



# An Introduction to the Business of Shipping

The Hon Justice James Allsop  
Federal Court of Australia



## 2 The purpose of this lecture (1)

- It is often easier to come to grips with the principles that underlie bodies of jurisprudence if one understands, at least in outline, how the relevant business and human affairs work. Law, after all, is merely the regulation of human activity by rules and norms, indicating what can and what cannot be done and prescribing the consequences of conduct by reference to those rules.



### 3 The purpose of this lecture (2)

- In commercial law, generally, the law reflects common sense directed or affected by the values and interests of those concerned.
- If one has some understanding of the business – the nature of the participants, the ships used, the roles of the participants, the expectations and commercial aims of the parties and how easy or difficult it is to fulfil those aims – one is, at the very least, at the beginning of understanding the likely responses of the law to a particular problem.



# 4 The importance of shipping

- International shipping carries 90% of the world's trade. It is the lynchpin of the world economy.
- Ships are large valuable assets of a sophisticated kind. Larger vessels can cost over USD 100 m to build.
- World freight is an estimated USD 380 billion per annum.



# 5 Ships and types of business (1)

- *Ships and markets*

The division of commercial ships can broadly be made as follows:

- \* passenger – liners, ferries
- \* container
- \* general cargo
- \* bulk carriers
- \* tankers
- \* car carriers
- \* specialised, eg dredgers, cable and pipe layers, heavy lift, tugs, tenders
- \* semi-submersible





## **Crude Oil Tanker: British Spirit**

Official No: 703252:

Built: 1983.

Tonnage: 66,024 gross; 36,229 net; 127,778 dwt

Length: 260.99m

Breadth: 39.65m

Draft: 16.22m





## **Bulk Carrier: Iron Newcastle:**

Official No: 851596.

Built 1985.

DWT: 148,140Mt.

Length 283.5m,

Breath: 47.07m,

Draft 15.901m





## **Liquefied Natural Gas Carrier: NorthWest Sanderling**

Official No: 853416

Built: 1989.

Length: 272m,

Breath: 47.2m,

Draft: 10.95m,

LNG Capacity : 125,000 cubic metres







## **Container Ship: OOCL Longbeach:**

IMO No: 9243409.

Built 2003.

GRT 89,097.

Length: 322.97m,

Breath: 42.80m,

Draft: 14.528m. Container Capacity: 8,063 teu.





## **General cargo ship: Iron Flinders**

Official NO: 854086.

Built: 1985

Gross tonnage: 13,380. DWT: 17,373Mt.

Length: 158.07m,

Breadth: 23.09m,

Draft 10.102m.

Container Capacity 928 TEU.



# 11 Ships and types of business (2)

- These types of ships are reflected by the different freight markets:
  - \* dry cargo
  - \* tanker or wet bulk
  - \* reefer (refrigerated)
  - \* car carrier
  - \* passenger
- There is a significant degree of overlap with the development of combination carriers:  
Oil/Bulk/Ore (O/B/O), Ore/Oil (O/O) and  
Container Bulk (Con Bulk)



# 12 Ships and types of business (3)

- The dry cargo market can be subdivided into:
  - \* bulker
  - \* 'tweendecker
  - \* container
  - \* ro/ro (roll on / roll off)
  - \* liner
  - \* small ships
  - \* special



# 13 Ships and types of business (4)

- The world fleet consists of 35,000-40,000 vessels with a total tonnage of + 650 m dwt. Tankers comprise about 8,000 ships, but account for half the tonnage.
- There are roughly 14,000-15,000 ships in the dry cargo market.



# 14 Ships and types of business (5)

- Most general cargo is now carried in containers: over 70% of world general cargo trade. Container vessels' dimensions were for many years controlled by the need to use the Panama Canal: LOA (length over all) 274m, beam 32m, draught 12m, (so-called "Panamax vessels"). Capacity of container ships is expressed in TEUs (twenty foot equivalent units).



# 15 Ships and types of business (6)

- Containers generally are either 20' or 40' long, by 8' x 8', though sometimes the dimensions are up to 9' 6" in height (high cubes). Holds are built to accommodate modules this size. Hatch covers have fittings to assist in securing them. Some container carriers are now “Post Panamax” size: Maersk Sealand “S” class ships which have a length of 347 m , a beam of 43m and a capacity of 9,000 TEU. Larger vessels are being built
- General cargo vessels often have a 'tweendeck, that is an intermediate deck in a cargo hold, and they often carry cranes and derricks for cargo handling.



# 16 Ships and types of business (7)

- Bulk carriers carry raw materials – grain, coal, ore, sand, fertiliser, alumina, bauxite, sugar, cement, wood chip, gypsum etc. They can be divided into:
  - \* Handysize 10-35,000 dwt
  - \* Handymax 35-50,000 dwt
  - \* Panamax 50-75,000 dwt
  - \* Capesize 80,000-150,000 dwt
  - \* Bulkers carrying iron ore and coking coal often to Japan or China 150,000 + dwt



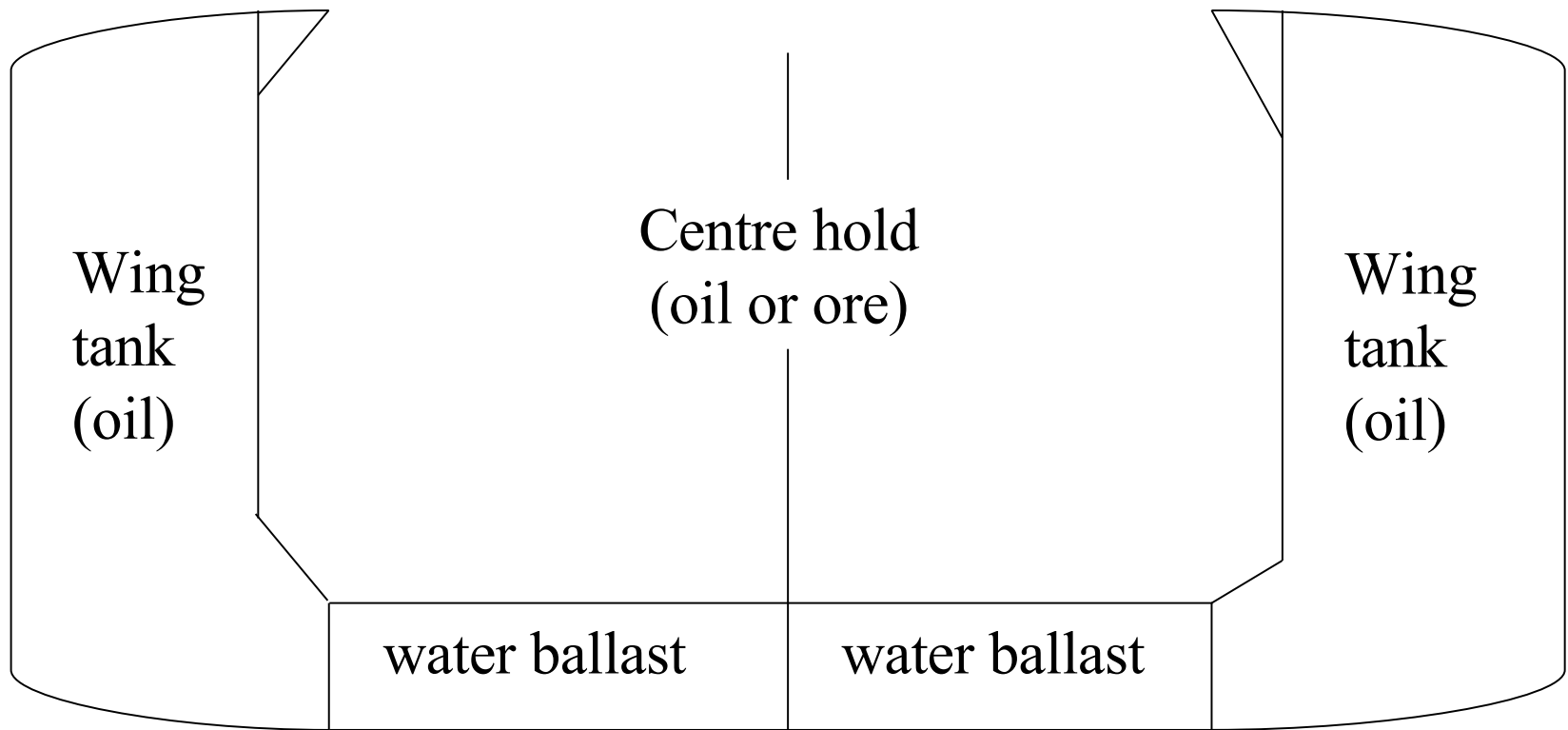


# 17 Ships and types of business (8)

- Bulk carriers sometimes, but not always, have cargo handling equipment; they generally have between 5 and 10 holds.
- There are two main types of combination carrier: ore/oil and ore/bulk/oil.
- A cross section of an ore/oil carrier is as follows:



# 18 Ships and types of business (9)



# 19 Ships and types of business (10)

- Tankers carry crude oil, petroleum products, chemicals, edible oils:
  - \* Handysize/Handymax 10-50,000 dwt
  - \* Panamax 60-75,000 dwt
  - \* Aframax (1) 75-120,000 dwt
  - \* Suezmax 120-200,000 dwt
  - \* Capesize 80,000 +

(1) American Freight Rate Association



## 20 Ships and types of business (11)

- VLCC (very large crude carriers) 200-320,000 dwt; ULCC (ultra large crude carrier) 320,000 + dwt
- Tankers used for chemicals or edible oils are sometimes called parcel tankers. Chemical tankers often have a large number of holds, with complex piping to enable the carriage of variety of chemicals.
- Tankers generally have longitudinal transverse bulkheads dividing into tanks, with complex piping.



## 21 Ships and types of business (12)

- Related to tankers are the LNG and LPG carriers. These are specialised ships which carry gas in spherical tanks under pressure. The gas is refrigerated or compressed (or both) to its liquid form. “Boil off” from the cargo is sometimes used as fuel on board for ship’s boilers. They often operate from remote terminals under long term contracts.



## 22 Ships and types of business (13)

- Car carriers (PCC: pure car carriers) are divided horizontally by decks. Cars are driven on and off over stern and side ramps, and are chained to the decks during the voyage. They have enough fuel for these tasks. Fire is a real risk in the handling of such vessels. A crew not trained to use firefighting equipment or the lack of firefighting equipment will make such a PCC unseaworthy.



## 23 Ships and types of business (14)

### *ships and stresses*

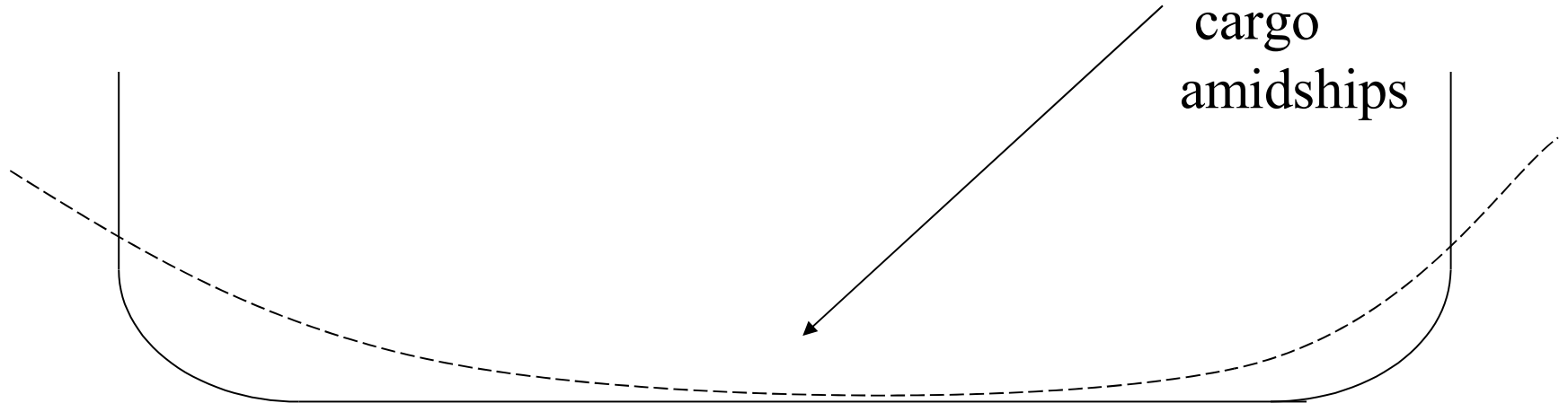
- This is not the place to discuss in any detail the myriad of engineering and technical details concerning the construction, operation and maintenance of different ships. Whether one has a carriage problem, a seaworthiness problem, a collision or damage problem or a salvage problem (indeed any problem which raises the operation of a ship) it is always necessary to appreciate and conceptualise the strains and stresses on the different parts and the whole of a large, elongated, partly divided metal bucket. Take the following:



# 24 Ships and types of business (15)

(a) *sagging* cargo amidship

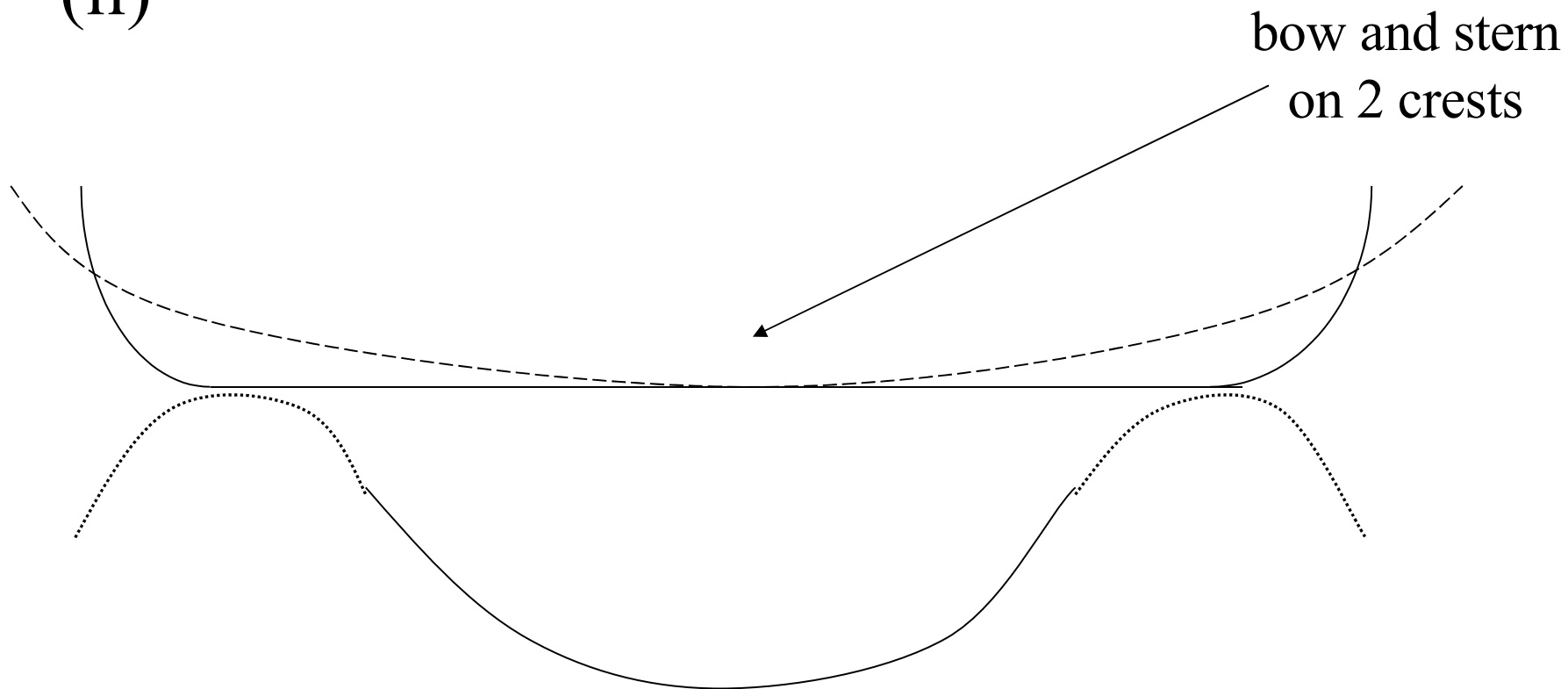
(i)





# 25 Ships and types of business (16)

(ii)

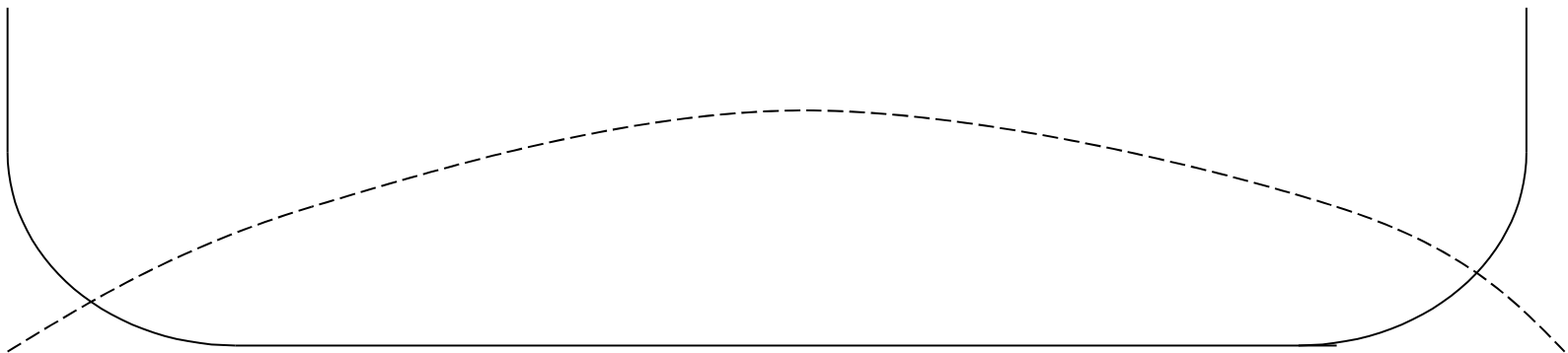


# 26 Ships and types of business (17)

## *(b) Hogging*

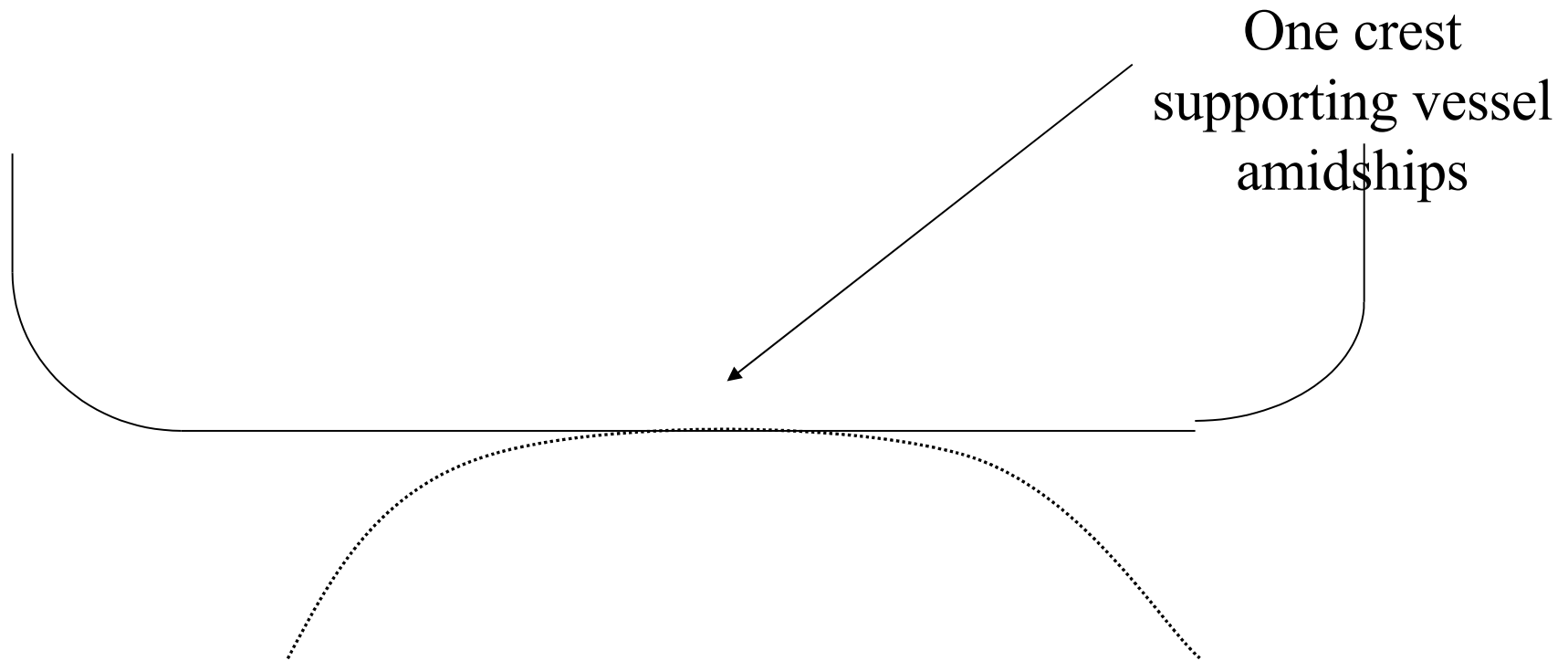
(i)

cargo towards  
bow and stern



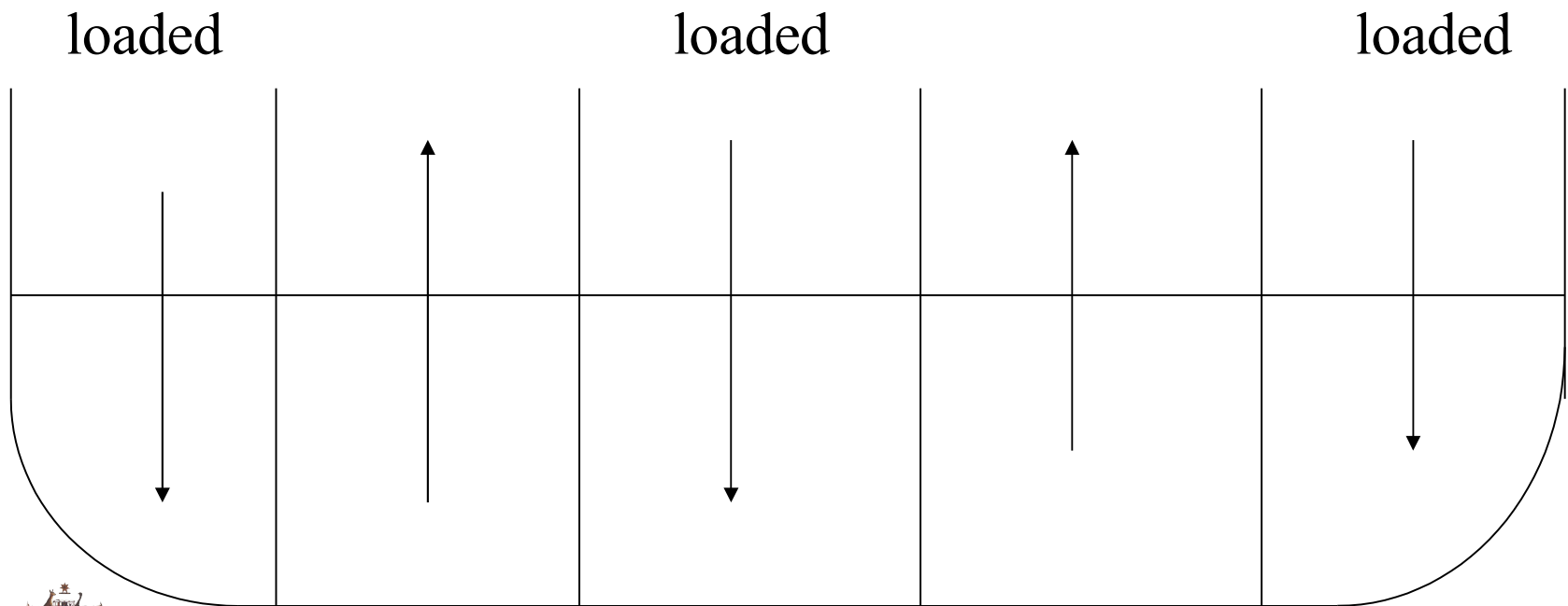
# 27 Ships and types of business (18)

(ii)



# 28 Ships and types of business (19)

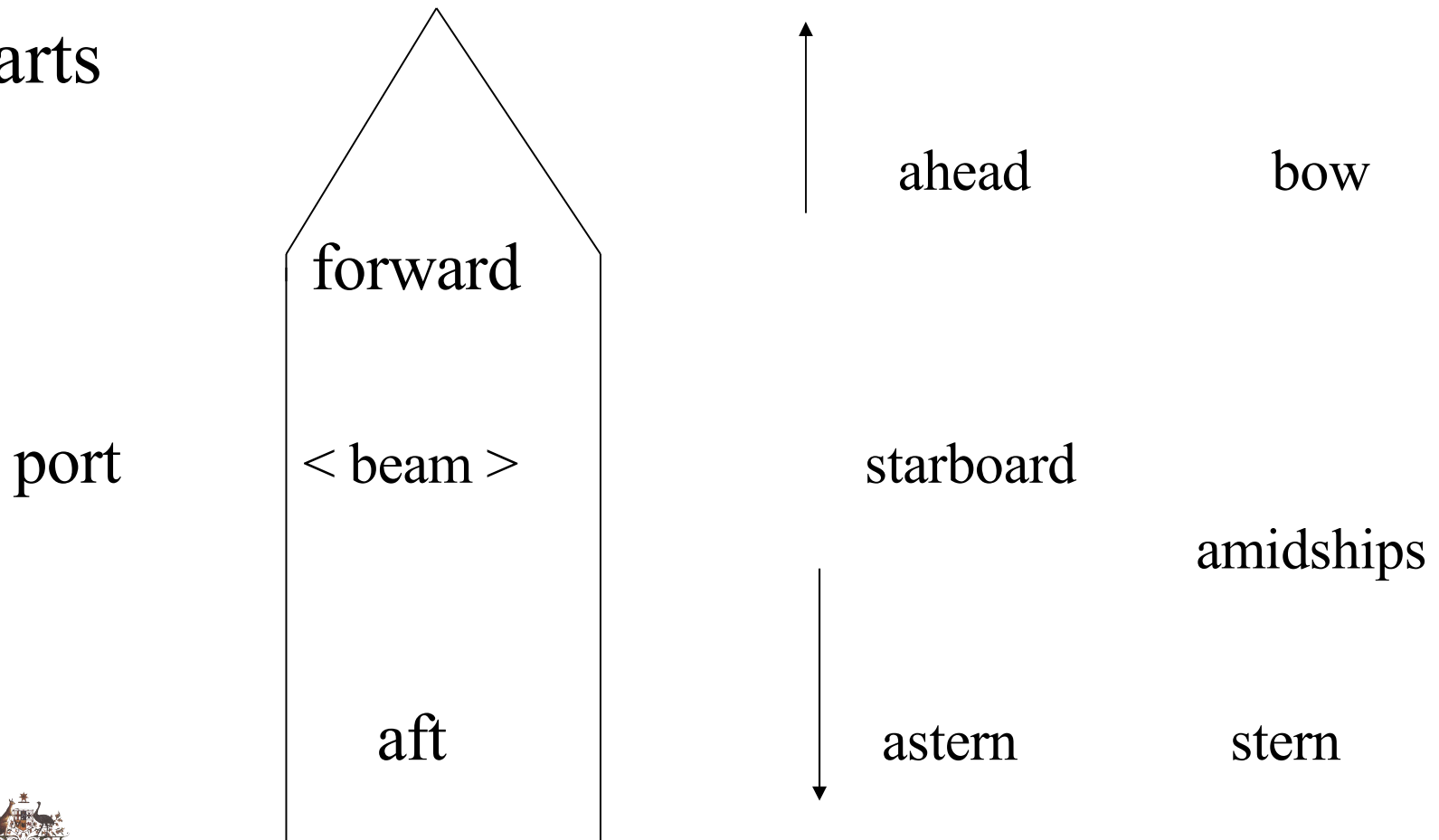
Think of stresses on compartments – sheer forces:



# 29 Ships and types of business (20)

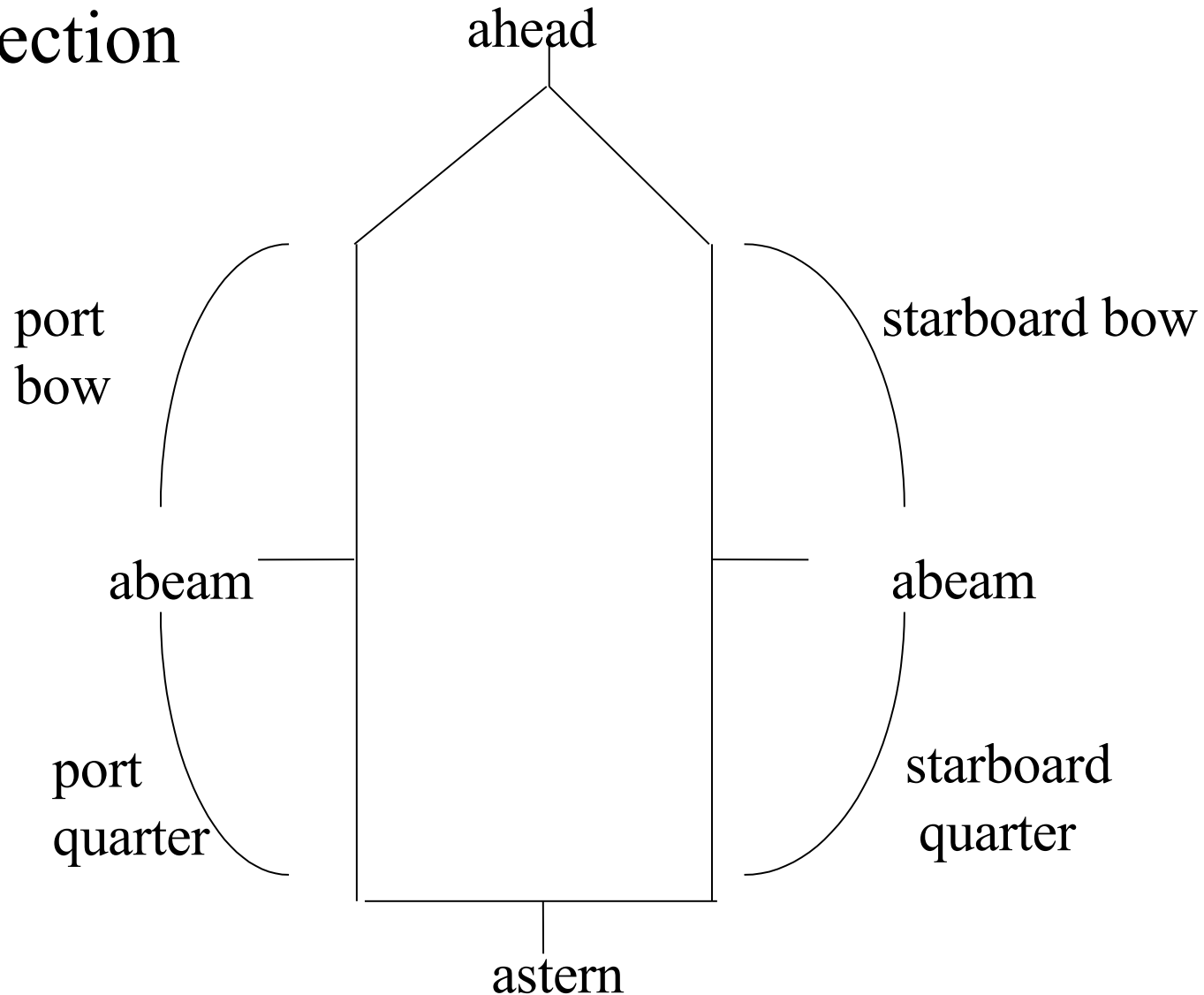
## *Parts and Directions of a Ship*

Parts



# 30 Ships and types of business (21)

Direction



# 31 Ships and types of business (22)

## *machinery*

- A ship will have propulsion machinery, auxiliary machinery, generators for cargo equipment, refrigeration and stowing.
- A ship may have one or more engines, with one or more propellers or screws. Engines may be diesel, reciprocating steam (now rare), turbines, including gas or steam, diesel electric.



## 32 Ships and types of business (23)

### *construction*

- The hull is the main watertight compartment, whose shape will depend on the vessel's purpose. A general cargo vessel will be divided horizontally with 'tween decks to aid stowage. Container vessels may have specially designed cellular holds or slots. The superstructure sits on top of the hull.





## 33 Ships and types of business (24)

### *draught, load line marks and freeboard*

- The draught is the actual depth of the submerged part of the hull below the waterline to the lowest part of the hull. Draught marks are engraved and painted at the bow and the stern. They are important to check during loading to assist with balance and trim.



## 34 Ships and types of business (25)

- Through the advocacy for reform of a 19th century British politician, Samuel Plimsoll, the marking on the ship of the safe maximum loading grew up: the Plimsoll line. The Plimsoll line is painted through a circle called the load line disk (see diagram below). There is now an international convention on load lines.

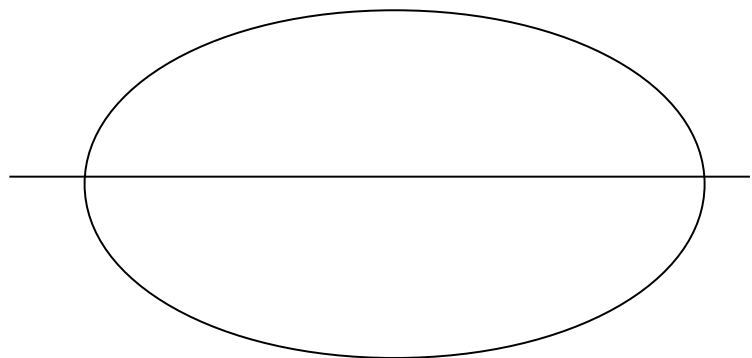


## 35 Ships and types of business (26)

- Because weather and seas vary according to place and season, the amount of “freeboard” (distance from waterline to the vessels uppermost complete water-tight deck) varies. Amidships there is marked on each side the position of the uppermost watertight deck – the “deckline”. Below the deckline is the loadline disk containing various load lines (generally 6 on merchant vessels) indicating different seasons and zones and fresh and salt water. The Plimsoll line is on the most commonly used summer load line mark.



# 36 Ships and types of business (27)



TF – tropical fresh

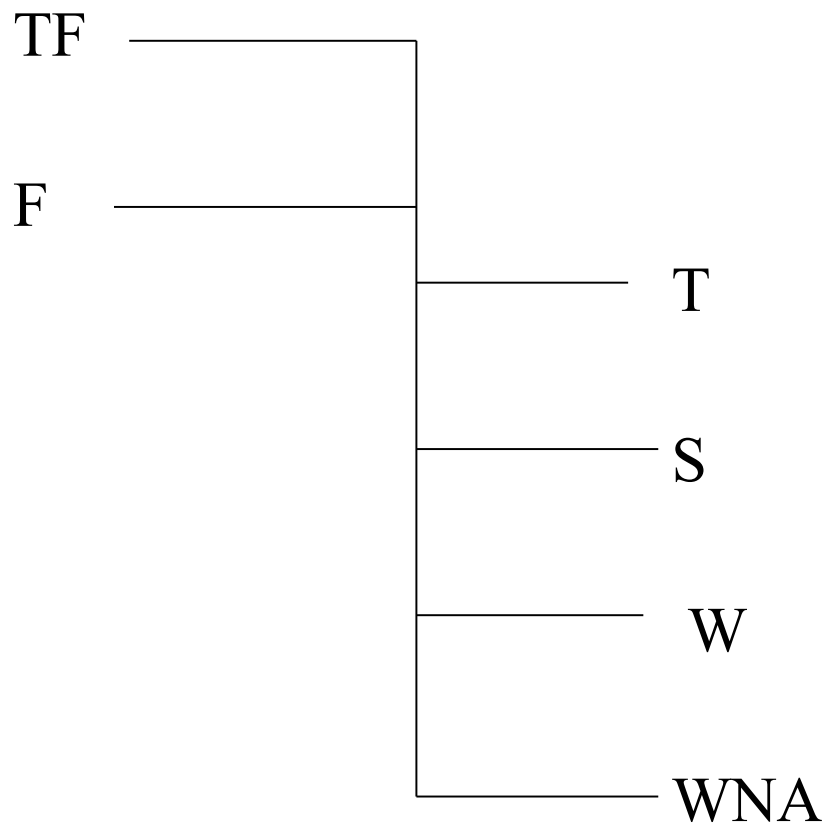
F – fresh

T – tropical

S – summer

W – winter

WNA – winter North Atlantic



# 37 Ships and types of business (28)

## *officers and crew*

- The person in charge of the ship (large or small) is the master. The master is the owner's or demise charterer's personal representative. His or her duties are varied and wide, encompassing the final responsibility for the ship and its operation.
- The crew can be divided into four departments: engine room, catering (and hotel on passenger vessels), deck and radio.



## 38 Ships and types of business (29)

- The first mate or chief officer, who is the deputy to the master, is in charge of the deck department. The number of mates who assist the chief officer depends on the size of the ship. There may be petty officers, and there will be deckhands. The principal petty officer – the boatswain or bosun is the foreman or supervisor of the deckhands. The chief engineer supervises the engine room. He or she is responsible to the master. The chief engineer is responsible for fuel, machinery maintenance and repairs. Assistants in the engine room include fitters and greasers.



# 39 Ships and types of business (30)

## *Tramp, liner trade and conferences*

- Another division of business that can be drawn is between tramp and liner trade.
- Tramp shipping is the movement of vessels on no specified route or regular line – travelling voyage to voyage where cargo and business take them. Tramp shipping is generally used to carry bulk cargo. Much container traffic is carried by regular liner services entering and leaving ports on defined runs like railway lines. Tramp ships used to be commonly 20-25,000 dwt. Now, with Handymax ships they are often 30-50,000 dwt.



## 40 Ships and types of business (32)

- As crops fail or not, as mineral or economic booms occur or fall away, the freight rate fluctuates with the market and tramp shipping becomes more or less profitable.
- Tonnage is often chartered in. The role of the shipbroker who will charter or “fix” a vessel in charterparties or fixtures becomes important.





# 41 Ships and types of business (33)

- Liner service runs on fixed routes, on fixed schedules, at advertised rates. Shipping lines often run in association with each other in conferences, which are cartels, often permitted as exceptions to domestic competition law: see Part X of the *Trade Practices Act 1974* (Cth).
- The association or conference will deal with matters such as:
  - freight rates of carriage
  - carrying capacity of different companies
  - frequency and allocation of sailing
  - membership
  - pooling of cargo
  - loyalty and volume arrangements
- There are ‘closed’ and ‘open’ conferences.



## 42 Trade routes

- Raw materials flow from their sites of mining or extraction to their end users.
- Manufactured goods flow from producers to consumers.
- All seaborne trade is constrained by geography and particular points: Suez, Cape of Good Hope, Malacca Straits, Sunda Strait, Lombok Strait, Panama Canal, Cape Horn, Arctic and Antarctic ice.
- The major container and break bulk routes run east-west to main entrepots eg China to Europe, China to US, Hong Kong, Singapore, Amsterdam and then along feeder routes.

## 43 Major ports

- In TEU movement in 2002 were in descending order: Hong Kong, Singapore, Pusan, Shanghai, Kaosuing, Sjenzhen, Rotterdam, Los Angeles, Hamburg, Antwerp.
- Largest bulk ports are crude terminals in the Persian Gulf.



# 44 Participants (1)

- shipowners and disponent owners / fleet and ship managers and operators
- shipbrokers
- freight forwarders / NVOCCs (non-vessel owning or operating common carriers)/ “logistic service providers”
- stevedores
- customs agents
- ships agents



## 45 Participants (2)

- insurers / protection and indemnity (p & i) clubs / insurance brokers
- master
- pilot
- crew
- marine and cargo surveyors
- harbour masters
- classification societies
- port or state security organisations



# 46 Tonnage (1)

- Originally a tun was a barrel holding 252 gallons of wine. Thus, the word originally meant capacity, as well as weight. This duality of meaning remains in maritime parlance. Tonnage can mean a number of things.
- Tonnage as to ships refers to:
  - (a) weight
    - loaded displacement
    - light displacement
    - deadweight tonnage (dwt)



# 47 Tonnage (2)

## (b) capacity

- gross tonnage (GT)  
(formerly gross registered tonnage: GRT)
- net tonnage (NT)  
(formerly net registered tonnage: NRT)
- Tonnage as to cargo refers to
  - (a) long (2,240 lbs, 1016 kg)
  - (b) short (2,000 lbs, 907 kg)
  - (c) metric (1,000 kg)



## 48 Tonnage (3)

- Deadweight tonnage (or deadweight carrying capacity) is the number of tons (long tons) of water a vessel displaces when loaded and submerged to the loadline less the displacement when not loaded with cargo, stores and bunker fuel (light displacement). The light displacement subtracted from the loaded displacement gives dwt.
- Gross and net tonnage are concepts related to capacity and relate to vessels, not cargo. They are measured by a calculation of the cubic capacity of the ship, one ton being equal to 100 cubic feet (2.83 cubic metres).





# 49 Tonnage (4)

- GT is the total internal capacity of the ship below the main deck plus the capacity of all enclosed spaces above deck with the exception of:
  - light and air spaces
  - wheelhouse
  - galley
  - WCs
  - staircases
  - hatchways
  - open shelter deck



# 50 Tonnage (5)

- NT expresses the space available for the accommodation of passengers and the stowage of cargo. It is equal to GT less:
  - accommodation of master, officers and crew
  - space for navigation
  - boatswain's store rooms
  - water ballast or freshwater supply
  - pump room (on tankers)
  - donkey (auxiliary) engine and boiler
  - engine room and propeller spaces (shaft etc)



# 51 Tonnage (6)

- GT is the measurement of the vessel's closed-in spaces and is used for such calculations as pilotage, dry docking, statistical comparisons and p&i club entries. NT is a rough estimation of the earning capacity of the ship and is used for such things as harbour and port dues and canal tolls.
- Cargo tonnage can be expressed by weight or volume: (American) short ton (2,000 lbs), (English) long ton (2,240 lbs), metric tonne (1,000 kgs).
- Tonnage for limitation of liability purposes is governed by relevant legislation by reference to the International Convention on Tonnage Measurement of Ships 1969.



# 47. Maritime organisations (1)

- Shipping is regulated and influenced by a number of international, governmental and private organisations. First is the authority of the flag state – the state where the ship is registered, giving the thing which carries a living human colony its nationality.
- Internationally, there is not, and never has been, one single controlling organisation.



## 53 Maritime organisations (2)

- Commercial and law reform agencies from the late 19th century have been instrumental in the coalescing of international opinion into treaties and conventions.
- Important intergovernmental organisations of importance include the following:
  - the International Maritime Organisation (the IMO)

The IMO is a specialised agency of the UN with its headquarters in London which in particular concerns itself with technical, practical, and environmental safety issues.
  - the International Labour Organisation (ILO)



## 54 Maritime organisations (3)

- the UN Conference on Trade and Development (UNCTAD)

UNCTAD's principal purpose is the acceleration and growth of developing states.

- UNCITRAL's main purpose is the harmonisation and unification of the law of international trades.



## 55 Maritime organisations (4)

- Important non-governmental organisations include the following:
  - Comité Maritime International (CMI)

The CMI works towards unifying and harmonising maritime law through the fostering of national maritime law associations. It has fostered and sponsored numerous conventions dealing with amongst other subjects arrest, collisions, salvage, average, limitation of liability, maritime liens.



## 56 Maritime organisations (5)

- International Chamber of Shipping (ICS)  
an association of ship owners.
- Baltic and International Maritime Council (BIMCO)  
A shipowner association and forum for exchange of information; it produces a number of widely used standard forms
- International Association of Independent Tanker Owners (INTERTANKO)





## 57 Maritime organisations (6)

- International Association of Dry Cargo Shipowners (INTERCARGO)

- The Baltic Exchange

A self regulated shipping exchange in London at which ship sale and chartering is carried on.

