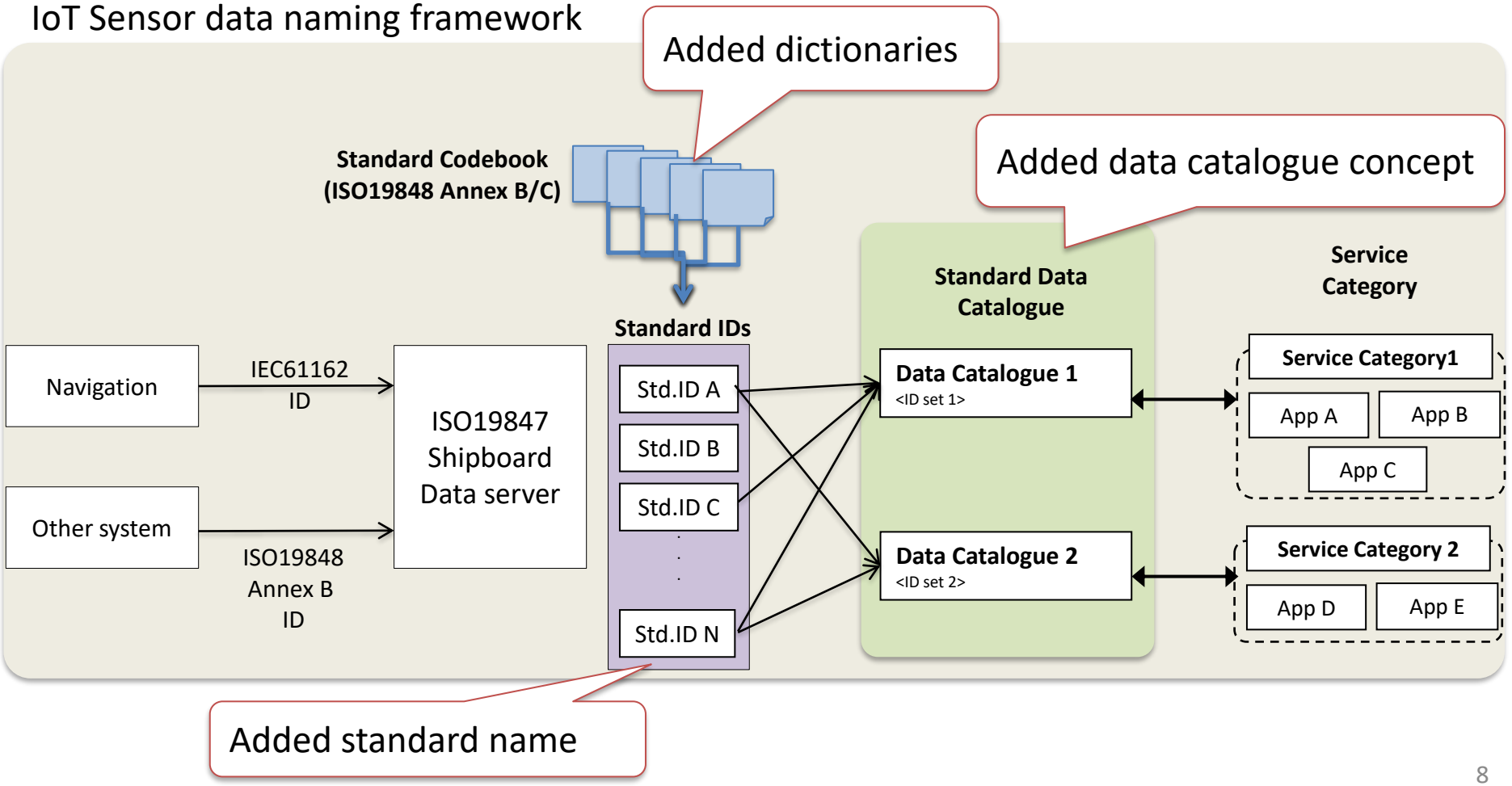
added



Update on ISO NP 19848

Added data catalogue, dictionary and standard IDs

IoT Sensor data naming framework



JSMEA Codebook, Standard ID and Data Catalog are downloadable

https://www.jsmea.or.jp/ssap/topics/jsmea_iso19848.html

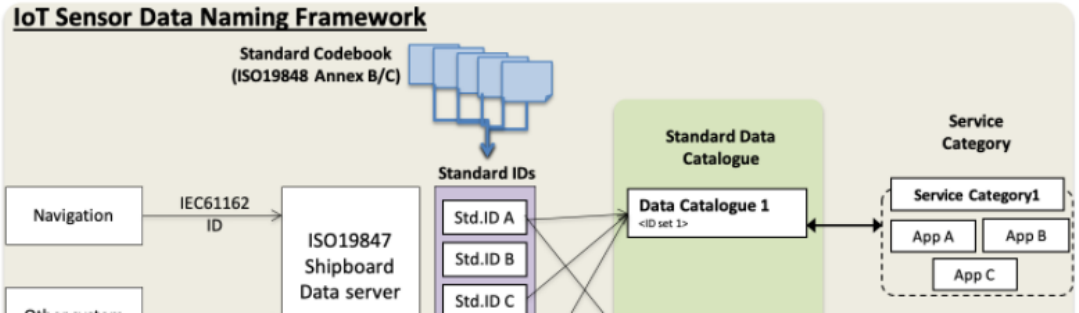
JSMEA Codebook, Standard ID and Data Catalog used in ISO19848

USECASE

Codebook, Standard ID and Data Catalog used in ISO19848 proposed by JSMEA are published.

Ship IoT Data Naming Framework

- **IoT data (sensor data) is very important & essential work for utilizing data for AI and Big data. However, it requires a lot of effort to define naming scheme, dictionary and standard names.**
- **ISO 19848 Annex B & C provide scheme for Standard Codebook and Standard ID.**
- **Standard data catalogue, which consists of Standard IDs, can be defined in correspondence with service category.**



ISO 16425 (2013) - Guidelines for the installation of ship communication networks for shipboard equipment and systems

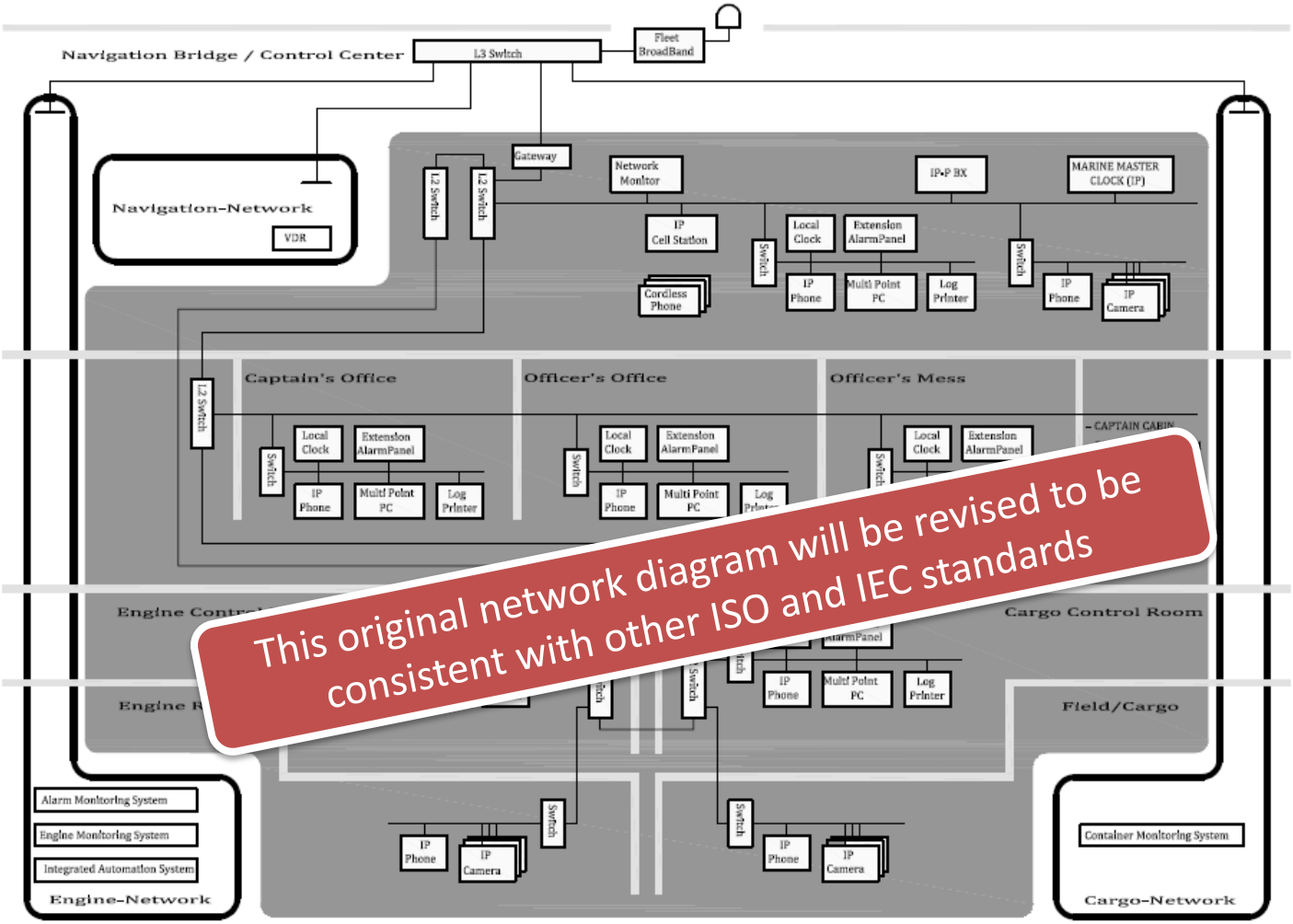
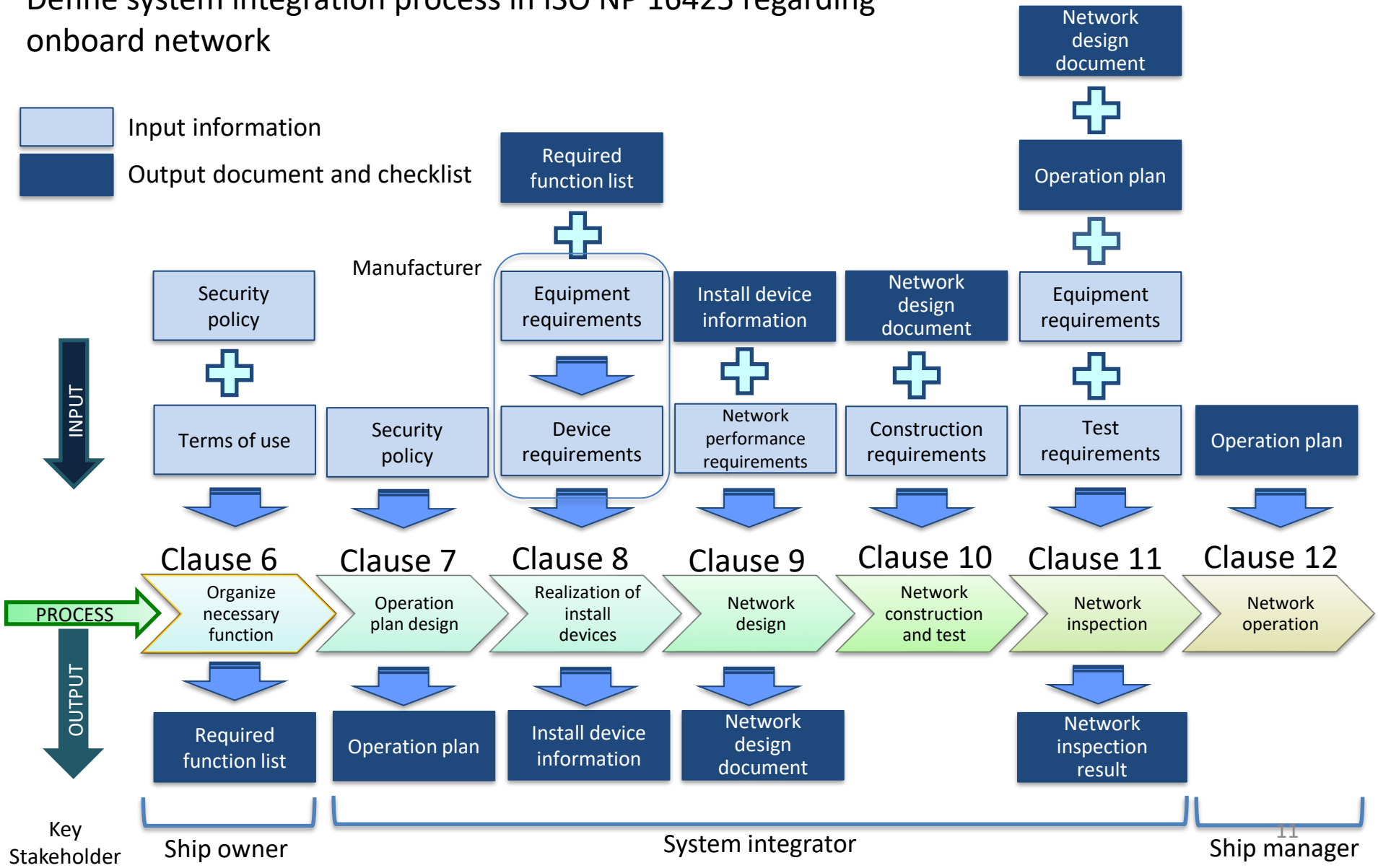


Figure 1 — Sample network architecture scope (Reference)

Update on ISO NP 16425

Define system integration process in ISO NP 16425 regarding onboard network



Scope of ISO WD 23807 (under drafting)

1 Scope

This document describes the requirements involved in ship to shore data communication between the shipboard data servers to the on-shore data servers. It defines:

- Asynchronous communication
- A method to measure end-to-end communication quality
- Transport integrity
- Transport security (eg encryption, authentication and authorization)
- Management of data transmission (eg prioritization, logging, carrier awareness/management)
- Communication optimization (eg deduplication, compression, resume, multiplexing)
- Compliance with the data communication protocols, including but not limited to ISO 19847

This document will not cover:

- The security of the data producer/consumer (eg identity management)
- Communication equipment requirements
- Carrier performance requirements (eg bandwidth and latency)

Discussion of the WD will be held in the next meeting of ISO/TC8/WG10 Ship-shore data communication panel. (Feb or March in 2021).

WD drafting schedule (target date)

- ISO NP 23807 (Ship-shore asynchronous data communication)
  - ~~**31st Dec 2020**~~ **-> 22nd Jan 2021**

- ISO NP 16425 (Onboard network)
  - **31st Mar 2021**

- ISO NP 19847 (Onboard data server)
  - **31st Mar 2021**

- ISO NP 19848 (Data model and format)
  - **31st Mar 2021**

ISO WGs to discuss ISO 19847, 19848, 16425 and 23807

- **ISO/TC8/WG10 Smart Shipping**
  - Last meeting: 21st - 22nd July 2020
  - Next meeting: T.B.D.

- **ISO/TC8/WG10 Ship – Shore Communication Panel**
  - **ISO 23807**
  - Last meeting: 9th Nov 2020
  - Next meeting: T.B.D. (Feb or March 2021)

- **ISO/TC8/SC6/WG16 Ship Communication Network Systems**
  - **ISO 19847, 19848 and 16425**
  - Last meeting: 3rd - 5th Nov 2020
  - Next meeting: T.B.D. (May or June 2021)

Your contribution to the WGs and ISO standardization process would be highly appreciated

SSAP4 Project (Jan 2021 – Dec 2022)
(Smart Ship Application Platform 4)

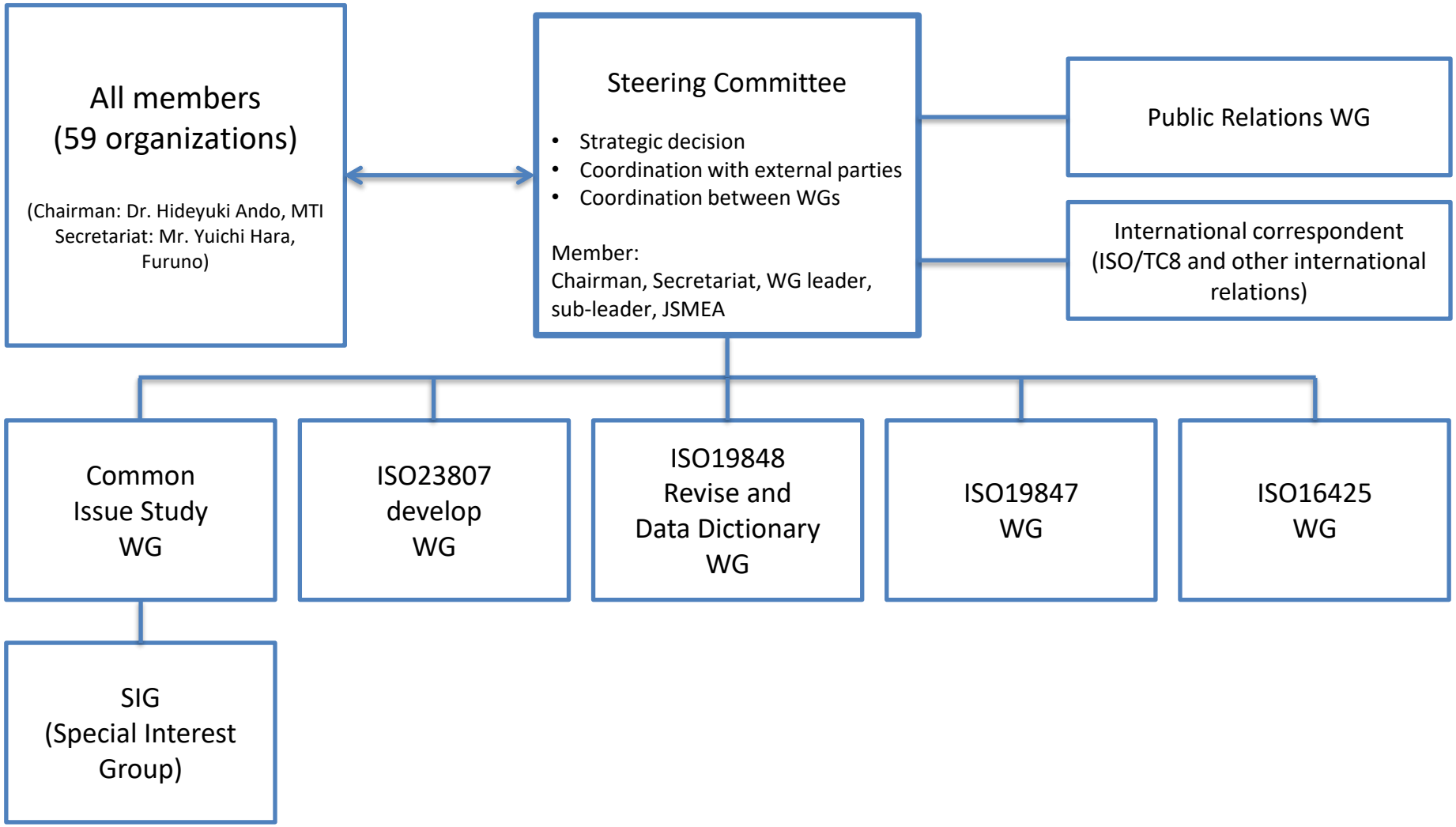
- Participants
  - 59 organizations

- A research project in JSMEA

- Action items (WG)
  - Common Issue Study WG
    - Special Interest Groups (SIGs)
  - ISO23807 Develop WG
  - ISO19848 Revise and Data Dictionary WG
  - ISO19847 Revise WG
  - ISO16425 Revise WG
  - Public Relations
  - International Correspondent

- Cooperation with JSTRA, official representative of Japan in ISO/TC8

Organization of SSAP4 Project



Cooperation with Smart Maritime Council

- SSAP highly appreciate support by Smart Maritime Council for ISO 19848
- Cooperation with SMC is on the agenda of SSAP4
- Please keep communication especially for to include ‘voyage’ data model and dictionary in the next ISO 19848

SMART MARITIME NETWORK NEWS SMN MEMBERS EVENTS ABOUT

Smart Maritime Council announces support for shipboard machinery data standard

The Smart Maritime Council Rotterdam meeting, where the ISO 19848 vote was passed

Story By: Rob O'Dwyer | February 26, 2020 | Features

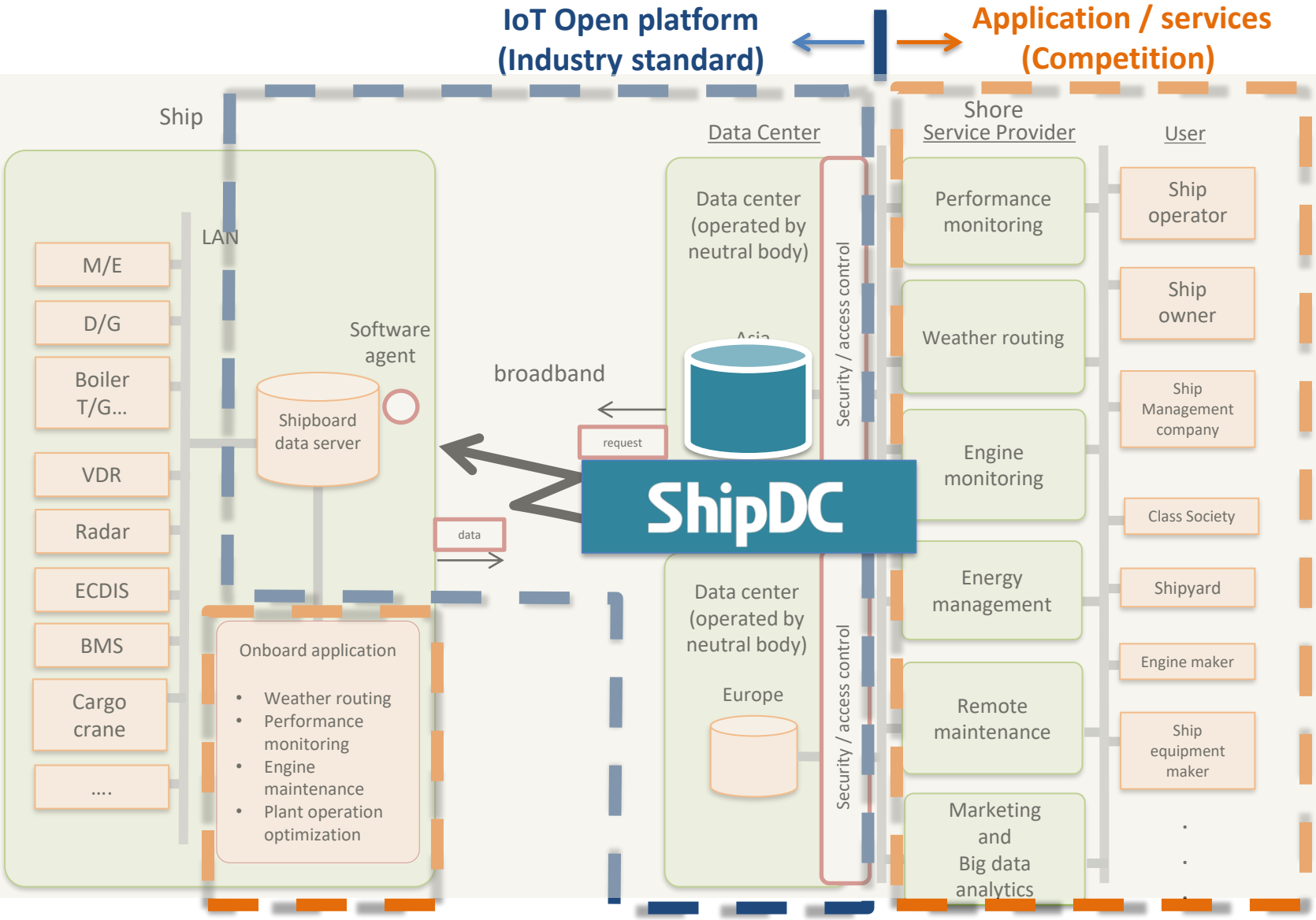
The Smart Maritime Council, the cross-industry membership group created by the Smart Maritime Network to improve technology interoperability in the industry, has announced its intention to support the use of the ISO 19848 data standard for shipboard machinery and equipment following a unanimous vote at the Council's most recent meeting in Rotterdam.

The Smart Maritime Council brings together maritime service and equipment providers, vessel operators and related industry stakeholders to discuss issues of technology compatibility, standardisation and harmonisation across the global transport chain.

Over the course of the last year the group has undertaken discussions at a series of regional meetings in

https://smartmaritimenetwork.com/2020/02/26/smart-maritime-council-announces-support-for-shipboard-machinery-data-standard/
(Feb 2020)

Open platform for data sharing in maritime industry

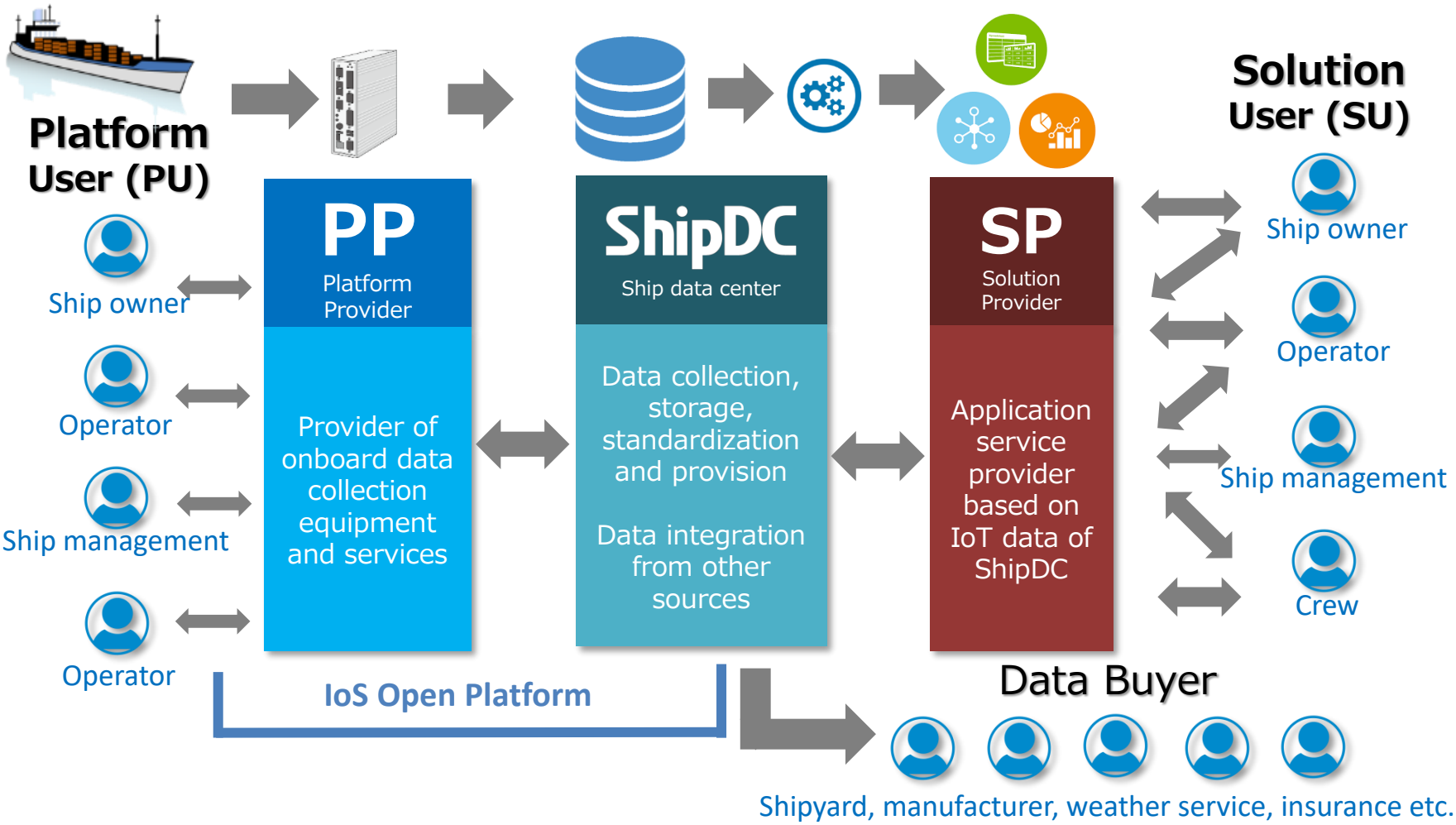


Internet of Ships Open Platform (IoS-OP)

56 members

- ✓ Stakeholder's role
- ✓ Data ownership rule
- ✓ Transparent and fair data sharing rule

→ Accelerate data driven innovation



Summary

- Update on Smart Ship Application Platform (SSAP) Project is introduced.

- SSAP is working on the following ISOs
  - **ISO NP 19847** rev. Shipboard data servers to share field data on the sea
  - **ISO NP 19848** rev. Standard data for machinery and equipment part of ship
  - **ISO NP 16425** rev. Guidelines for the installation of ship communication networks for shipboard equipment and systems
  - **ISO NP 23807** General requirements for the ship-shore asynchronous data communication

- Cooperation with SMC is on the agenda of SSAP4

- Data governance issue, including data ownership, is discussed in ShipDC/IoS-OP

Appendix

ISO NP 23807 and related standards

(Based on discussions with other groups of related standards)

Applications	**Customs /Trade** (Import/Export)	**Port info.** (Arrival /Departure)	**Navigation** (VTS / Route exchange)	**Navigation** (GMDSS)	**Operation** (Ship Mgmt. & Maintenance)
Data Transaction	**B to G** (Business to Government)				**B to B** (Business to Business)
Discussion groups /committees	WCO (World Custom Organization)	IMO FAL	IMO MSC NCSR / IALA / IHO		n/a
Typical Systems /Standards	Import/Export System (e.g. NACCS.jp)		e-Nav. / AIS	GMDSS (S-125)	n/a
Ongoing discussions and standards					
Data Model (Data Format /Metadata)	**WCO Data Model** etc.	*Discussing in IMO FAL	**S-100 S-212** etc.	**(S-100 etc.)**	**ISO19847 ISO19848** etc.
Data Exchange (Confidentiality /Integrity /Availability)	**FAL 44/7 (Maritime Single Window)**		**IEC CD/63137 (S-421)** **VDES**		**ISO/PWI 23807**

Thank you very much for your attention

Smart Ship Application Platform 4 (SSAP4) Project

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