

# DOCKS THE FUTURE Towards the Port of Tomorrow

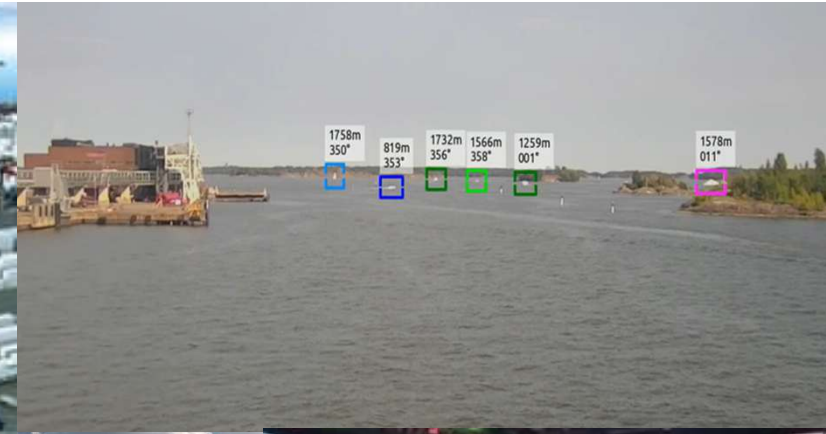
## Automated and autonomous maritime transport systems

October 4 , 2023

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# ONE SEA



MASS Maritime  
Autonomous  
Surface  
Ships and  
underwater  
ROV's



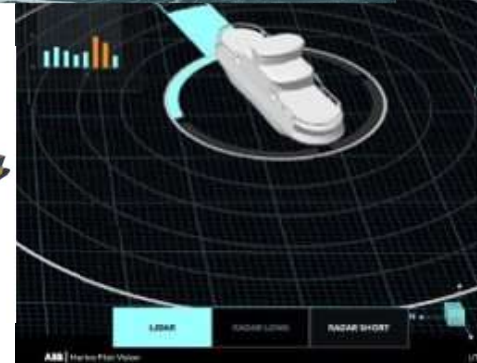
Automated  
maritime  
commuter  
services



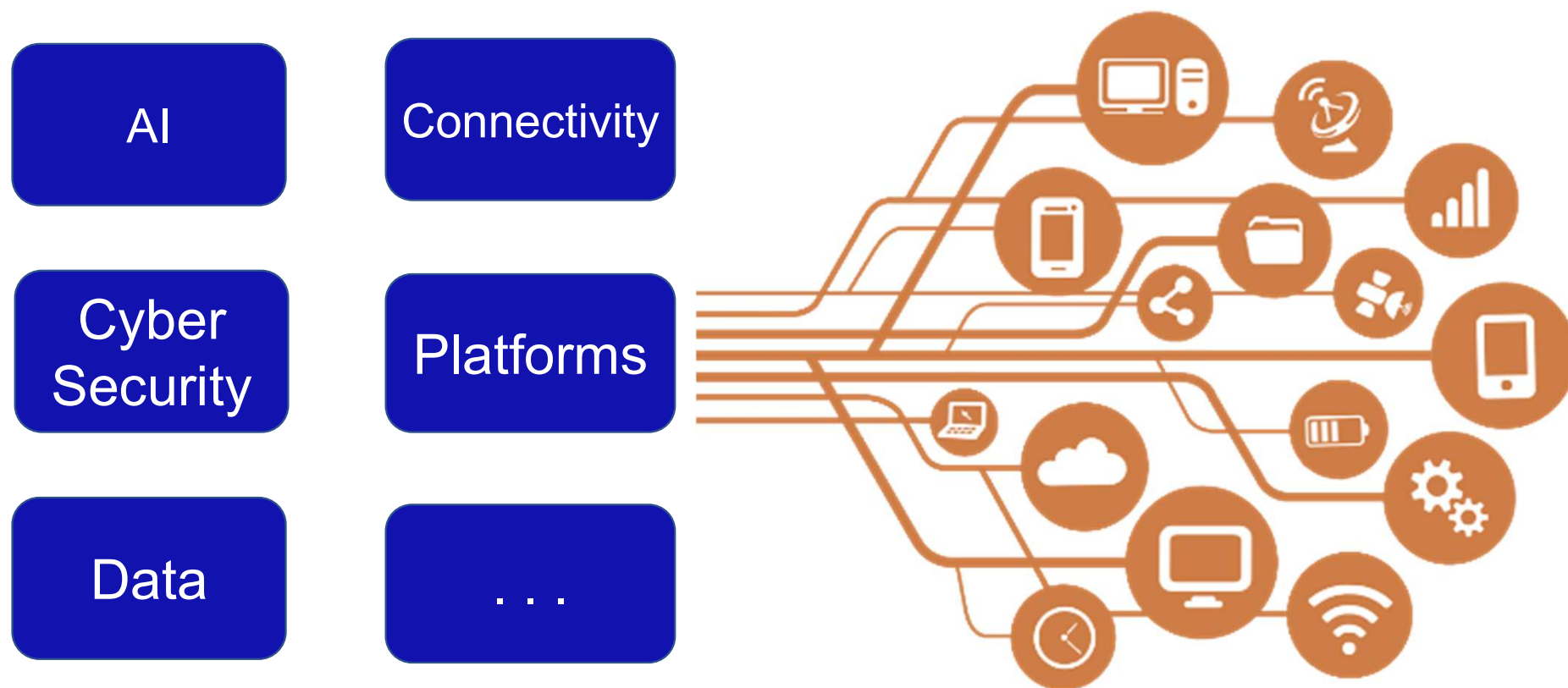
Short Sea  
Shipping



Ocean going  
ships



## Maritime logistics chain



# Goal of technology

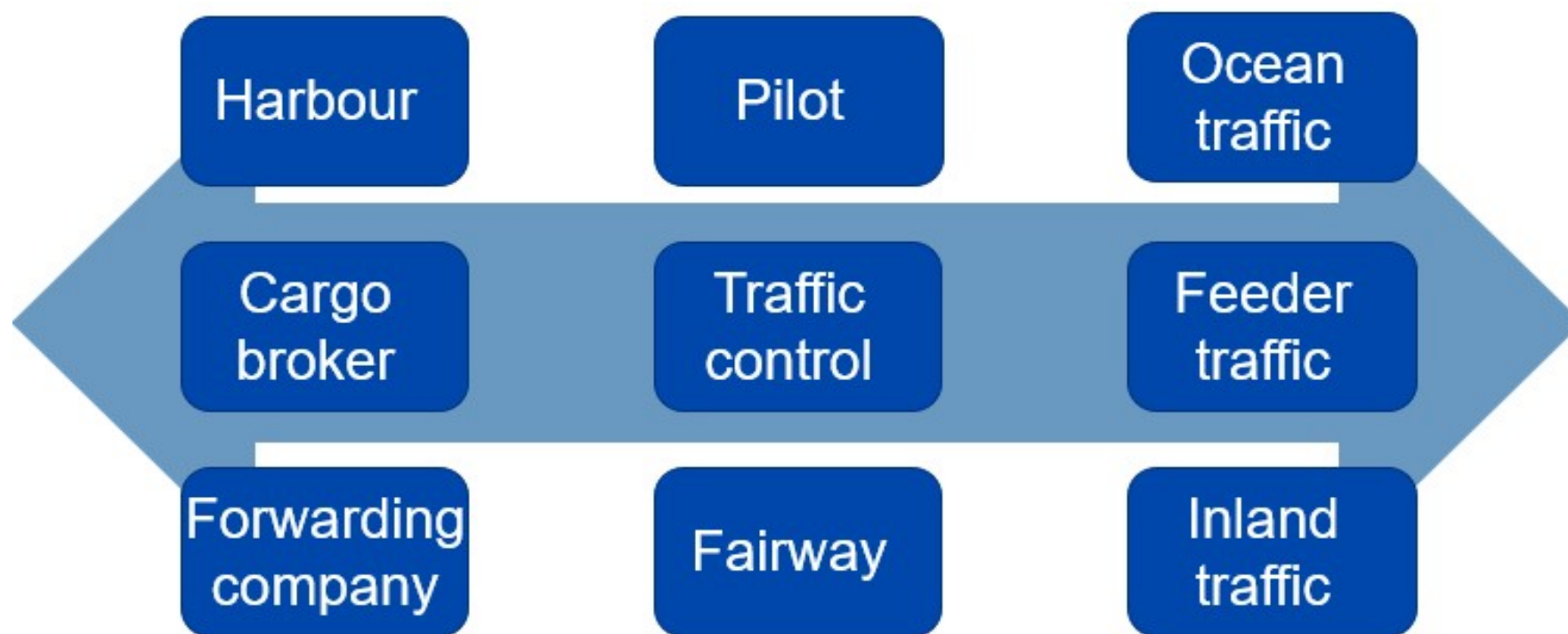
Support human strengths with the capabilities of technology.

Combining the strengths of humans and technology





## Application of technology



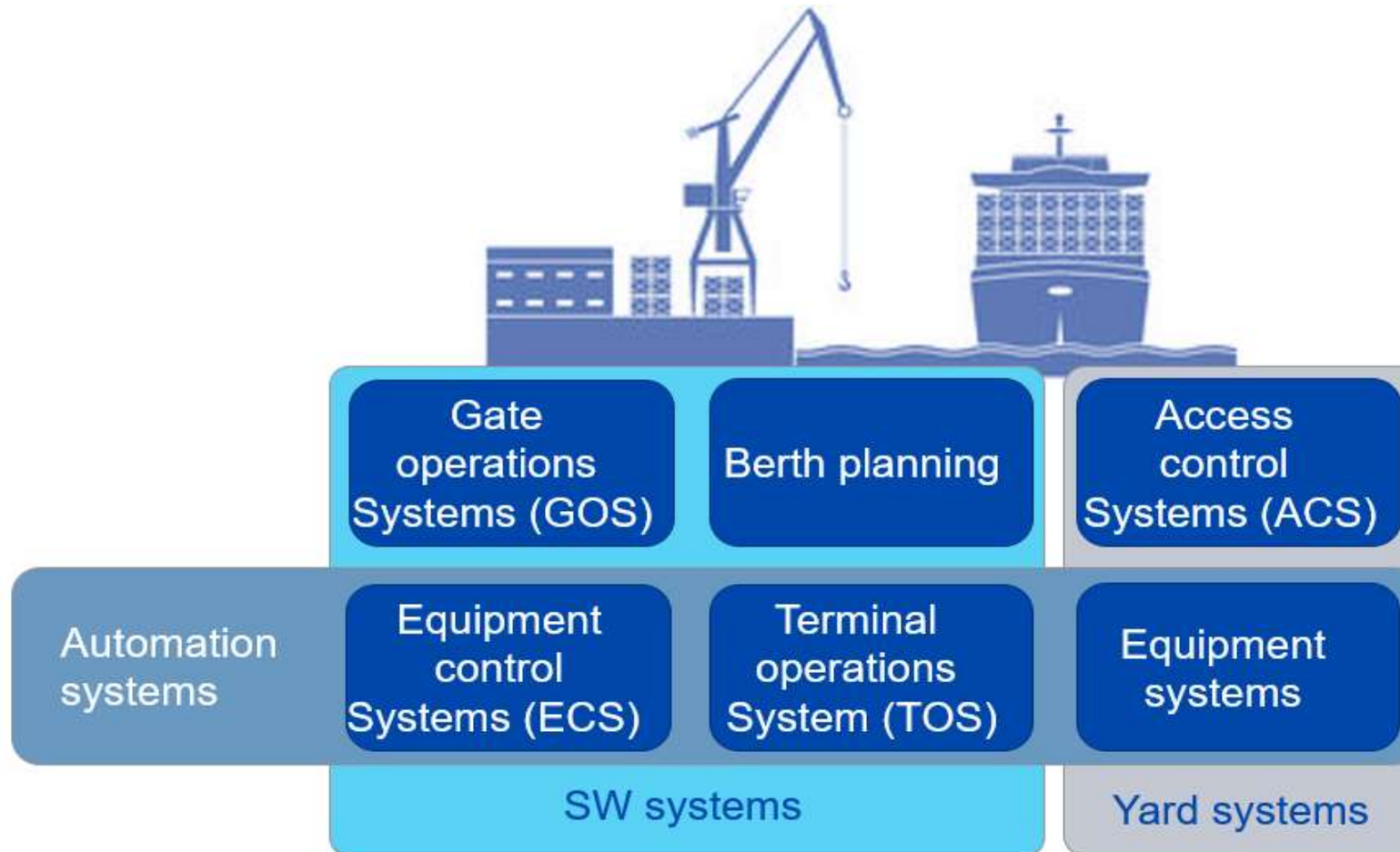


## **4.5 Million reasons for synchronised progress**

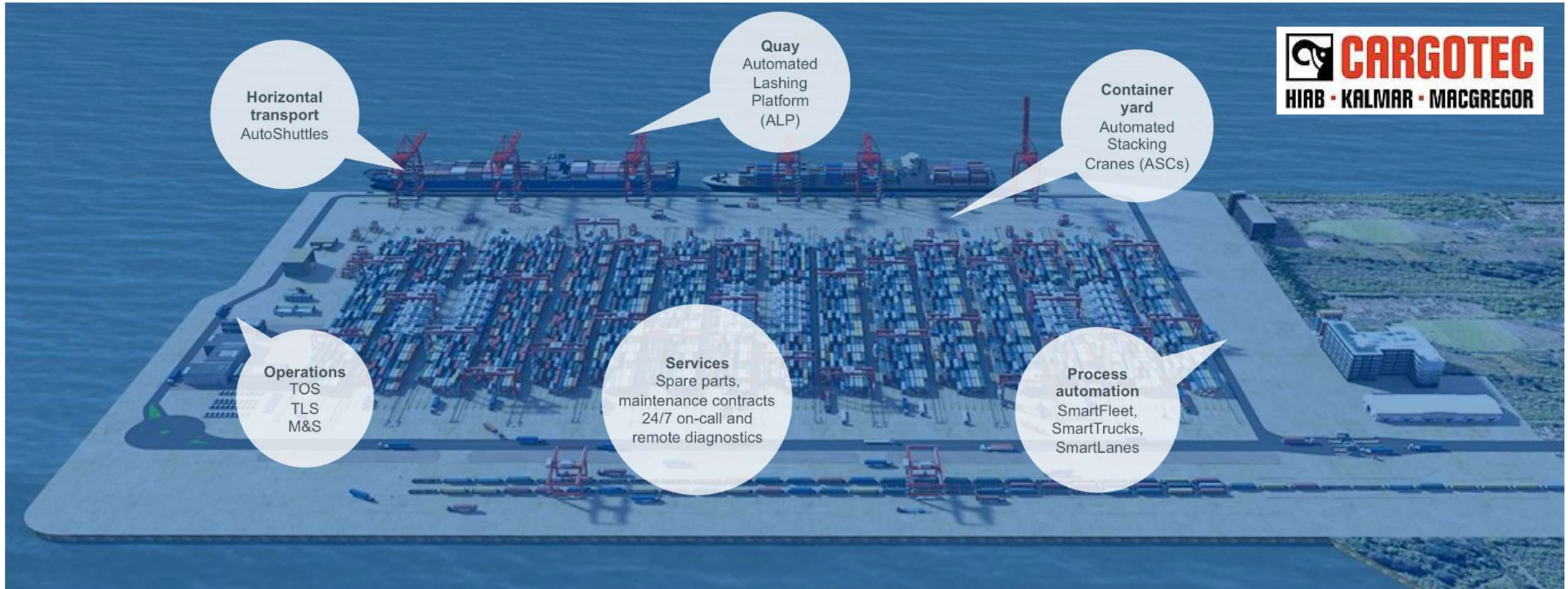
- Improved efficiency and productivity
- Enhanced safety
- Reduced environmental impact
- More innovations



## Port systems







Horizontal  
transport  
AutoShuttles

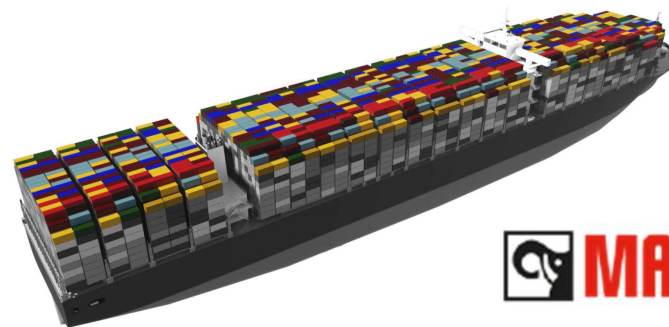
Quay  
Automated  
Lashing  
Platform  
(ALP)

Container  
yard  
Automated  
Stacking  
Cranes (ASCs)

Operations  
TOS  
TLS  
M&S

Services  
Spare parts,  
maintenance contracts  
24/7 on-call and  
remote diagnostics

Process  
automation  
SmartFleet,  
SmartTrucks,  
SmartLanes

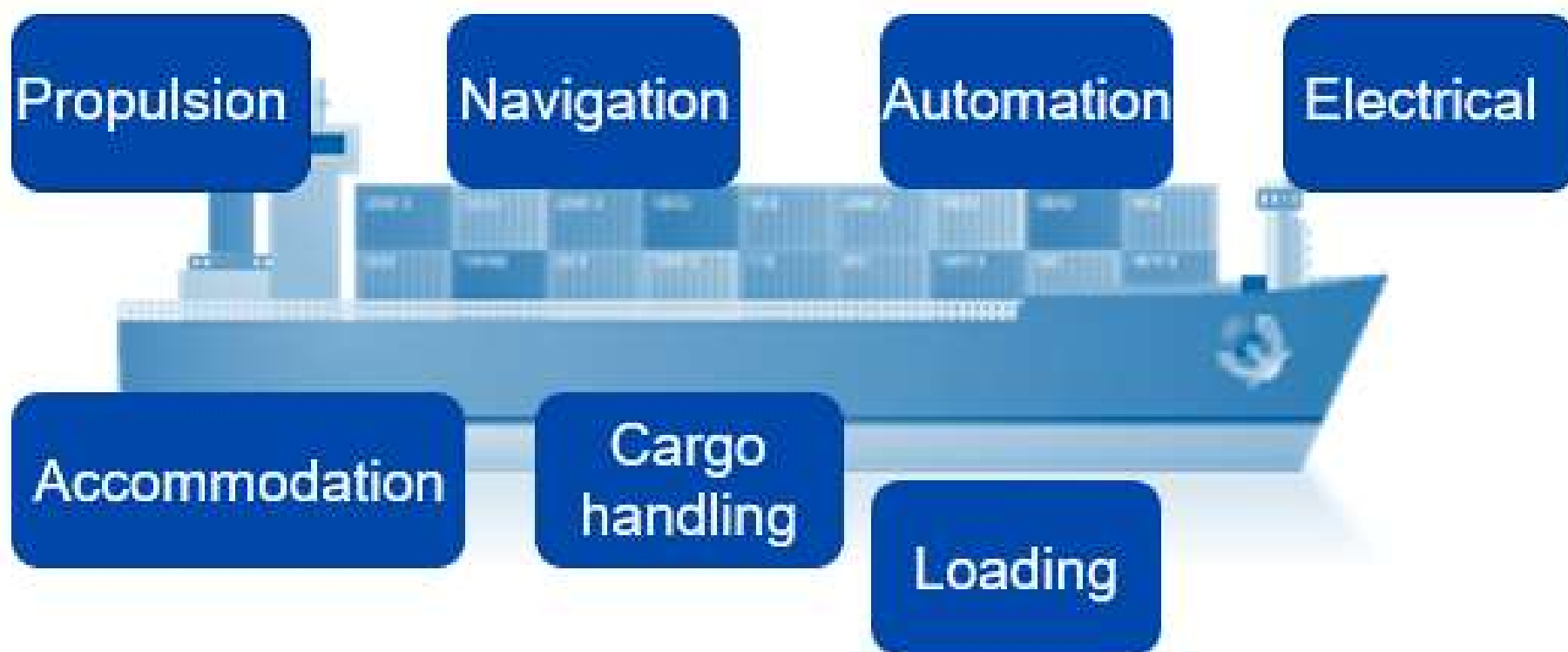


 **MACGREGOR**





## Ship systems

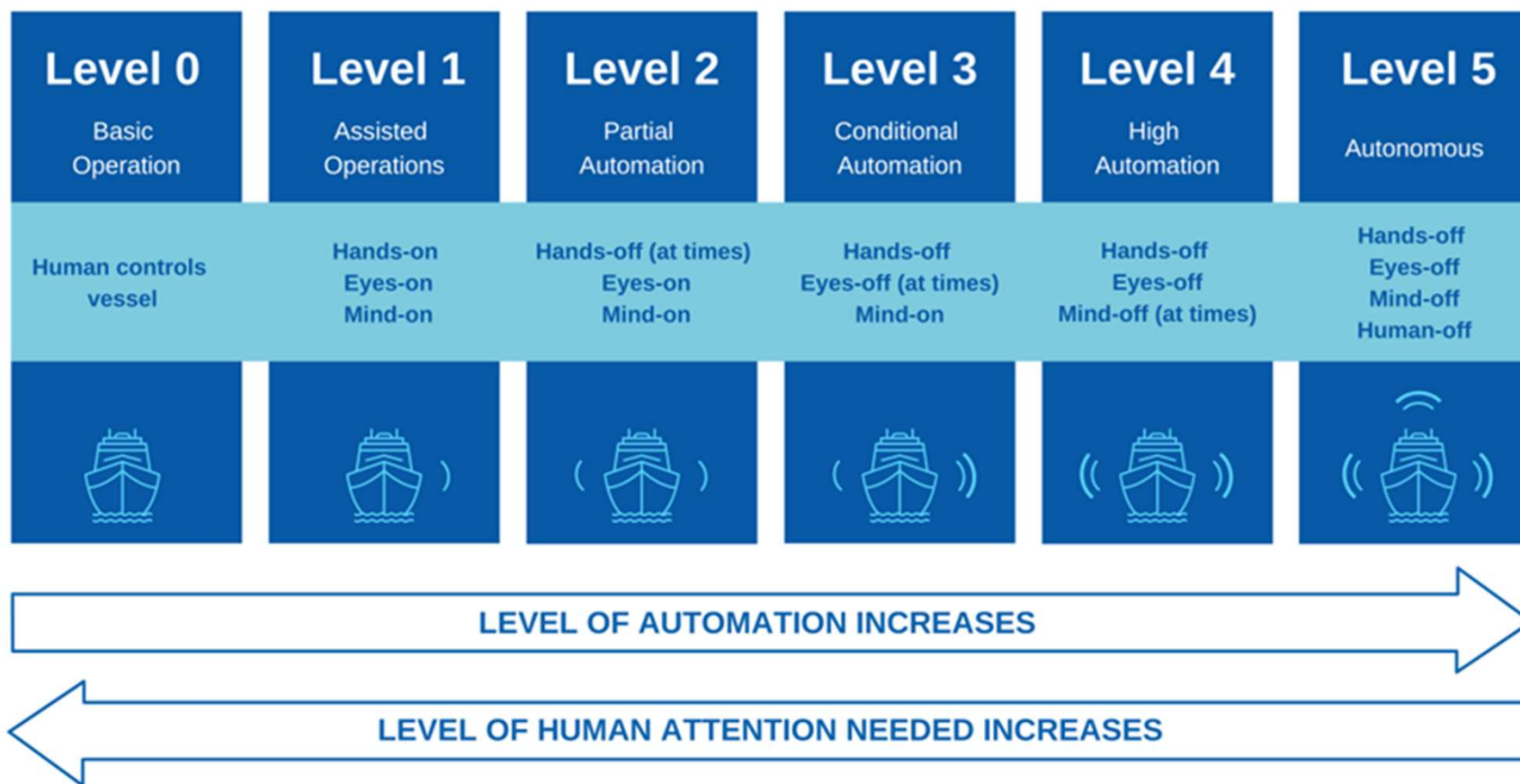




# Embracing the system-of-systems approach

- Automation level of various systems may differ
- Autonomy is a sum of automated functions
- Single fully autonomous system does not make the entire ship autonomous

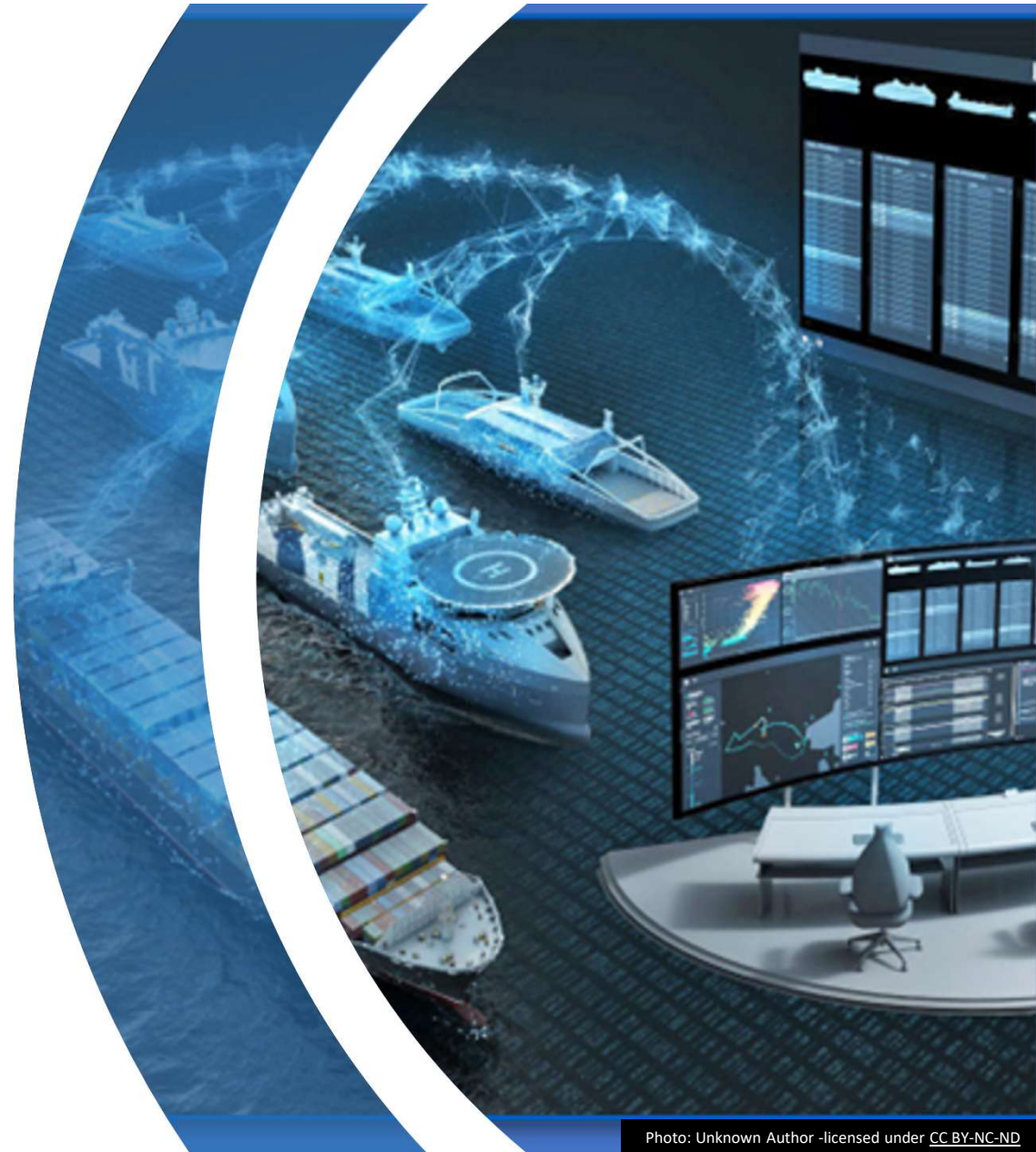


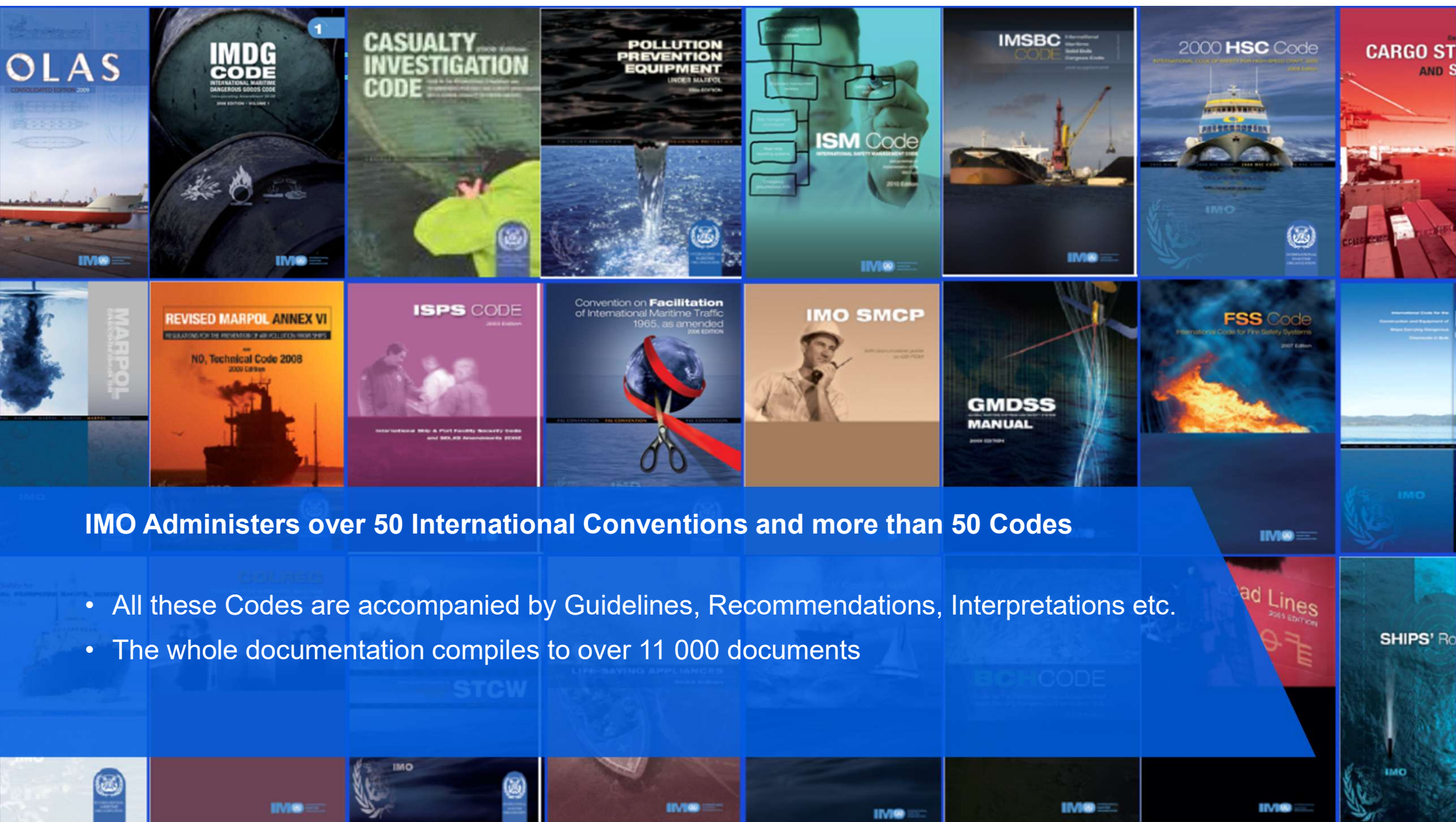




# REMOTE SERVICES

Remote Operations Centre means a location remote from the MASS that can operate some or all aspects of the functions of the MASS





## IMO Administers over 50 International Conventions and more than 50 Codes

- All these Codes are accompanied by Guidelines, Recommendations, Interpretations etc.
- The whole documentation compiles to over 11 000 documents



Clear and  
**common terminology**  
is urgently needed!...to

- Facilitate the discussion,
- Ensure cross modality application,
- Create a seamless transport chain.





# Permit to operate

Bi-lateral or multilateral agreements should be the first step to establish international remote or autonomous maritime transport





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**ONE  
SEA**