

KORMARINE 2024

Plan for Global Maritime Digital Route Testbed

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Korea Research Institute of Ships & Ocean Engineering
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Plan for
Global Maritime Digital Route Testbed

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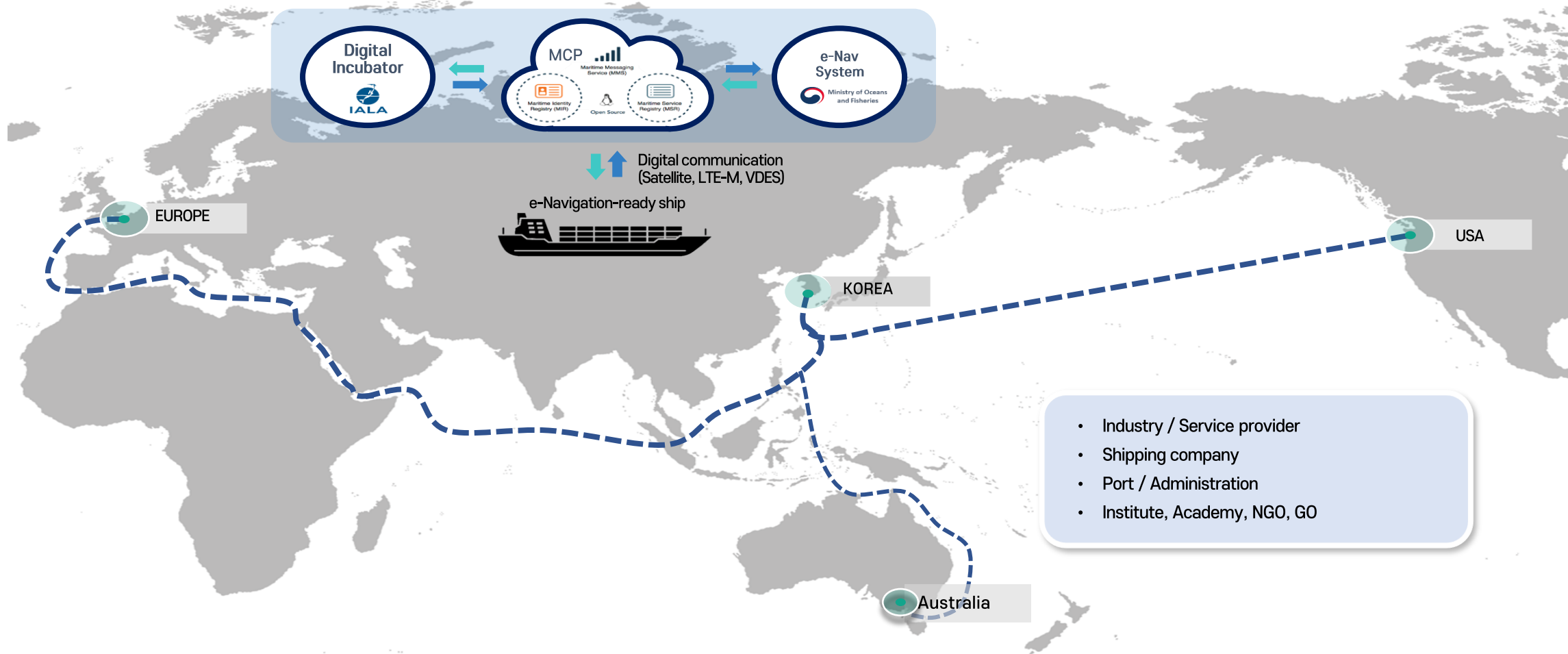
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Overview

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1.1 Concept & Definition

Development of an integrated system that can use maritime digital route technology and services for **international scale demonstration** of digital maritime services developed by each country or region



1.3 Vision & Objective



● Development of integrated system for international maritime digital services

Group 1 Development of INOS

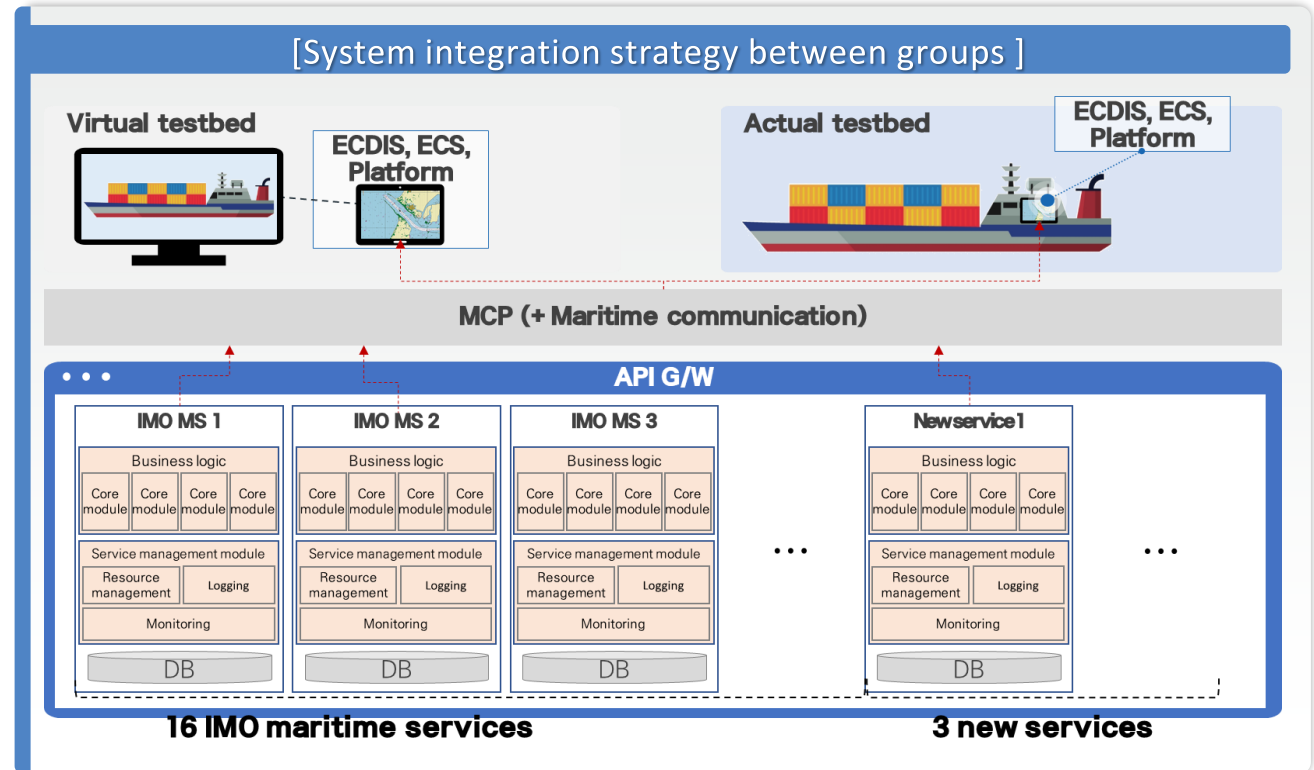
- International standard-based INOS (Intelligent Onboard System) prototype and standard

Group 2 Development of open CP

- Global maritime connectivity platform standard and technology

Group 3 Global testbed establishment

- Digital maritime services based on global testbed
- IMO maritime services and new services

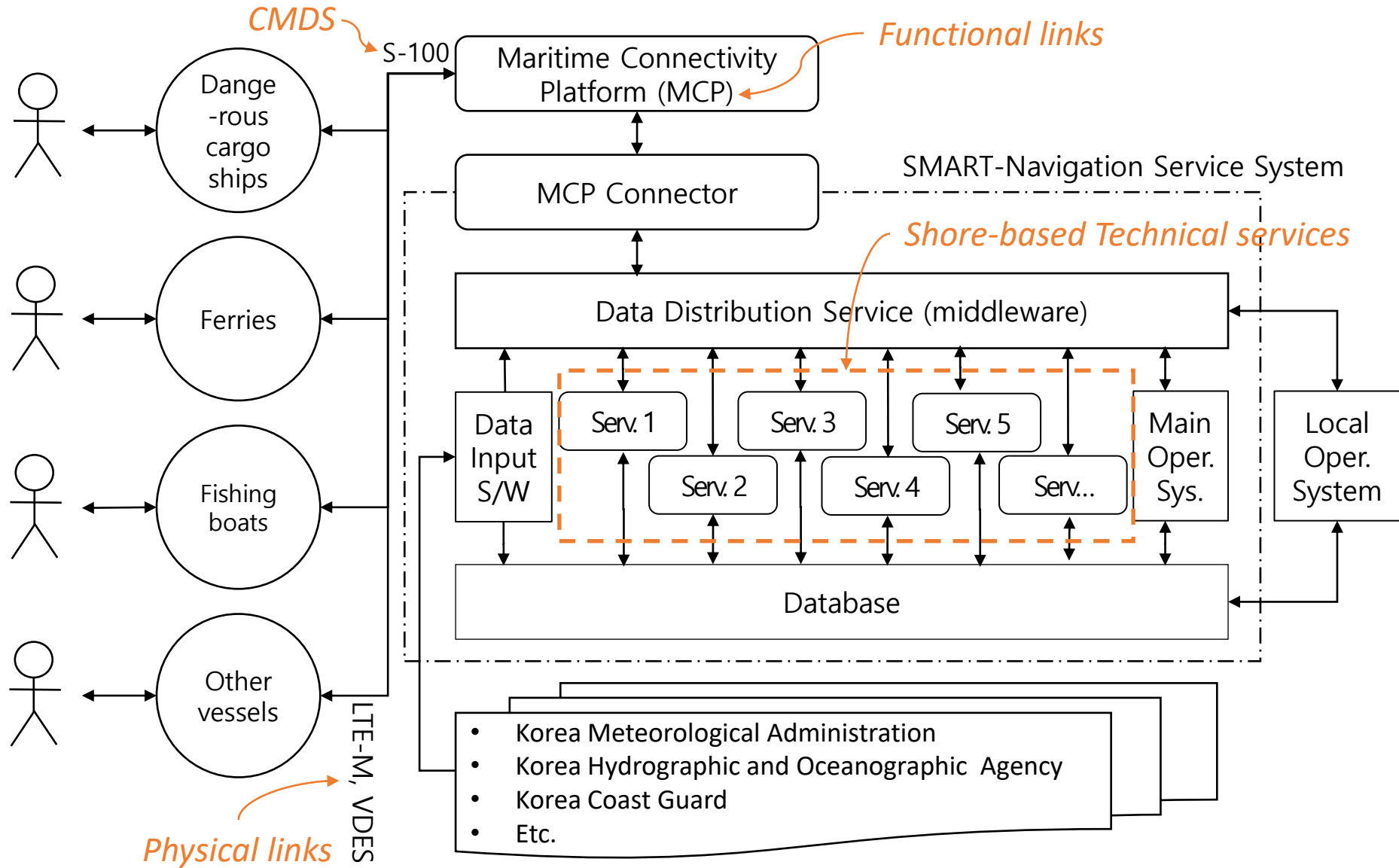


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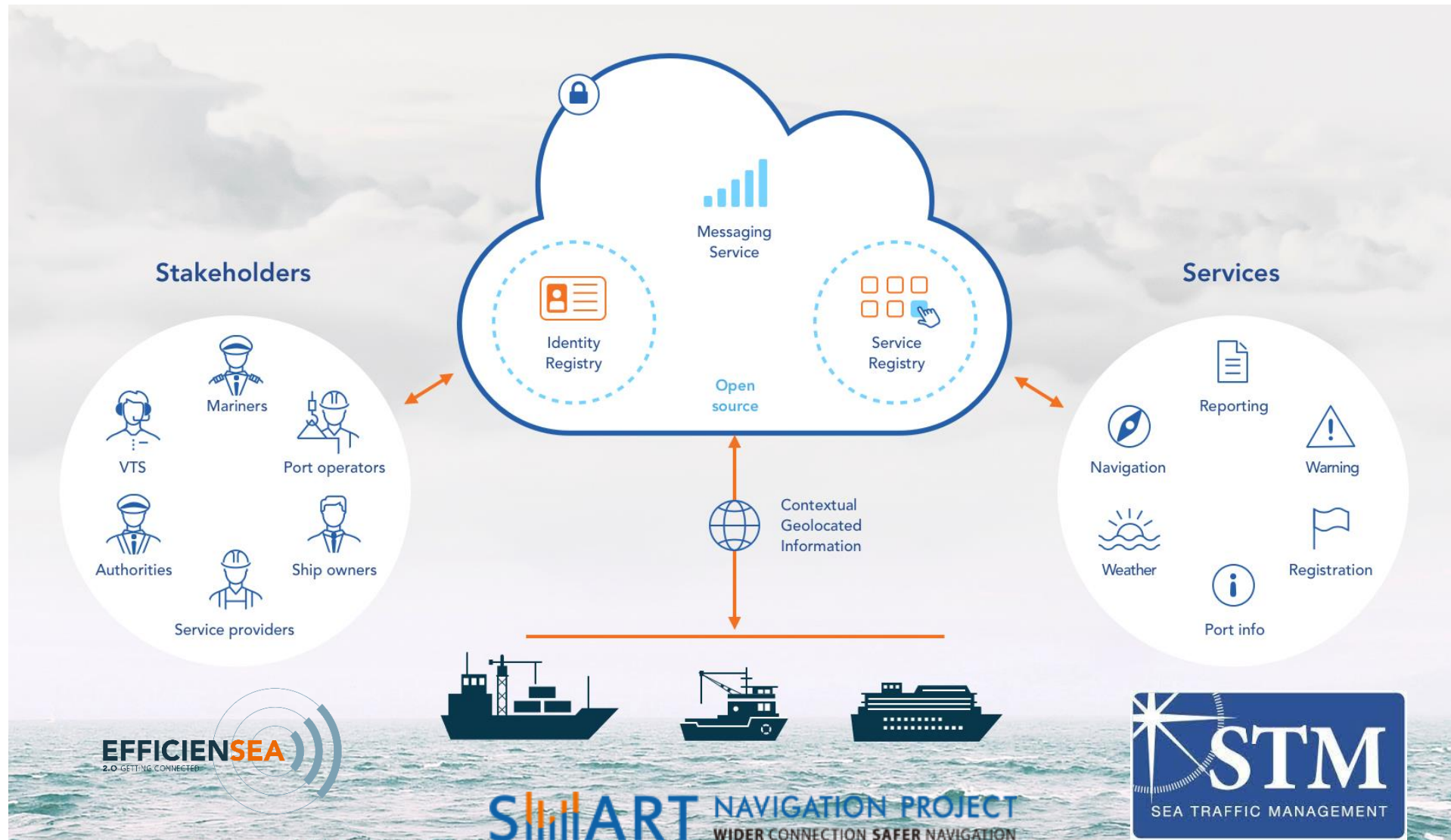
Project Details

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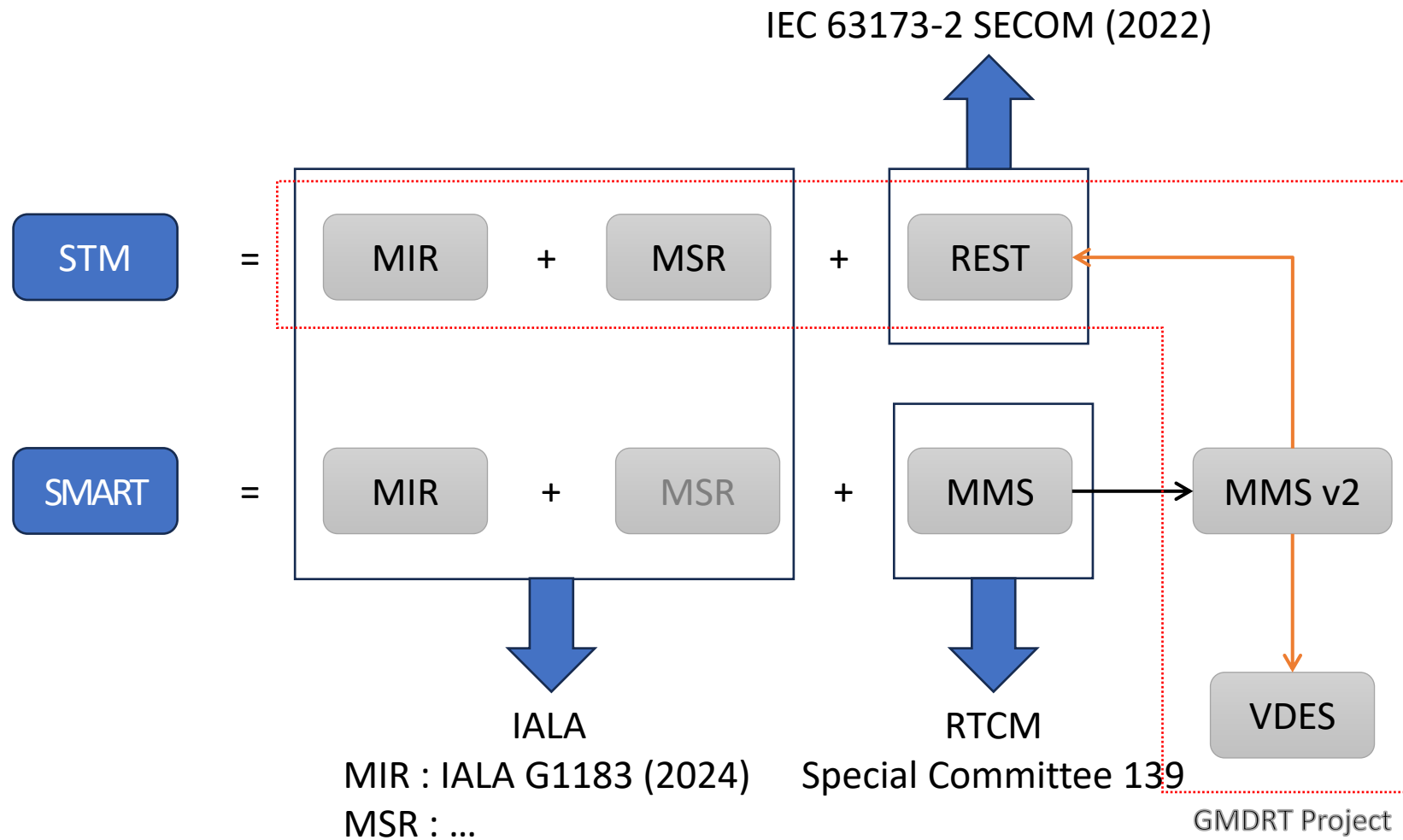
2.1 SMART-Navigation



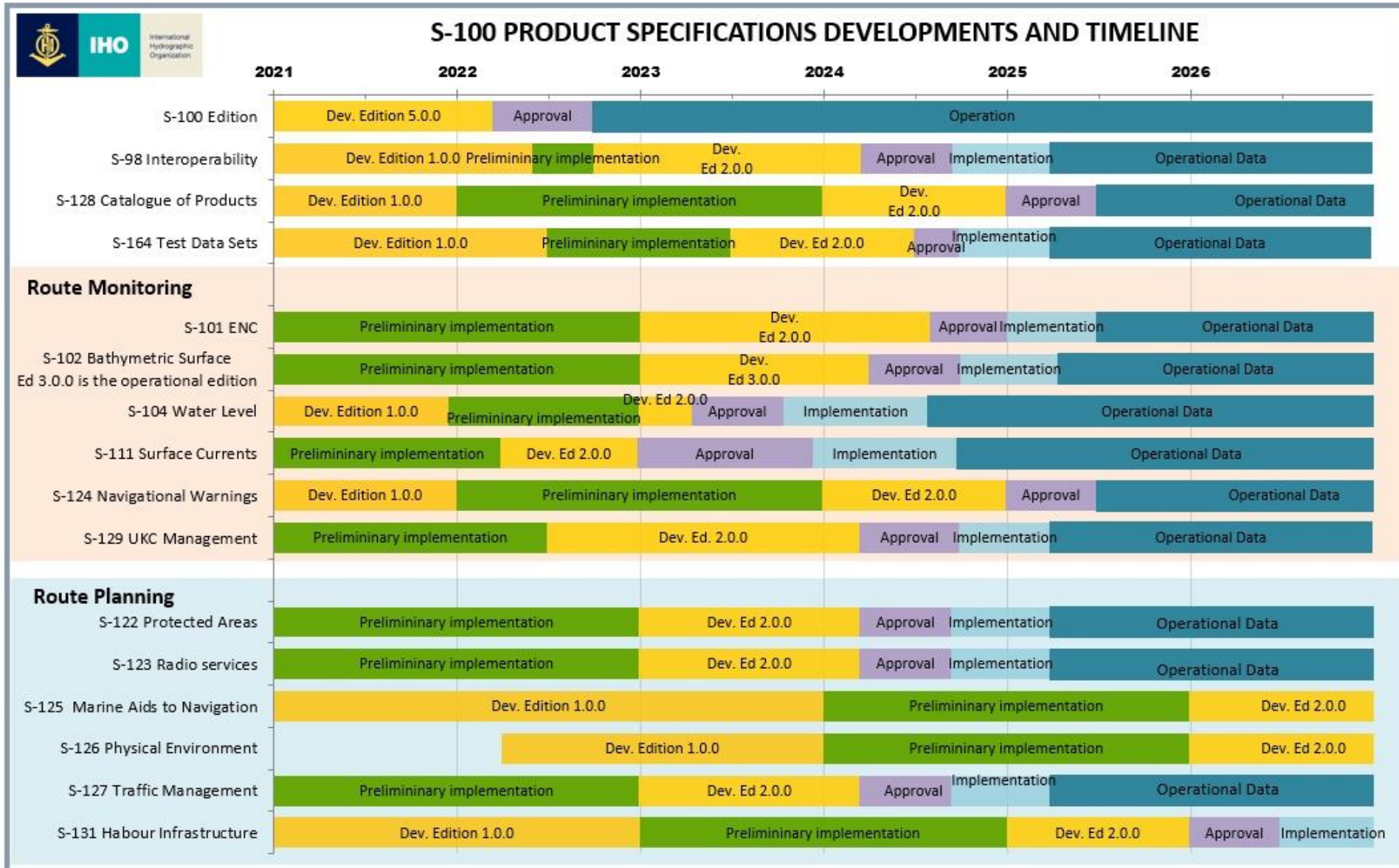
2.1 SMART-Navigation



2.2 e-Navigation Standards



2.2 e-Navigation Standards



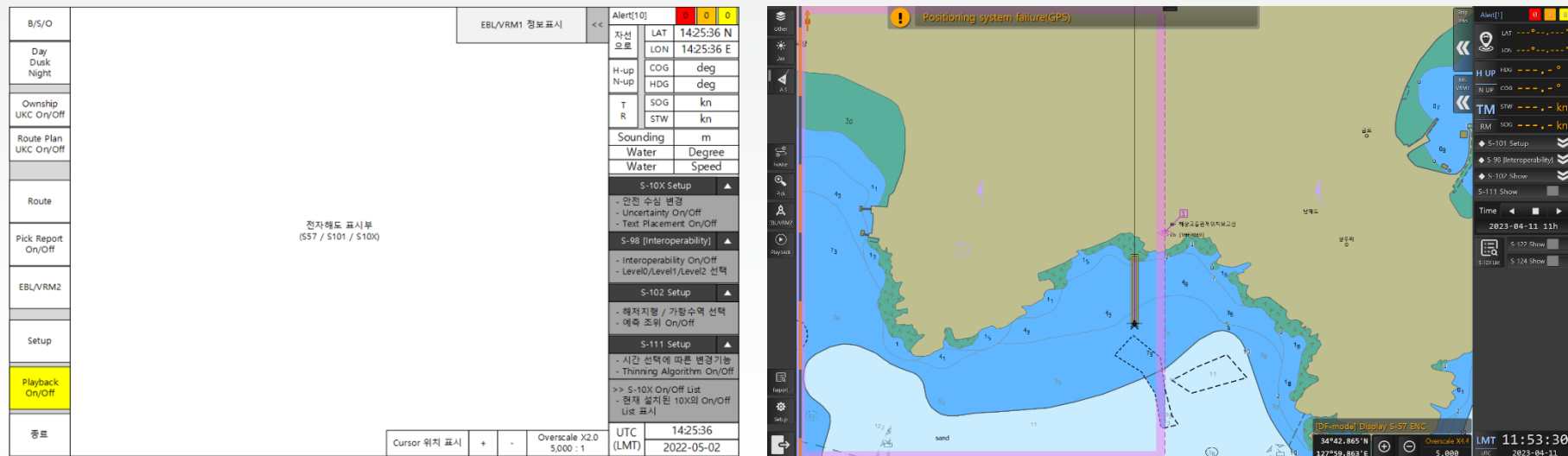
RESOLUTION MSC.530(106)/REV.1 (2024) PERFORMANCE STANDARDS FOR ELECTRONIC CHART DISPLAY AND INFORMATION SYSTEMS (ECDIS)

11.3.4 It should be possible to exchange, send and receive both selected and alternative route plans with shore-based Maritime Service providers. The exchange should be in accordance with standard formats for route plan exchange (IEC 61174/IEC 63173-1) and **should use standard service interfaces including information security protection (IEC 63173-2)** to allow for secure machine-machine communication...

Onboard System

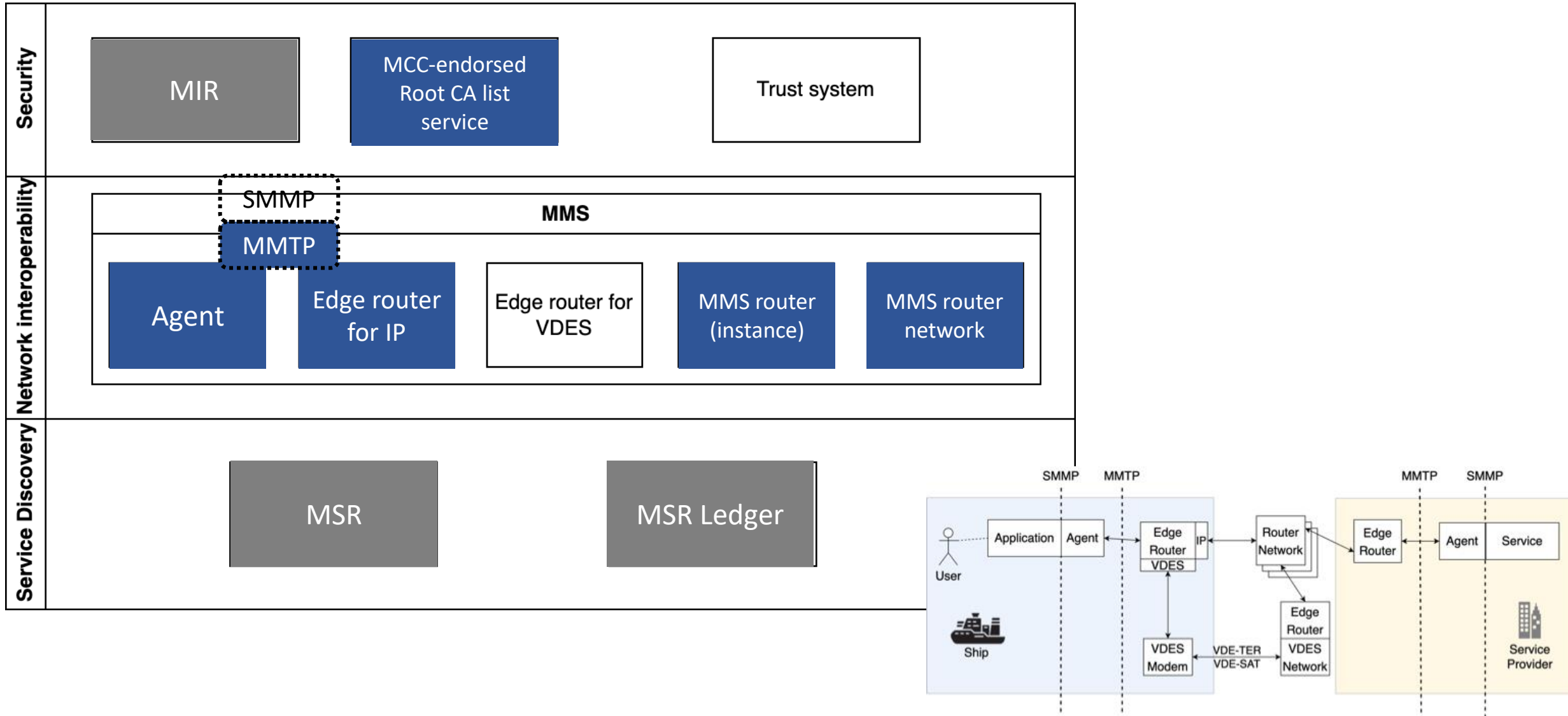
Development of Dual-Fuel ECDIS

- ▶ The goal of group 1 includes ECS for small boats, ECDIS for general ships, and a navigation platform considering autonomous ships.
- ▶ The project consists of creating specifications and conformity evaluation guidelines for these onboard systems.



S-57/S-101 simultaneous handling

2.3 Development Targets of GMDRT Project



2.3 Development Targets of GMDRT Project

GMDRT Services (1/2)

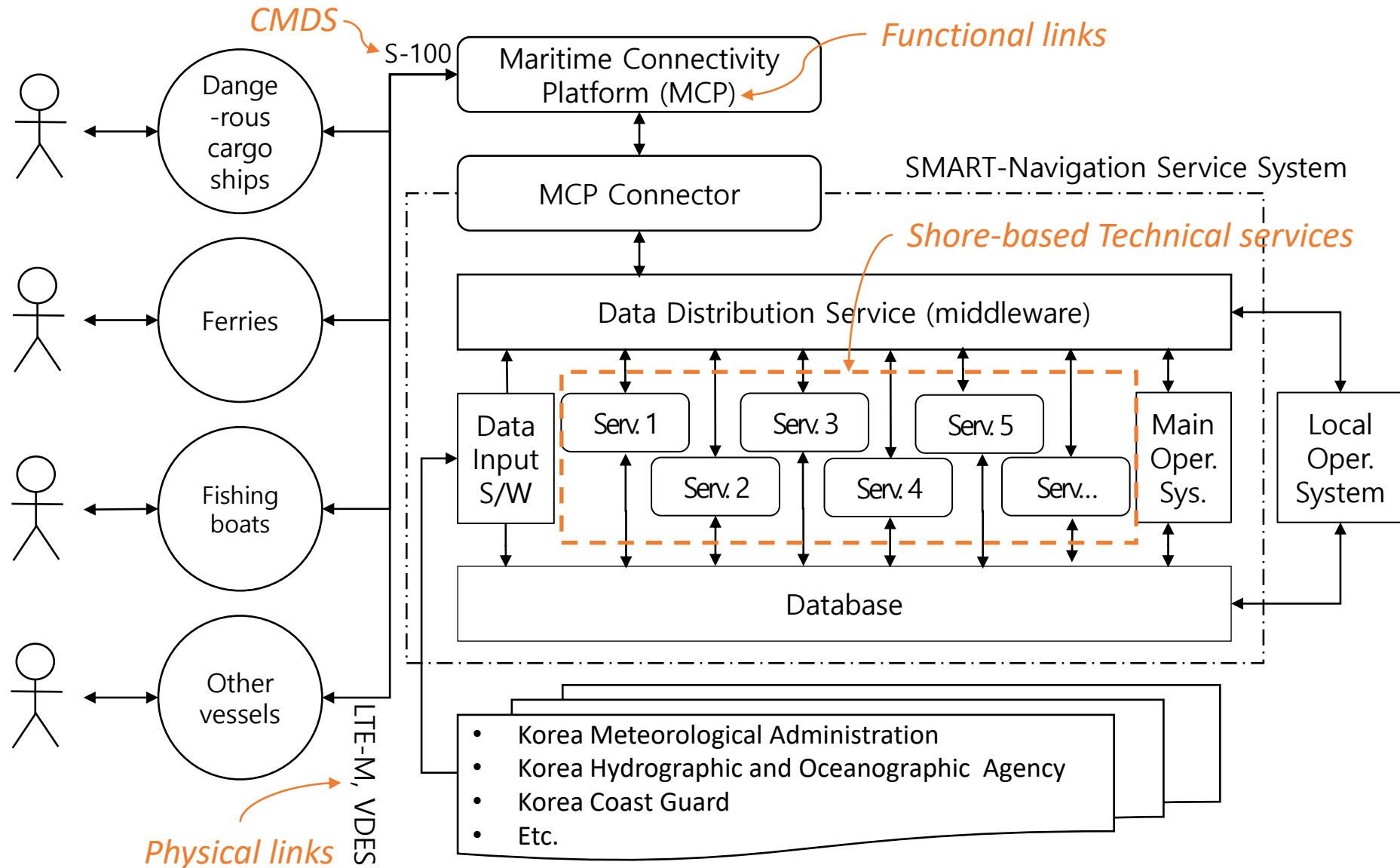
ID	Name	Data	Service Description
MS1	Vessel traffic service (VTS)	AIS ASM (VTS-generated/synthetic targets)	Nearby vessel information
		S-212 (VTS Digital Information) S-421 (Route Plan)	Traffic Clearance Service (New)
MS4	Port support service (PSS)	S-211 (Port Call Message Format)	Port Call Message (New)
MS5	Maritime safety information (MSI) service	S-124 (Navigational Warnings) S-412 (Weather and Wave Hazards)	Navigation warnings and weather warnings
MS8	Vessel shore reporting	EPC (Electronic Port Clearance, ISO 28005-2)	Partial implementation of EPC (New)
MS12	Nautical publications service	S-122 (Marine Protected Areas) S-123 (Marine Radio Services) S-127 (Marine Traffic Management)	Nautical publication
MS14	Meteorological information service	S-412 (Weather and Wave Hazards) S-413 (Weather and Wave Conditions)	Marine weather information
MS15	Real-time hydro and environmental information service	S-102 (Bathymetric Surface) S-104 (Water Level Information for Surface Navigation) S-111 (Surface Currents)	Real-time hydro and environmental information service
Add.1	Low carbon emission route planning service	S-421 (Route Plan)	Minimum carbon emission route (New)

2.3 Development Targets of GMDRT Project

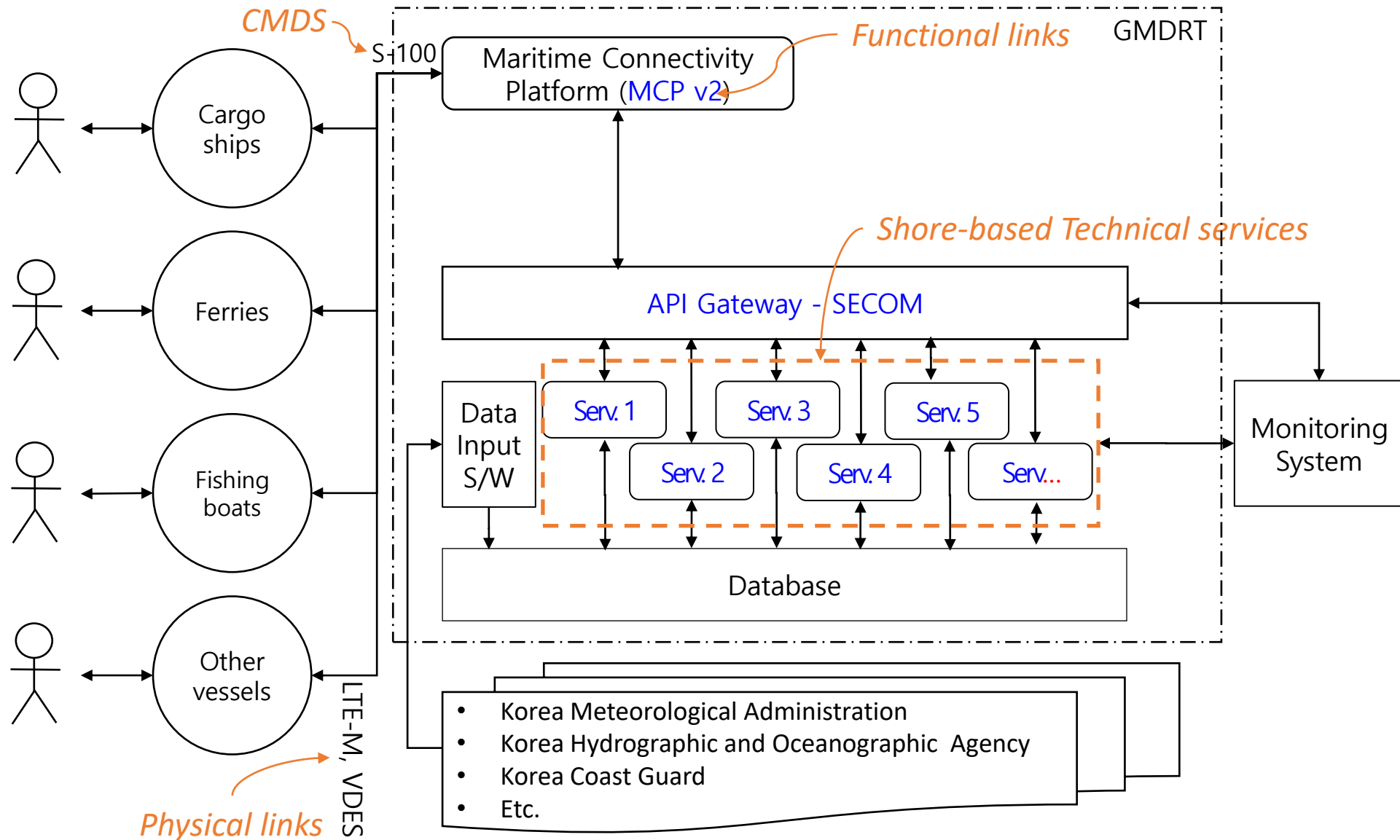
GMDRT Services (2/2)

ID	Name	Data	Service Description
MS1	Vessel traffic service (VTS)	S-124 (Navigational Warning) S-421 (Route Plan)	Hazard information around the route
		S-127 (Marine Traffic Management)	Slow speed regulation information (New)
MS4	Port support service (PSS)	S-127 or S-131 (Marine Harbor Infrastructure)	ISPS Validity Notification (New)
MS6	Pilotage service	S-127 (Marine Traffic Management)	Port pilotage information
MS7	Tug service	ASM (VTS-generated/synthetic targets)	Tug location information
MS9	Telemedical assistance service (TMAS)		Hospital and clinic information (New)
MS10	Maritime assistance service (MAS)		SOS function
MS11	Nautical chart service	S-101 (Electronic Navigational Chart)	ENC update
MS16	Search and rescue (SAR) service		(New)
Add.2	Ship performance management service		Speed and engine settings considering CII rating (New)
Add.3	Estimated time of departure prediction service	S-211 (Port Call Message Format)	AI-based ETD prediction (New)

2.3 Development Targets of GMDRT Project



2.3 Development Targets of GMDRT Project



Open Digital Incubator Initiative (ODI)

ODI Current Activities

- S-124 Navigational warnings service
- S-125 AtoN information service
- S-212 VTS traffic clearance service
- S-421 ...
- S-129 ...



- » Share developments in digital services from Europe, Canada, and Australia, and collaborate to ensure compatibility.
- » Enhance services through the participation of maritime safety service entities (Canadian Coast Guard, Australian Maritime Safety Authority, etc.)
- » It is expected that access to navigation warnings and maritime traffic control services in Australia, Europe, and other regions will be possible through ODI.

2.4 Global Cooperation & Collaboration

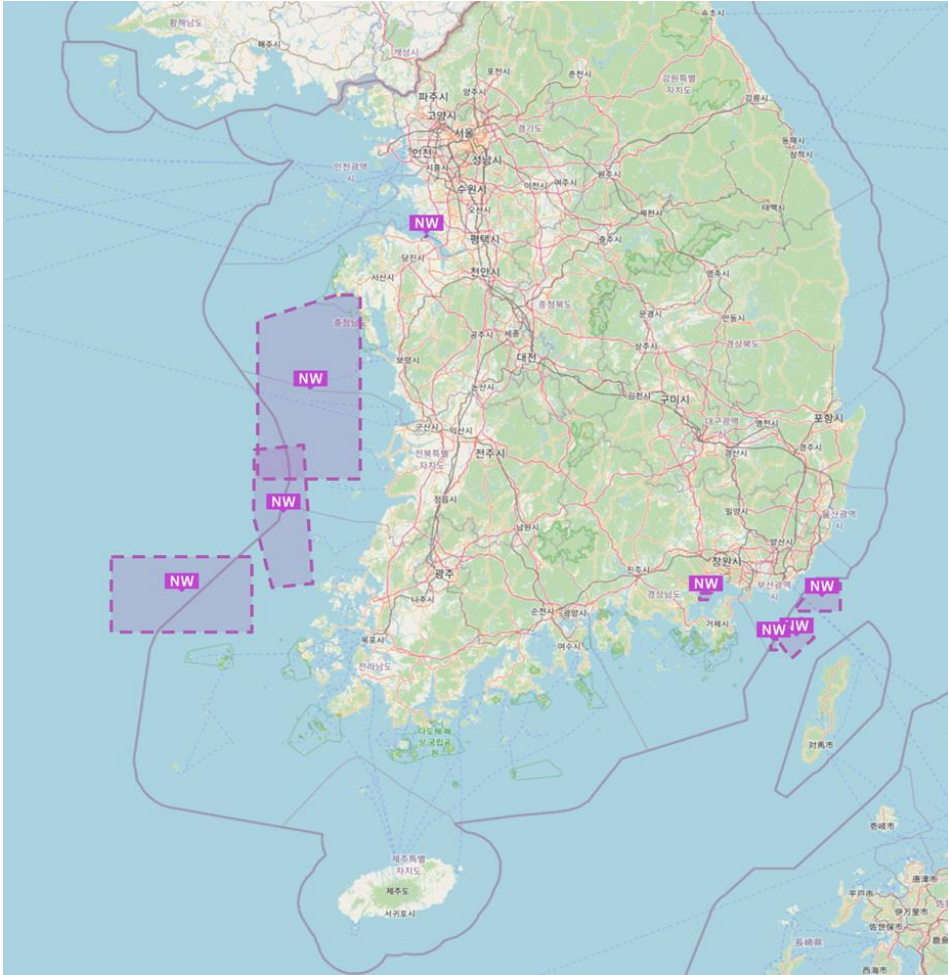
The screenshot shows a web browser window with the URL <https://navui.amsaconnectivity.net>. The page is titled "AMSA Nav UI" and has a "SERVICES" tab selected. On the left, there is a table of services with columns for "Subscribe", "Name", and "Status".

Subscribe	Name	Status
<input type="checkbox"/>	s124 CCG service prod service	Pull Online
<input checked="" type="checkbox"/>	AMSA NAVAREA X Warnings	Live Pull Online
<input type="checkbox"/>	Demo S-124 MMS Service	Offline
<input type="checkbox"/>	DMA Baleen Test Server	Live Pull Online
<input type="checkbox"/>	Fintraffic Navigational Warnings in Finland	Pull Online
<input type="checkbox"/>	Fintraffic Navigational Warnings in Finland - Unauthenticated	Pull Online
<input type="checkbox"/>	KRISO Navigation Warnings	Live Pull Online
<input type="checkbox"/>	s124 CCG service dev service	Offline

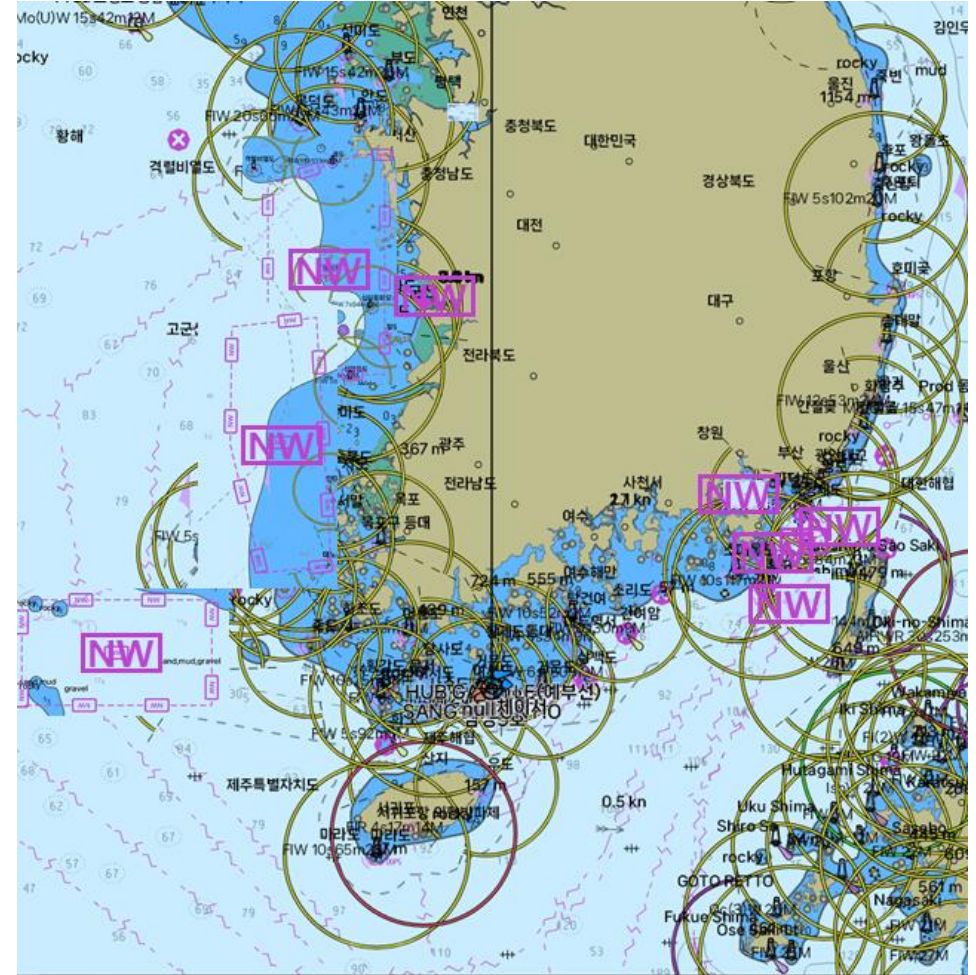
To the right of the table is a map of the Pacific region with several purple markers labeled "NW". A red warning banner at the bottom of the map area reads: "DO NOT USE FOR NAVIGATION - DATA MIGHT BE INCORRECT/INCOMPLETE".

A vertical stack of three images. The top image shows a man in a suit at a desk with a microphone, labeled "IALA Meetings". The middle image shows a group of people in a meeting room, labeled "IALA Secgen". The bottom image shows a video conference interface with a red 'X' icon over a video feed, labeled "Dayoung Song". Below this is another video conference interface with a red 'X' icon, labeled "Peter_GMT". At the bottom of the stack are two circular icons: one with "GY" and "Gaole Yao", and another with "+73".

2.4 Global Cooperation & Collaboration



Nav UI



ECDIS

2.5 Roadmap

2023~2025

- Development of ECDIS, MCP and services

2026

- Simulation based pretest

2027~2028

- Demonstration of GMDRT using real voyages

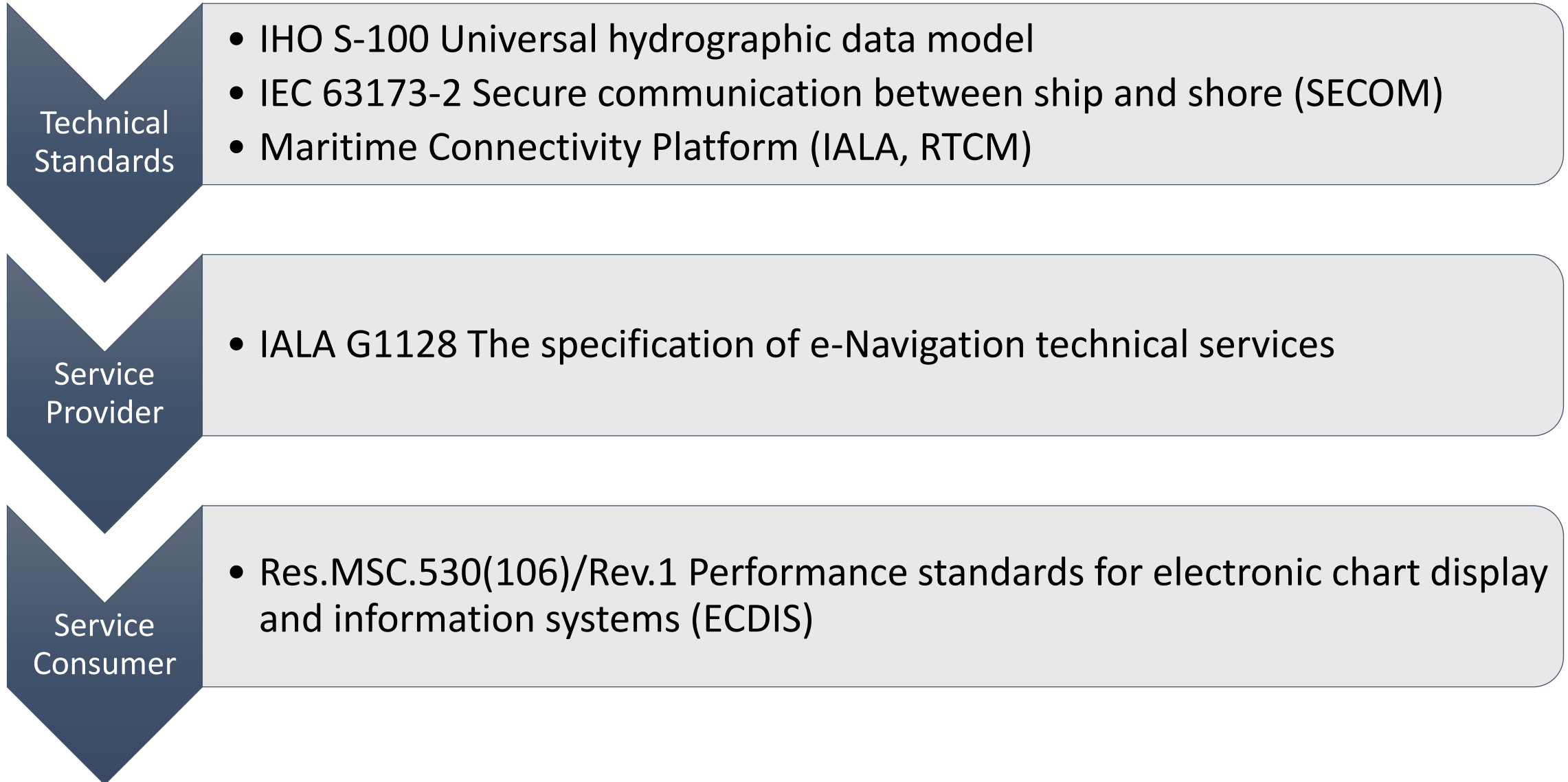
2029

- Resolution MSC.530(106)/Rev.1 ECDIS

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Conclusion

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Expected outcome 1



Development of INOS equipment

- Contributing to the **sustainable ecosystem** of the shipbuilding and marine equipment industry
- Development of INOS equipment that **can be continuously linked with technologies** to be developed in the future

Expected outcome 2



International cooperation framework

- Development of an **open Connectivity Platform** to provide the international digital maritime information service
- Establishment of an **international cooperation framework** for the international standards of maritime service provider

Expected outcome 3



Activation of digital maritime transportation

- Provision of digital maritime services that are **not limited to ship types or regions**
- Contribution to safe sea environment and **new maritime service ecosystem**

THANK YOU

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