



Western Norway
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Human-Centred Design in the Maritime Domain

Current practice and beyond

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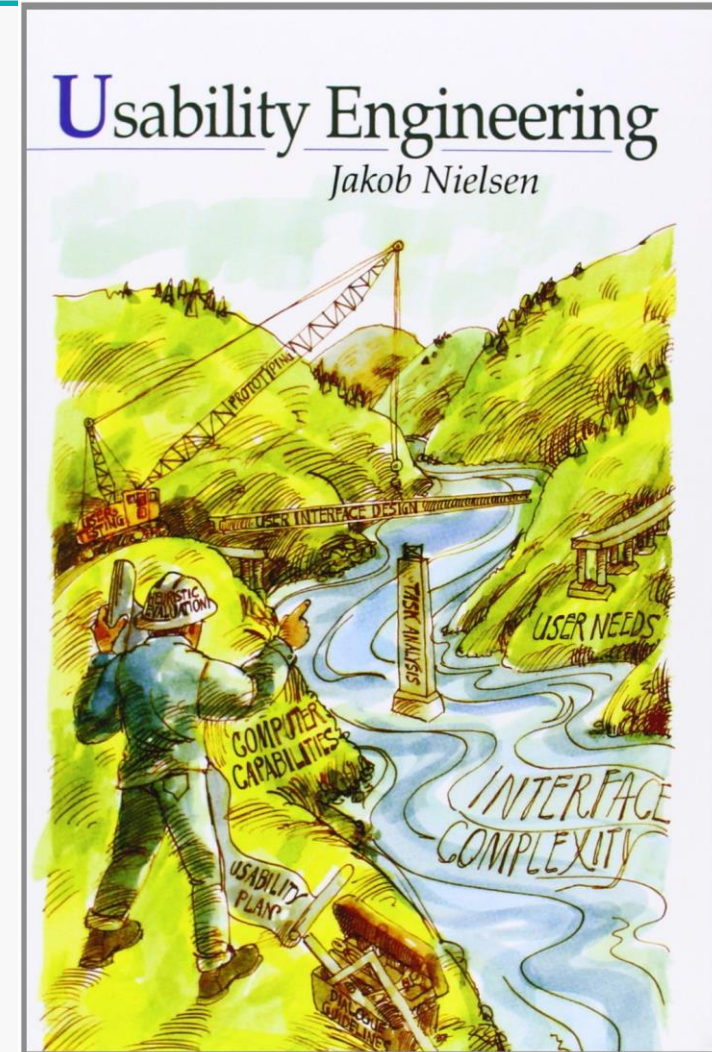


A buzzword



Once upon a time ...

- › Technological advancements since WWII leads to the development of complex equipment
- › The operation of complex equipment sometimes exceeds human capabilities
- › The problem of technical complexity versus human abilities
- › A realisation of the need to fit the equipment to people, not the other way around

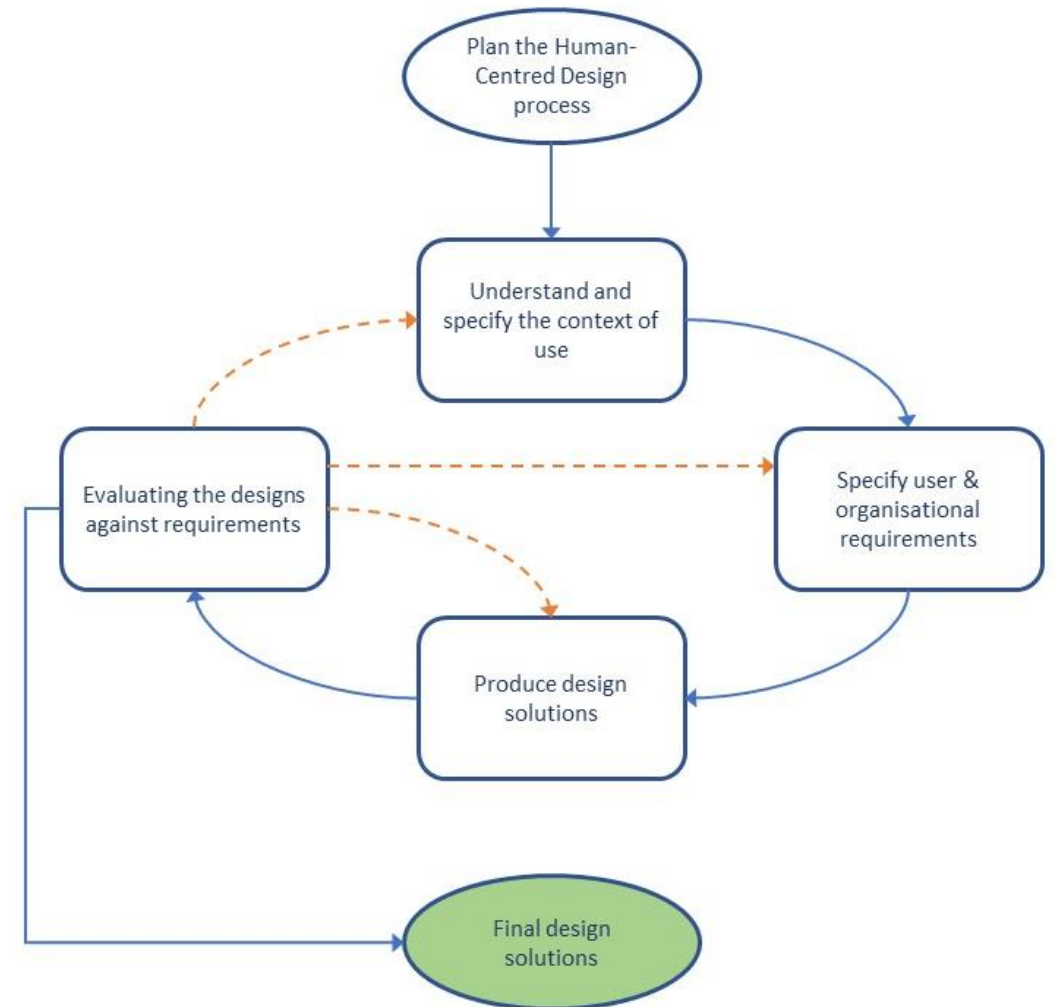


Usability



Human-Centred Design (HCD)

- › Human-centred design
 - › places human needs and abilities at the centre of organisational activities and the design process of technological systems
- › Following the HCD approach leads to improved usability
- › (*) Usability does not necessarily mean standardisation



Does HCD work?



An engineer climbing an offshore wind turbine (Source: dissolve.com)



Walk to Work solution – a vessel with Ampelmann offshore personnel transfer system (Source: ampelmann.nl)

Does HCD work?

- › The design of the PCTC HARVEST LEADERS followed a user-centred approach.
- › The design team collected feedback from crew members to identify ergonomics aspects that could be improved.
- › The design team worked with the owner, manager, and shipyard to apply the feedback to the design.
- › The final results were 1716 ergonomic improvements.

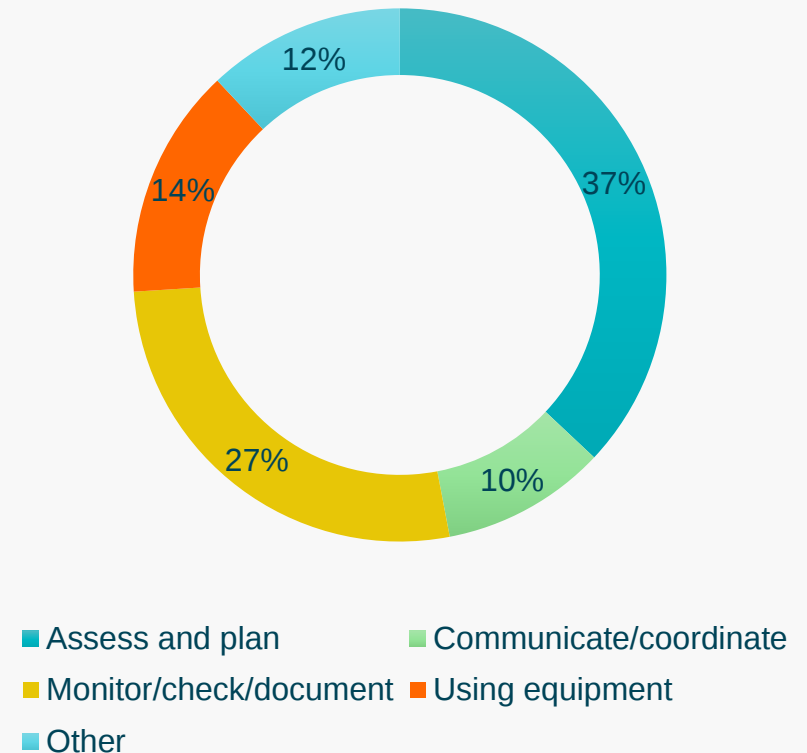


A photo of HARVEST LEADER (Source: fleetmon.com)

Current status of HCD practice in the maritime field

- › No statistics on HCD adoption.
- › Accident statistics indicate that:
 - › 14% of navigation errors can be linked to design shortfalls.
 - › design measures contribute to 64% of fatalities at sea.
 - › improper equipment design is found among contributing factors leading to accidents.

Safety factors related to navigation action for 2009 to 2011 (ATSB, 2013)



Current status of HCD practice in the maritime field

- › HCD is not a traditional design approach.
- › Maritime designers have been considering designs mainly from technical and economical viewpoints.
- › There is no systematic HCD application.
- › Naval architect students lack understanding of human factors
- › The topic is not incorporated into the training programme for future maritime designers.



Naval architect bachelor students at Australian Maritime College building prototypes of mooring stations – a part of the workshop to introduce human factors knowledge and HCD to students.

Possible reasons for current status of HCD practice

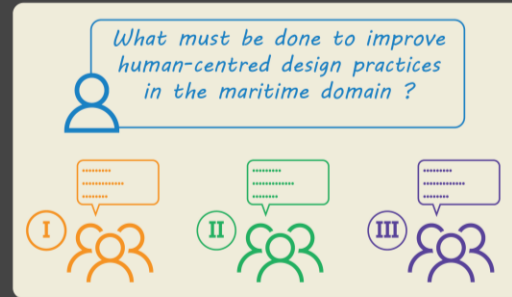
- › It is not easy to do HCD. Successful adoption of HCD requires:
 - › Support and consensus from all relevant stakeholders.
 - › Determination and faith in the iterative process.
- › Difficult to evaluate added value to justify investment.
- › The traditional engineering mindset is technically focused.
- › Lack of guidelines to support maritime designers, particularly for digital interface design.



Finding solutions

1. Announce the topic

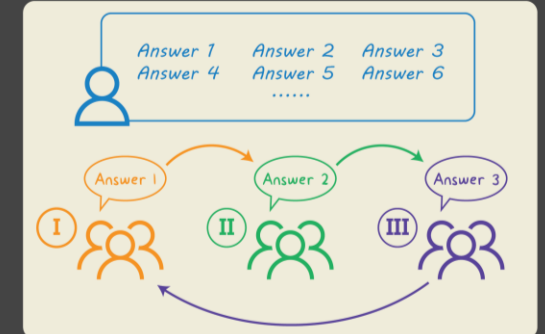
Participants work in groups, discussing factors that help make human-centred design practices more popular in the maritime industry.



2. Collect answers

The groups take turns, one after another, answering factors that help improve the adoption of human centred design in the maritime domain.

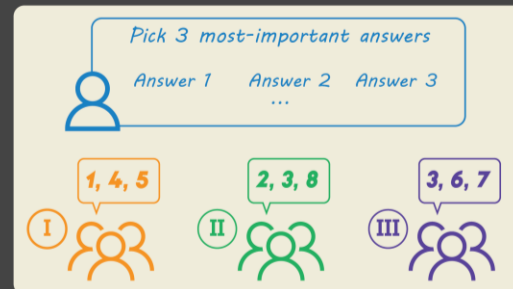
All answers are subsequently put on a large board so that everyone can see.



3. Each group picks 3 most important factors

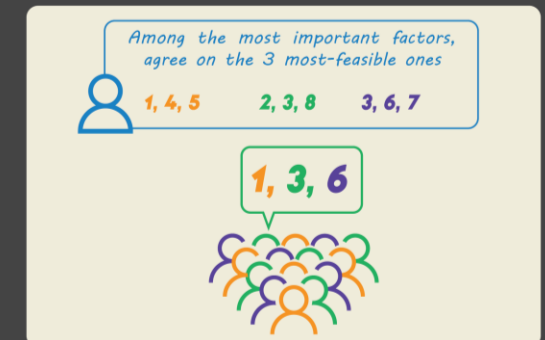
Each group selects, among all answers collected in step 2, three factors that are most important.

The facilitator collects all answers, remove duplicates, and post on the board.



4. All participants agree on 3 most feasible factors

Looking at the most important factors posted on the board, all participants discuss and make a collective agreement on three factors that are easiest to implement.



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