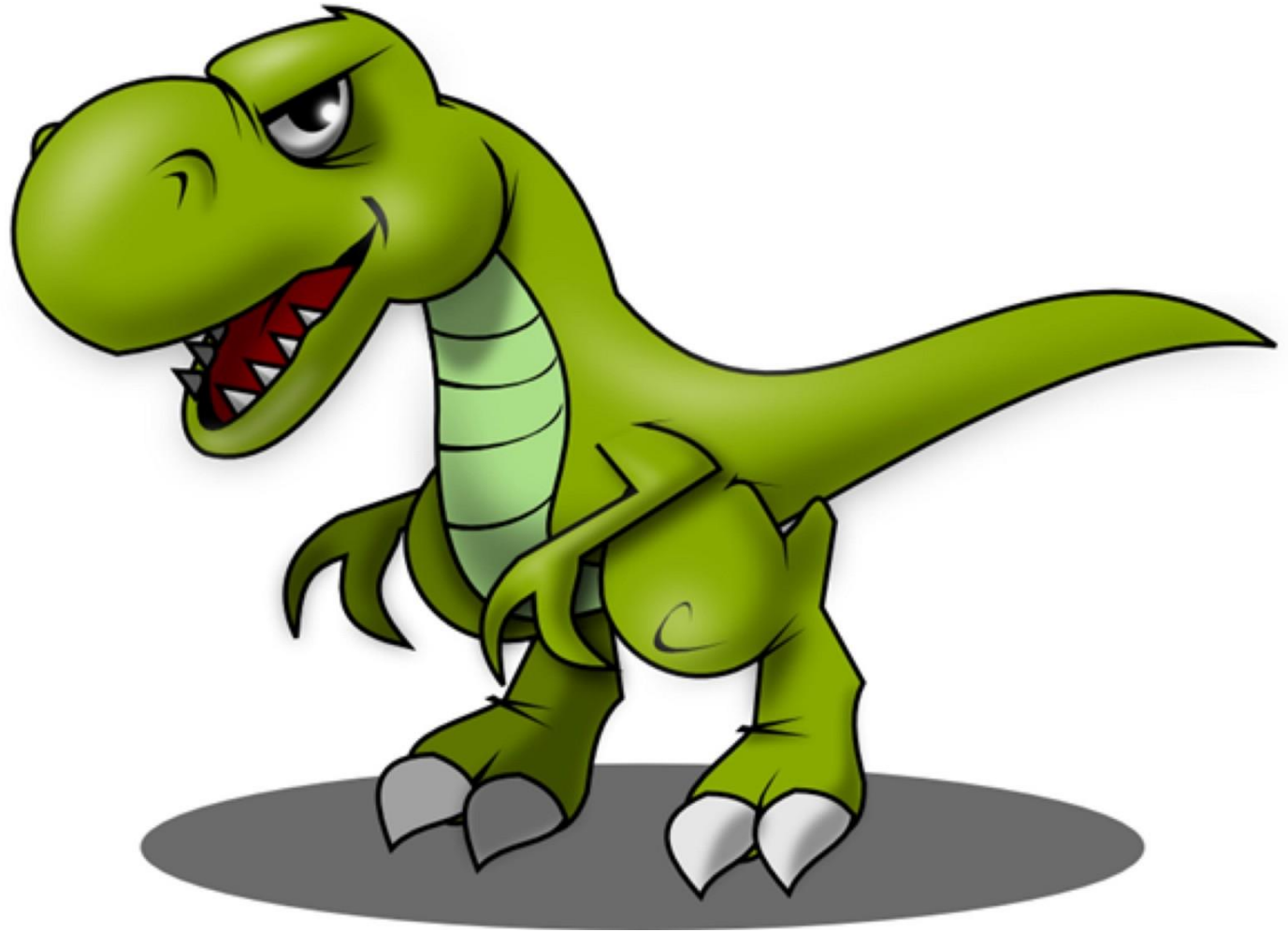**MARITIME**

Human Factors and The Safety Culture in Shipping

Tanker Operator Conference, Hamburg
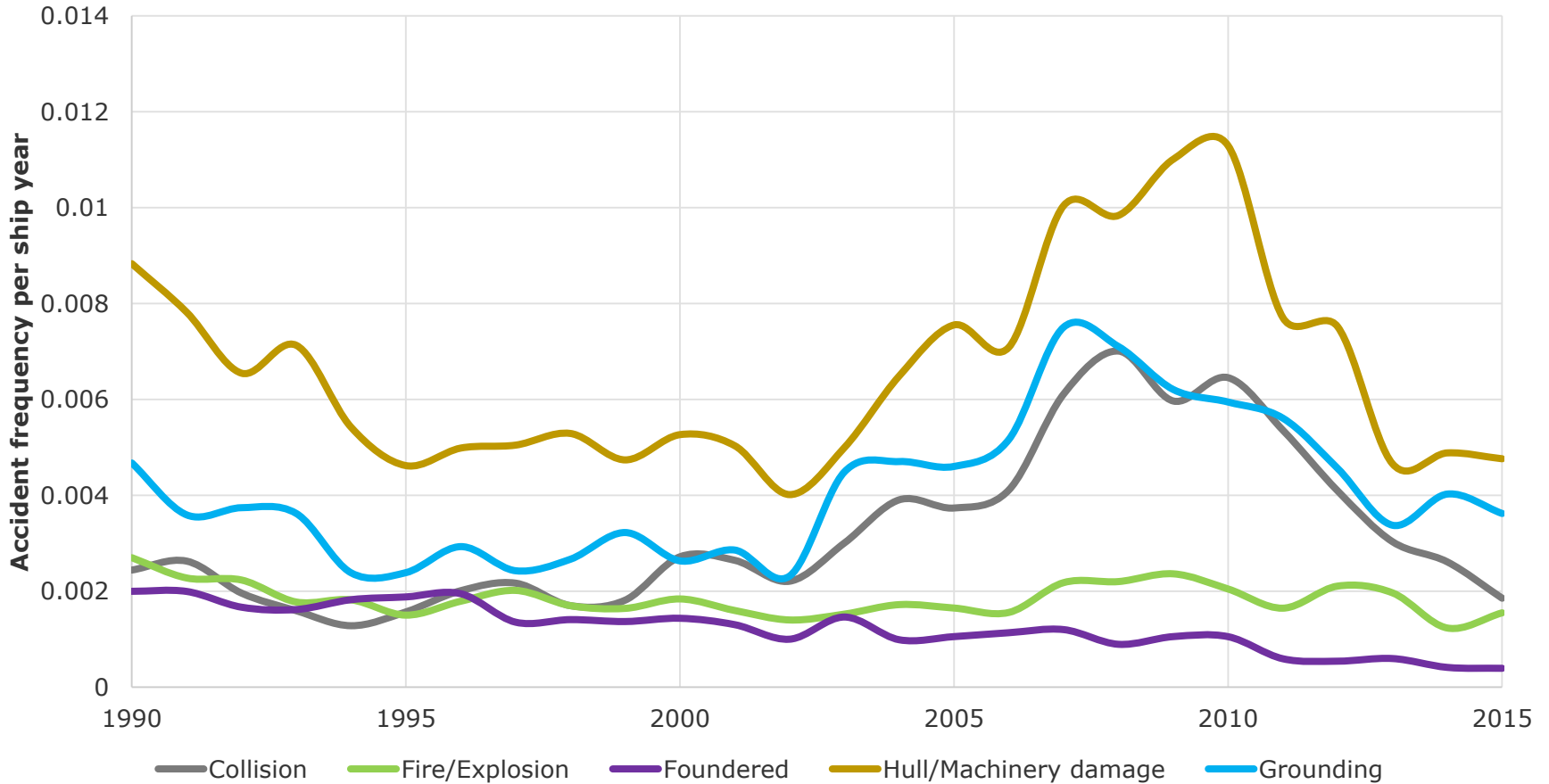
Sergey Gribanov
16 October 2018

Is this Me or the Industry

The safety level in shipping has changed little over the last 20 years

Serious accidents

All cargo carrying ships (dry cargo/passenger, tankers and bulk carriers)

DNV·GL

Is this Me or the Industry

- A Recent study **Being Human – in safety-critical organisations** concluded that **"Humans are crucial to safe performance in complex systems."**

  - The authors begin by stating that the underlying drivers of our behaviour – which have evolved over millions of years – will not go away and cannot be ignored.

- It seems as if the **human element in shipping has been pushed firmly down the agenda.**

  - Humans will soon become superfluous to our industry.

  - Moreover, if four-fifths of shipping accidents are the result of human error, these can best be mitigated by reducing the human involvement to make mistakes to a minimum by **removing men and women from vessel and port operations completely.**

- But are they right? Will levels of **safety be improved** through a shift to digital shipping, with no or **minimal interaction from humans?**

- Or we shall focus on what humans and machines both do best?

DNV·GL

Is this Me or the Industry

▪ There is no doubt that shipping is **becoming increasingly complex**,

But the **human element remains to be a key** because a sustainable and safe shipping industry is where **humans are engaged, motivated, and properly led** – rather than replaced by algorithms.

What you see is not always what you get !

- **Culture surrounds us and influences the values, beliefs and behaviours.** The western world's approach to management is based on an emotionally detached rationality.

  – It assumes that human cultures in the workplace should resemble the laws of physics or engineering, and therefore have universal application, this assumption reflects a western cultural bias.

- Maritime safety must transcend national boundaries, including all the cultures therein.

  – Nevertheless, **one could detect differences in how people respond in similar situations.**

- Some people are not acknowledging that cultural differences exist. This results in a type of **cultural blindness** that creates the false assumption that we all see things and behave in the same way. Clearly, we do not.

DNV·GL

Dealing with Bias and language

- Judgement is shaped by **personal experience**.

  – Based on a lifetime of personal experience, we all develop **mental models** that serve well for quickly evaluating everyday situations intuitively in the absence of a complete set of facts. **Unfortunately, many of these mental models reflect personal bias.**

- **Another source of problems in** cross-cultural transactions.

  – With English being the language of maritime the language barrier may disrupt effective communications when English speakers interact with non-English speakers and non-English speakers interact with other non-English speakers.

DNV·GL
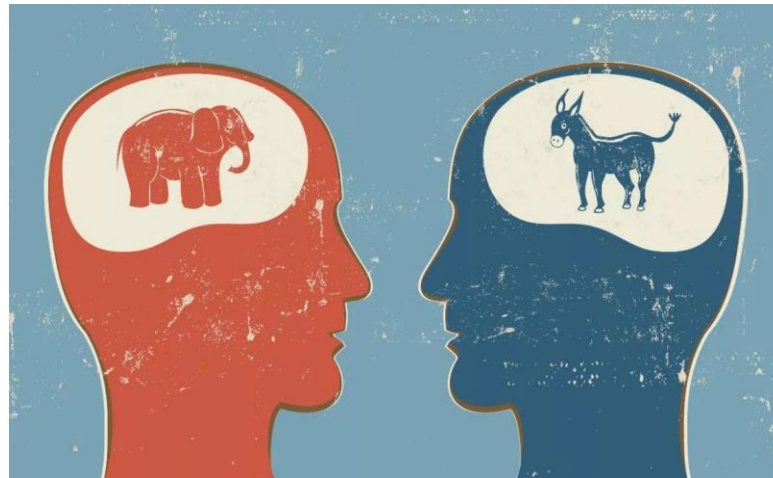
The way forward

- Important is that the enforcement regime should move beyond a culture of **negative reporting** i.e. **non-compliances, failures, defects, detentions and human errors.**

  - Rather to focus on understanding how, despite all the environmental, social and technical obstacles, **people generally succeed in carrying out their jobs.**

- This leads to an entirely different language of safety

  - one that is **characterised by every day trade-offs**, adaptability, or 'seamanship' – and **one where human performance is seen as a solution and not the problem**.

- It is not difficult to figure this out on a vessel where seafarers **often find ways to carry out tasks differently than set out in procedures**, due to lack of resources, time pressures, inadequate procedures that leave **no choice but to violate those procedures.**

DNV·GL

Human Factors TMSA 3
what are
you
doing about it ?

DNV·GL
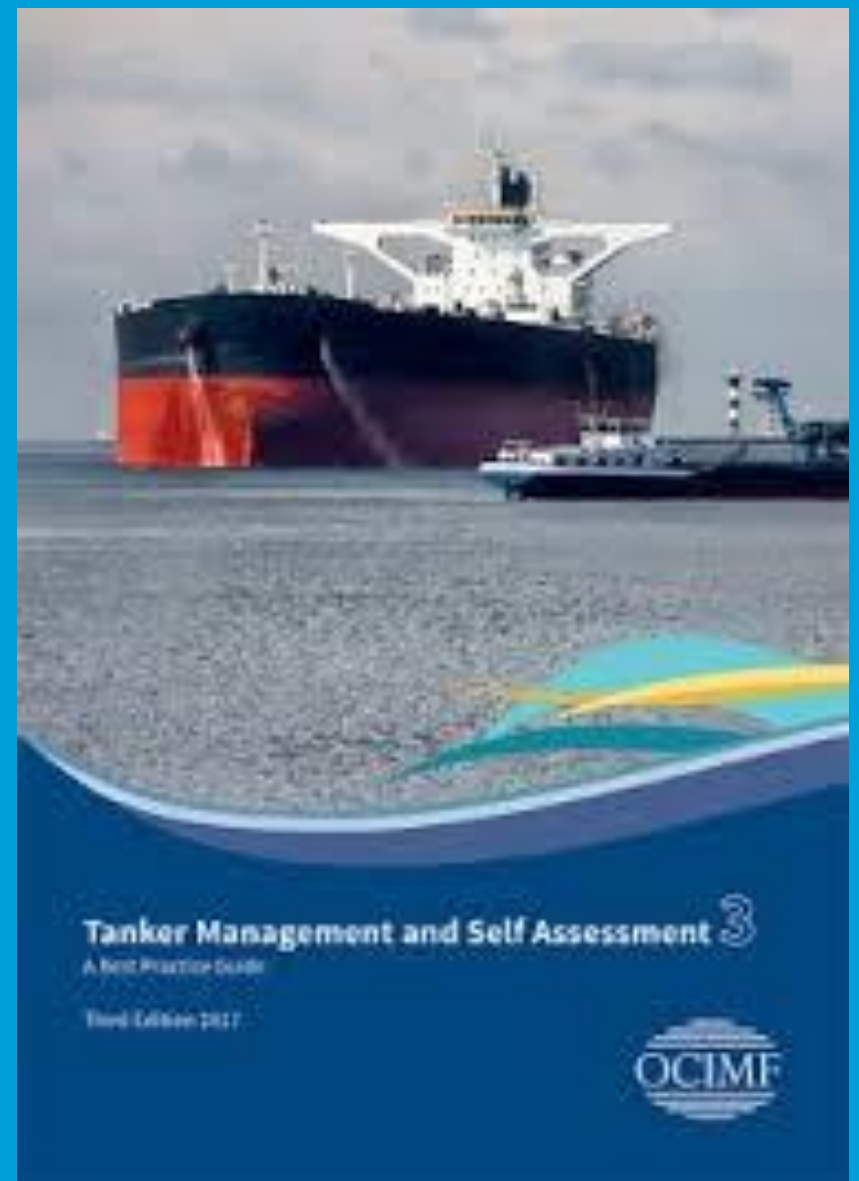
TMSA

- 12 KPI references to Human Factors/culture
- 30 Best practice Guidances

Element 1

Stage	KPI's	Best Practice
2.3	Vessel and shore – based management teams promote HSSE excellence	Strong effective leadership is visibly demonstrated through: - **Leading by example** - **Empowering personnel to intervene** to prevent hazardous situations developing
4.3	All personnel demonstrate commitment to HSSE excellence	Examples of commitment include participating in: - **A Behaviour-Based safety system** Managers and S/T's demonstrate commitment by their behaviour

Element 2

Stage	KPI's	Best Practice
4.3	The Company Promotes appropriate interpersonal skills training	Training may included: • **Team building** • **Cultural diversity** • **Effective communications**

Element 9a

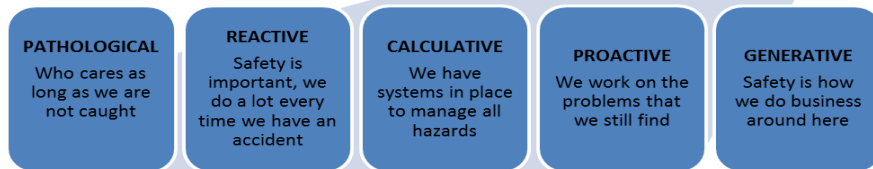| Stage	KPI's	Best Practice
3.2	Procedures measures and compare the strength of safety culture across the fleet to identify areas for improvement and to provide motivation to crew	Measures: • **Near miss reporting** • **BBS system observations** • **Best practices identified** • **Hazards are identified** • **Unsafe acts identified** • **Safety suggestions**

DNV·GL

What is safety culture and why does it matter

What is Safety Culture?

"Safety Culture is the elements or parts of organizational culture that influence the organizational members' attitudes, beliefs, perceptions, and behaviours, which have an impact on the level of safety within the organization."
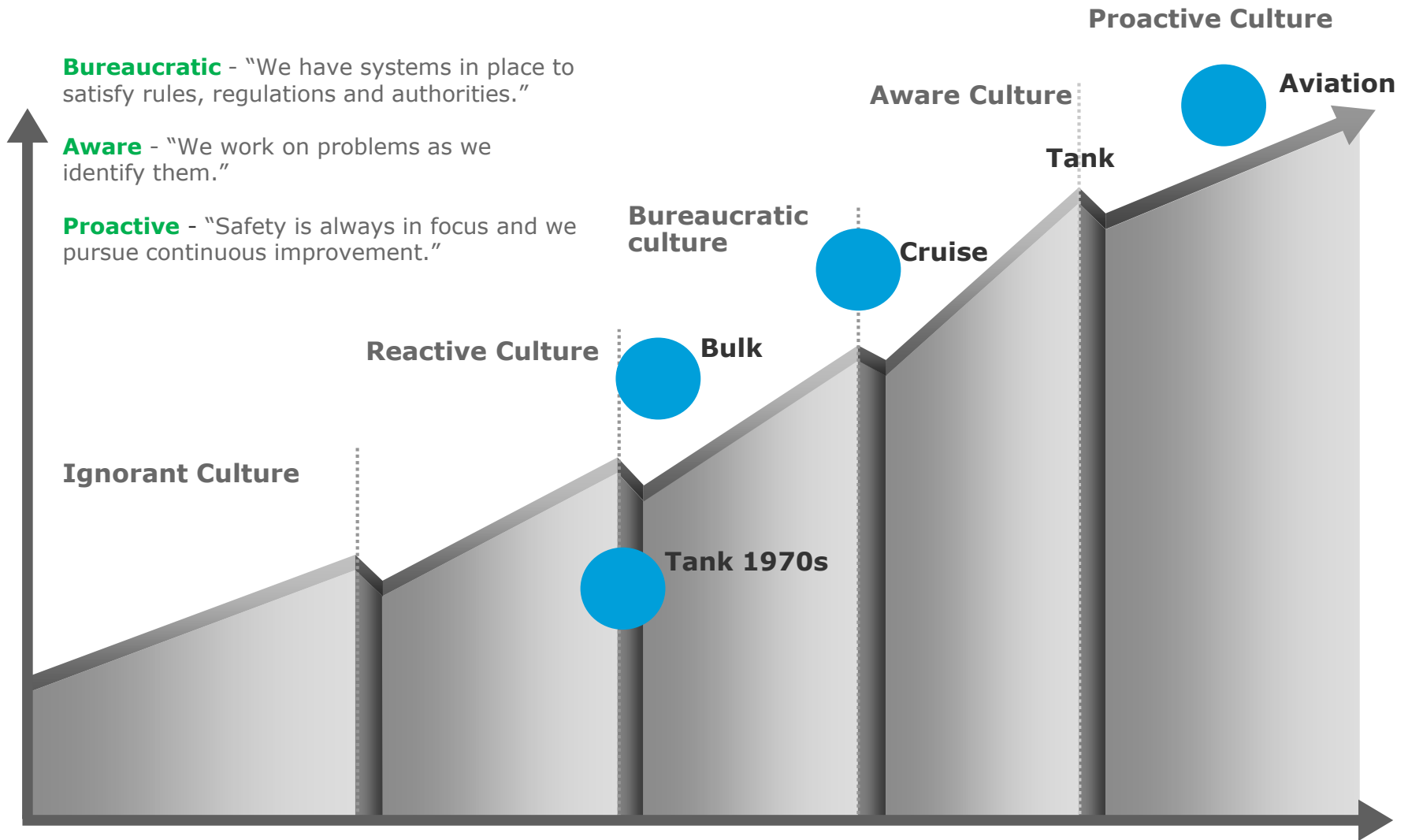
A Hale

PATHOLOGICAL	REACTIVE	CALCULATIVE	PROACTIVE	GENERATIVE
Who cares as long as we are not caught	Safety is important, we do a lot every time we have an accident	We have systems in place to manage all hazards	We work on the problems that we still find	Safety is how we do business around here

Why it matters

- Culture impacts on the **performance** of the whole organization.

- Maritime **regulatory compliance** alone has **not achieved accident reduction** to the extent of other industries. If we are to improve our safety record, we must properly **address** the **human element**.

- The organization's safety culture can be a **leading indicator** of the vulnerability to incidents and accidents in safety critical industries.

DNV·GL

The maturity of a Safety Culture

Proactive Culture

Aviation

Aware Culture

Bureaucratic - "We have systems in place to satisfy rules, regulations and authorities."

Tank

Aware - "We work on problems as we identify them."

Proactive - "Safety is always in focus and we pursue continuous improvement."

Bureaucratic culture

Cruise

Reactive Culture

Bulk

Ignorant Culture

Tank 1970s

What makes up Safety Culture

Safety Culture

The product of individual and group values, attitudes, perceptions, competencies and patterns of behaviour that can determine the commitment to, and the style and proficiency of an organisation's management of safety.

Safety Climate	Behaviour	Organisation
'how people feel'	**'what people do'**	**'what the organisation has'**
Individual and group values, attitudes and perceptions.	Safety-related actions and behaviours.	Policies, procedures and management systems.

Safety Culture maturity is reflected in responses to incidents

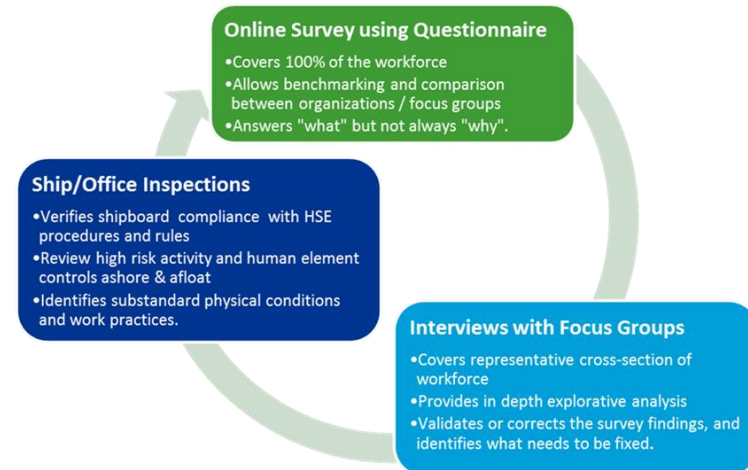| Application of initiatives	Learning
▪ The shipping industry most frequently applies initiatives **reactively** either**:** – either learning from **incidents** or – implementing good practices observed from **other industries**. ▪ Responses to incidents are in general: – **technical** or – **procedural**, ▪ Rarely do we address the **underlying human factors** (root cause of ~90% of incidents).	▪ **Learning is easily lost** if human fallibility is viewed as the 'cause' behind accidents. – This is a **simplistic** and naive understanding of human factors. – Part of the problem is that the maritime industry does **not value** human and behavioural sciences in the same manner as engineering sciences. ▪ **Human error** should instead be analysed as a **symptom of a malfunctioning system**.

Major accidents offer tremendous potential for learning from failures.

DNV·GL

Safety Culture Development in two steps

- Step 1:

- Identify the status of the culture through DNV GL's Safety Culture Survey

  - A safety culture survey where the employees in the entire organization have the opportunity to express their perception of the safety situation

- Step 2:

Identify the underlying factors affecting culture

  - DNV GL use a mixed method where we use a qualitative method with interviews and focus groups to identify the underlying causes

Online Survey using Questionnaire
- Covers 100% of the workforce
- Allows benchmarking and comparison between organizations / focus groups
- Answers "what" but not always "why".

Ship/Office Inspections
- Verifies shipboard compliance with HSE procedures and rules
- Review high risk activity and human element controls ashore & afloat
- Identifies substandard physical conditions and work practices.

Interviews with Focus Groups
- Covers representative cross-section of workforce
- Provides in depth explorative analysis
- Validates or corrects the survey findings, and identifies what needs to be fixed.

DNV·GL

To establish a baseline of safety culture, a combined quantitative and qualitative approach was agreed ...

| **1** **Quantitative Perspective**	**2** **Qualitative Perspective**
"What are the issues?"	**"Why are these the issues?"**
Safety Culture Survey	**Validation in Interviews and Workshops**
▪ All seafarers and staff have the opportunity to anonymously express their perception of the safety situation ▪ Suitable for benchmarking/ comparative purposes ▪ Very efficient assessment tool ▪ Answers "what", but not always "why" ▪ Starting point to explore the under-lying causes of focus areas in 2.	▪ Understanding the underlying issues in interviews and workshops with seafarers and staff on focus areas ▪ In-depth explorative analysis (explains and confirms survey results) ▪ More time and resource consuming ▪ Results are harder to compare ▪ Allows to derive recommendations on improvement actions – covering real problems, not symptoms

DNV·GL

Eight dimensions form DNV GL's safety culture framework
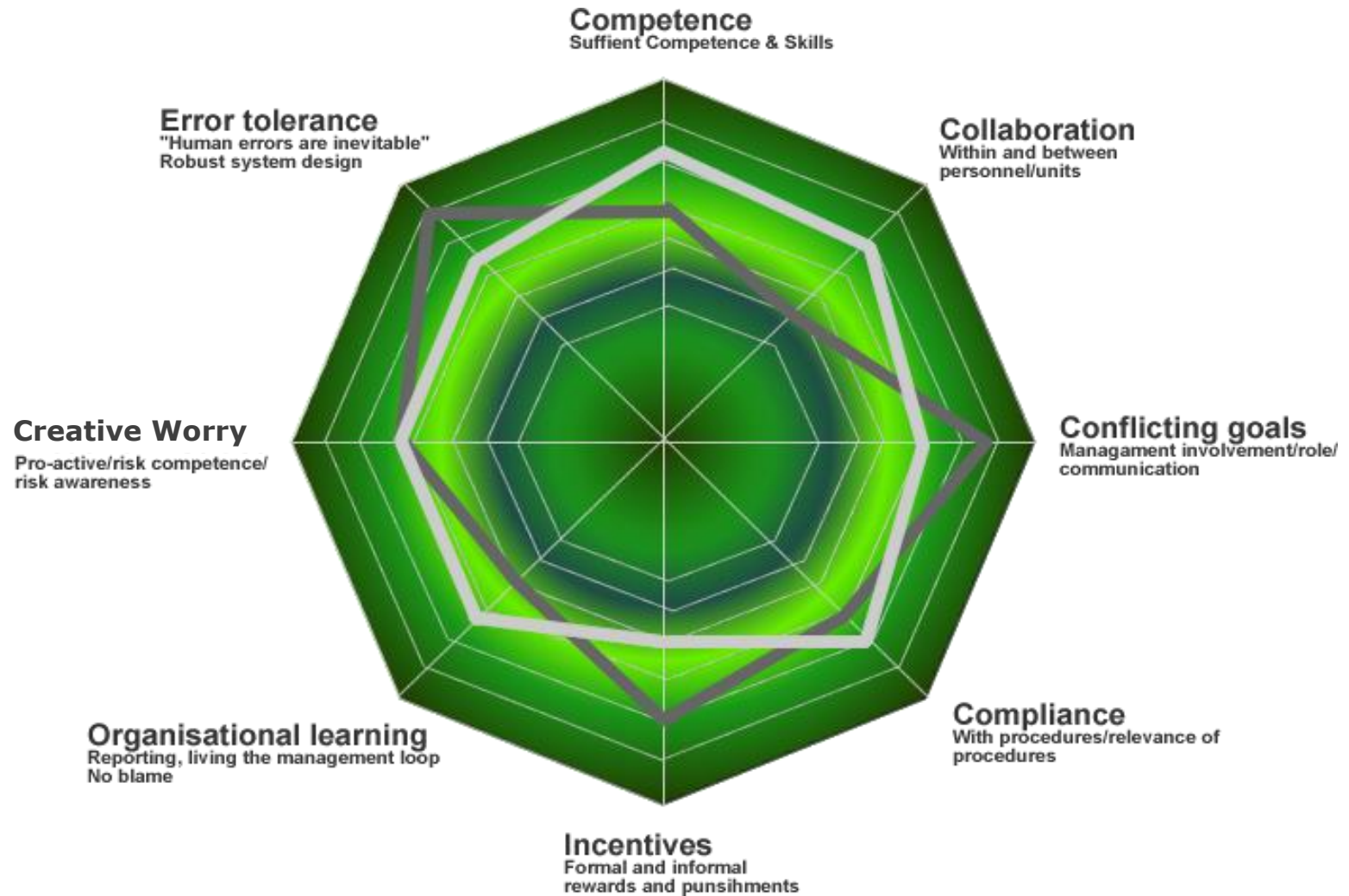
Dimensions describing Safety Culture

Competence

We want to understand how good the company is at recruiting, training and developing their staff to ensure they have the right skills to carry out their jobs safely.

Collaboration

We want to understand how much people work together to identify and manage safety hazards and what the quality of this collaboration is, e.g. does it lead to improvements in safety systems or procedures.

Managing conflicting goals

We want to understand to what extent safe behavior is demonstrated by management and to what extent safety is prioritized.

Compliance

We want to understand how relevant, available and understandable safety instructions are (e.g. procedures, permit to work, life saving rules, verbal instruction, etc.) and the extent to which employees follow these instructions.

Incentives

We want to understand what external and internal drivers exist that influence whether or not people demonstrate safe behavior.

Organizational learning

We want to understand how the company uses feedback from accident/incident/near miss reporting systems to learn from experience and improve the safety program.

Creative worry

We want to explore whether or not people are actively anticipating what could challenge safety and thinking about what could be done to reduce the risk of major hazards.

Error tolerance - a resilient organization

We want to understand what processes the company has in place to protect itself and recover from unwanted incidents.

DNV·GL

Collaboration

We want to understand how much people work together to identify and manage safety hazards and what the quality of this collaboration is, e.g. does it lead to improvements in safety systems or procedures.

* Please rate how strongly you personally agree or disagree with the following statements

	Strongly disagree	Disagree	Neither agree or diagree	Agree	Strongly agree	I don't know/not applicable
My manager discusses safety-related issues with me	○	○	○	○	○	○
My manager on shore has a good understanding of my ship's operation	○	○	○	○	○	○
Safety issues are usually resolved by management and the workforce working together	○	○	○	○	○	○
When I work in a team, I always know exactly what my responsibilities are	○	○	○	○	○	○

Questback distributes tailored questionnaires to recipient e-mail lists, monitoring and collating responses automatically.

Identify the underlying factors affecting the culture

Identify the underlying factors for safety culture

Interviews and Focus Groups will be used to better understand the findings from the safety culture survey.

The qualitative assessment will use an iterative method for exploring the reasons "why". This is to understand the underlying causes behind the weak and strong areas of safety culture that came out of the survey.

A set of performance shaping factors will be used to identify how organizational factors affect human performance. This method is used in previous projects and based on Human Reliability Analyses.

The assessment can be performed through:

- Telephone interviews
- One to one interviews
- Focus groups (8-10 persons)

The scope of the qualitative assessment will be decided on case-by-case basis.

DNV·GL

Thank you!

For further information please contact
Sergey.gribanov@dnvgl.com
+4915140669198

www.dnvgl.com

SAFER, SMARTER, GREENER

DNV·GL