



International Association of Marine Aids to Navigation and Lighthouse Authorities  
11th Co-operation Forum, Singapore 2018  
Requirements for future shipping – IALAs work on e-Navigation

Secretary-General Francis ZACHARIAE



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# About IALA

International Association of Marine Aids to Navigation and Lighthouse Authorities



# Aids to Navigation

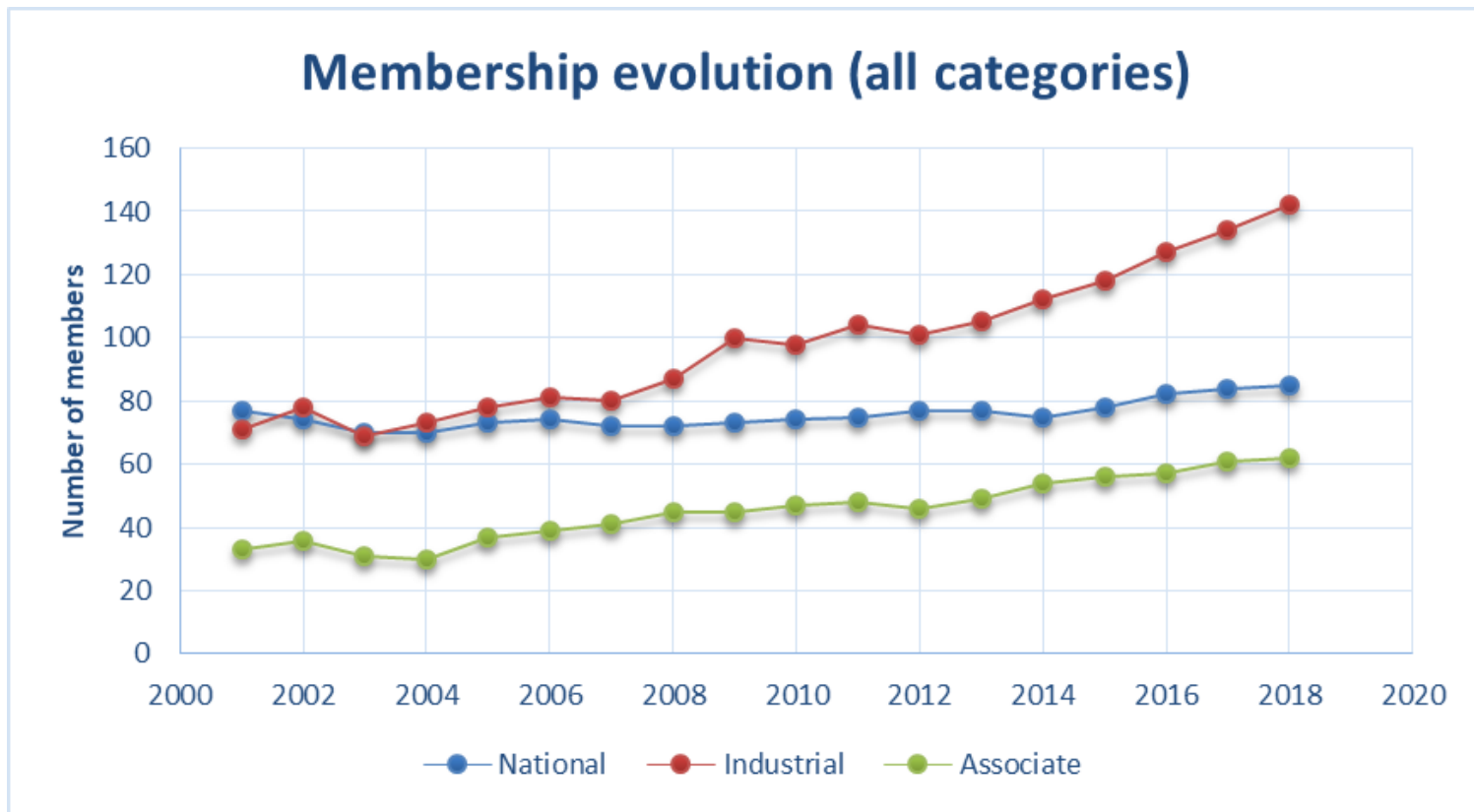
IALA Constitution Art. 1

“A device, system or service, external to vessels, designed and operated to enhance safe and efficient navigation of individual vessels and/or vessel traffic”





# Membership





## Four types of Membership

- 85 National Members (Coastal States)
- 62 Associate Members
- 147 Industrial Members
- 47 Honorary Members





## Election of the new Council







# Publications

Main result of the Committees' work

- **Standards** which can be referred to directly in IMO and other international conventions and in national maritime laws.
- **Recommendations** which advise what should be done.
- **Guidelines** which advise how to implement the recommendations as 'best practice'.
- **Manuals** which provide general reference materials (NAVGUIDE; MBS; VTS Guide; IALA Dictionary).
- **Model courses** which provide guidance on the training of VTS personnel, Aids to Navigation Managers and Aids to Navigation Technicians.





# The Committees

The “Power House” of IALA

- AtoN Requirements and Management (ARM)
- Engineering and Sustainability (ENG)
- Vessel Traffic Services (VTS)
- e-Navigation (ENAV)





# IALA Strategic Vision and Goals for 2026

## Goal 1

Marine Aids to Navigation are developed and harmonized through international cooperation and the provision of standards.

## Goal 2

All coastal states have contributed to a sustainable and efficient global network of Marine Aids to Navigation through capacity building and the sharing of expertise.



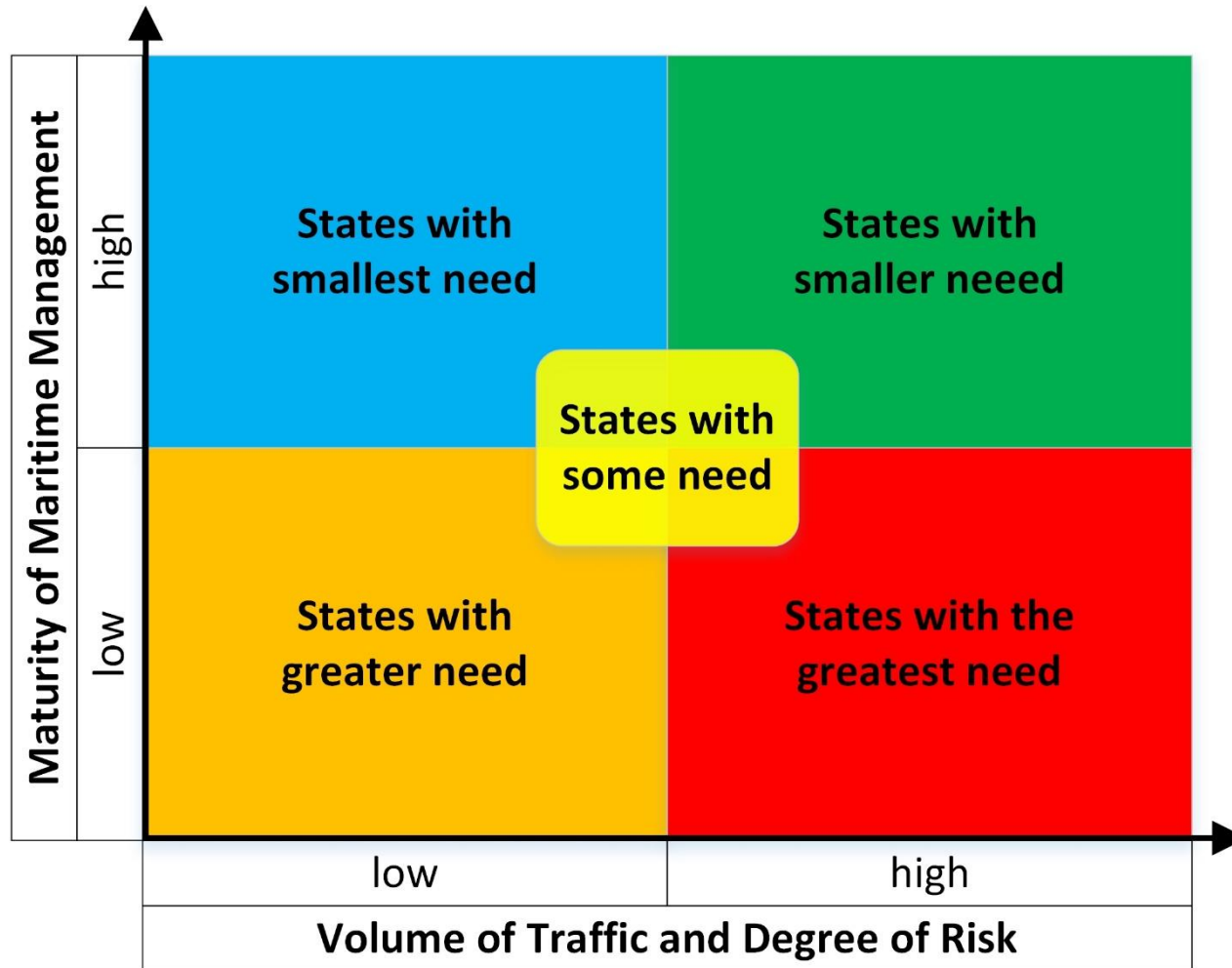


# **The World-Wide Academy**

Training and capacity building



# Assessment of Need - 154 Coastal States



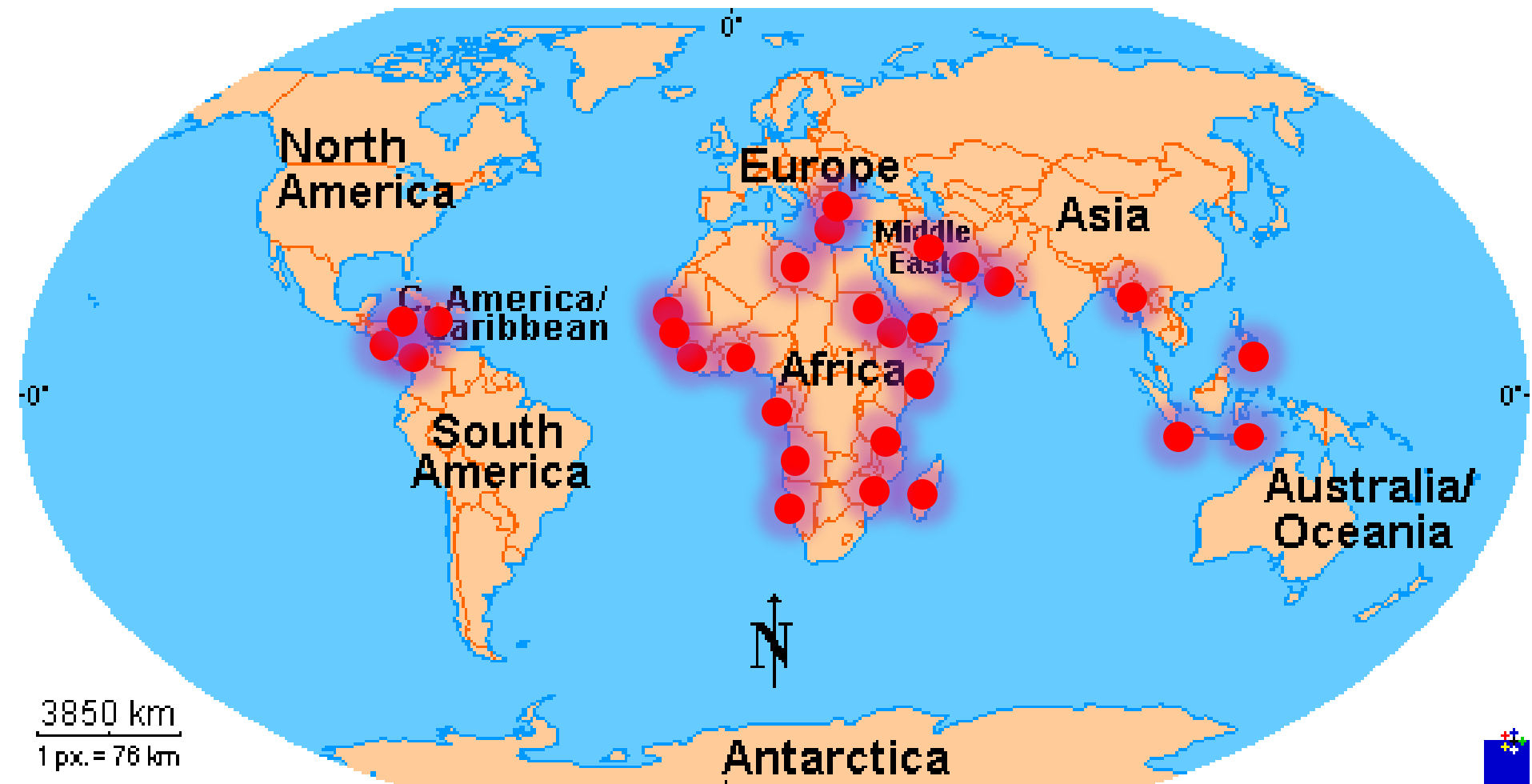


## States in need (2017)

	Continental Regions					
Degree of Need	Africa	Europe	Asia	Pacific	Americas	Total
Smallest need	1	12	7	1	6	27
Smaller need	10	16	13	8	13	60
Some need	5	2	3	2	5	18
Greater need	7	1	2	5	7	22
Greatest Need	15	2	7	0	4	28



## Those in greatest need





Delivering as one







# The requirements for future shipping

IALAs work on e-Navigation



# E-Navigation

The definition (2005-2008)

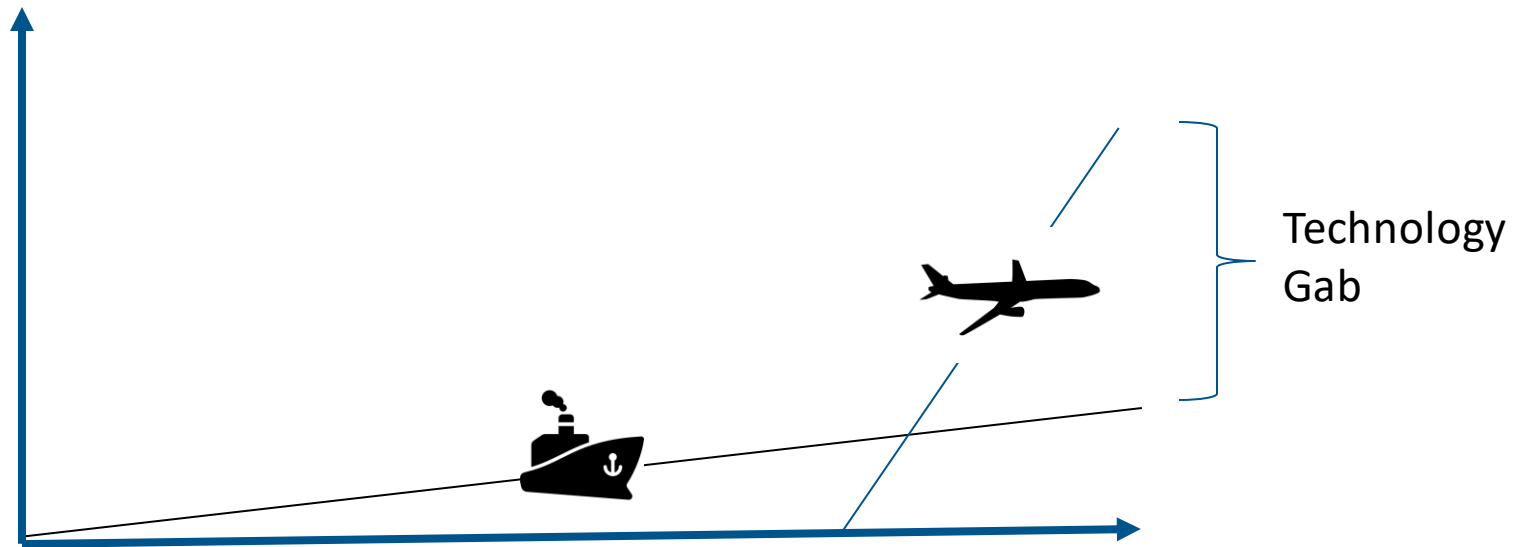
E-navigation is defined as “the harmonized collection, integration, exchange, presentation and analysis of marine information on board and ashore by electronic means to enhance berth to berth navigation and related services **for safety and security at sea and protection of the marine environment.**”

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# Mind the Gab

The Maritime domain into the digital age





# The difficult balance

Look out the window



Autonomous navigation





2017 was the safest year in aviation history





(On-board navigation systems),

Shore side vessel traffic information management  
and

Ship-to-ship-, ship-to-shore and shore-to-shore-  
communication infrastructure.





# IALA and the future ships

What about traditional Aids to Navigation?







# VTS in a rapidly changing world

IALA vision for VTS:

“There will be an increasing adoption of VTS to facilitate safe, efficient and economic movement of vessels and protection of the marine environment in a changing maritime domain.”





# IALA and the future ships

- **Shore services**
- Resilient Position, Navigation and Timing (PNT)
- Data Modelling
- Connectivity





# Maritime Service Portefolios (MSP)







# IALA and the future ships

- Shore services
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# Increased dependence on automated systems

...combined with a decline in traditional skills gives rise to concern.

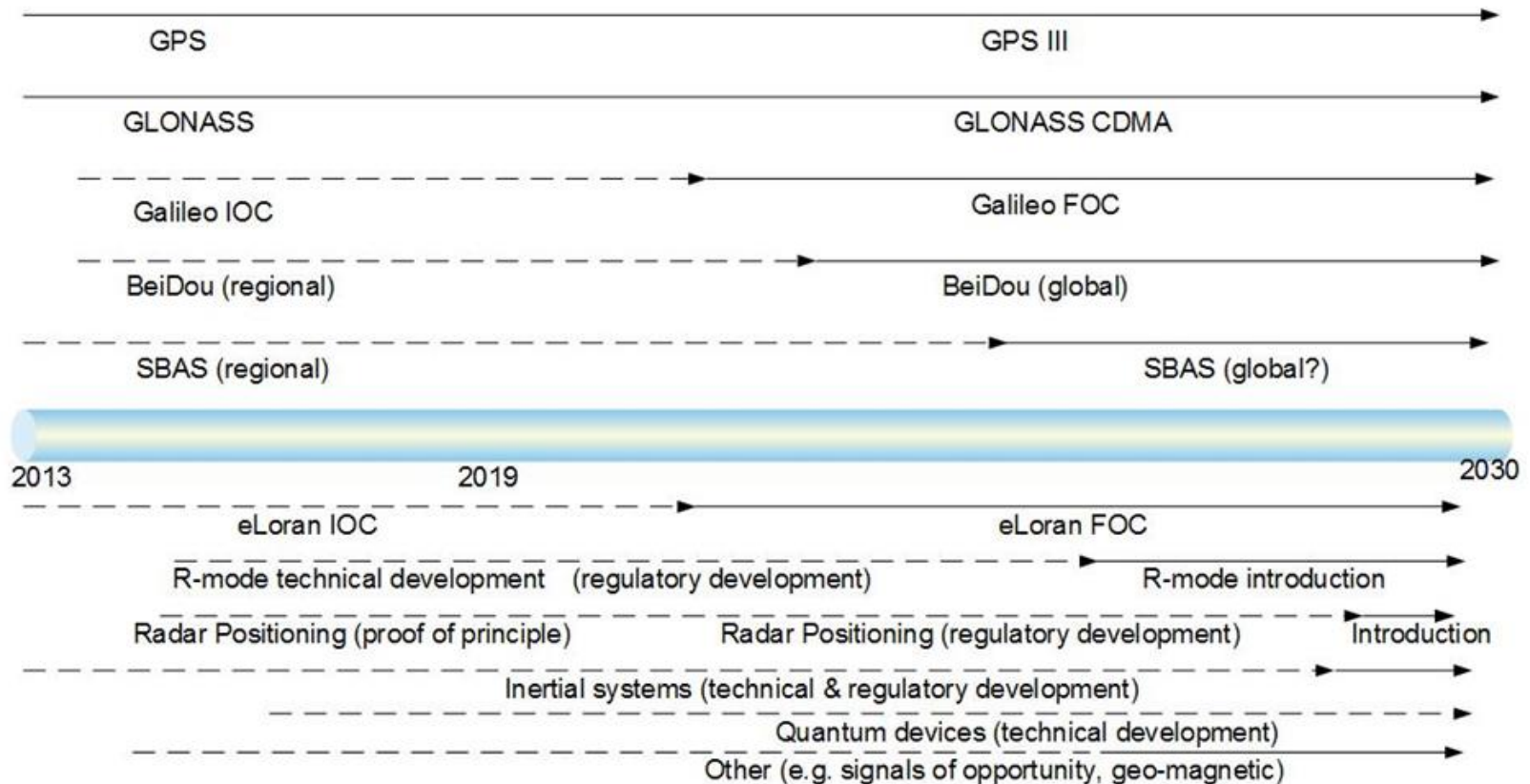




# Timeline for Resilient PNT

## GNSS

— e-Navigation Introduction —→



## Complementary systems



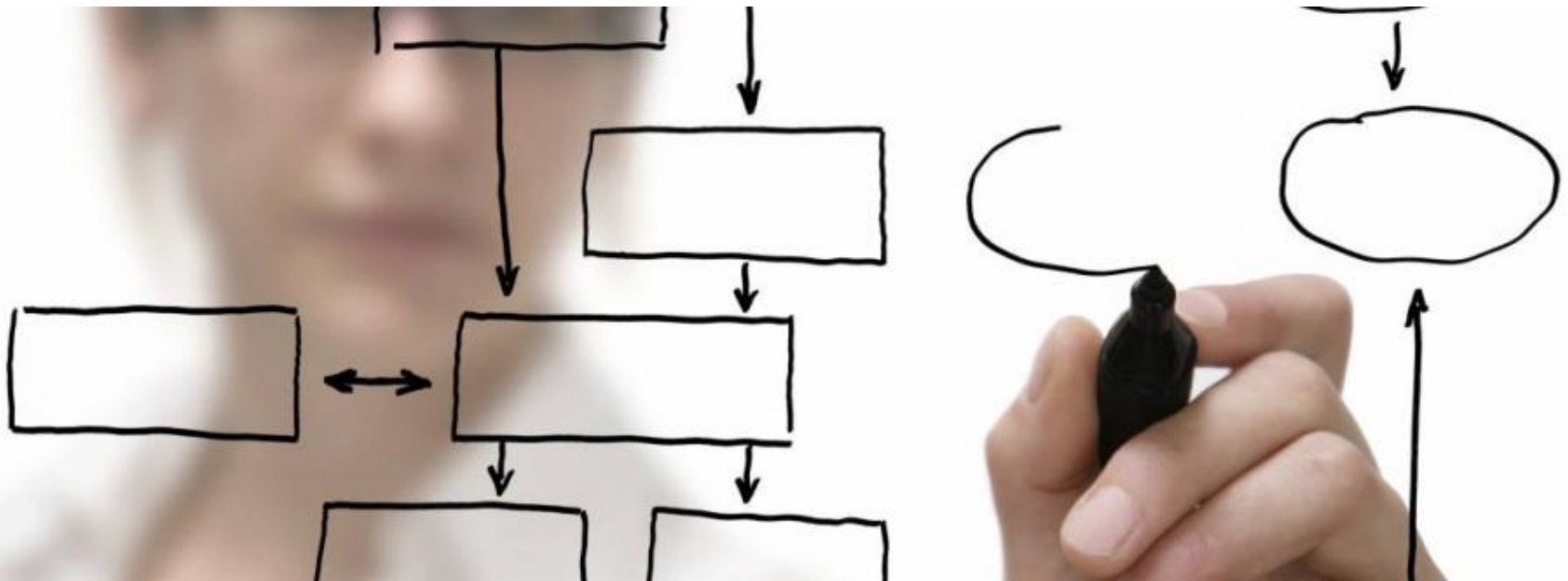
# IALA and the future ships

- Shore services
- Resilient Position, Navigation and Timing (PNT)
- **Data Modelling**
- Connectivity





- IMO/IHO Harmonization Group on Data Modeling
- S-200 Series Product Specifications
- Maritime Service Portefolios (MSP)
- Maritime Resource Numbers





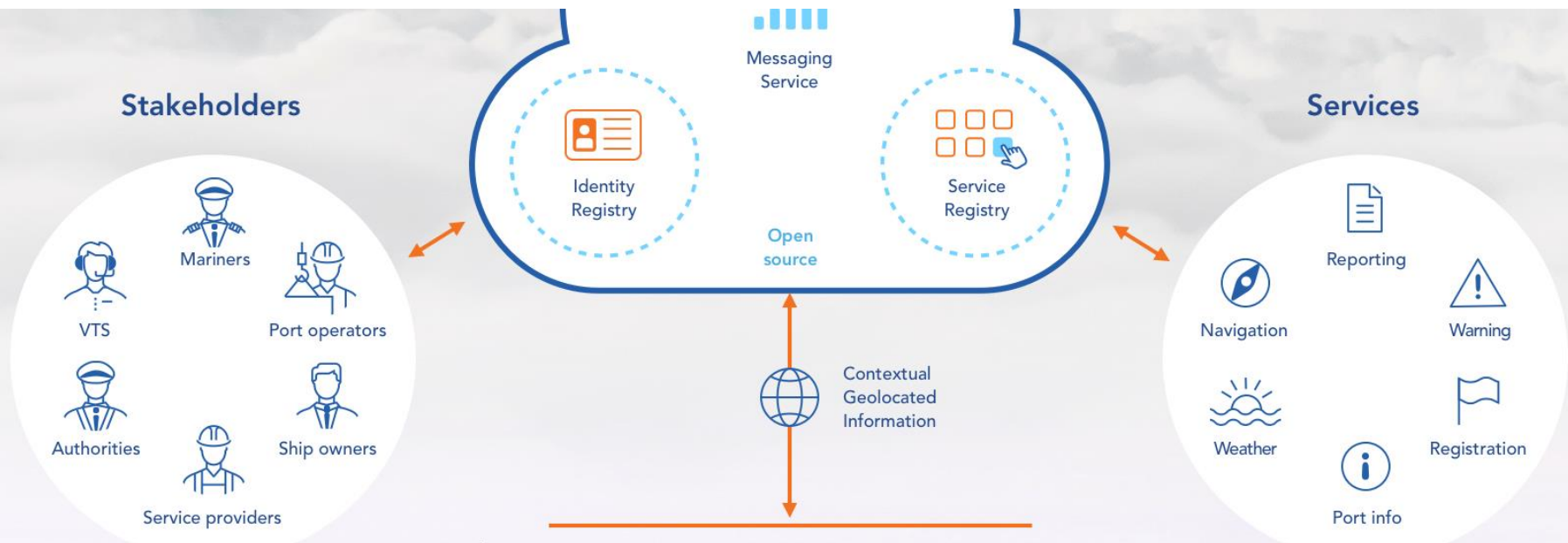
# IALA and the future ships

- Shore services
- Resilient Position, Navigation and Timing (PNT)
- Data Modelling
- **Connectivity**





- Maritime Connectivity Platform (MCP)
- VHF Data Exchange System (VDES)
- Smart Navigation (LTE)
- Other services....





THANK YOU

Contact: [contact@iala-aism.org](mailto:contact@iala-aism.org)