

Review of IMO SYMPOSIUM ON THE FUTURE OF SHIP SAFETY

Nov. 8, 2016

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※ CHARTER OF ASEF

Article 1 Name

Active Shipbuilding Experts' Federation (referred to hereinafter as 'ASEF') is an international organization representing shipbuilding industry.

For the purpose of the present Charter, 'shipbuilding' means new building, repair and conversion of ships and offshore structures.

Article 2 Purposes

ASEF, through technical communication and cooperation among shipbuilding industry, contributes to sound development of international maritime transportation and further enhancement of the world maritime safety, marine environment protection and maritime security.

Article 3 Functions

ASEF has the following functions which lead to smooth, sound and sustainable development of the shipbuilding industry:

- To hold the ASEF Forum;
- **To exchange views and opinions among members** on technical matters on shipbuilding including technical agenda in International Maritime Organization (referred to hereinafter as 'IMO') and International Organization for Standardization (referred to hereinafter as 'ISO');
- **To develop relationship with other international organizations** through promoting awareness to the relevant international organizations of issues handled by the shipbuilding industry; and
- **To contribute and offer opinions to external bodies** including IMO and ISO on their technical agenda.

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Outline of the Symposium

- **Date: June 10-11, 2013**
- **Venue: IMO Headquarters, London**
- **Participants: about 500**, including participants via web conferencing facility
- **Presentations and Discussions:**
 - By the highly influential/knowledgeable speakers from across the broad spectrum of ship design, construction, equipment, operation and regulation;
 - on a wide range of issues impacting the future of ship safety.



Background

- **The Year 2013:**
 - ❖ the 100th anniversary of the sinking of [the Titanic\(1912\)](#) and the [SOLAS \(1914\)](#)
- **Continuous accidents occur, despite of strengthening the instruments and technology advancements**
 - ❖ [the Costa Concordia accident](#), in 2012
- **Needs for a new regime and regulatory systems, with more scientific approaches, for the enhancement of ship safety and environment protection**
to shape what we want in 2050

 *See the 'Opening Remarks' of Mr. Sekimizu, former Secretary General of IMO*
(<http://www.imo.org/en/About/events/FSS>)



✂ The Titanic and SOLAS

Surviving disaster – The Titanic and SOLAS

In 1914, two years after the Titanic disaster of 1912, in which 1,503 people lost their lives, maritime nations gathered in London adopted the International Convention for the Safety of Life at Sea (SOLAS Convention), taking into account lessons learned from the Titanic. The 1914 version was superseded by SOLAS 1929, SOLAS 1940, SOLAS 1960 (the first adopted under the auspices of the International Maritime Organization) and SOLAS 1974. SOLAS 1974 is still in force today, but it has been amended and updated many times. The regulations relating to life saving appliances and arrangements, contained in chapter III of SOLAS, a new version of which entered into force on 1 July 1998, are intended to ensure that in the event of a catastrophe at sea, passengers and crew have the greatest chances of survival. Improved design and equipment, better fire protection, satellite communications, rescue planes and helicopters and trained personnel also contribute to improved safety at sea.

Ice patrol

In the first SOLAS 1914, after the Titanic disaster, ice patrols in the north Atlantic were set up and continue to be a SOLAS requirement.



Speed of navigation around ice

The Commission into the Titanic ruled the loss was due to collision with an iceberg brought about by excessive speed at which she was being navigated. Under SOLAS, when ice is reported on or near his course the master of every ship at night is bound to proceed at a moderate speed or alter course.

Public address system

There was no public address system on the Titanic and news filtered to the passengers slowly, adding to the disorder and confusion. Under SOLAS, all passenger ships must be fitted with a public address system.



Lifeboat design

Some people died from hypothermia in the Titanic lifeboats because they were open and gave no protection against the cold. Under SOLAS, lifeboats must be fully or partially enclosed. On passenger ships, partially enclosed lifeboats can be used as they are easier to get into, but they must have a collapsible roof to fold across.



Training of crew in lifeboat drill

The crew of the Titanic lacked training in loading and lowering the lifeboats and few knew which boat they were assigned to. Lifeboats were not filled to capacity because senior officers did not know the boats had been tested and were strong enough. Under SOLAS, every crew member must participate in regular practice drills and have easy access to training manuals.



Distress alert

The Titanic used radio which had a limited range of 200 nautical miles. Ships can now communicate globally via satellites.



Maritime radio waves

Helicopters and rescue planes

Unavailable in 1912, helicopters and rescue planes are now used to locate, search for and rescue survivors.

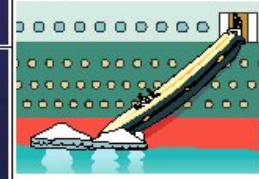


Lifeboat drill

No lifeboat drill was held on the Titanic. Under SOLAS chapter III an 'abandon ship' and fire drill must take place weekly on all passenger ships.

Evacuation chutes

Passengers on the Titanic jumped from windows and doorways into the lifeboats as they were lowered, often injuring themselves or other passengers. Now emergency evacuation chutes are both safer and quicker.



Number of lifeboats

The Titanic did not have enough lifeboats for all passengers. Under SOLAS, passenger ships must carry enough lifeboats (some of which can be substituted by liferafts) for all passengers, plus liferafts for 25%.

Location

The land station at Cape Race, Newfoundland and ships other than the Carpathia and the Californian heard the Titanic distress call but the airwaves were cracking and the Titanic's position was misinterpreted. With EPRBs and global positioning systems, the position of a ship in distress can be automatically sent.



The Carpathia

Received distress call at 12.25am. Travelled 50 miles and picked up first lifeboat at 4.10am.

The Californian

Stopped because of the ice less than 20 miles from the Titanic. Did not approach until after 6.00am when the Carpathia was spotted. Arrived at 7.30am - too late to rescue any survivors.

The Titanic

Hit iceberg at 11.40pm and sank at 2.20am.



Distress watch

The Californian was less than 20 miles away but the radio officer had gone off duty when the distress messages were sent. Under SOLAS, every ship while at sea must maintain a continuous watch on the distress and safety frequencies.

GRAPHIC: LIZ GOSOLD ©

※ Marine Accidents



Titanic(1912)



Herald of Free Enterprise (1987)



서해페리



Costa Concordia(2012)

REUTERS



Tory Canyon(1967)



Exxon Valdez(1989)



Sea Prince(1995)

Hebei Spirit(2007)



SeWol(2014)



Erica(1999)



Prestige(2002)



MOL Comfort(2013)



Piper Alpha(1988)



Deepwater Horizon(2010)

Topics /Programme

- **Day 1: Where Are We?**
 - **Future Impacts on Ship Safety**
 - **Meeting the Needs of Society and the Maritime Industry**
 - **Driving Forces on Maritime Safety**
- **Day 2: Achieving Our Goals**
 - **Responding to the Challenges and Opportunities**
 - **Dealing with the Human Elements**
 - **The Needs For Change**

✂ Programme

DAY 1: MONDAY, 10 JUNE, 2013 SHIP SAFETY – WHERE ARE WE?

07.30 REGISTRATION

09.00 OPENING ADDRESS

Mr Koji Sekimizu
Secretary-General, IMO

09.30 SESSION 1 – FUTURE IMPACTS ON SHIP SAFETY

This session will highlight the recent trends in ship design and the likely impact on ship safety in the decades to come in the light of such trends and discuss how these future risks should be assessed.

MODERATOR: Mr Bernard Meyer
Managing Director, Meyer Werft

- **Trends in Passenger Ship Design**
Mr Hami Kulovaara, Executive Vice President, Maritime, Royal Caribbean Cruises Ltd.
- **Trends in Containership Design**
Dr Bo Cerup-Simonsen
Senior Vice-President, Maritime Technology, Maersk
- **Trends Impacting Tanker Design**
Mr Christopher Bailey
Technical Vice President, BP Shipping
- **Future Engine Systems**
Dr Masayoshi Kawakami
Senior Technical Advisor, Niigata Power Systems

11.00 COFFEE/TEA – SPONSORED BY IACS

11.30 PANEL DISCUSSION: WHAT WILL BE THE IMPACT ON SAFETY IF THESE TRENDS CONTINUE?

12.00 LUNCH

14.00 SESSION 2 – MEETING THE NEEDS OF SOCIETY AND THE MARITIME INDUSTRY

This session will look at the way shipping responds to the needs of society, industry and global trade and looks to possible ways forward for the future.

MODERATOR: Mr Tom Boardley
Marine Director, Lloyd's Register

- **Sustainable Development and the Future of the Maritime Industry**
Mr Claes Berglund
Director of Public Affairs and Sustainability, Stena

- **Ship owners' perspective on the needs of the maritime industry**
Ms Katharina B. Stanzel
Managing Director, INTERTANKO
- **Meeting the needs of society and the maritime industry through ship design**
Mr Wu Jiameng, Vice-Director, Merchant Ship Dept., Marine Design & Research Institute of China (CANSI)
- **Lessons learned from Fukushima**
Mr James T. Stewart
Transport Safety Unit, IAEA

15.30 PANEL DISCUSSION: ARE THESE VIEWS MUTUALLY EXCLUSIVE OR IS THERE A WAY FORWARD?

16.00 COFFEE/TEA – SPONSORED BY IACS

16.30 SESSION 3 – DRIVING FORCES ON MARITIME SAFETY

This session will look at the economic, environmental and consumer forces impacting maritime safety and how such forces will drive future ship design and operations.

MODERATOR: Mr Peter Hinchliffe OBE
Secretary-General, ICS

- **Future Challenges for the Maritime Industry**
Ms Birgit Liodden
Secretary-General, YoungShip International
- **Economic Imperatives**
Dr Martin Stopford
President, Clarkson Research Services Limited
- **Regulatory challenges and tools**
Mr Philippe Corrigan
Head, Safety, Energy & Environment Section, Bureau Veritas
- **Accident Zero Campaign**
Mr Gary Prosser
Secretary-General, IALA

17.50 PANEL DISCUSSION: CHALLENGES AND OPPORTUNITIES

18.30 EVENING RECEPTION – SPONSORED BY ICS

DAY 2: TUESDAY, 11 JUNE, 2013 SHIP SAFETY – ACHIEVING OUR GOAL

09.00 OPENING OF DAY 2 Introduction

09.10 KEYNOTE SPEAKER

Dr Tor E. Svendsen
President, DNV Maritime and Oil & Gas

09.30 SESSION 4 – RESPONDING TO REGULATORY CHALLENGES THROUGH RISK ASSESSMENT

This session will discuss the availability and need for data collection and analysis methodologies necessary to provide the sound scientific basis for continuous improvement in the years to come.

MODERATOR: Dr Kirsi Tikka
President and COO, ABS Europe Division

- **Data Collection and Analysis Methodologies**
Mr Koichi Yoshida, Director, Technology Department
Ship Equipment Inspection Society of Japan
- **The Scientific Risk-Based Approach**
Mr Jim Peachey and Mr Rae McIntosh
Royal Institution of Naval Architects (RINA)
- **Setting Goals for Safety**
Dr R. Hamann, Sr. Engineer, Department Safety & Environmental Research, Germanischer Lloyd (GL)
- **Residual Risks and Emergencies**
Mr Vaughan Pomeroy
IMarEST

11.00 COFFEE/TEA – SPONSORED BY IACS

11.30 PANEL DISCUSSION: IS A RISK-BASED REGULATORY APPROACH RIGHT FOR SHIP SAFETY?

12.00 LUNCH

14.00 SESSION 5 – DEALING WITH THE HUMAN ELEMENT

This session will seek to identify the best way of encouraging a safety culture beyond mere compliance with statutory requirements based on both theoretical and practical examples.

MODERATOR: Mr Gerardo A. Borromeo
President, Intermanager

- **Human Element and Maritime Safety**
Professor Neil Greenberg
Clinical Director, March on Stress
- **From Best Practice to Self-Regulation**
Mr Andreas Nordseth
Director General, Danish Maritime Authority

- **Education and Training**
Professor Zhang Renping
Dalian Maritime University

15.00 PANEL DISCUSSION: CAN WE LEGISLATE FOR PEOPLE?

15.30 COFFEE/TEA – SPONSORED BY IACS

16.00 SESSION 6 – THE NEED FOR CHANGE

This session will look at whether the current international safety regulatory framework will effectively respond to the future challenges discussed throughout the Symposium and identify the actions needed to get us from where we are today to where we need to be in that future world.

MODERATOR: Dr Tom Allan
International Maritime Consultant

- **Gaps and Pitfalls in the Current Regulatory Framework**
Professor Dracos Vassalos
University of Strathclyde, Glasgow
- **Making Better Use of Industry Consensus Standards**
Captain Charles Piersall, Chairman, ISO Technical Committee on Ships and Marine Technology (TC 8)
- **The Need for Change**
Ms Anneliese Jost, Deputy Head, Maritime Safety Division, German Federal Ministry of Transport
- **Shaping Safety into the Future**
Mr Roberto Cazzulo
Chief Operating Officer, Rina SpA

17.20 PANEL DISCUSSION: SOLAS 74 – IS IT TIME FOR A NEW SOLAS CONVENTION?

17.50 APPROVAL OF SYMPOSIUM RESOLUTION FOR CONSIDERATION BY THE MARITIME SAFETY COMMITTEE

18.00 CLOSING REMARKS **Mr Koji Sekimizu** Secretary-General, IMO

Themes Highlighted (1):

- **increasing consumer demand**, especially in emerging markets, will continue to drive growth in both the number and size of ships with **a need for more innovative and complex ship designs**, which will have a related impact on vessel traffic control;
- **the incorporation of new technologies** will place increasing demands on regulators to keep the prescriptive safety regulatory framework relevant with the ever-increasing pace of change and technological advancements;
- **societal demands** to reduce the impact ships have on the environment and increasing energy prices are intensifying the need for ship owners to employ new technologies, such as alternative fuels, with consequential impacts on ship safety and thus the **need for a safety regulatory framework** that can better address technological innovation and novel solutions;
- **improved data collection** is urgently needed to better understand and identify current risks and future trends, undertake contingency planning and to support the **use of risk-based methodologies and analysis techniques** so that future safety regulations have a sound scientific and practicable basis to support their development;

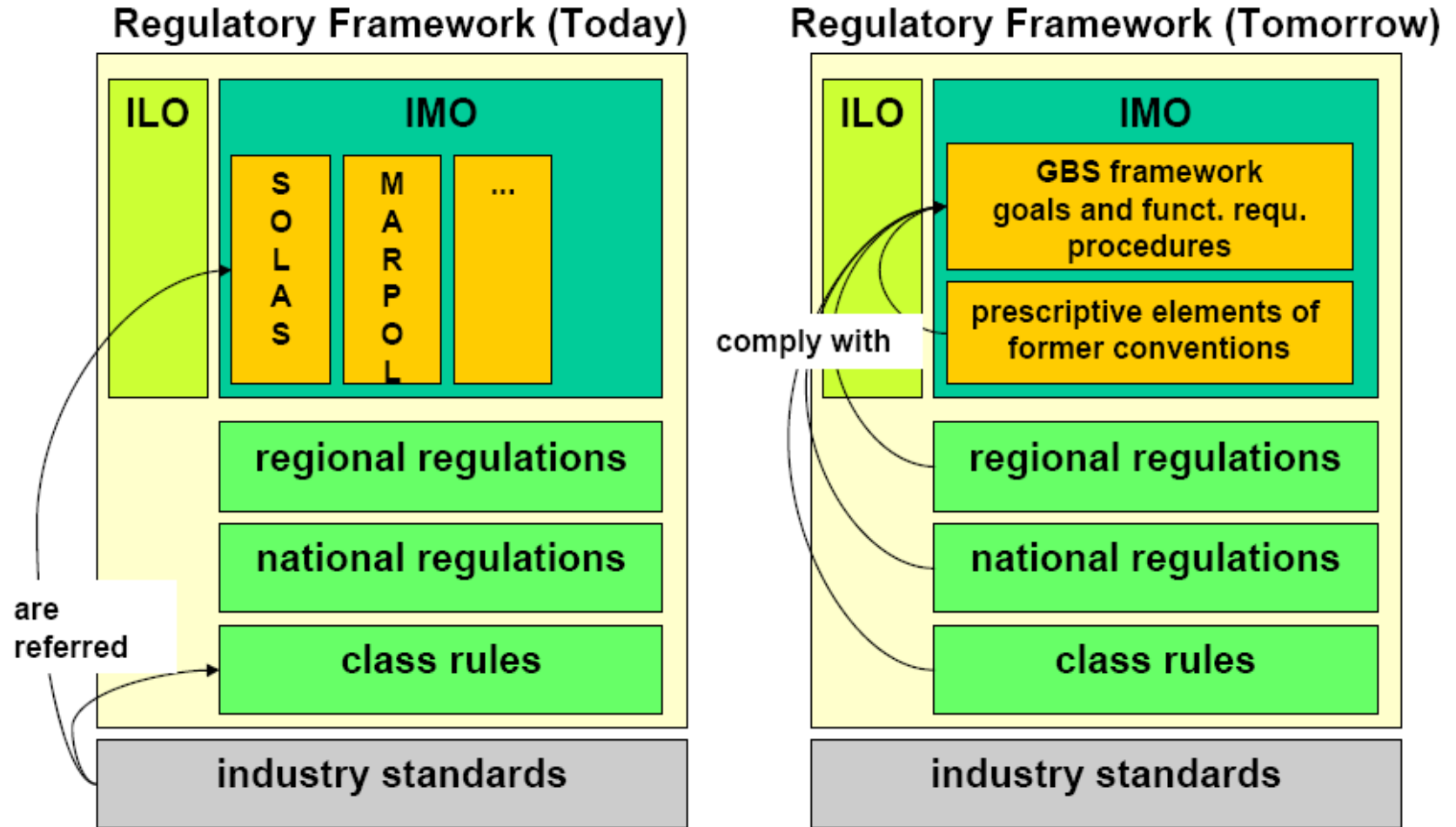
Themes Highlighted (2):

- as ships become more complex, **a safety culture** that goes **beyond mere compliance** is essential to the future;
- **the human element** remains the primary cause of maritime casualties and the future safety regulatory regime should comprehensively address this important issue including, but not limited to, the burdens new regulations place on seafarers, the man-machine interface, **the impact of changing technologies and stress and fatigue**; and
- **a long-term comprehensive review of the safety regulatory framework** is necessary to ensure that it is fit for purpose to meet the future challenges addressed at the Symposium, taking into account the ever-increasing pace of change and technological advancements made since the 1974 SOLAS

Outcome: Statement of the Participants

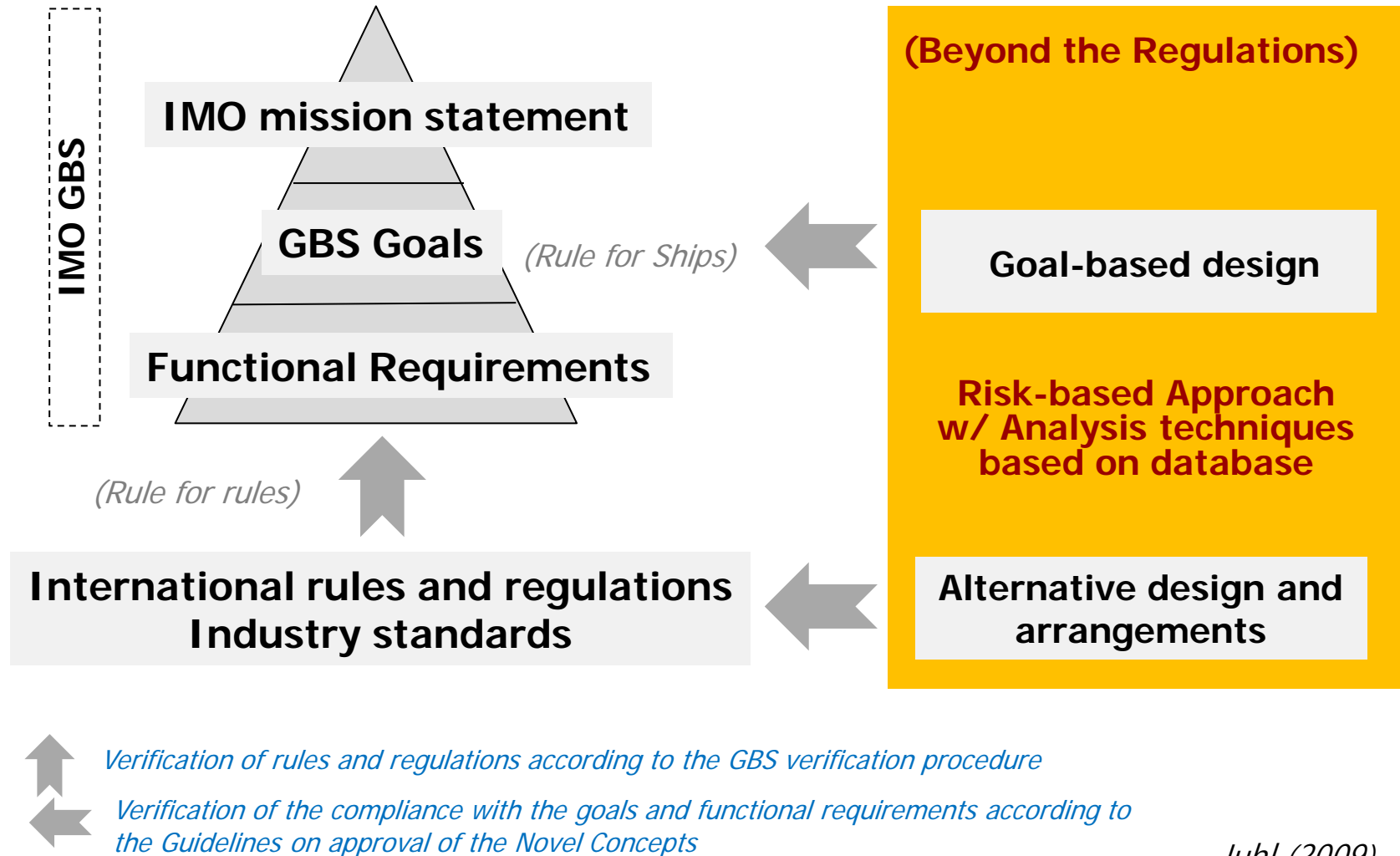
- **RECOMMENDATIONS to the MSC (MSC 92/23/3):**
 - To consider how to improve data collection and increase its availability in order to support monitoring and development of safety regulations;
 - To consider how to better integrate risk-based methodologies and the latest analysis techniques into the safety regulatory framework to provide a sound scientific and practicable basis for the development of future safety regulations;
 - To consider ways of encouraging a safety culture beyond mere compliance with regulatory requirements;
 - To take into account the burden any new or changing regulation(s) place on the seafarers and how this burden can be minimized;
 - To consider undertaking a long-term comprehensive review of the existing safety regulatory framework with a view to ensuring that it will meet the future challenges ..., taking into account the ever-increasing pace of change and technological advancements ...
- **URGES all Participants :**
 - to strengthen their cooperation aimed at enhancing maritime safety through internationally agreed uniform principles and rules.

✧ Long-term Vision



Sames (2008)

※ GBS/SLA : A New Framework for the FSS

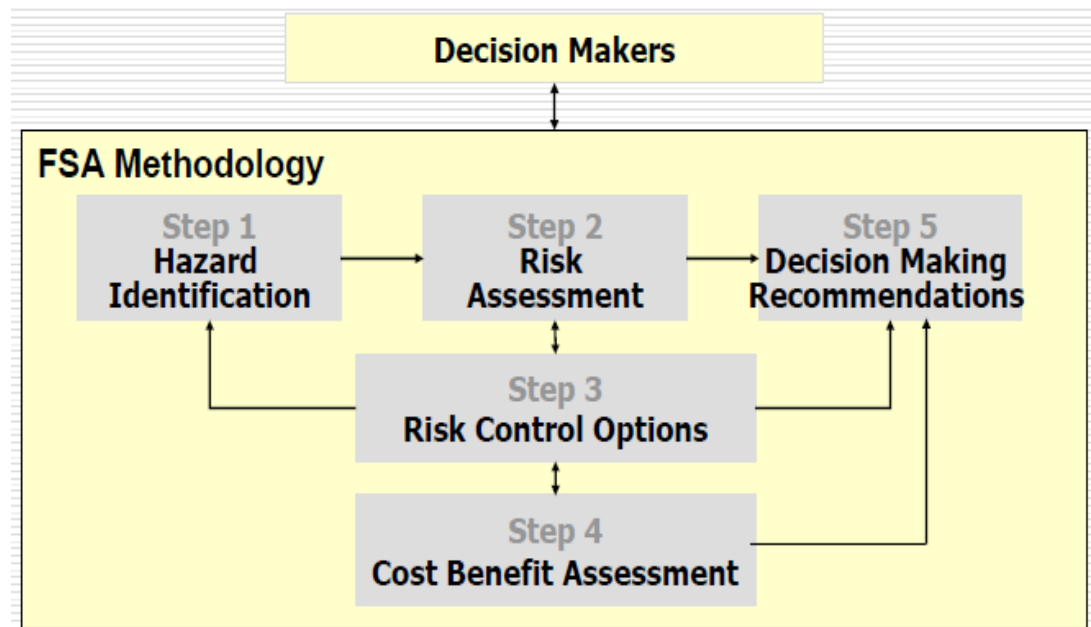


Juhl (2009)

※IMO FSA (Formal Safety Assessment)

“A structured and systematic methodology, aimed at enhancing maritime safety, including protection of life, health, the marine environment and property, by using risk and cost-benefit assessment.” (MSC/Circ.1023-MEPC/Circ.392)

Flow Chart of the FSA methodology



☞ MSC/Circ.1023 - MEPC/Circ.392, Guidelines for Formal Safety Assessment (FSA)

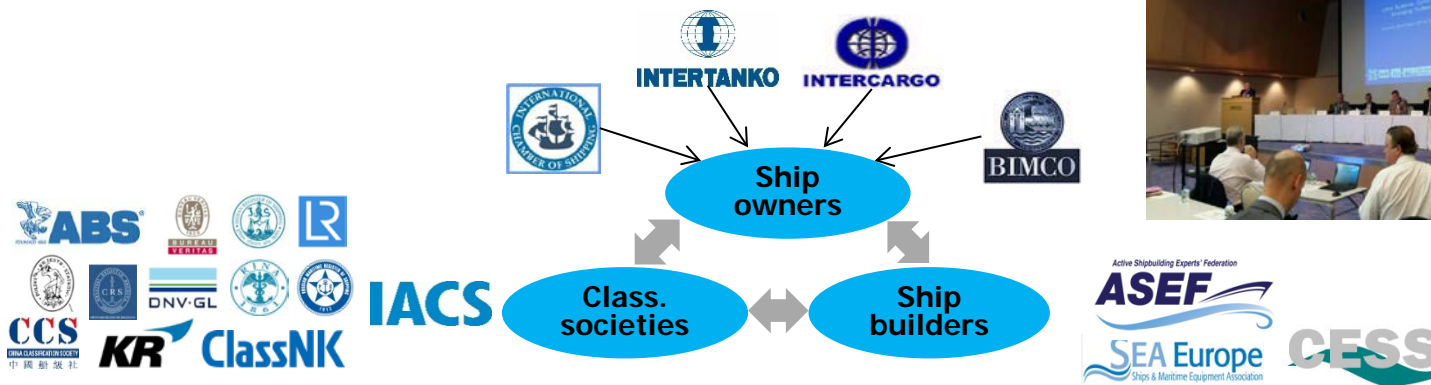
☞ MSC/Circ.1022 - MEPC/Circ.391, Guidance for the use of HEAP and FSA

Related Discussions (1)

- **Tripartite Meeting (2015-2016)**

w/ holistic approach in design, certification, and operation:

- GBS/Hull Common Structural Rule (CSR)
- Data collection and applications
- Cyber risk and security
- Ballast Water Management System (BWMS)
- Interaction between SOLAS and MARPOL
- Human element issues, ...

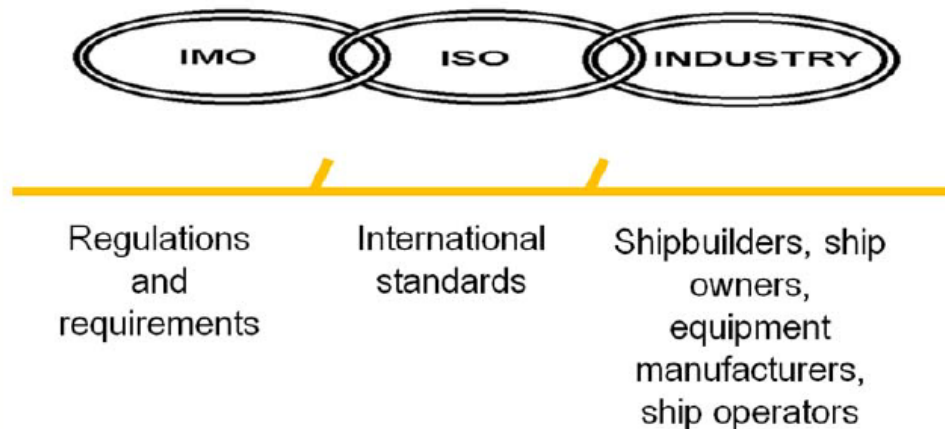


Related Discussions (2)

- **ISO/TC8 (Ships and Marine Technology)**

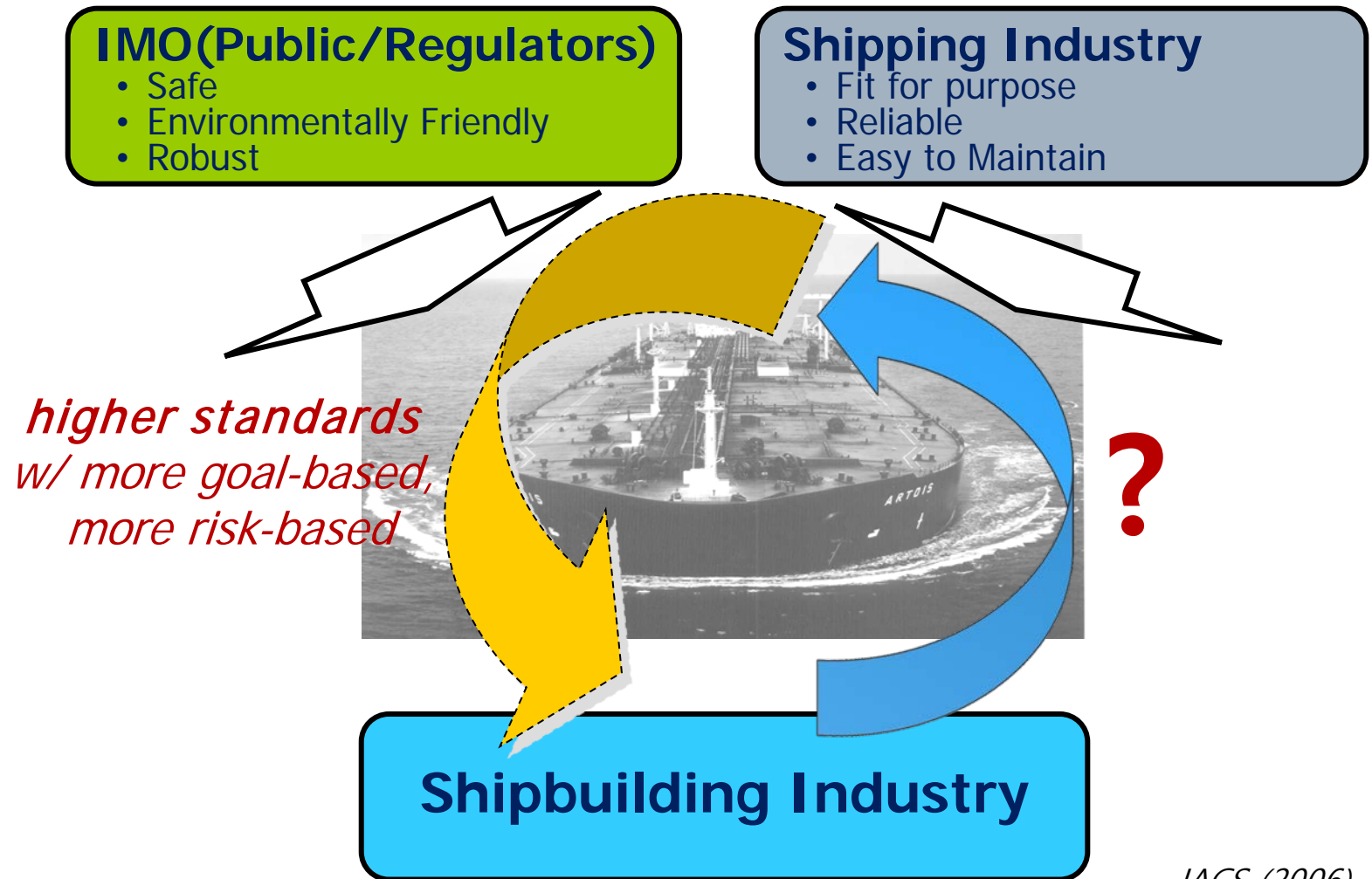
as Linking Instrument between IMO and Industry:

- Cyber safety / security for smart shipping
- Ballast Water Management
- LNG fueled ships / bunkering facilities
- Arctic / Antarctic Navigation
- ...



Yanqing Li (2016)

Shipbuilders Perspectives



IACS (2006)

Summary

- **The Future of ship safety:**
 - One of the most important factors in the future of shipbuilding industry
 - Challenges for the shipbuilders
- **Issues to be considered in the design and construction of the future ships:**
 - Risk-based approach
 - Cyber safety and security of the smart ships
 - Data collection and its application
 - Human elements
 - GBS/SLA as new regulatory framework
 - ...

Suggestions

The ASEF, as a (candidate) NGO of the IMO :

- **To be more proactive,**
as a contributor for the enhancement of the maritime safety and environment protection
- **Needs more communications and close cooperation with:**
 - other stakeholders in the maritime industry;
 - related international organizations, including ISO/TC8
- **Establishment of a framework for cooperation inside/outside of the ASEF boundary**
- **Needs further discussions about key technical issues**

Thank you for your kind attention!

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