Maritime Vulnerabilities

Challenges and Opportunities

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Environmental Stewardship

Existing activities:
- Vessel efficiency
- Marpol Annex VI
- Ballast water
- Sulfur limits

Current Performance:
- 2.6% CO₂ emissions
- 90% world cargo
- Growth:
- 0.9 – 1.4% per year

IMO Strategy:
- 2030: 40% Reduction of CO₂ per Cargo transport
- 2050: 50% reduction of Greenhouse Gas
Increased Connectivity & Digitilization

- **Environmental**
  - EU MRV and IMO DCS
  - Performance monitoring
- **Operational**
  - Predictive vetting and vessel rating
  - Performance data used to evaluate vessels
  - Condition data to impact maintenance activity

Preparing for a future where decisions will be based on data will require
- Understanding and planning data collection and management
- Data quality and cyber security as foundational elements from design to operations
Cyber

- Increasing levels of automation and increasing complexity
- Increased system **vulnerabilities** and potential operational and safety **impacts**
- Require a updated safety approach

**Potential Impacts**
- Loss of propulsion
- Delays in scheduling
- Loss of Stationkeeping
- Costly repairs

**Affected Systems**
- Dynamic Positioning
- Drilling Control
- Ballast control
- Power management
- Subsea
Looking Forward

- Environmental compliance will continue to challenge the marine industry
- Increased connectivity and digitalization will help
- Cyber security remains a threat

- Business practices
- Energy sources
  - Renewables
  - New fuels & propulsion technology
- Digital innovation
Thank You

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