OECD's Council Working Party on Shipbuilding (WP6)

Workshop on Future Shipbuilding

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Changing demands on shipbuilders

Current regulatory trends and possible future developments related to safety

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Summary

1. **Further development of standards**

2. **Moving from regulatory compliance to safety culture**

3. **The human element and the role of classification societies**

International Standards

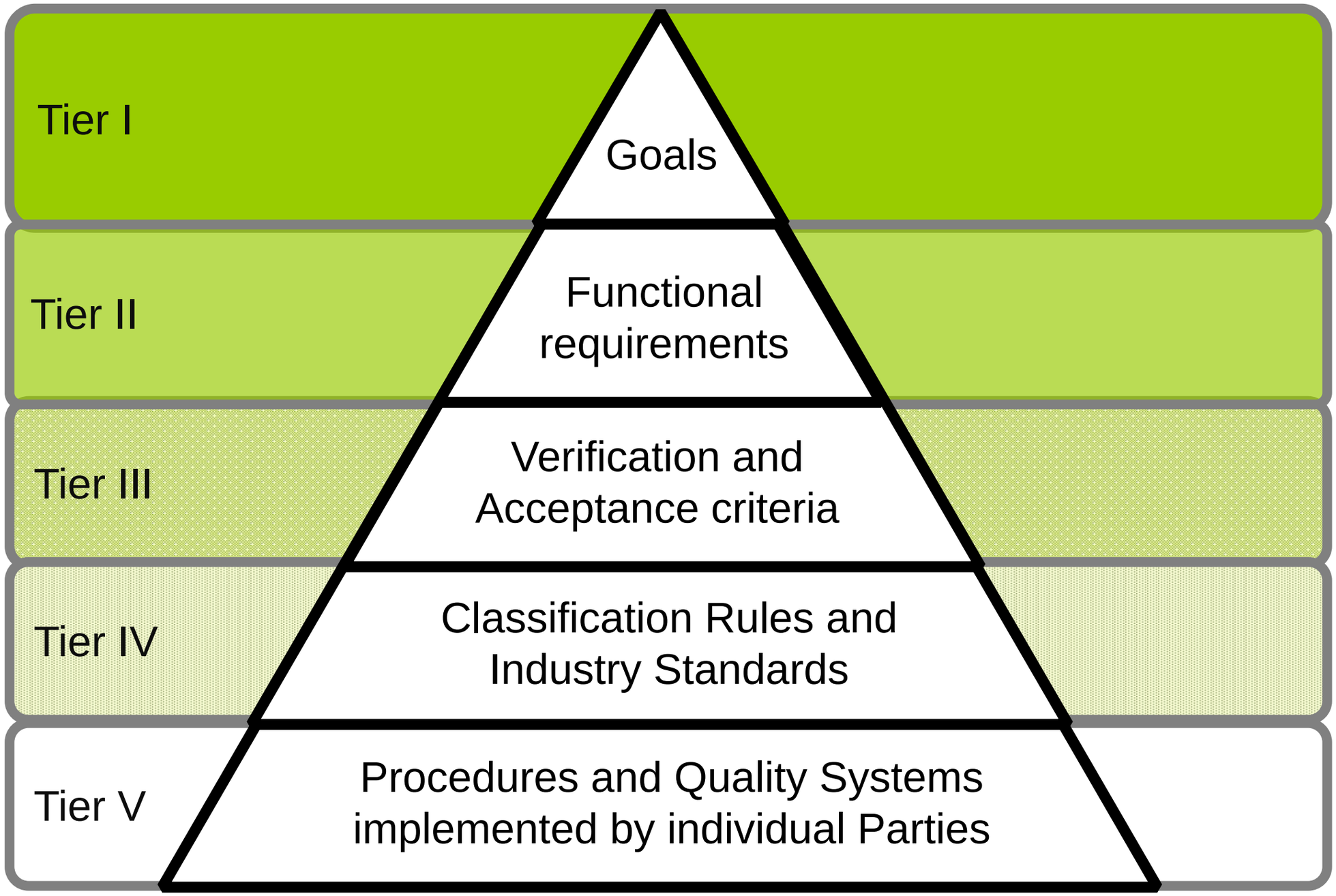
Ships are designed, constructed and operated according to standards defined within an international regulatory framework

- IMO Regulations
- IACS Classification Rules
- ISO and other Industry Standards

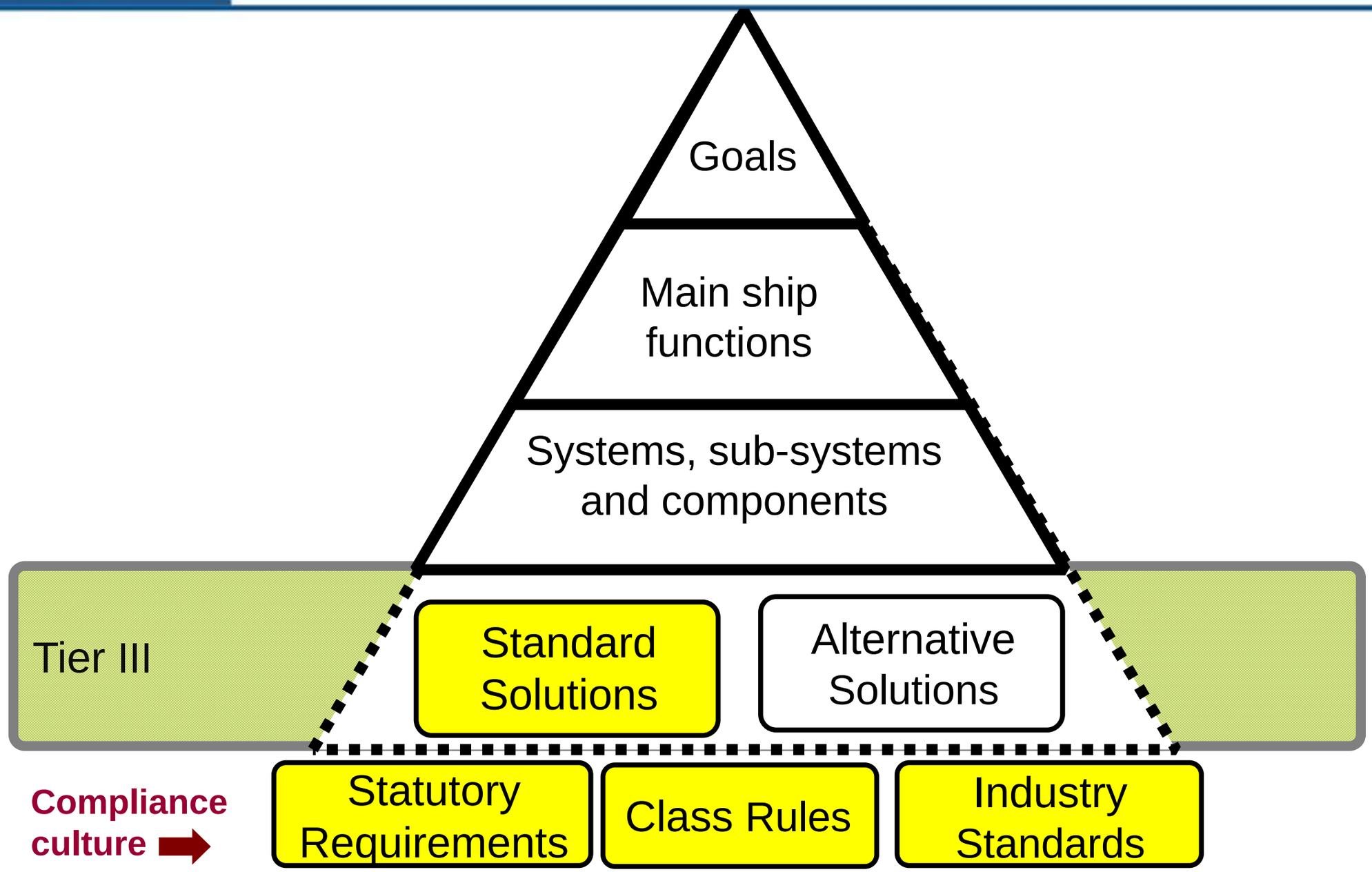
Regulatory Trend

- OECD countries use Regulatory Impact Assessment (RIA) as basis for regulatory decision making (e.g. EU carried out 109 Regulatory Impact Assessments in 2011)
- Scientific approaches to regulation: Cost Benefit Analyses, Efficiency Analyses, Risk Assessment, Formal Safety Assessment, Safety Level Approaches, Goal Based Standards
  - The aim is to continually reduce risk that is the main goal in safety and environmental protection regulations
- These scientific approaches heavily rely on data, models, expert judgment, assumptions, decision making criteria
- The regulatory decision process is made more transparent by analyzing the needs for new regulations and evaluate their impact on safety, the environment and the large scale economy

Goal-Based Standards



Standard Solutions



Verified by competent Bodies

- Flag Administrations / ROs
- Classification Societies
- Charterers

Oil Tankers

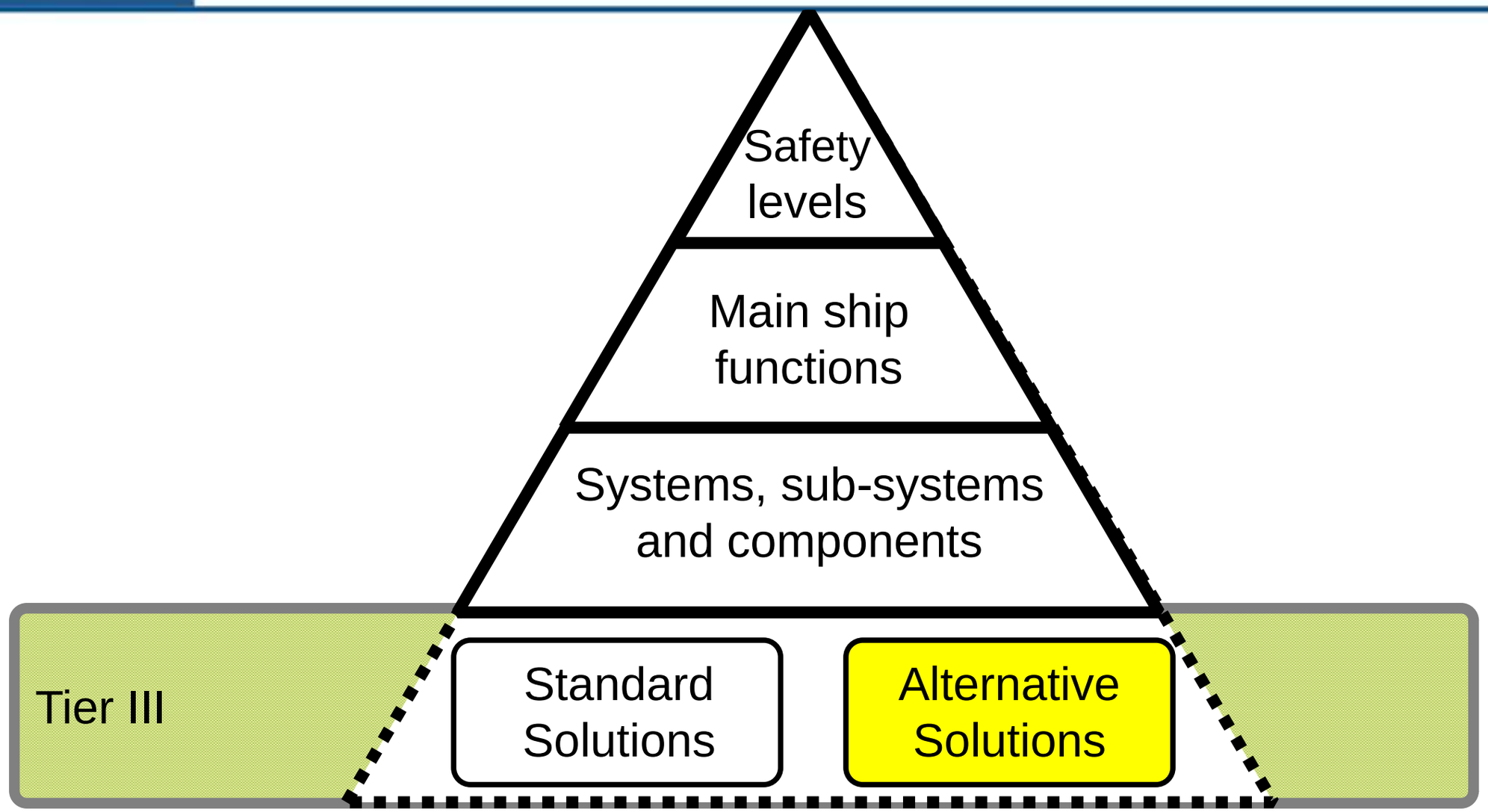
- Common Structural Classification Rules for Double Hull Oil Tankers
- Length greater than or equal to 150m

Bulk Carriers

- Common Structural Classification Rules for Bulk Carriers
- Length greater than or equal to 90m

Harmonized Common Structural Rules

Alternative Solutions



New safety culture ➡

Industry Innovations

Verification that alternative solutions meet the required safety levels by means of risk-based approaches ➡

Risk Assessment

Innovative Ship Designs

No Rules

Safety Level

Formal Safety Assessment

Risk Based Design & Appraisal

Sustainability

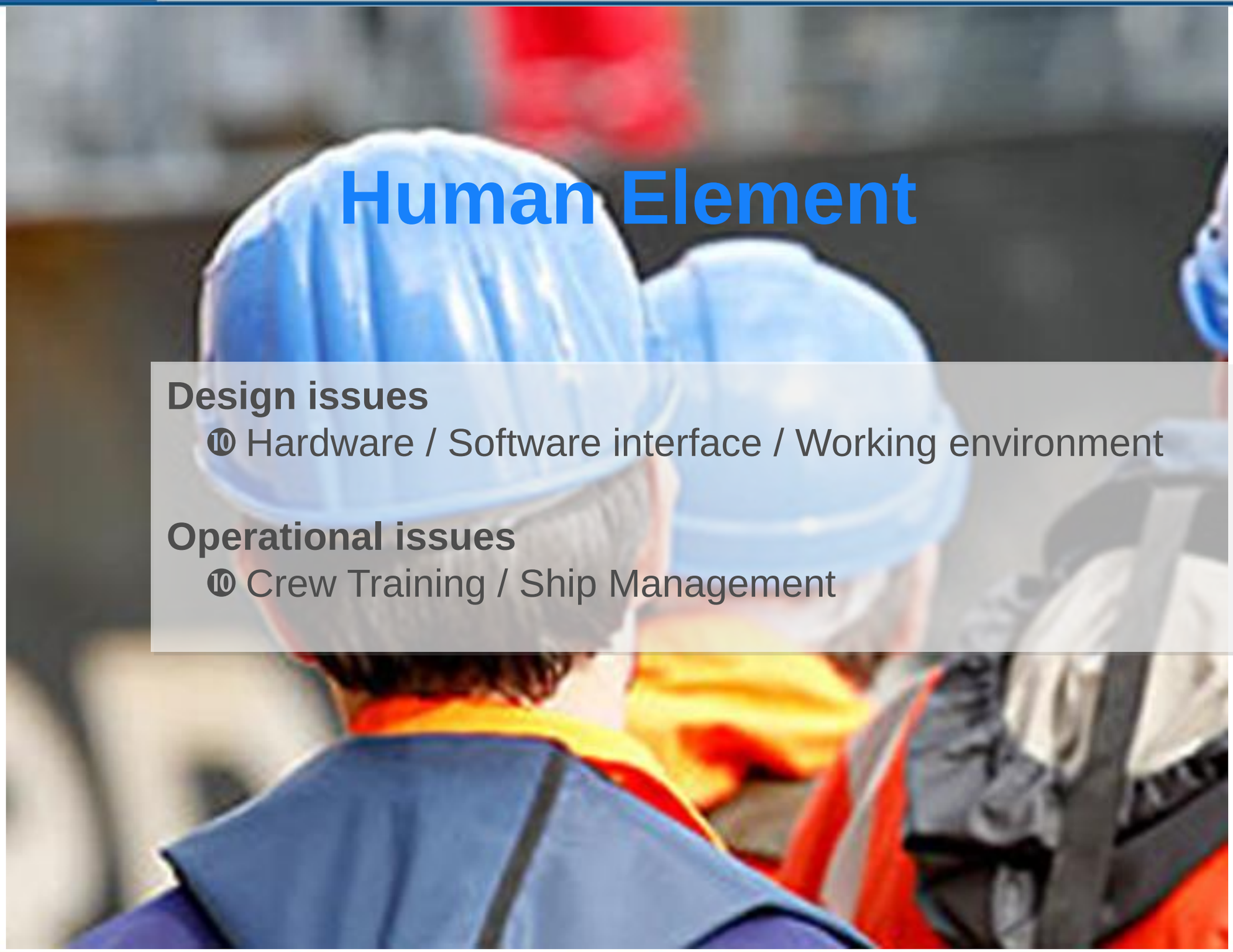

GHG Emissions
Energy Savings
Minimum Power

Contamination

Ballast Water Management

Energy Savings

Safety Culture



Human Element

Design issues

- Hardware / Software interface / Working environment

Operational issues

- Crew Training / Ship Management

Classification Society Role

Design phases

- ❿ Verification of rules / alternative design solutions
- ❿ Surveys during construction / equipment testing

Operational phases

- ❿ Periodic surveys / ship management audits

Requirements and practices

- **Classification societies use a lot of feedback information from**
  - Design experience
  - Service experience
  - Research and experimental data

Useful data

- Accident statistics (IHS-Fairplay, LMIU, GISIS, EMSIP)
- Reliability or failure data for equipment
- Human reliability data
- Structural Reliability data (material, strength, wave, response, etc.)
- Fleet data (exposure data)
- Cost data on risk control options
- Cost of inspection, maintenance, replacements, off-hire, etc.
- Cost of clean-up, pollution, etc.

The level of detail necessary will depend upon the particular risk control option

Data challenges

- Equipment reliability data and failure rates
- Exposure data
- Failure definitions, accident classification
- Failure data are conditional, not absolute (conditional on accident, inspection, maintenance, etc.
- Data are depending on reporting
- Varying units: per hour operation, per hour elapsed, per year, per lifetime, per trip, per time used etc.
- Cost data
- Commercial data
- Intellectual property rights

Positive Information Exchange