



The Efficiency & Cost Challenge – Capitalizing on Innovation

Knut Ørbeck-Nilssen, CEO DNV GL - Maritime

A rapidly transforming maritime industry

There are tectonic shifts on three fronts right now

MARKETS



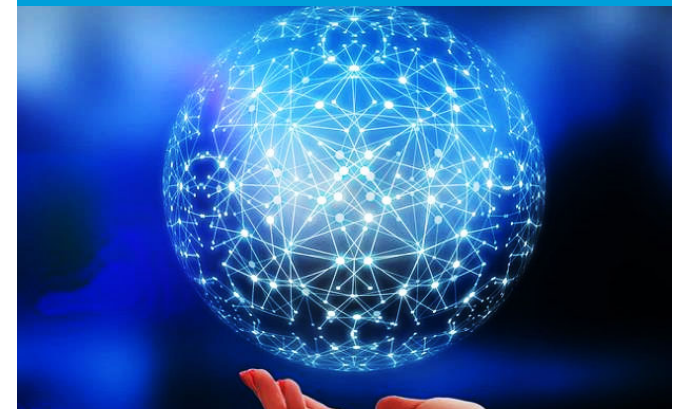
Increasingly unpredictable

REGULATIONS



Growing expectations and complexity

TECHNOLOGY



Strong impact of new technologies

The three tectonic shifts ... and related safety challenges

MARKETS



Commercial pressure and tight schedules increase likelihood of human error.

Growing ship sizes pose new challenges to fire containment and pollution.

REGULATIONS



New fuels, contamination and **environmental technology** raise safety questions.

EEDI compliant de-rated engines cause torsional vibration and propeller shaft fatigue.

TECHNOLOGY

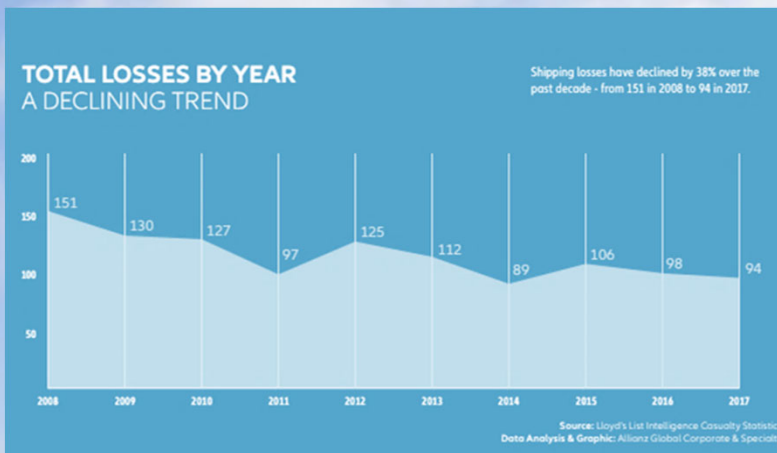


Enhanced ship-to-shore **connectivity** increases demands on cyber resilience.

Higher degrees of **autonomy** rely on sensor performance and data quality.

Environmental concerns steal the focus

... marine safety improves but should not be taken for granted



- According to the Allianz Global Corporate & Specialty (AGCS) Safety and Shipping review 2018, the **long-term trend of shipping losses is going down**.
- **94 total losses** in 2017 – the second lowest count in a decade.
- **90% of global trade** is transported by **50,000 merchant ships** trading internationally.
- 75% of shipping insurance losses (equivalent to \$1.6bn) are caused by **human error**.

A safety net is required ...the role of Class and DNVGL

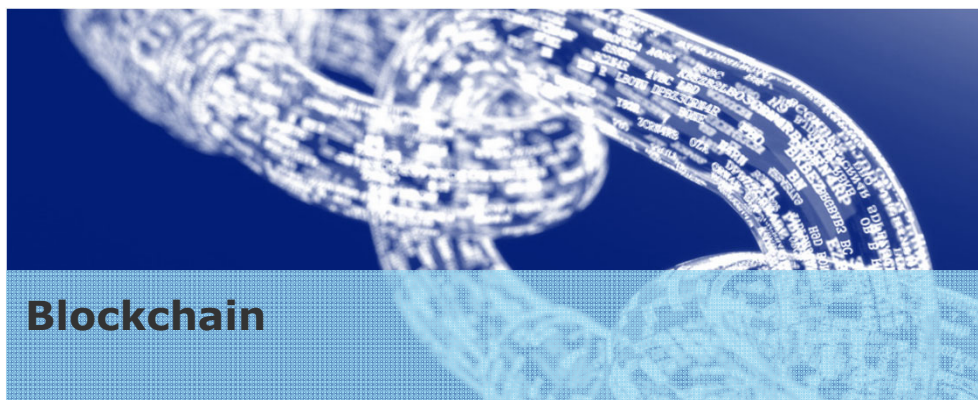
Safety at Sea is our purpose!

5 proposals to improve it:

- 1) Develop **holistic regulations** with safety at the core
- 2) Improve **safety culture**
- 3) Unlock **data silos** for deeper insights to incidents and near-misses
- 4) Increase **transparency** on safety findings
- 5) Apply **barrier management** inspired by other industries



Emerging technologies that offer opportunities for shipping to
... improve safety while tackling efficiency and cost challenges



In a rapidly transforming maritime industry
... transparency, scale and innovation will win the future



Thank you for your attention.

Knut Ørbeck-Nilssen, CEO DNV GL - Maritime

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