



# SAFEMODE

Strengthening synergies between Aviation and Maritime in the area of Human Factors towards achieving more efficient and resilient MODES of transportation.



## TOWARDS A SAFETY LEARNING CULTURE FOR THE SHIPPING INDUSTRY

WEBINAR

7 April 2022

10.00 - 11.30 CEST



SAFEMODE



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DeepBlue

- SAFEMODE
- Study Aim
- Approach
- Next Destination
- Safety Learning Approaches
- Way Forward



- SAFEMODE is all about Maritime & Aviation learning from each other in the safety and human factors domains
- 3-year EC project with 33 Partners, half Maritime, half Aviation (ends November 2022)
- It has a focus on Human Factor and design, and learning lessons from safety-related events
- This is seen as good safety culture



The current status of **Safety Culture** in the shipping industry, and to recommend possible avenues for improvement.

Guidance should be based on leading edge work ongoing in the **aviation** domain.



Confidential

Online

60-90 minutes

Same structured question format

2-3 interviewers

Written record

Transcripts & draft report verified by interviewees

Content analysed & mined for quotes and themes

Generally high agreement





## Seafarers:

- Captain
- Chief Officer
- Chief Engineer
- Rating

## Maritime segment (seafarers)

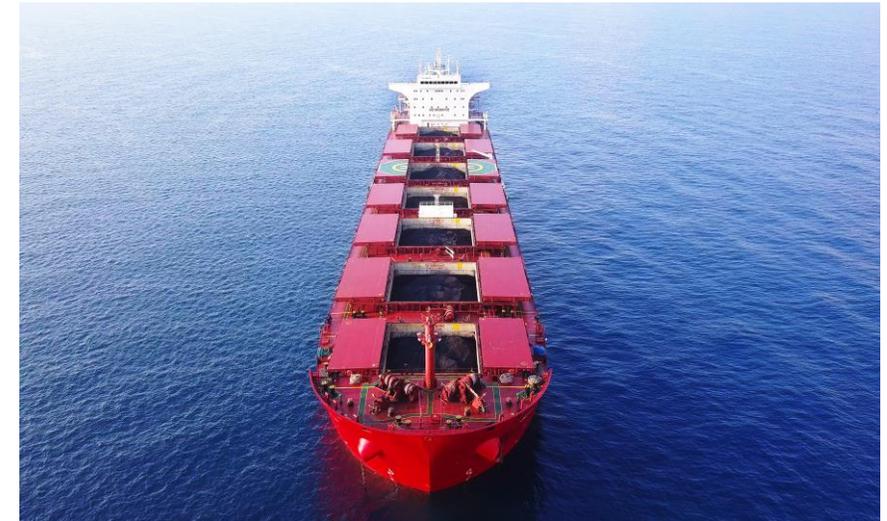
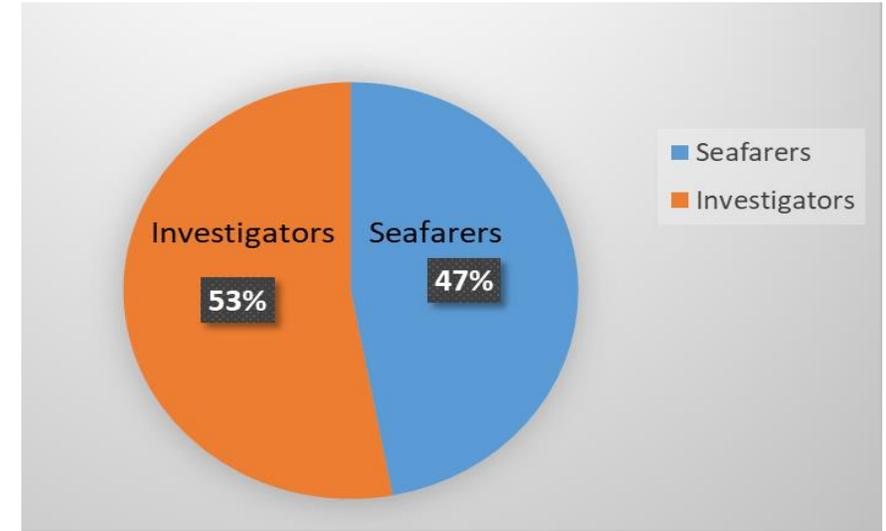
- Cargo (chemical tankers, containers), passenger / cruise ships

## Geography – countries represented:

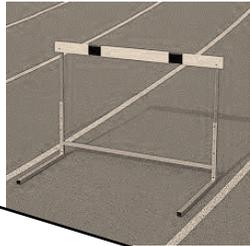
- Seafarers – *Mexico, Denmark, Romania, Netherlands, France, India, Sweden, UK*
- Investigators – *USA, UK, Malta, Spain, Portugal, Denmark, Italy*

EMSA, IMO, Unions, Training organization

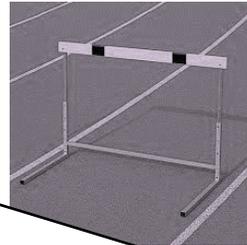
MCA (HEAG), IMarEST, STABS 2021, OCIMF 2022 (HFC)



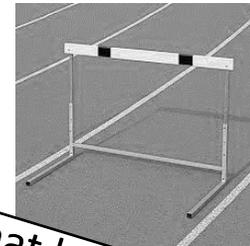
What is the Culture that must be promoted?



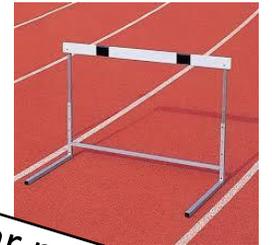
Investigation



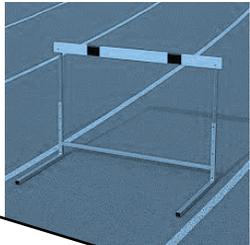
Reporting



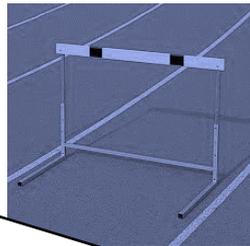
What keeps ship safe



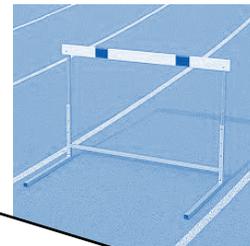
Near miss Reporting



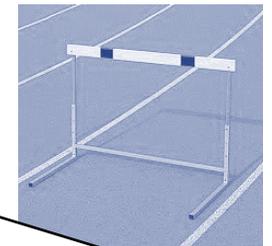
Safety Management System



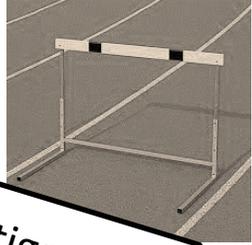
Understanding Human Element



Just Culture

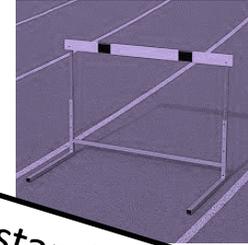


Safety Learning



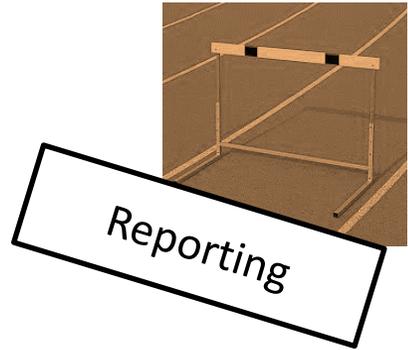
### Investigation

- Conflicting objectives in accident investigation (e.g. learning or prosecuting)
- Lack of trustful relationship (e.g. investigators vs. seafarers)
- Organizational and structural issues scarcely investigated



### Understanding Human Element

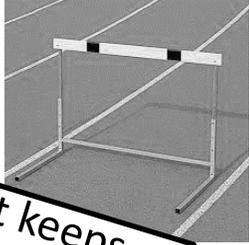
- Insufficient knowledge in Human Factors
- Focus on individual not on the system
- Too much focus on procedural compliance



- Difficulty in making reports
- Unfavourable mindset to reporting
- Reporting purpose (e.g. blaming or learning?)
- Mistrust shore-ship

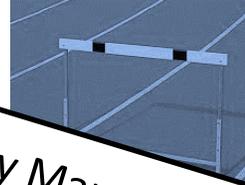


- Negative feedback on near miss reporting
- Focus on satisfaction of indicators more than quality of reporting
- Reporting system itself: easiness, use of information
- Lack of tools and resources to analyse reporting



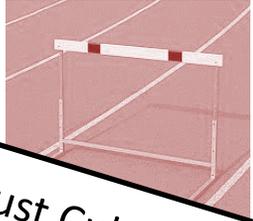
What keeps  
ship safe

- Professionalism of crew and training of individual
- Resilience and flexibility
- Balance between experience (crew) and procedures (company)
- Procedures do not take into account the realities of the operation context



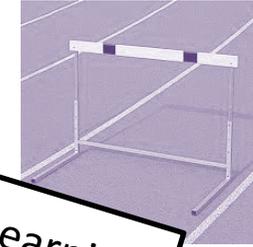
Safety Management  
System

- Lack of positive feedback, seen as burdensome
- Too generic does not properly integrate operational demands
- Gap in understanding between onshore departments (SMS) and ship (operational context)
- Learning processes do not mean Learning Culture



Just Culture

- Blame and punishment hinders learning
- Unstable working conditions
- Need for a systems perspective
- Need for trust and cooperation



Safety Learning

- Investigator provides facts to learn from
- Investigations recommendations not sufficiently applied
- Reluctance to consider organizational factors

# Top Human Element Contributors



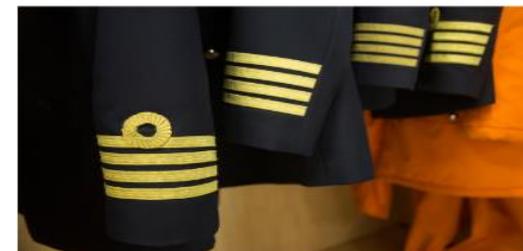
- Seafarers
- Both
- Investigators



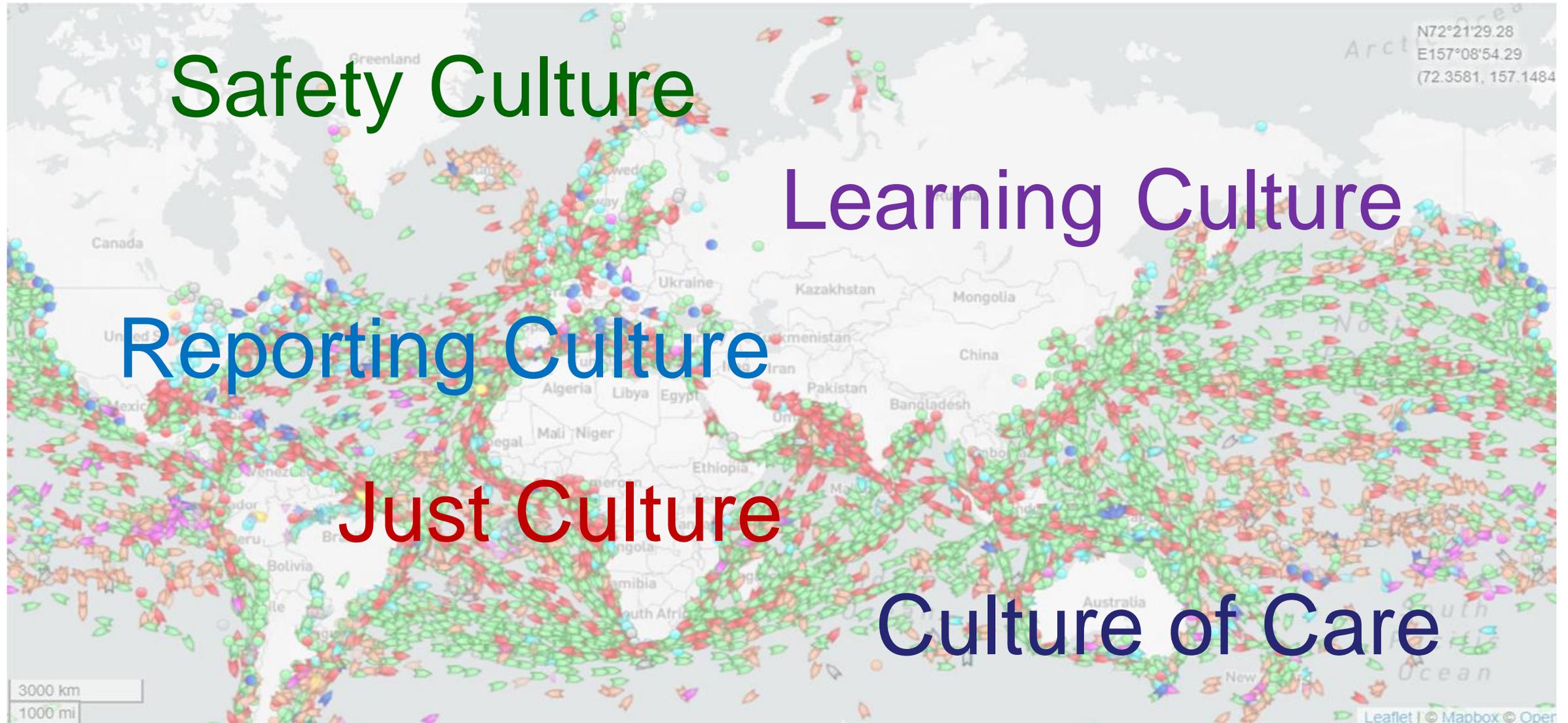
Routine  
 Skills Low perception of risk  
 Superficiality Constant change in the crew  
 Mental Capacity Lack of training  
 Lack of attention **Fatigue** Ergonomics issues  
 Mechanical Failures **Multi-cultural crews** Lack of Situational Awareness  
 Company's own culture **Communication** Inexperience  
 Lack of Feedback **Complacency** Safety Culture  
 Knowledge **Lack of Manning** Commercial and Time Pressures  
 Lack of balance between senior and junior officers No design standards for some technical equipment  
 Attitude Lack of compliance



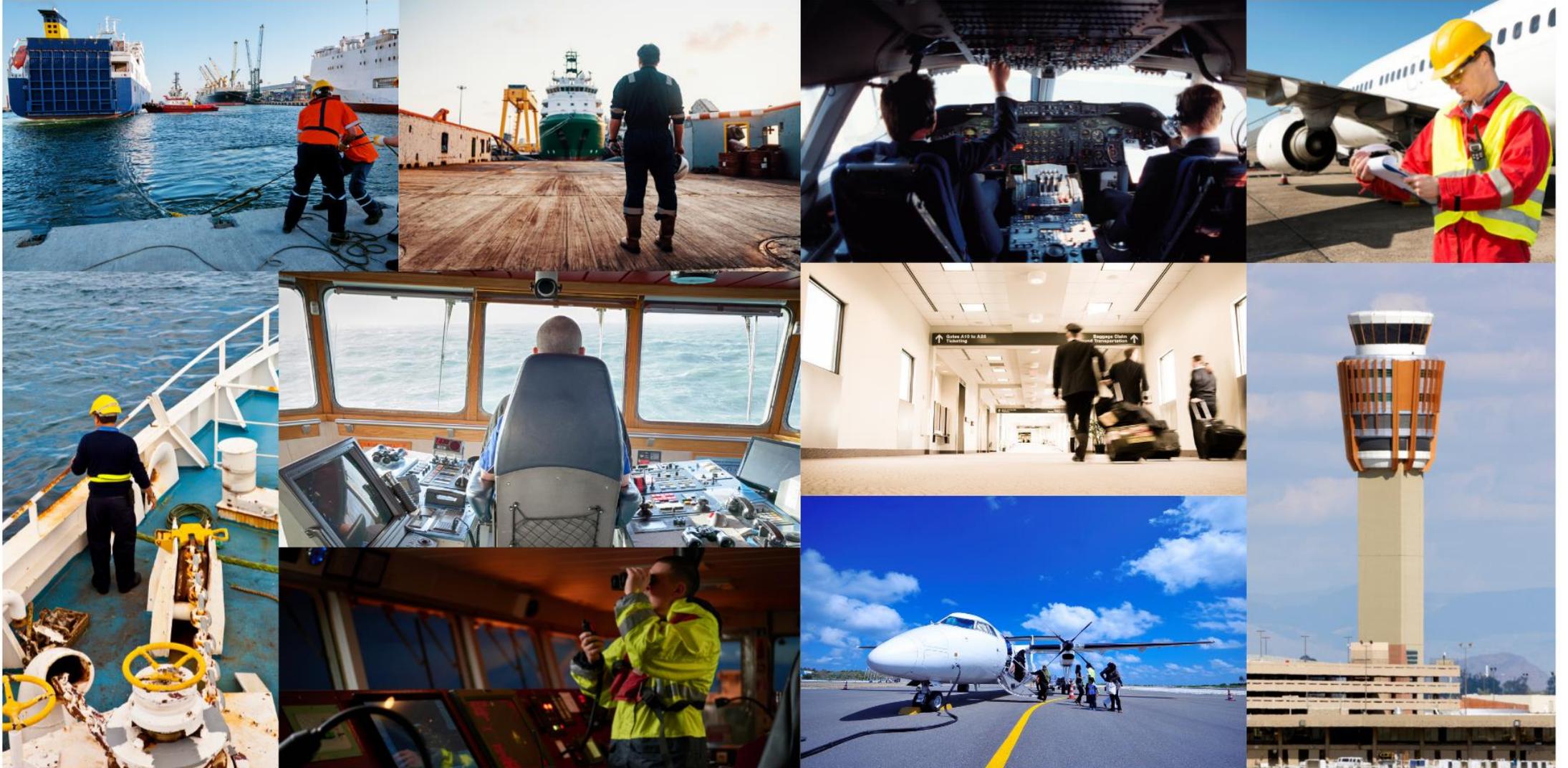
# What keeps ships safe?



Safety Standards  
 Safety Culture Resilience  
 Buddy Systems Flexibility Good maintenance regimes  
 Leaving problems ashore Procedures Safety practices  
 Recognition from peers Professionalism Ergonomics improvements  
 Master's leadership attitude Experience Continuous improvements  
 Updated QA manuals Training Formalized competency models  
 Multi-skilled crew Seafarer's competence to face problems  
 Vessel's generous safety margins



# SAFEMODE Safety Learning Culture: existing, borrowed, new...



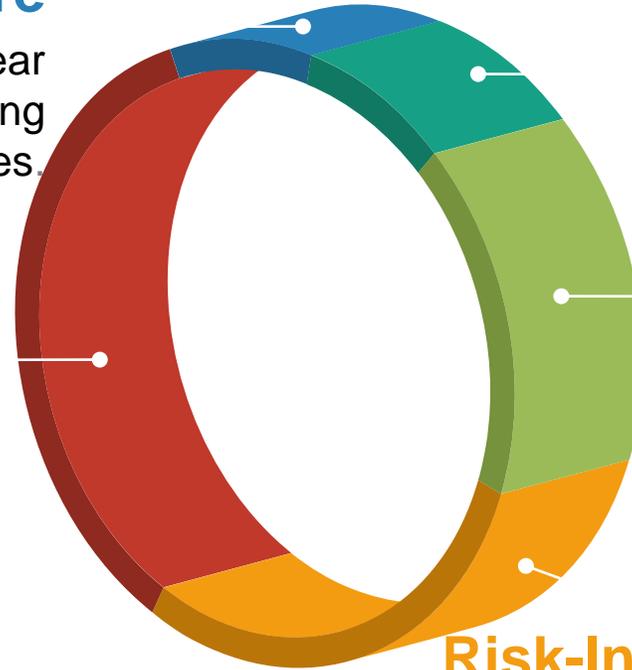
This

## Data Capture

Any events, incidents, accidents and near misses are reported and investigated using effective systems, language and processes.

## Operation & Maintenance

Normal and abnormal operations are monitored constantly for performance variations and safety exceedances



## Data Analysis

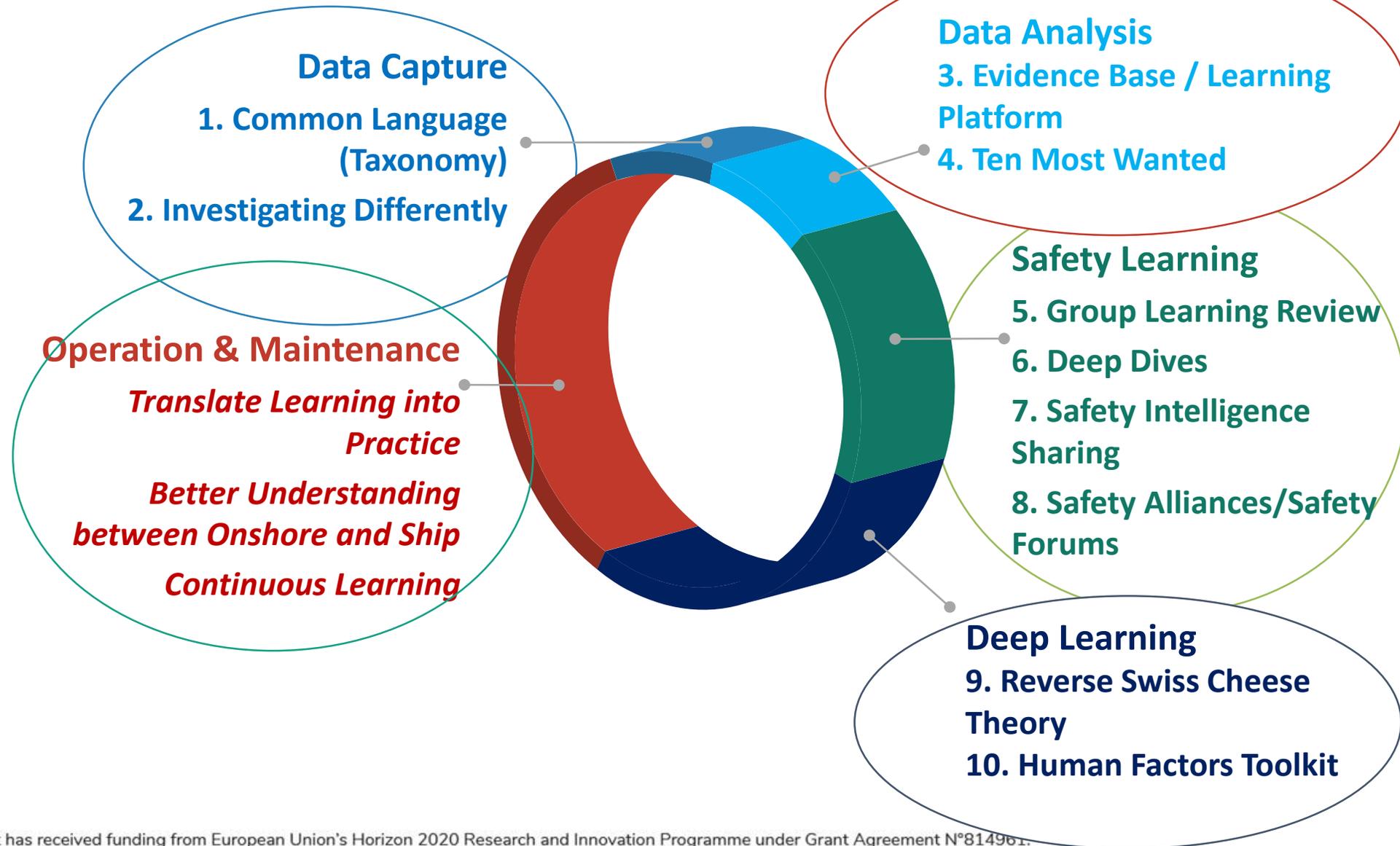
Data are analysed to determine causes, contributions, and remedial measures to prevent recurrence

## Safety Learning

Specific and generic lessons are drawn to improve safety, including via job and interface design, automation, and improved risk assurance processes

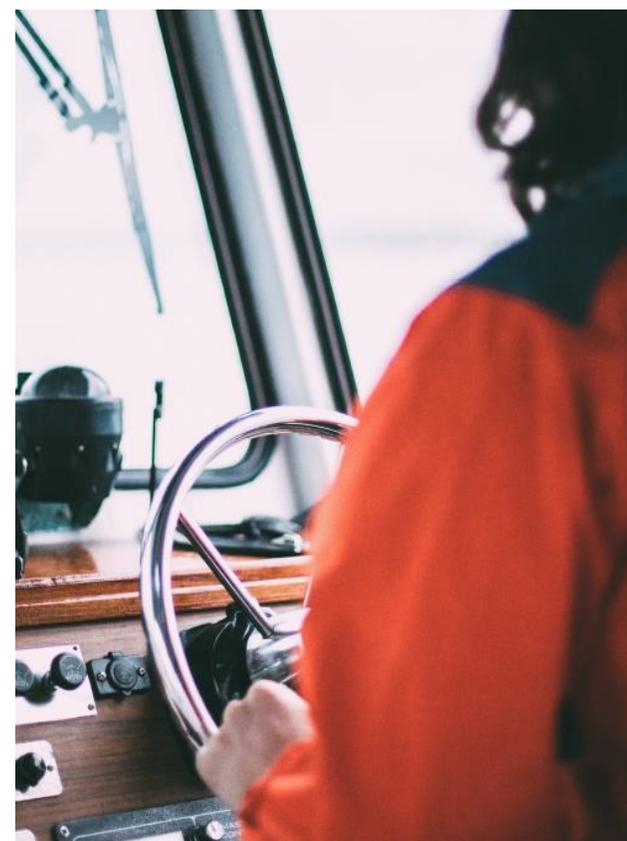
## Risk-Informed Design / Deep Learning

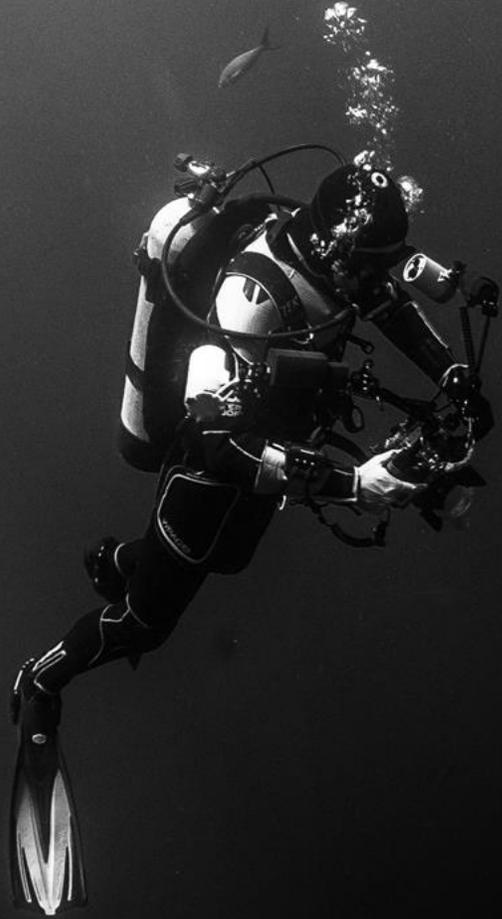
Designers and risk assessors are able to use the lessons learned to make future systems more resilient. Organizational and systemic Human Factors issues are addressed





Flooding / Foundering  
Crane operations  
**Enclosed Spaces**  
Deck machinery handling  
Hot Work Piracy  
Contact Man Overboard Loss of Control  
**Grounding / Stranding**  
Lifeboat testing Electrocution  
**Falls from Height**  
**Collisions Hull failure**  
Capsizing / Listing  
**Fire/Explosion**  
Mooring Operations





# Safety Deep Dives

Explore a specific accident or incident trend

Examine the basis for safety

Which barriers are still working?

Which barriers are no longer working?

What are the key Human Factors involved (both positive and negative?)

Have any external factors changed?

Have internal factors changed (staffing, competency, etc.)?

Are the procedures still fit for purpose?

What are the deep systemic factors?

Where are the hotspots in the fleet?

Where are there best practices in the fleet?

What can be shared across the fleet?

# HF Toolkit

## Error Identification

HAZOP; TRACER; SOAM

## Systemic Analysis

SHELL; STAMP; SESAR HPAP; Arktrans

## HMI Prototyping

RTS Prototyping; Scenario-based design; Focus Groups; Eye Tracking

## HF Guidance

LOAT; HF Guidance

## Task Analysis

CIT; OSD; HTA;  
Walk-through / Talk-through

## Organisational Aspects

Safety Culture Assessment;  
HPSOE; Fatigue



*Economy, Pressures, Laws,  
Regulations, Societal Trends*

Upstream

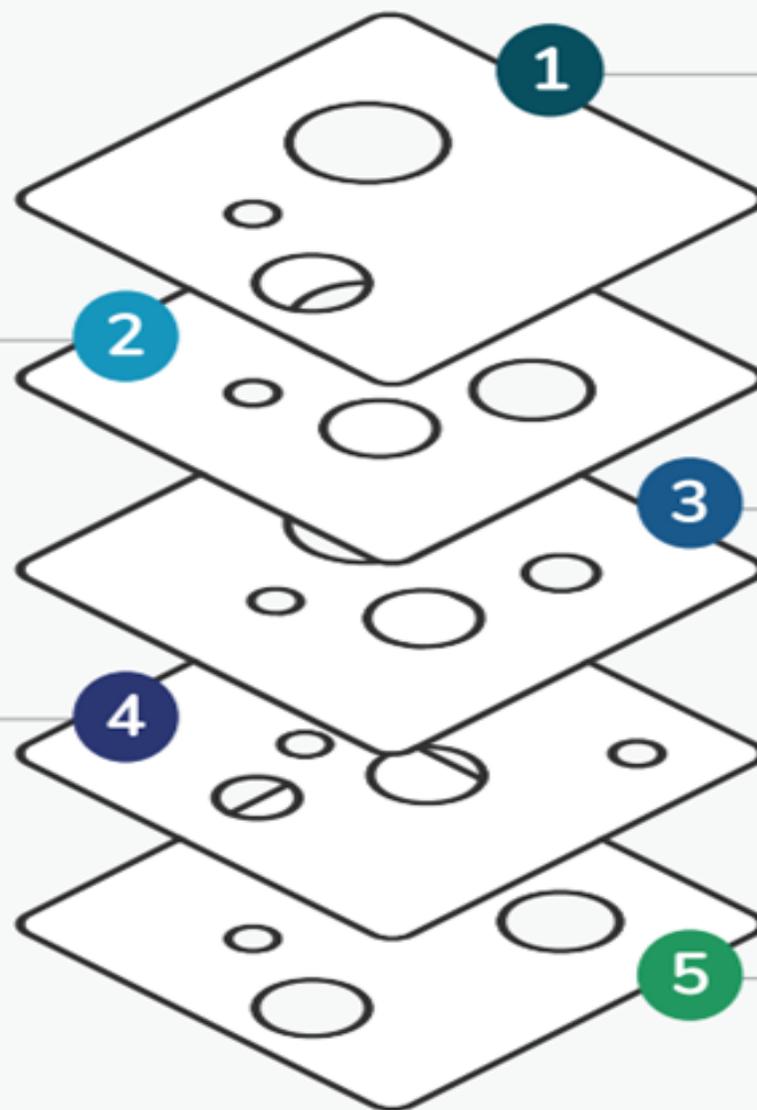
Downstream

### Design

- Concept Requirements
- Naval Architecture
- Standards
- Human Factors & Ergonomics
- Safety Margins
- Operational Feedback

### Vessel Operations

- Master's Leadership
- Professionalism
- Teamwork
- Speaking Up / Just Culture
- Health & Wellbeing / Fitness for Duty
- Onshore-Onboard Collaboration



### Organisation

- Strategy & Policy
- Resources
- Communications
- Culture
- Safety Management & Learning
- Regulatory Compliance

### Fleet Support

- Crewing & Certification
- Training & Procedures
- Safety Management System
- Investigation & Learning
- Maintenance Planning System
- Defect Reporting & Management

### Providence (luck)

# The Way Forward



01

**Safety  
Intelligence  
Sharing +  
Safety  
Alliances/Foru  
ms**

02

**Investigating  
Differently +  
Group  
Learning  
Reviews**

03

**Taxonomy +  
Database /  
Learning  
Platform +  
Ten Most  
Wanted**

04

**Human  
Factors  
Toolkit**

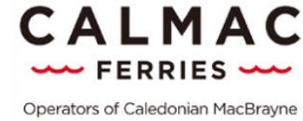
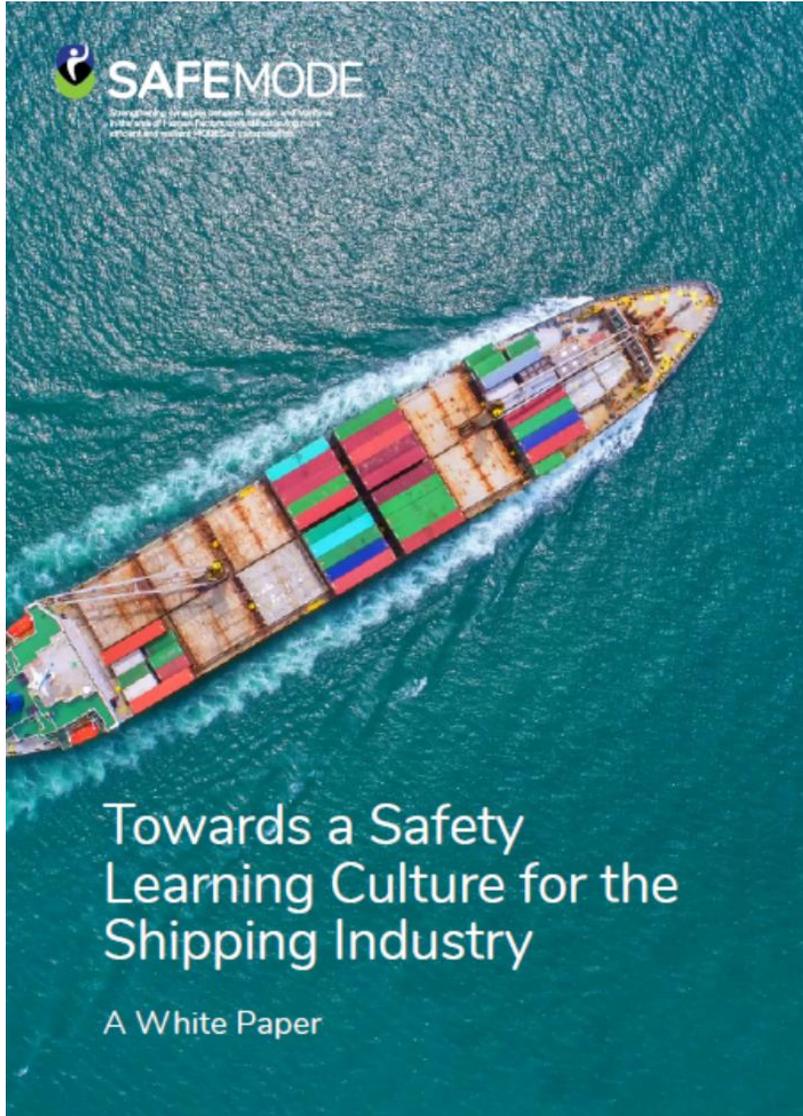
05

**Deep Dives +  
Reverse  
Swiss  
Cheese**

- Safety Learning Culture is seen as a promising destination for Shipping.
- Six use cases from the industry show that Shipping is already on the way.
- Safety learning practices will help transform the industry into a safety learning culture.



# Many thanks!



*Thanks for listening*

