

# IALA Workshop on International Mobile Telecommunications for Marine AtoN

**„How do your nice brand new Maritime Services and their nice S-100-world data products, both with explicit real-time aspirations get their data across between shore/ship and ship/shore supportive of IP protocols in real-time with high bandwidth and (very) low latency, and cyber-secure?“**

**„And is there a system family that can deliver seamlessly additional features to the maritime domain, such as digital voice communications, Internet of things, and even high precision positioning? Even with satellite integration?“**

**„Yes, the IMT family.“**

**„If so, why have we not adopted it to the maritime domain and marine AtoN domain?“**

**„Maybe because we didn't bother (enough) ...?“**

**– This is going to change this year! = Join, the IALA IMT Workshop 1-5 Sep 2025**

# The digital transformation by the advent of the Maritime Services

## „Maritime Services in the context von e-Navigation“ MSC.1/Circ.1610 **REV1**

Maritime Service
MS 1 – Vessel traffic service
MS 2 – Aids to navigation service
MS 3 – (Reserved for future use)
MS 4 – Port support service
MS 5 – Maritime safety information service
MS 6 – Pilotage service
MS 7 – Tug service
MS 8 – Vessel shore reporting
MS 9 – Telemedical assistance service
MS 10 – Maritime assistance service
MS 11 – Nautical chart service
MS 12 – Nautical publications service
MS 13 – Ice navigation service
MS 14 – Meteorological information service
MS 15 – Real-time hydrographic and environmental information services
MS 16 – Search and rescue service



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MARITIME  
ORGANIZATION

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MSC.1/Circ.1610/Rev.1  
24 June 2024

### DESCRIPTIONS OF MARITIME SERVICES IN THE CONTEXT OF E-NAVIGATION

# The digital transformation by the advent of the Maritime Services

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**These (maritime) services in the digital space complement their physical correlates by their digital representation regarding physical functionality and/or functionalities even only defined and existent in the digital space.**

**They each explicitly prompt their associated data definitions from the S-100 world (not even confined to a single data product) as well as call upon connectivity provided.**

## S-212 (Digital VTS)





# The digital transformation by the advent of the Services-Data-Connectivity stack

## Extract from MSC.530(106)/Rev.1 (ECDIS-PS, 2024)

.3 changing the position of a waypoint.

**11.3.3** It should be possible to plan one or more alternative routes in addition to the selected route. The selected route should be clearly distinguishable from the other routes.

**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<sup>8</sup> and should use standard service interfaces including information security protection<sup>9</sup> to allow for secure machine-machine communication. Received route plans should be considered as a basic indication of preferred intention and should be indicated by ECDIS as for voyage planning purposes only. The use of the received route plans should be controlled by the master, in accordance with SOLAS regulations V/34 and V/34-1, respecting the master's professional judgement and discretion.

**11.3.5** The exchanged route plan should include a route schedule including estimated time of departure and estimated time of arrival as soon as they can be determined with reasonable accuracy.

**11.3.6** A graphical indication is required if the mariner plans a route closer than a user-specified distance from own ship's safety contour.

<sup>8</sup> IEC 61174/IEC 63173-1.

<sup>9</sup> IEC 63173-2.

**Red: EN IEC 63173-1 S-421 route plan based on S-100**

**Blue: digital services; green: SECOM radio communications protocol**

## Services – Data – Connectivity

(Digital maritime)  
Services

Data (models)  
(S-100 World)

Connectivity

One „above-chart“  
example only,  
though.

Protocol mentioned  
here explicitly,  
only, though.

# The digital transformation by the advent of the Services-Data-Connectivity stack

IMO Maritime Safety Committee, Input document MSC109/19/3 et al

## WORK PROGRAMME

Proposal for a new output to realize the full potential of the S-100 Electronic Chart Display and Information System (ECDIS)

Submitted by Antigua and Barbuda, Australia, Bangladesh, Canada, Cook Islands, Ecuador, Georgia, Indonesia, Liberia, New Zealand, Türkiye, Ukraine, United Arab Emirates, BIMCO and IALA

## SUMMARY

*Executive summary:* This document proposes a new output for the Organization to develop guidance to establish a framework for data distribution and global Internet Protocol (IP)-based connectivity to realize the full potential of S-100 capable Electronic Chart Display and Information System (ECDIS).



# The digital transformation by the advent of the Services-Data-Connectivity stack

## IMO Maritime Safety Committee, Input document MSC109/19/3 et al

### Urgency

65 With S-100 capable ECDIS expected on ships as early as 1 January 2026, the IHO is committed to ensuring that Phase 1 (Route monitoring) standards are ready in time for Member States to produce official S-100 data in 2025 (MSC 108/12/4 paragraphs 14 and 15).

66 ECDIS equipment installed on or after 1 January 2029, must be S-100 compatible. The absence of established objectives and performance requirements for real-time data exchange currently precludes ECDIS from fully realizing the potential of S-100 services, representing a critical gap in the system's capabilities.

67 MSC 109 must take urgent action to ensure the timely development of a globally unified framework for real-time S-100 data exchange. If this new work is not prioritized, it is highly unlikely that a standardized and effective solution will be available by the 2026 deadline and fully operational by the 2029 deadline, as outlined in resolution MSC.530(106)/Rev.1, when S-100 capable ECDIS becomes mandatory for new-builds.



# The digital transformation by the advent of the Services-Data-Connectivity stack

IMO Sub-Committee on Navigation, Communication, Search&Rescue,  
NCSR12/1/1 Agenda Item 14:

- 14 Development of guidance to establish a framework for data distribution and global IP-based connectivity between shore-based facilities and ships for ECDIS S-100 products**

The Sub-Committee will be invited to consider the development of guidance to establish a framework for data distribution and global IP-based connectivity between shore-based facilities and ships for ECDIS S-100 products (see document MSC 107/20, paragraphs 19.27 to 19.34 for further background information).

**Date: NCSR12 13-22 May 2025, London**

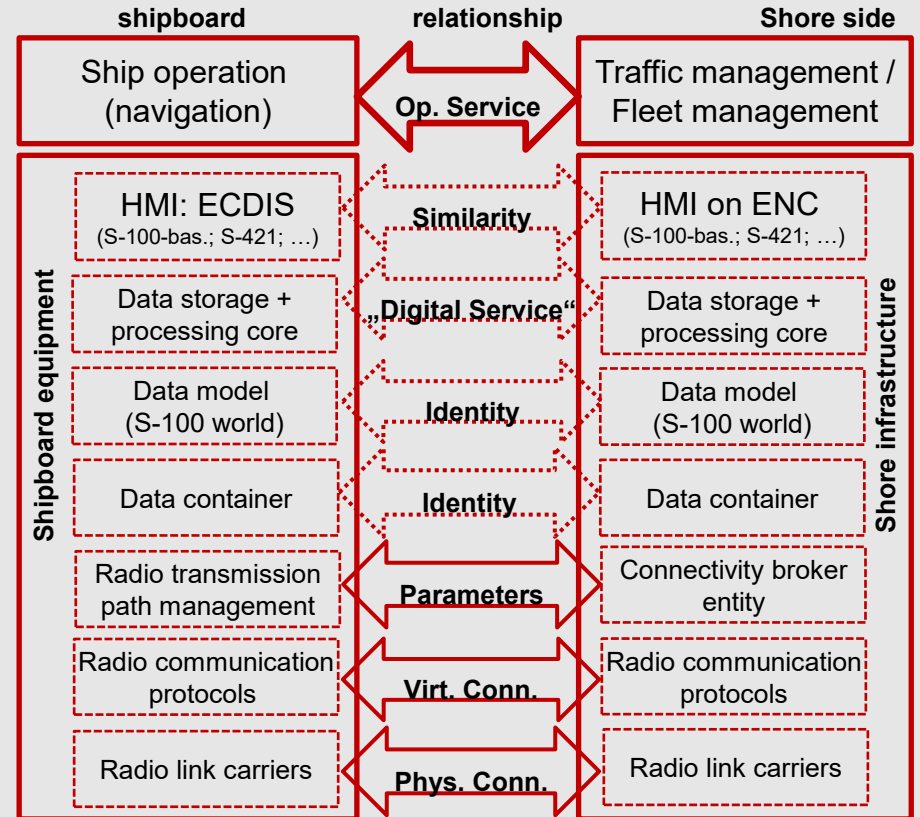
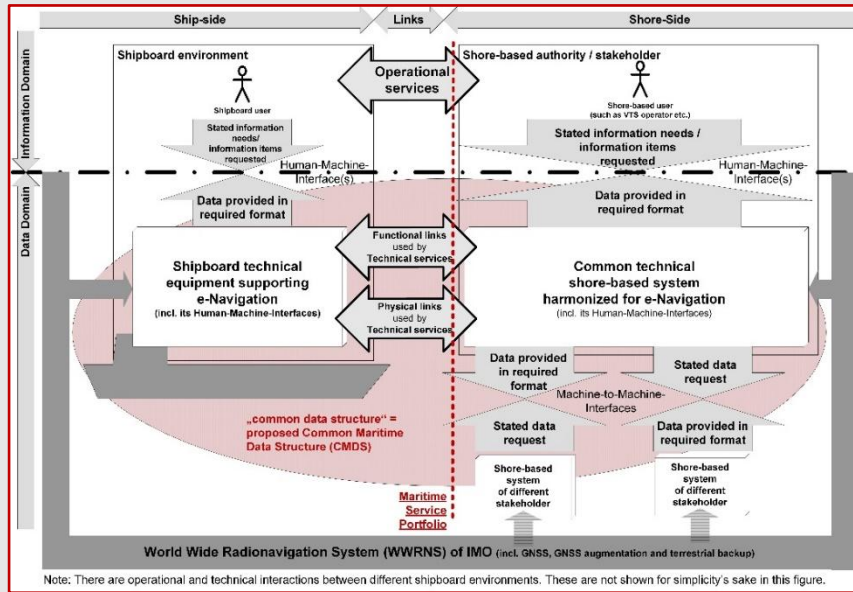
bulky documents, **10 February 2025;**

non-bulky documents + bulky information documents, **10 March 2025**

documents commenting, **24 March 2025**

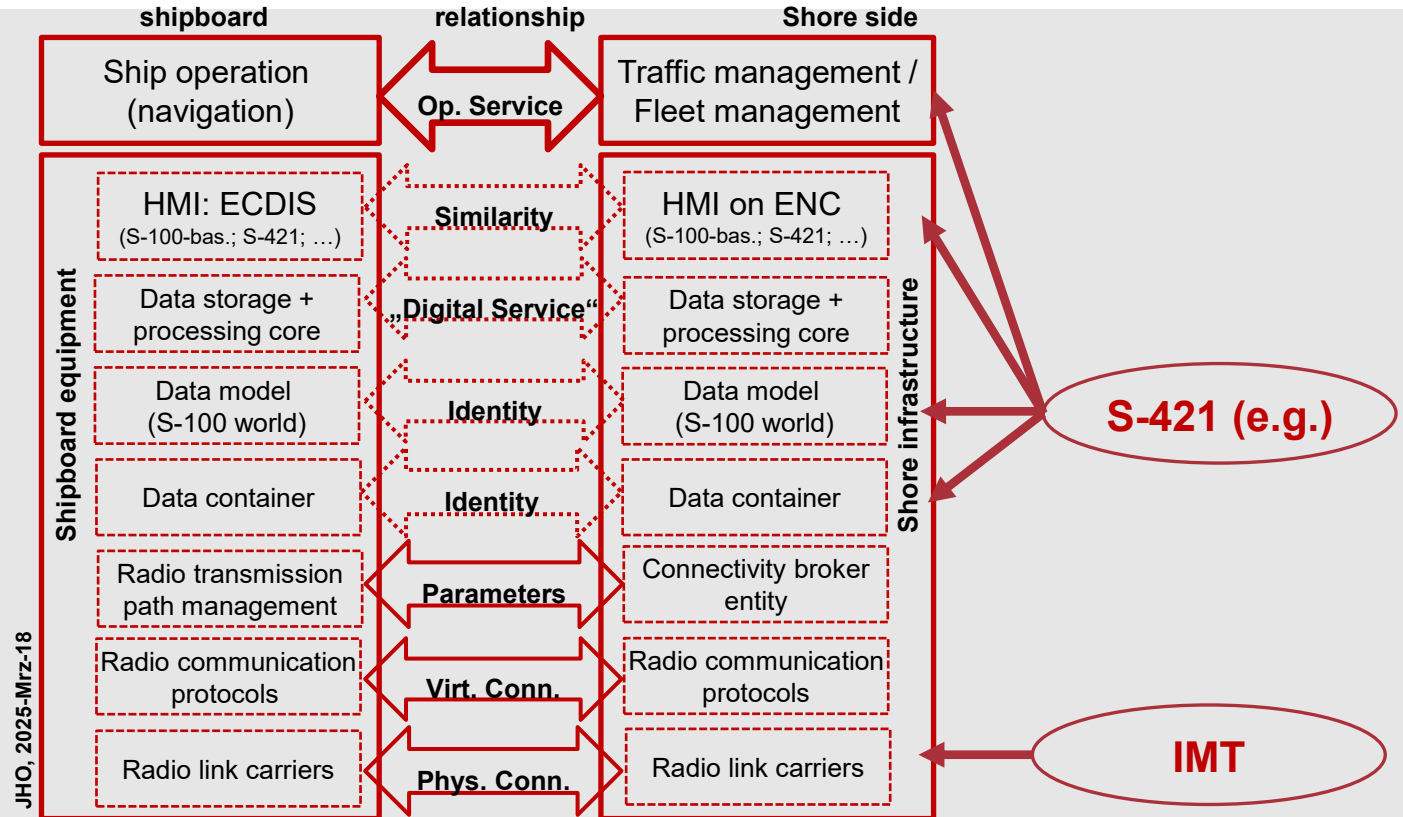
# The digital transformation by the advent of the Services-Data-Connectivity stack

## Services – Data – Connectivity stack

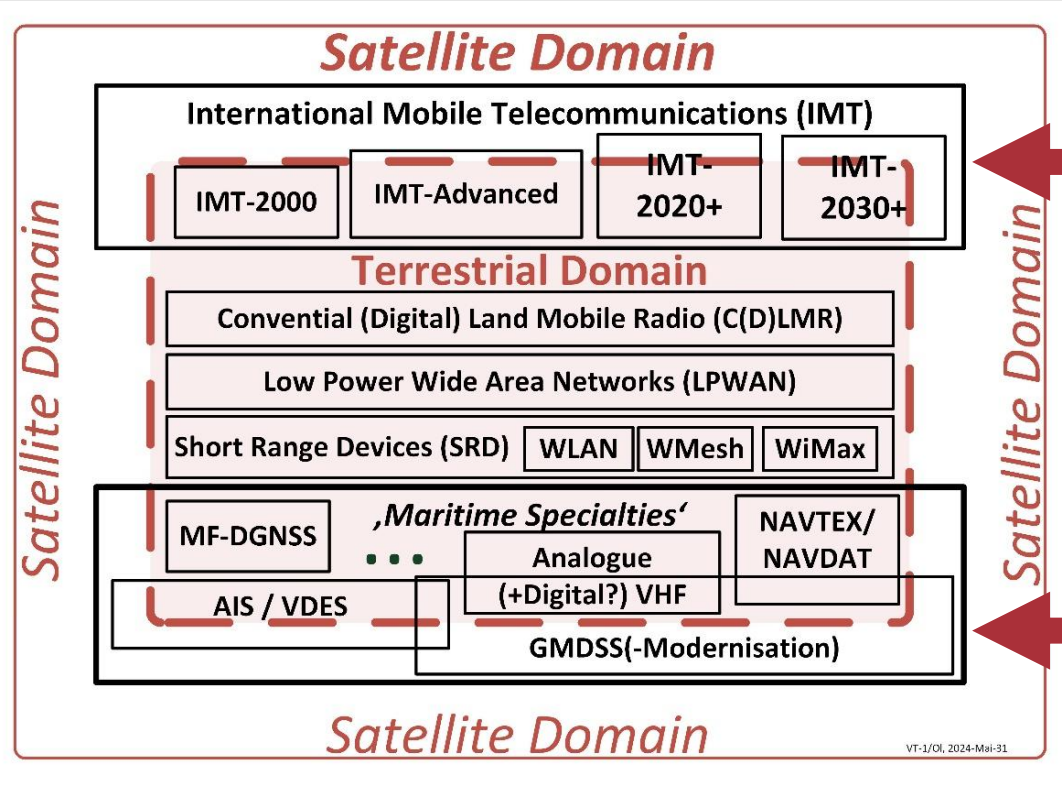


# The digital transformation by the advent of the Services-Data-Connectivity stack

## Services – Data – Connectivity stack



# The digital transformation by the advent of the IMT @ ‚wet‘ domains



„We didn't  
bother enough“

„Oh, by the way,  
GMDSS can be  
addressed, too.“



# The digital transformation by the advent of the IMT @ ‚wet‘ domains

IMT-2030 –  
Rec. ITU-R  
M.2160(2023)

From 5G  
to 6G

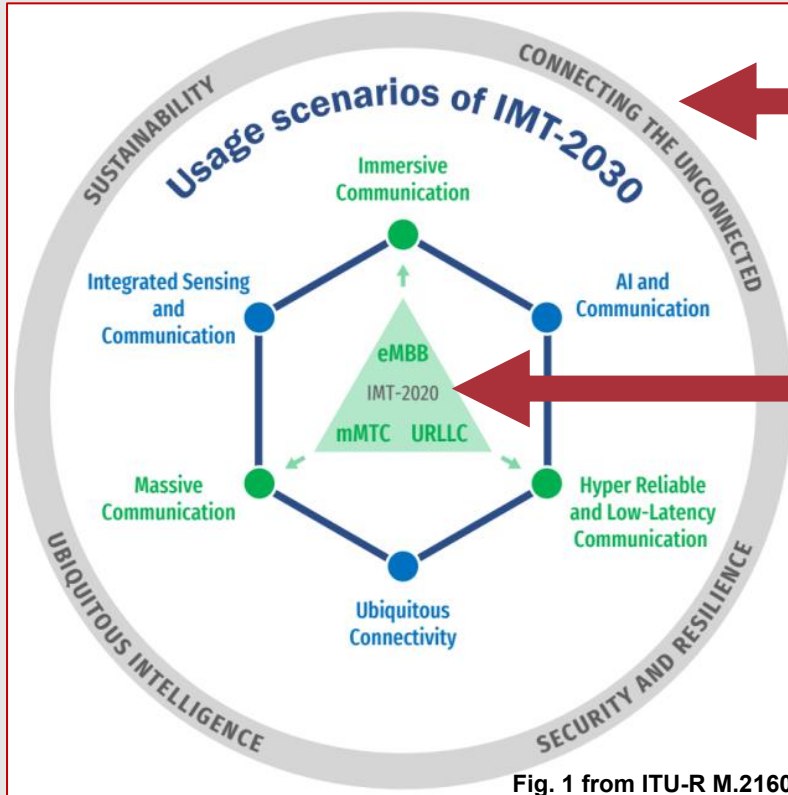


Fig. 1 from ITU-R M.2160

„IMT-2030 and beyond“  
aka 6G

„IMT-2020 and beyond“  
aka 5G

# The digital transformation by the advent of the IMT @ ,wet‘ domains

## Capabilities of IMT-2030

NOTE: The range of values given for capabilities are estimated targets for research and investigation of IMT-2030.

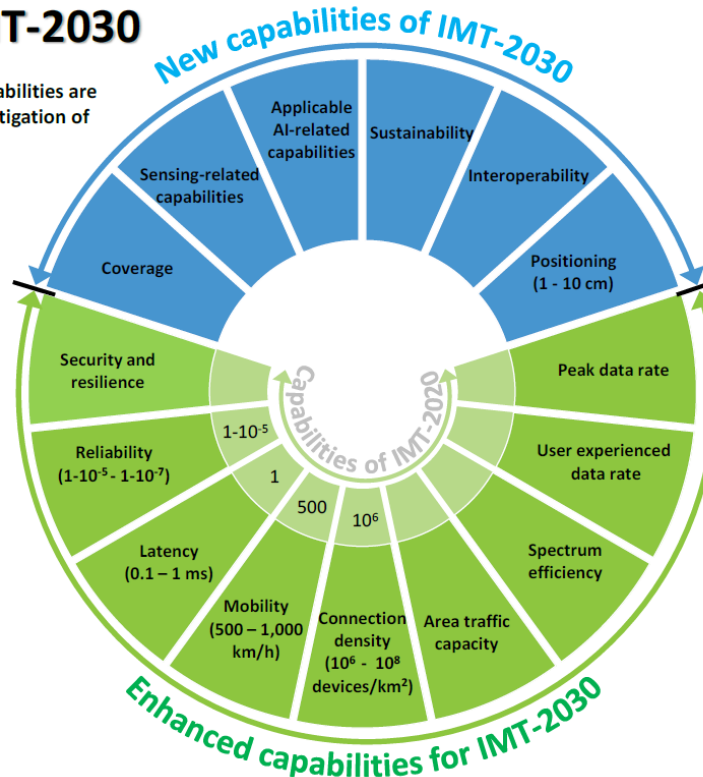


FIG. 2 FROM ITU-R M.2160

**IMT-2030 –  
Rec. ITU-R  
M.2160(2023)**

**Enhancing  
capabilities from  
5G to 6G  
Adding genuinely  
new capabilities  
from 5G to 6G**

# The digital transformation

by the advent of the IMT @ at the „Marine AtoN domain“



WSV.de

Join us for

„Rising to the challenge of  
implementing IMT technologies  
at the Marine AtoN domain  
(including VTS)“!

**IALA IMT Application Workshop**

**Karlsruhe, Germany**

**01-05 September 2025**

Direct  
High-speed  
Trains (ICE/TGV)

Paris Est

