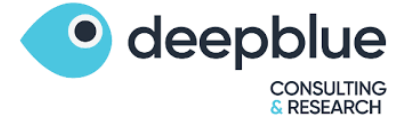




SAFEMODE

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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programme under grant agreement N°814961.

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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)

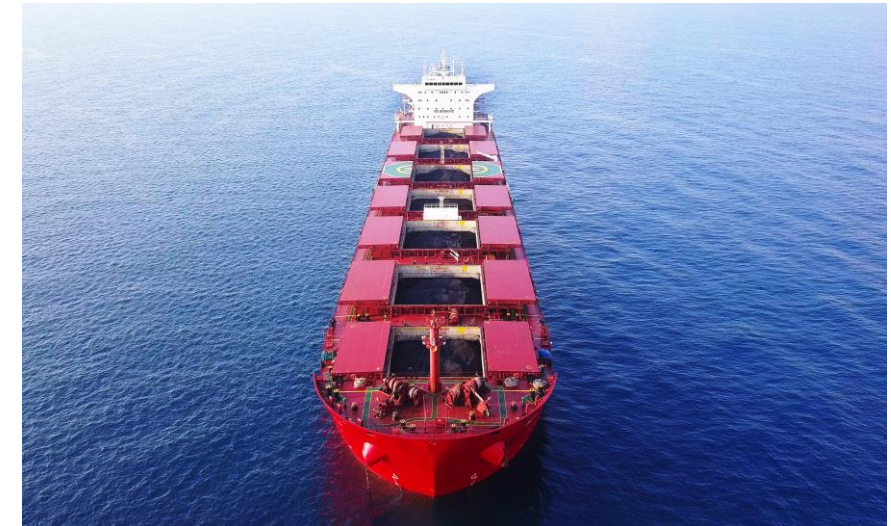
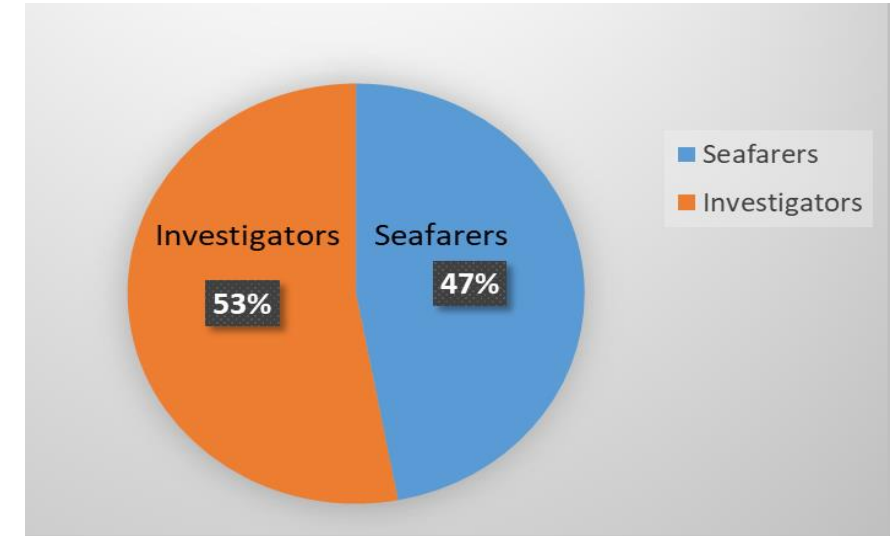
- Cargo (chemical tankers, containers), passenger / cruise ships

Geography – countries represented:

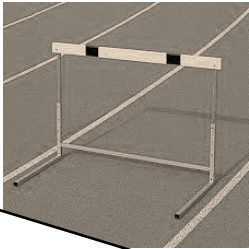
- Seafarers – *Mexico, Denmark, Romania, Netherlands, France, India, Sweden, UK*
- Investigators – *USA, UK, Malta, Spain, Portugal, Denmark, Italy*

EMSA, IMO, Unions, Training organization

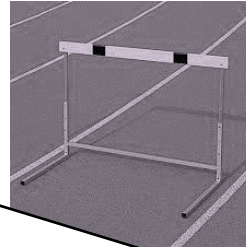
MCA (HEAG), IMarEST, STABS 2021, OCIMF 2022 (HFC)



What is the Culture that must be promoted?



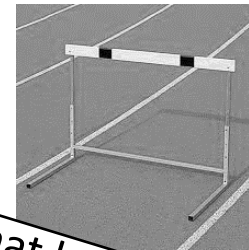
Investigation



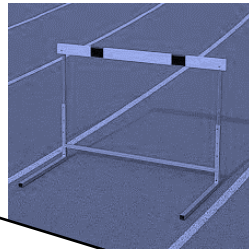
Reporting



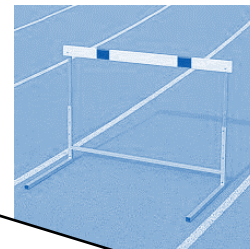
Near miss
Reporting



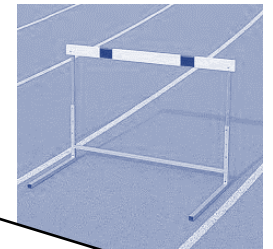
What keeps
ship safe



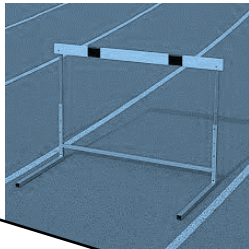
Understanding
Human Element



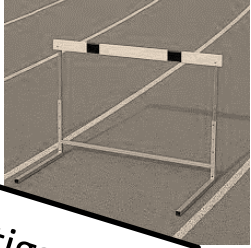
Just Culture



Safety Learning

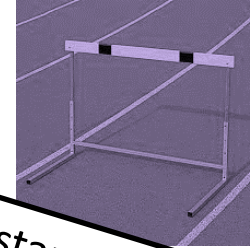


Safety Management
System



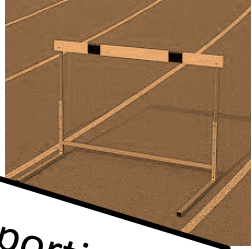
Investigation

- 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



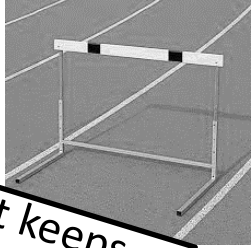
Reporting

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



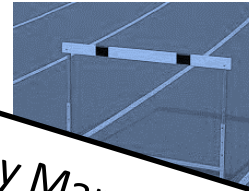
Near miss
Reporting

- 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



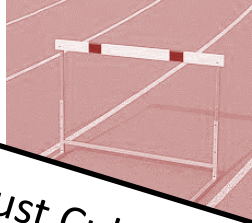
What keeps
ship safe

- 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



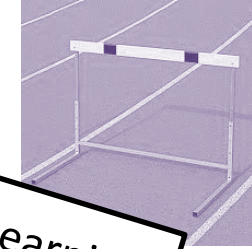
Safety Management
System

- 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

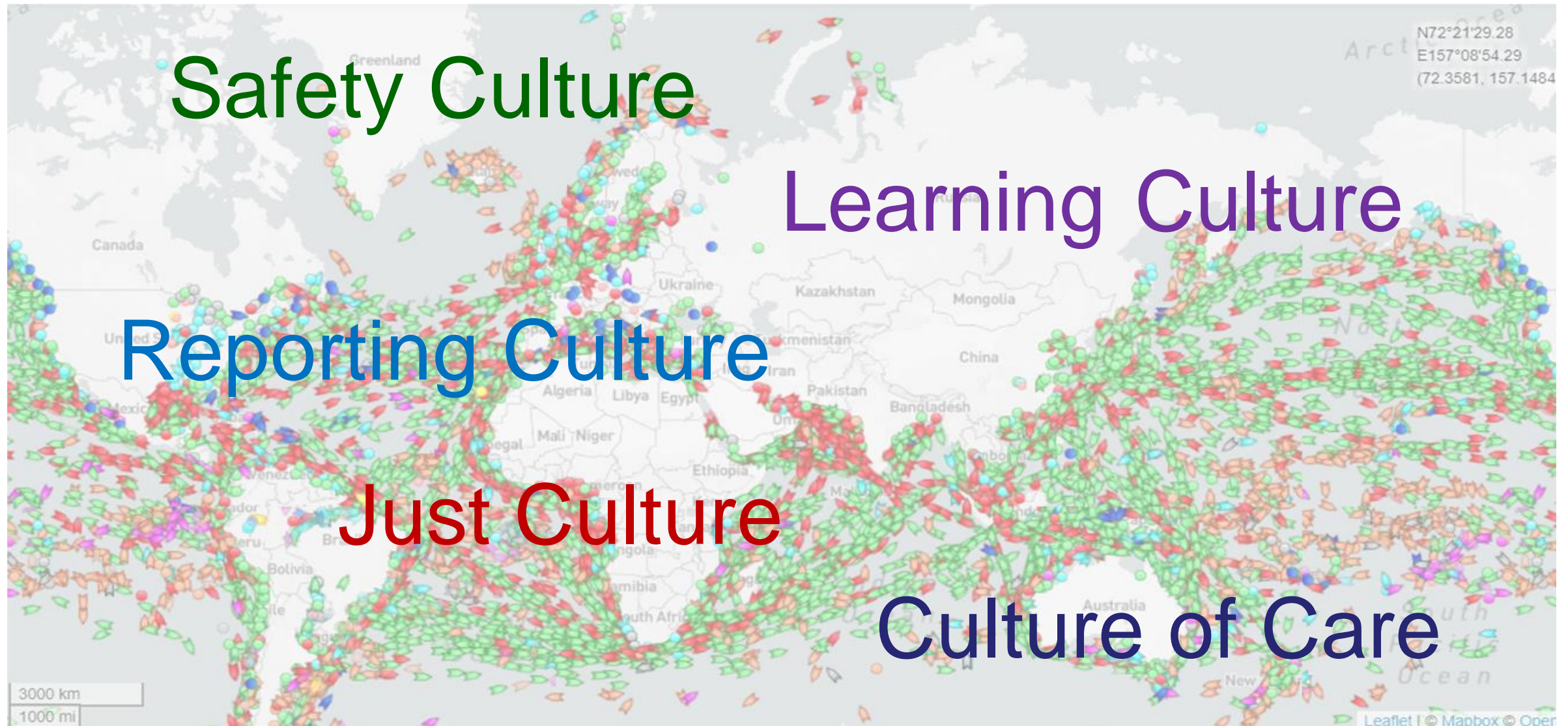
Routine
 Skills Low perception of risk
 Superficiality Constant change in the crew
 Mental Capacity Lack of training
 Lack of attention **Fatigue** Ergonomics issues
 Mechanical Failures **Multi-cultural crews** Lack of Situational Awareness
 Company's own culture **Communication** Inexperience
 Lack 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

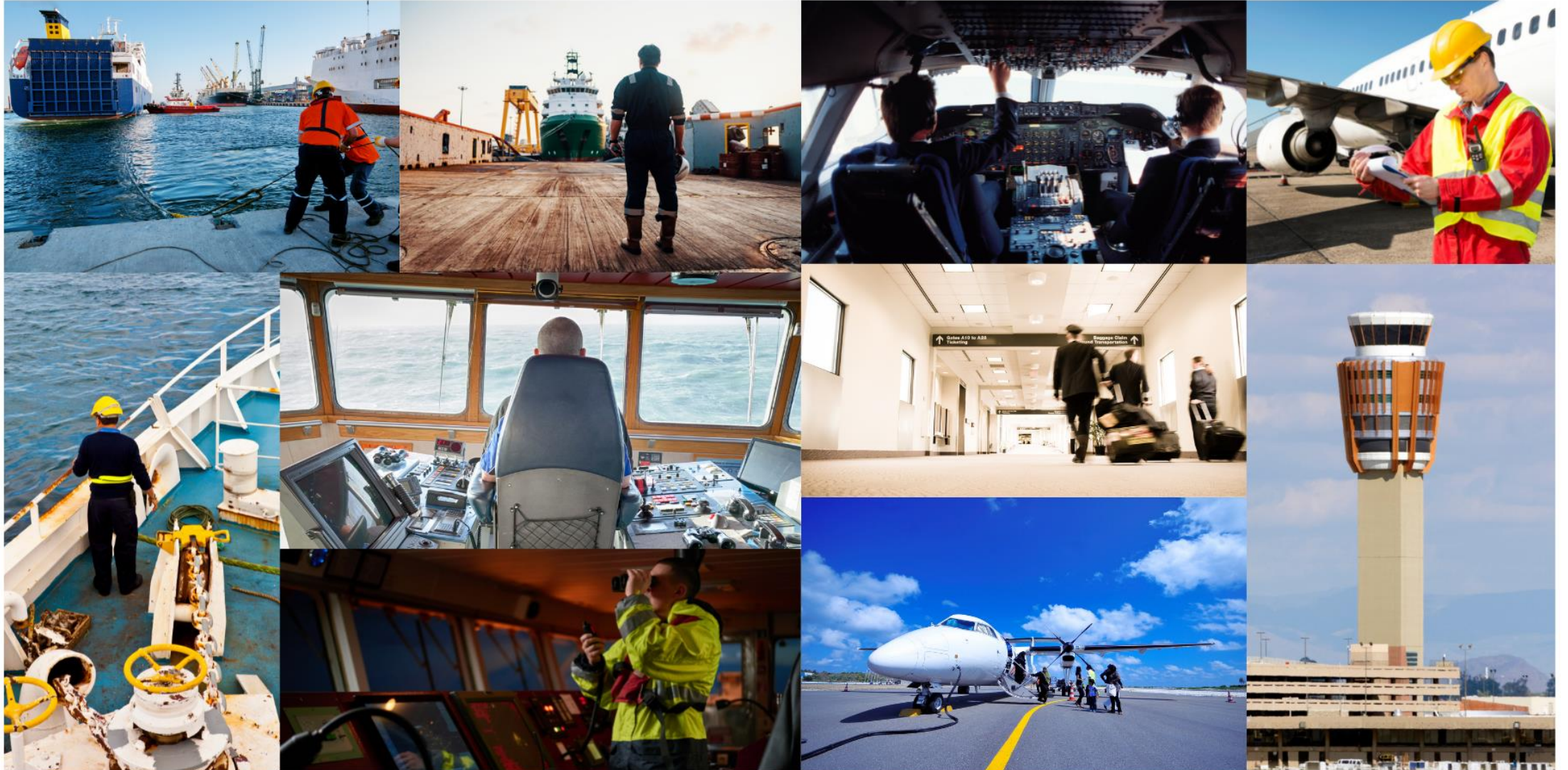


What keeps ships safe?



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



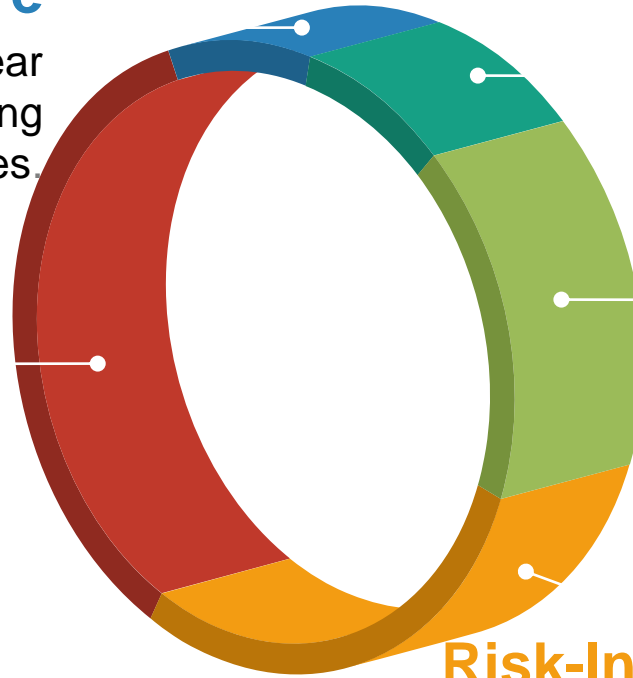


Data Capture

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

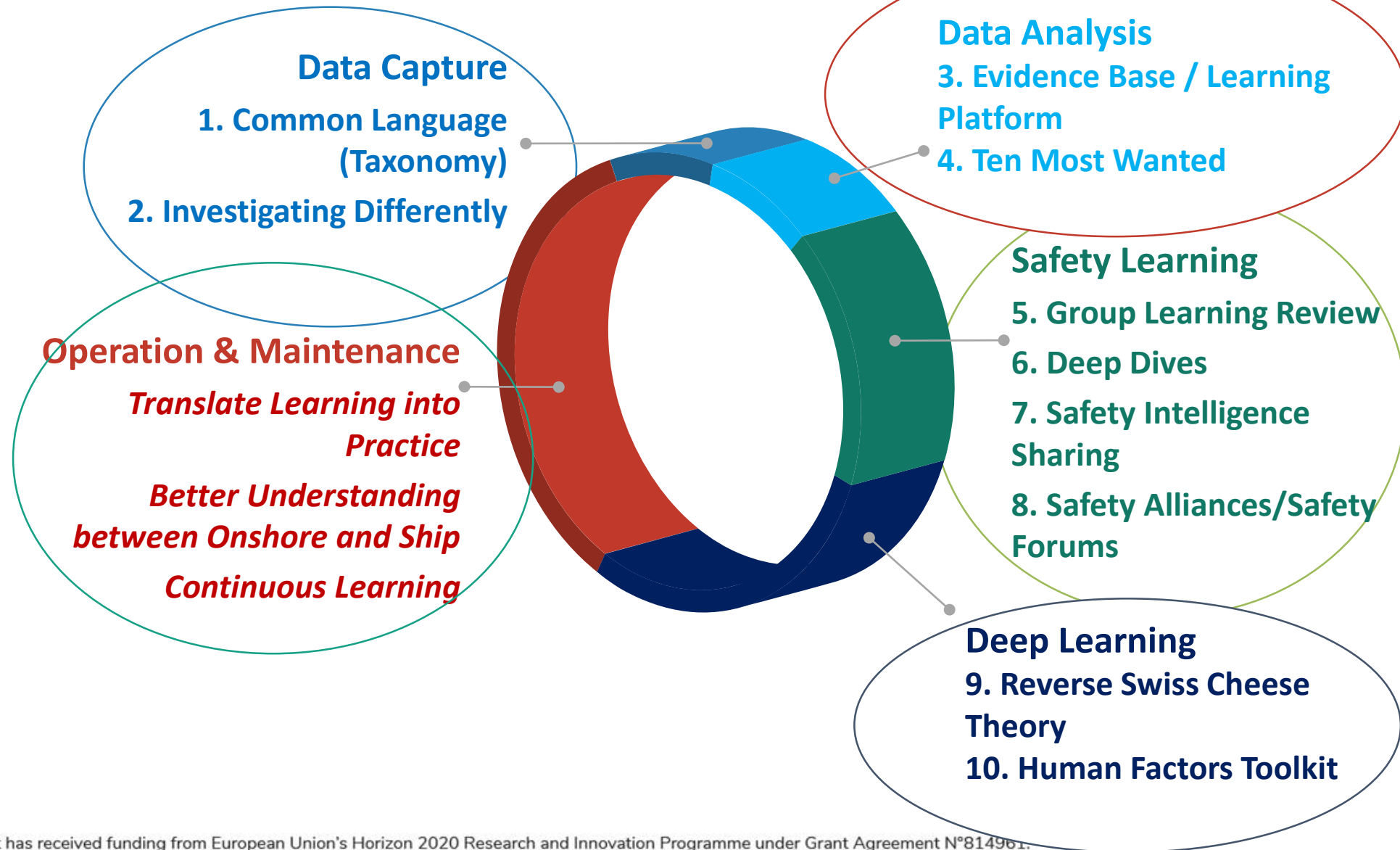
Safety Learning

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

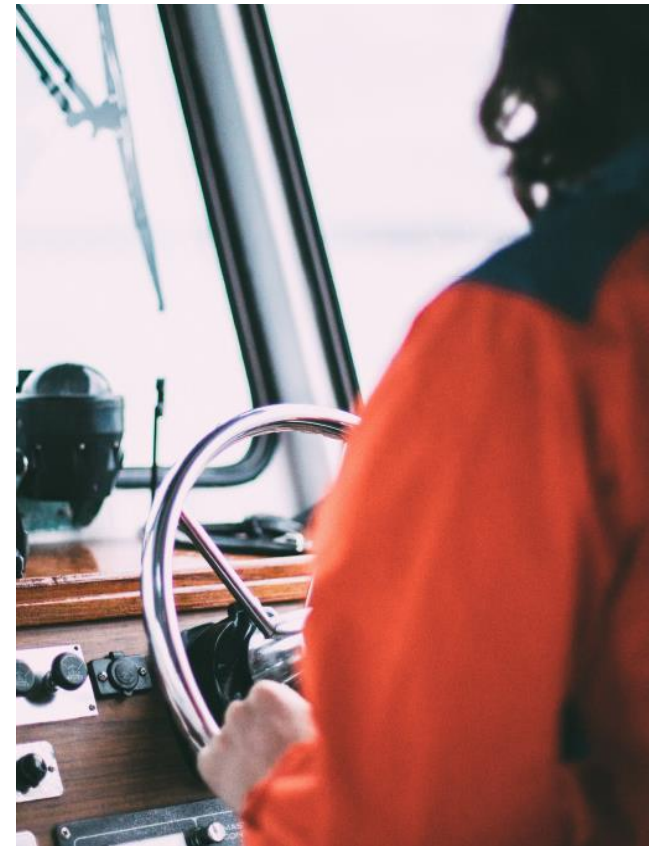
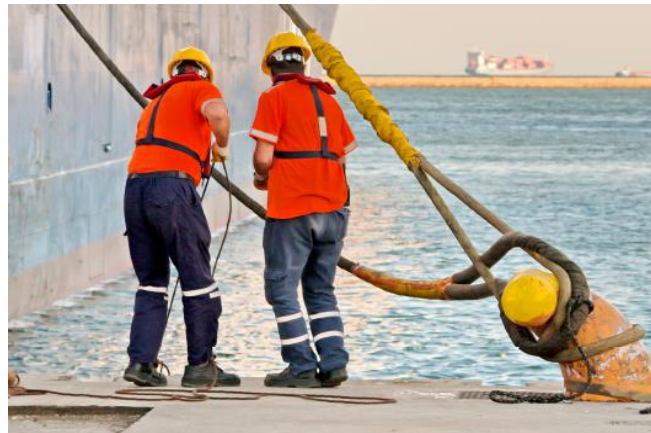
Designers and risk assessors are able to use the lessons learned to make future systems more resilient.
Organizational and systemic Human Factors issues are addressed

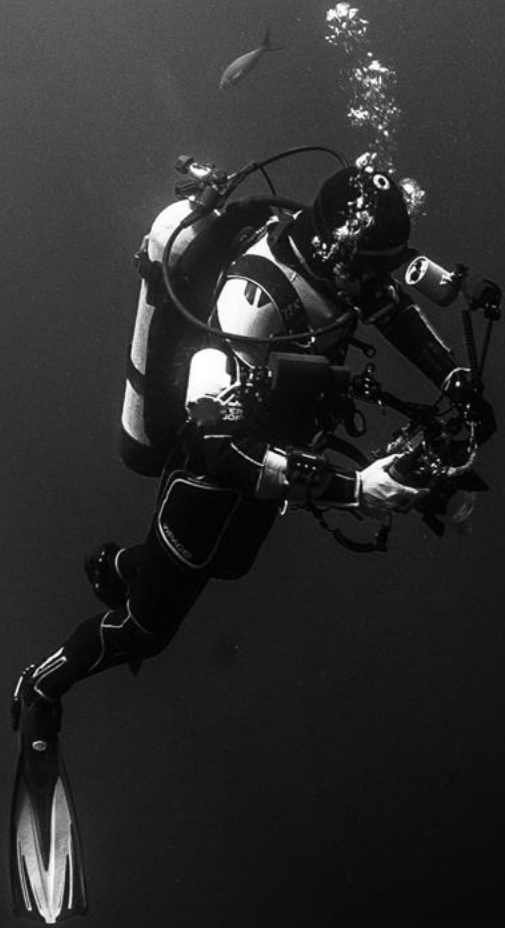
Ten Safety Learning Approaches





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

Real-Time Simulation

RTS Prototyping; Eye Tracking; NEUROID

Human Reliability Assessment

HEART; CREAM; CARA



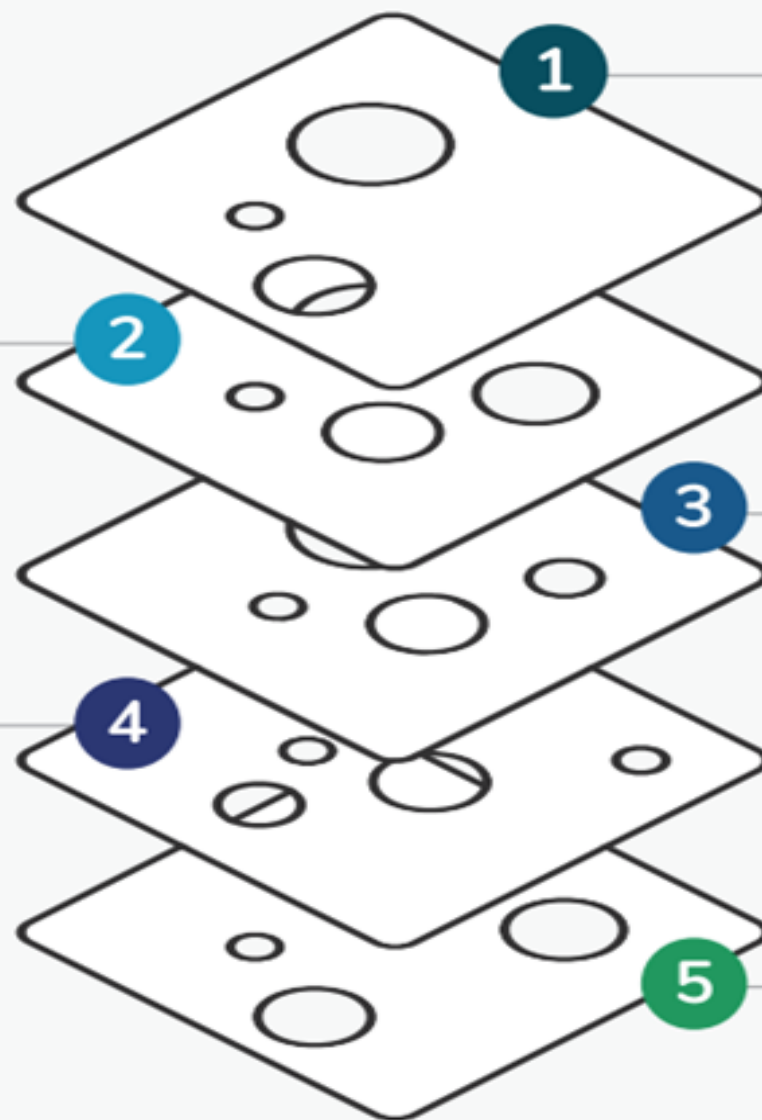
Upstream

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)

Downstream

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**

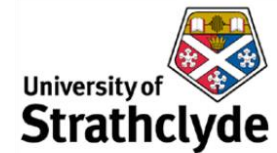
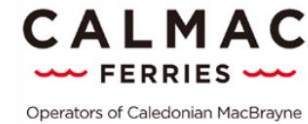
05

**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

