

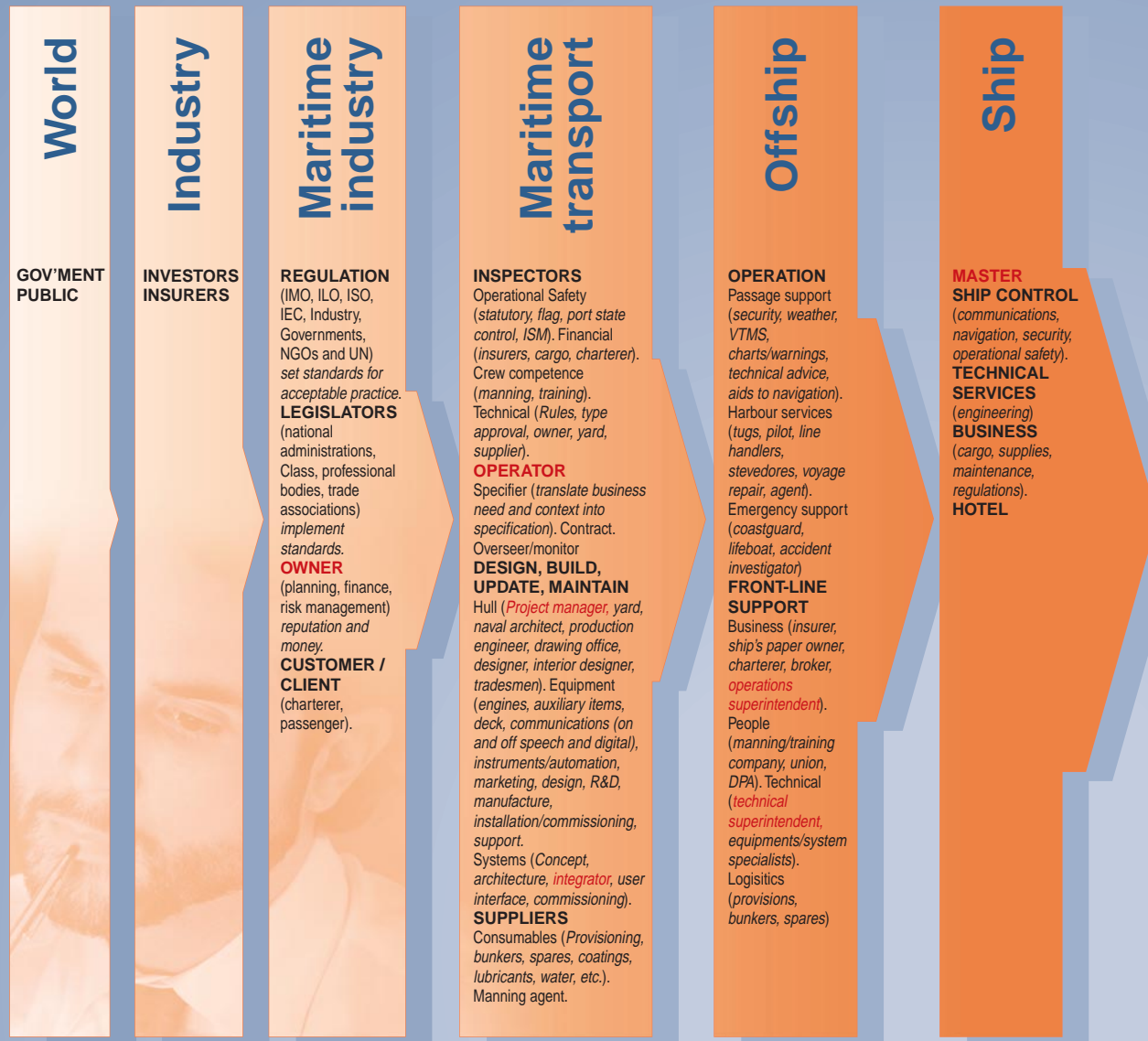
# WHO?

# Exploring the human element

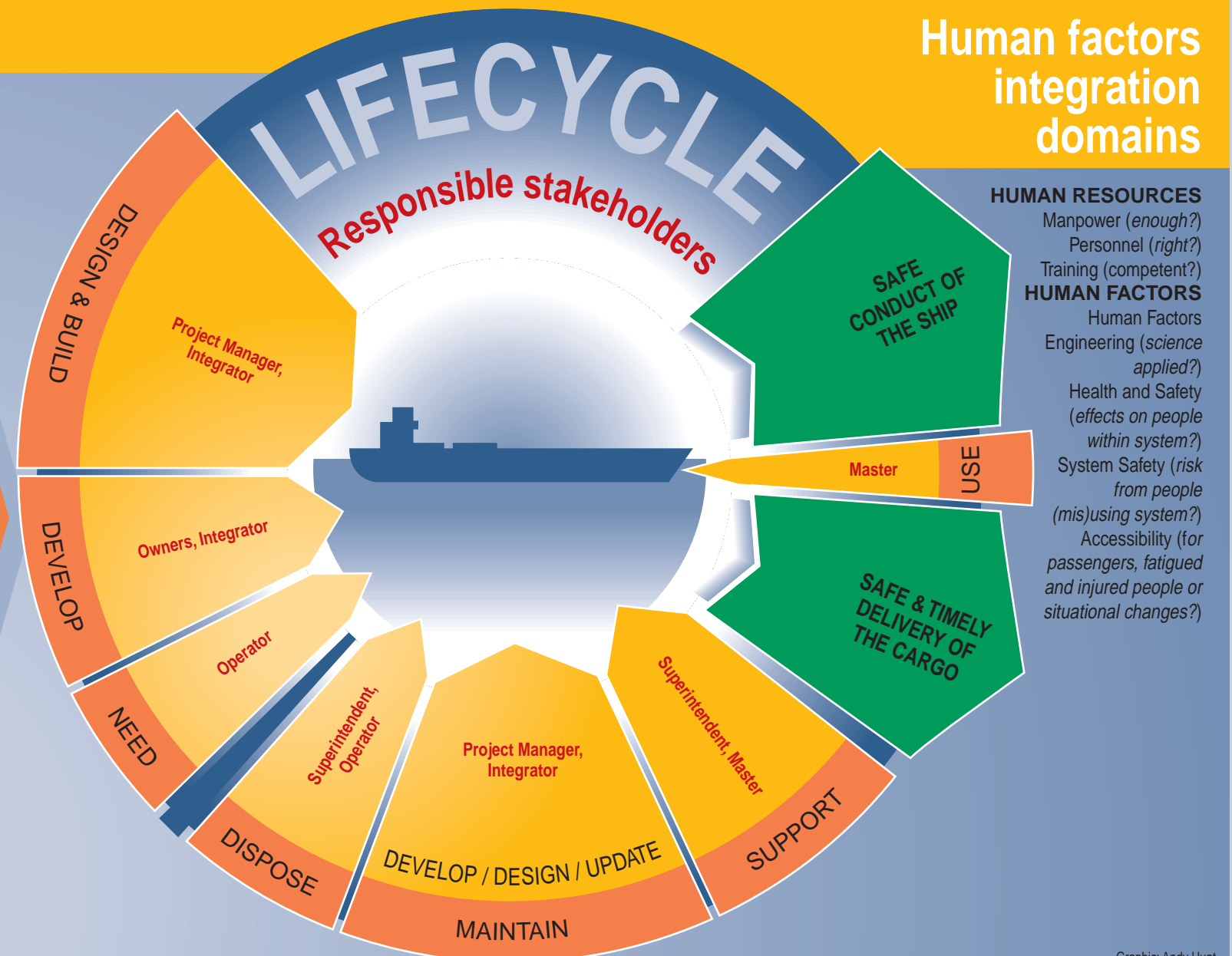
# WHEN?

# HOW?

## Stakeholders



## Human factors integration domains



Graphic: Andy Hunt

There is no accepted international definition of the term Human Element, yet the IMO has been addressing these issues since 1991! The aviation world describes the Human Element as an alternative to the term Human Factors to 'avoid ambiguity and aid comprehension', and the US Coastguard defines it as 'human and organizational influences on marine safety and maritime system performance'.

In the maritime context, the term Human Element embraces anything that influences the interaction between a

human and any system aboard ship. The Human Element has been with us since time immemorial, but it is the 'systems' that have changed, through the increase in electronic technology, which has caused the mariner to be less 'hands on' and driven more towards automation. Use of technology in general has replaced work teams with individuals, resulting in less checking, more lone work and a different social environment.

This illustrative diagram tells the story of the life of a modern ship in terms of the human element; it identifies the various

responsible stakeholders and their linkage, at each stage of the lifecycle, from conception to disposal. While every one of these stakeholders has an influence on the human-system integration on the ship, the degree of influence can be more, or less, direct. For example, someone on a ship who does not take account of health and safety issues will have a very direct influence on the operation of that particular ship, whereas someone in Government, who takes an interest in the health and safety of seafarers generally, could have a small but significant effect on all seafarers sailing under that country's

flag. All responsible stakeholders need to work together to ensure that ultimately the master and his crew have the right tools in place, and are properly trained, to ensure the safe conduct of the ship, and the safe and timely delivery of its cargo.

But, in order to ensure that the ship is 'fit for purpose' in every respect, stakeholders must ensure that the key domains are fulfilled in terms of:

- Manning - numbers required, to do the jobs in both normal and emergency situations

- Personnel - ensuring the correct mix of people onboard to operate and maintain the ship and its systems
- Training - competency and familiarity with the ship and its systems
- Human Factors Engineering - the integration of human characteristics v optimisation of human/machine performance, including ergonomics
- Health and Safety - the effects on the people who are operating the system
- System Safety - the risks from people using (or misusing) the system

- Accessibility - for passengers, fatigued and injured people, or to take account of situational changes, which exceed human adaptation eg extreme motion or low or high illumination

This is a working diagram and it is inevitable that some of the stakeholders may have been left out; we hope to develop it further through the website, during the next three years.