



# Navigating to 2050

A safe and sustainable maritime future

#NavigatingTo2050



## Ann Pletschke

Chief Vessel Operator  
Ocean Infinity



Commissioners of  
**IRISH LIGHTS**

Navigation  
and Maritime  
Services



# From Concept to Reality

## Commercial Remote Controlled MASS Operations



**OCEAN INFINITY®**

November, 2022

# Who are Ocean Infinity?

Ocean Infinity are supplementing our fleet of 'first generation' USV and 'traditionally crewed' chartered vessels with remotely controlled and remotely supported vessels





# Remote Control Centres

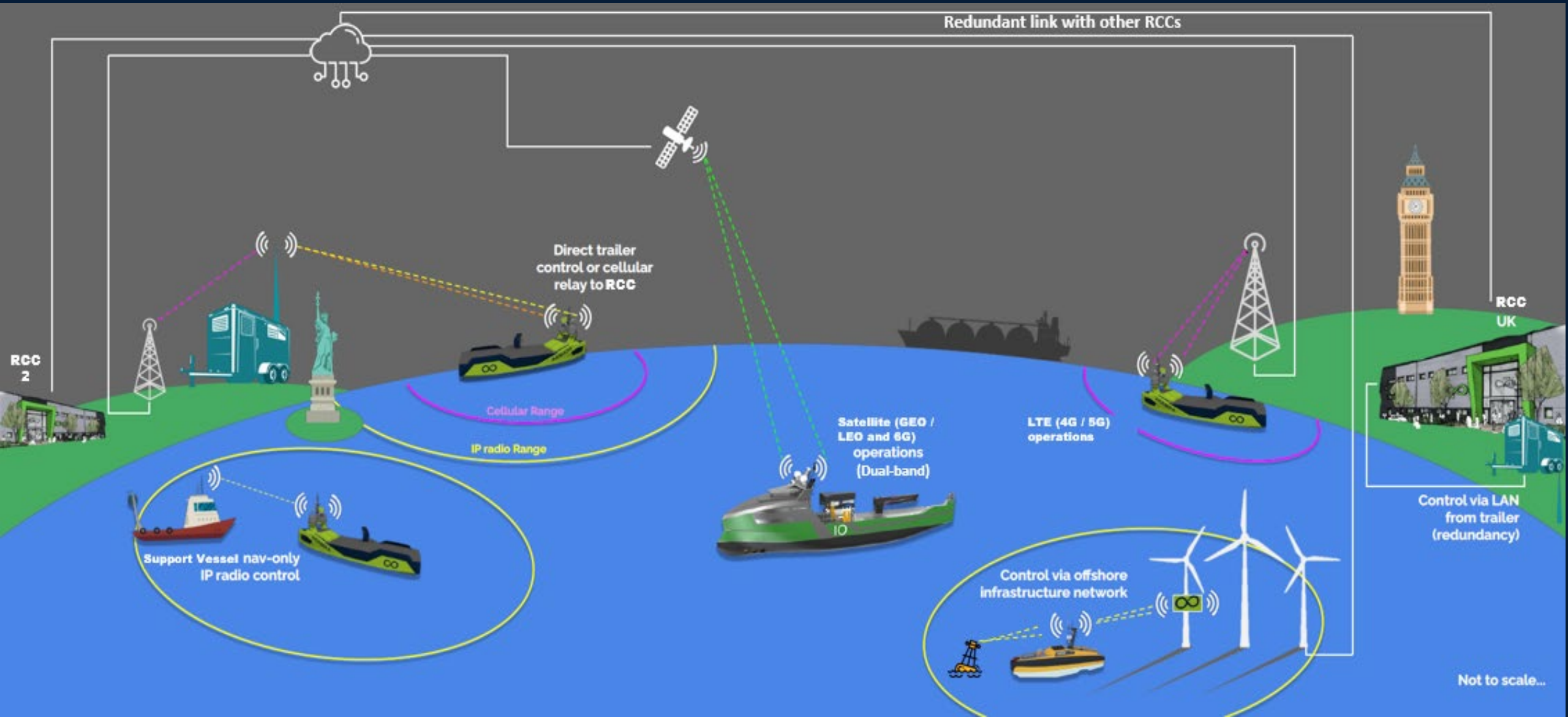


Our custom developed Remote Control Centres bridge human operators with robotic platforms.

- From custom operator consoles, our mariners and data acquisition specialists will safely and efficiently harvest vast quantities of ocean data.
- Vessel navigation capabilities include all capabilities expected for a standard Bridge Watch on a Merchant Vessel as well as ROV, AUV and UAV navigation capabilities.

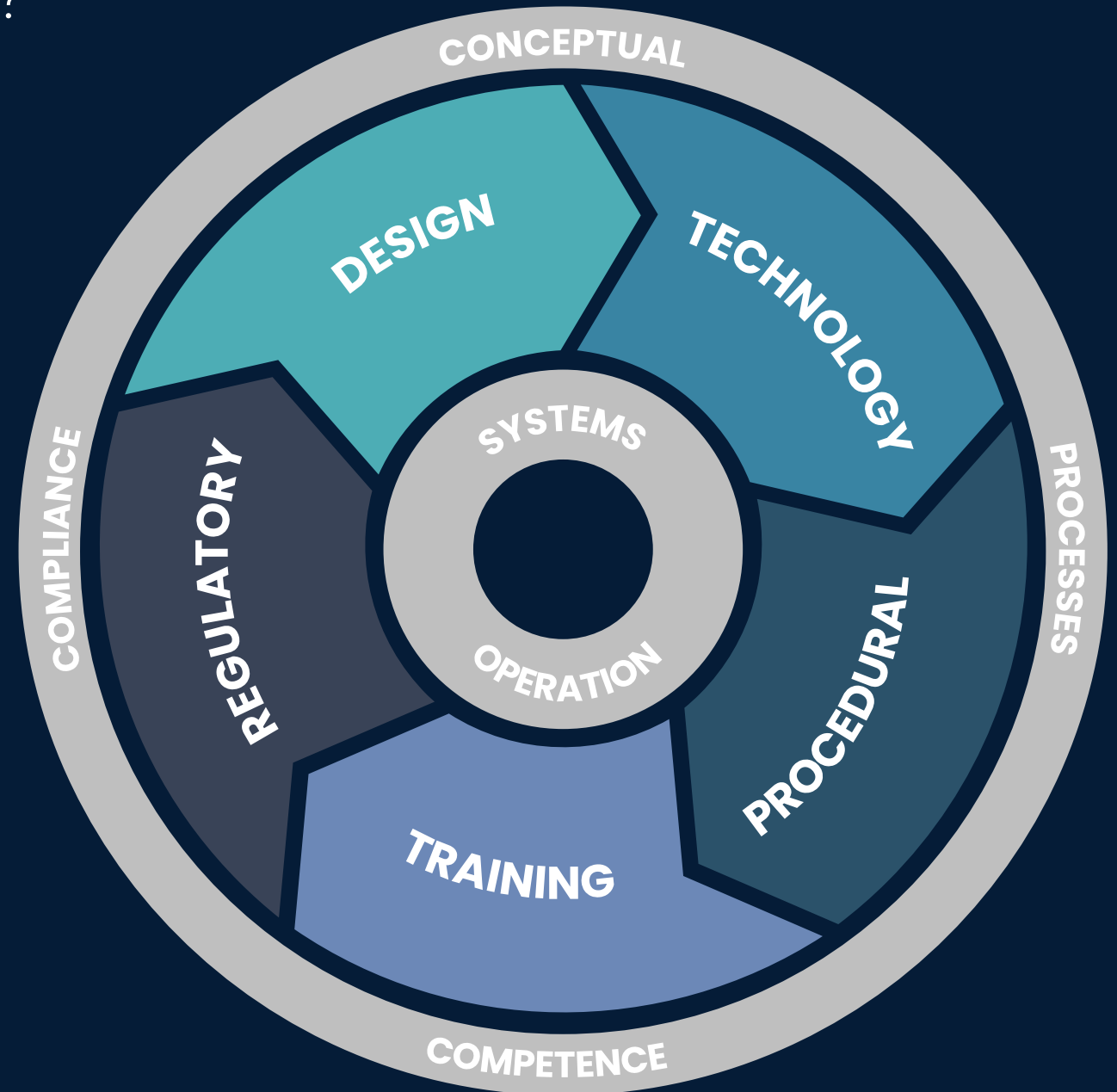


# Armada Connectivity Architecture



# How to turn Concept to Reality?

- Safety
- Stepwise
- Skills
  
- Safety Cases
- Tech Releases
- Training, Coaching and Assessment

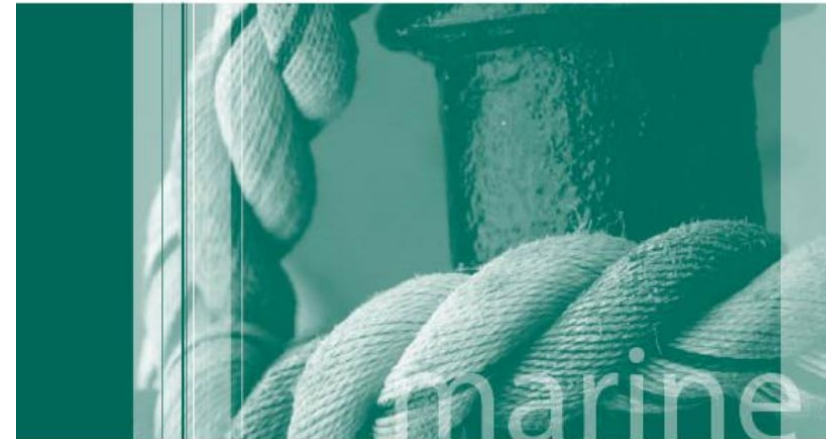




# Why So Cautious?



Collision between US Navy Destroyer *John S McCain* and Tanker *Alnic MC*  
Singapore Strait, 5 Miles Northeast of Horsburgh Lighthouse  
August 21, 2017



Marine Accident Report

NTSB/MAR-19/01  
PB2019-100970



**National  
Transportation  
Safety Board**



# Tech is only as good as it's user\*

\* Interface, training, familiarity

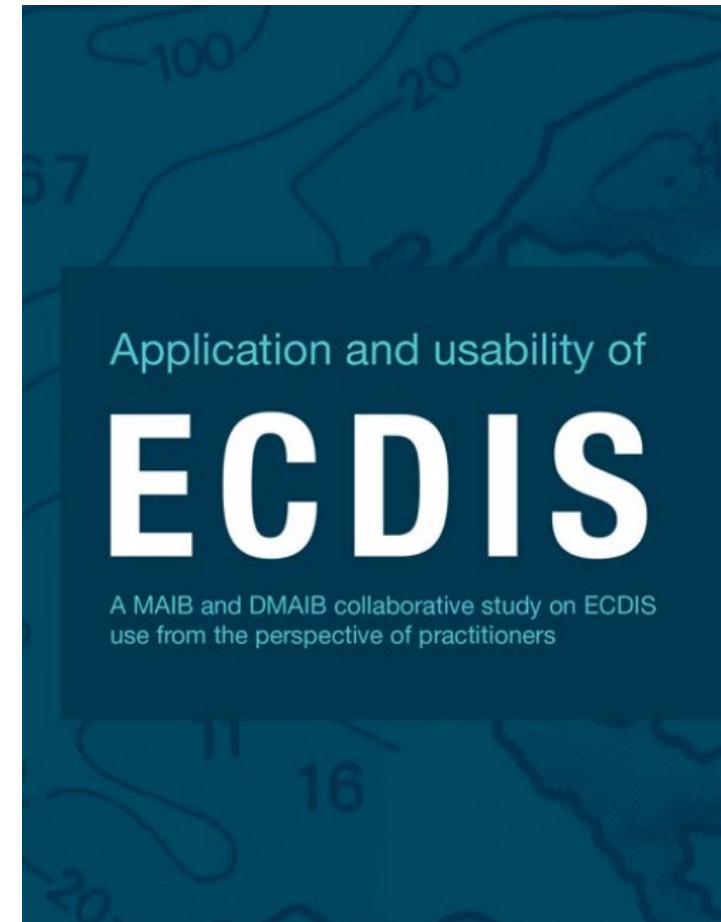
## 200930 ECDIS-assisted grounding

04 MAY 2009

[MARS 2009](#)

Ecdis-assisted grounding  
MARS Report 200930

Official report: Abridged from MAIB Report 21/2008





Just because it works, doesn't mean it will LAST...



# What 3 S's Mean in Practice

## Safety

FMECA



Quantitative Risk Assessment



Qualitative HAZOP



Trials and Testing Evidence

## Stepwise

Graduated Tech Release Plans



Monitoring before Control



Technology Qualification



In-Service Trials and Testing Evidence

## Skills

Strategy and Needs Analysis



Training Programme



Course Criteria



Cross-Training



# Example: Safe Lookout

## Colreg Requirements

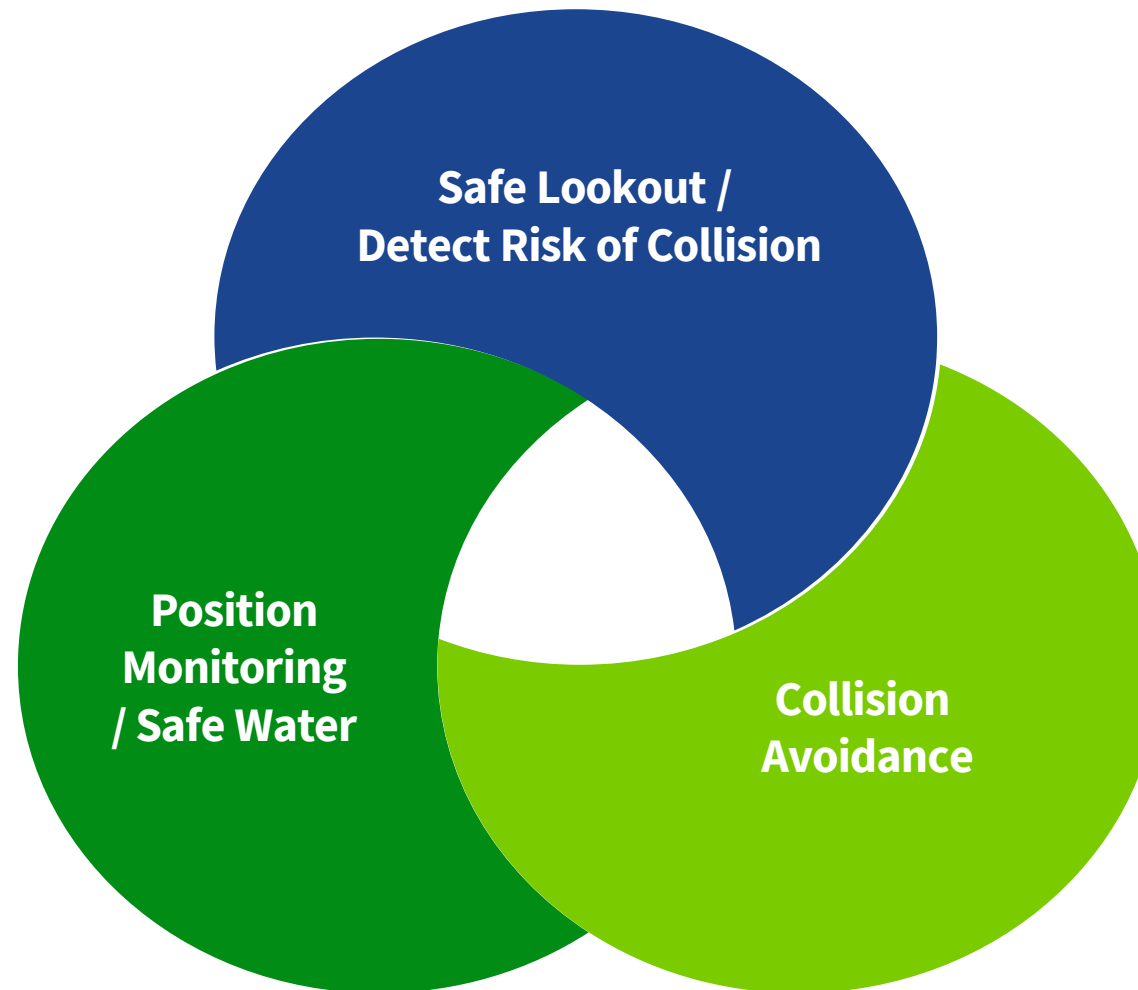
**Rule 5** – maintain lookout by sound hearing, and complementary means

**Rule 7** – ability to obtain a compass bearing of a non-Radar & AIS discernible target (e.g. wooden fishing craft)

**Rule 14** – ability to observe visual aspect (not COG) to determine head on or crossing situation

**Annex I** – ability to discern all colours and combinations of navigational lights and day shapes

**Annex IV** – ability to observe by sound and hearing the full range of distress signals

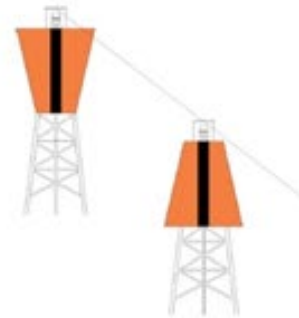
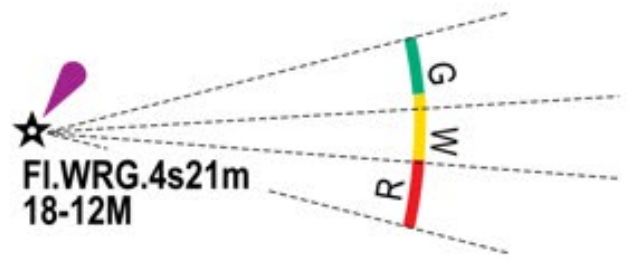
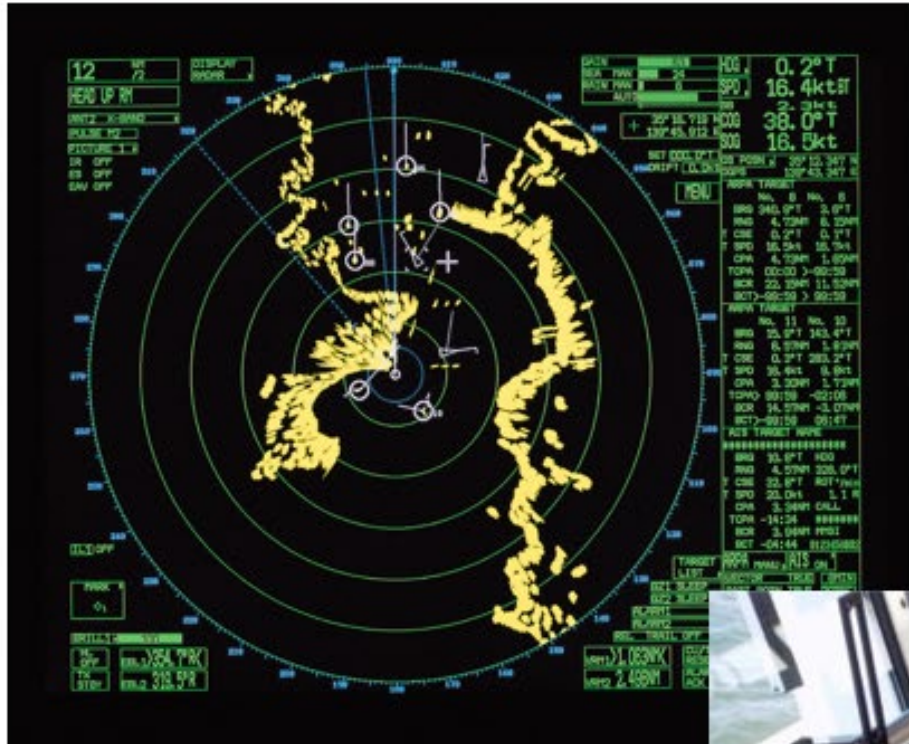


## Means

- **Visual 360 cameras** day and night – no blind sectors
- **Binocular equivalent** to detect aspect and day shapes
- **Ability to detect colour** in all light states
- **Audio ability** similar to Sound Reception in Enclosed Bridge Wings
- **Compass bearing** linked to visual and radar target acquisition
- **Radar displays** with fully adjustable tuning, different wavelengths and manual range/bearing markers

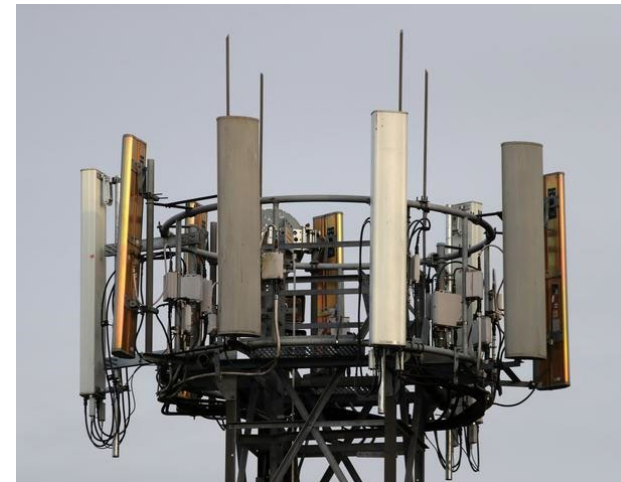
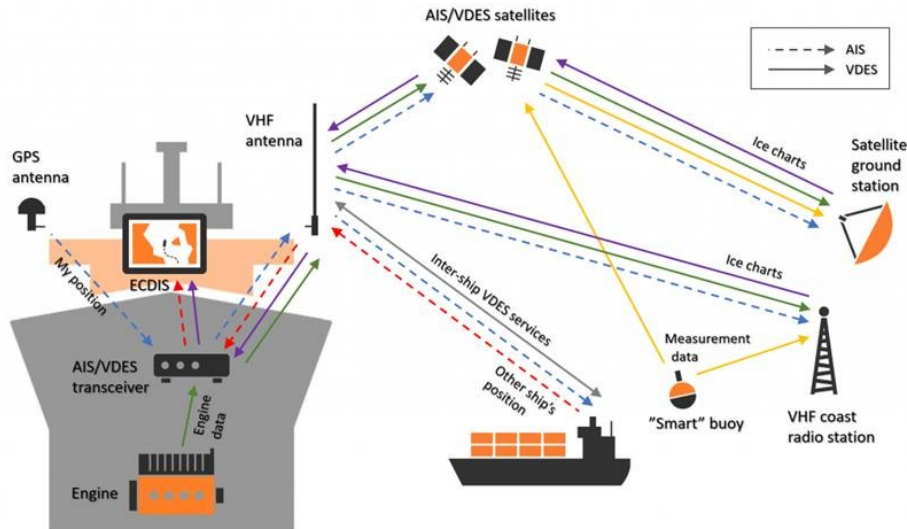
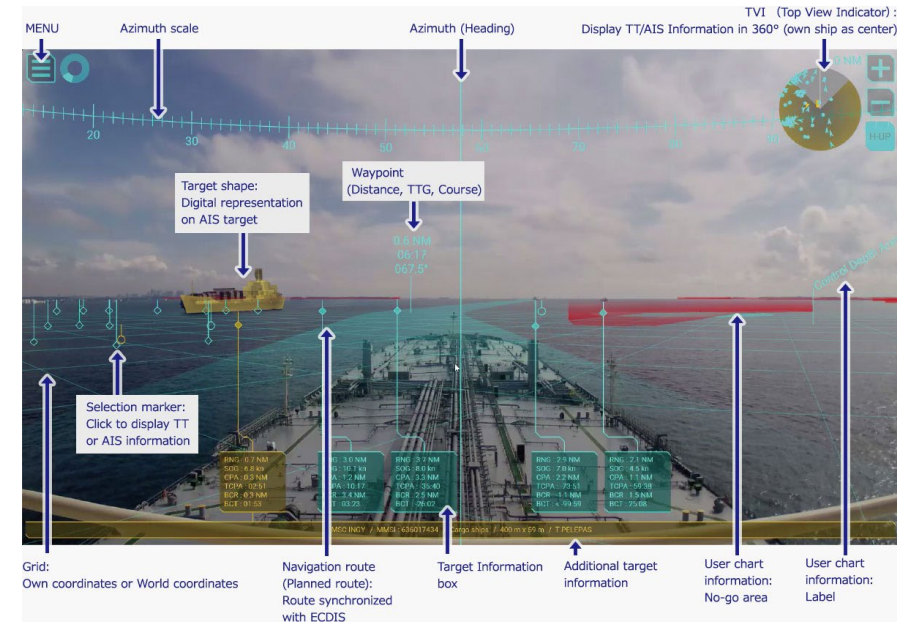


# Old School methods to backup New School tech



# Coastal/Port Interface: Challenges or Opportunities?

- Buoyage & sectored lights
- Pilotage
- VTS
- Virtual AtoN
- To NTM or not to NTM?
- Connectivity?





# Key Takeaways

- To do it safely, we must tick all the boxes – sexy and unsexy side to tech
- We must strive to do the right thing, for the right reasons
- Testing, testing, testing
- Unmanned doesn't mean unskilled. Training is key
- Principles of watchkeeping remain
- Other transversal industry principles. VTS, shore maintenance, UAV ops
- Maritime evolves. Propulsion, containerisation, GMDSS, DP. We must be ready to adapt







# Thank you

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