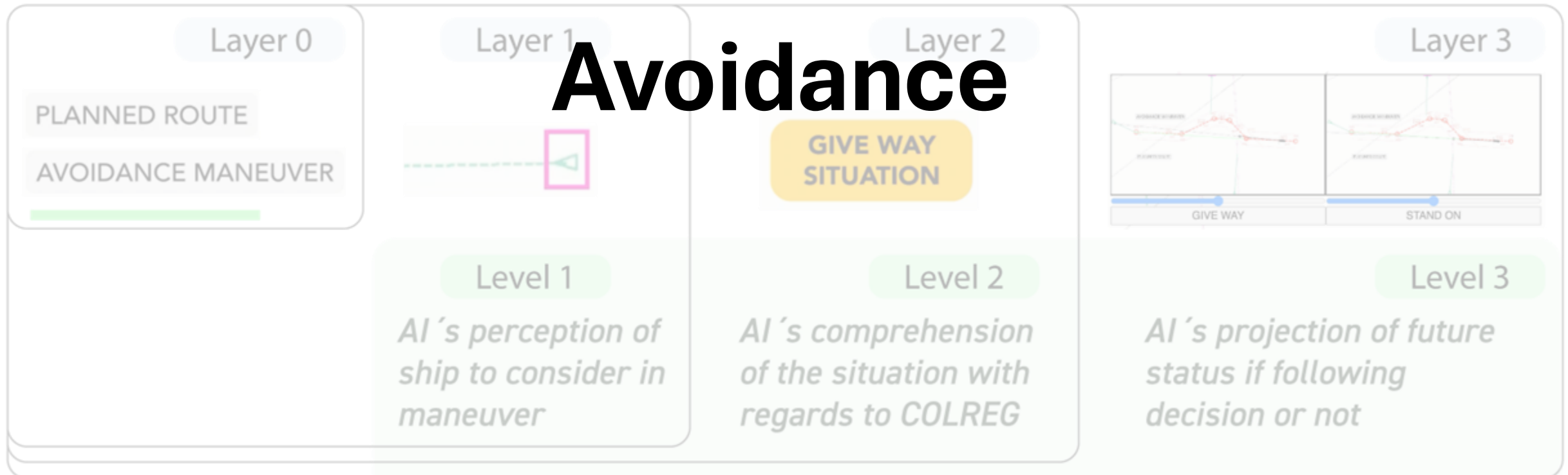


Human Centred Design in Autonomous Collision Avoidance



AI's Situation Awareness

Andreas Nygard Madsen

- B.Sc. Nautical Sciences
- M.Sc. Management of Demanding Marine Operations
- PhD Nautical Operations
- Deck officer
- Teacher and instructor
- Associate professor





Photo: Kristan Løseth

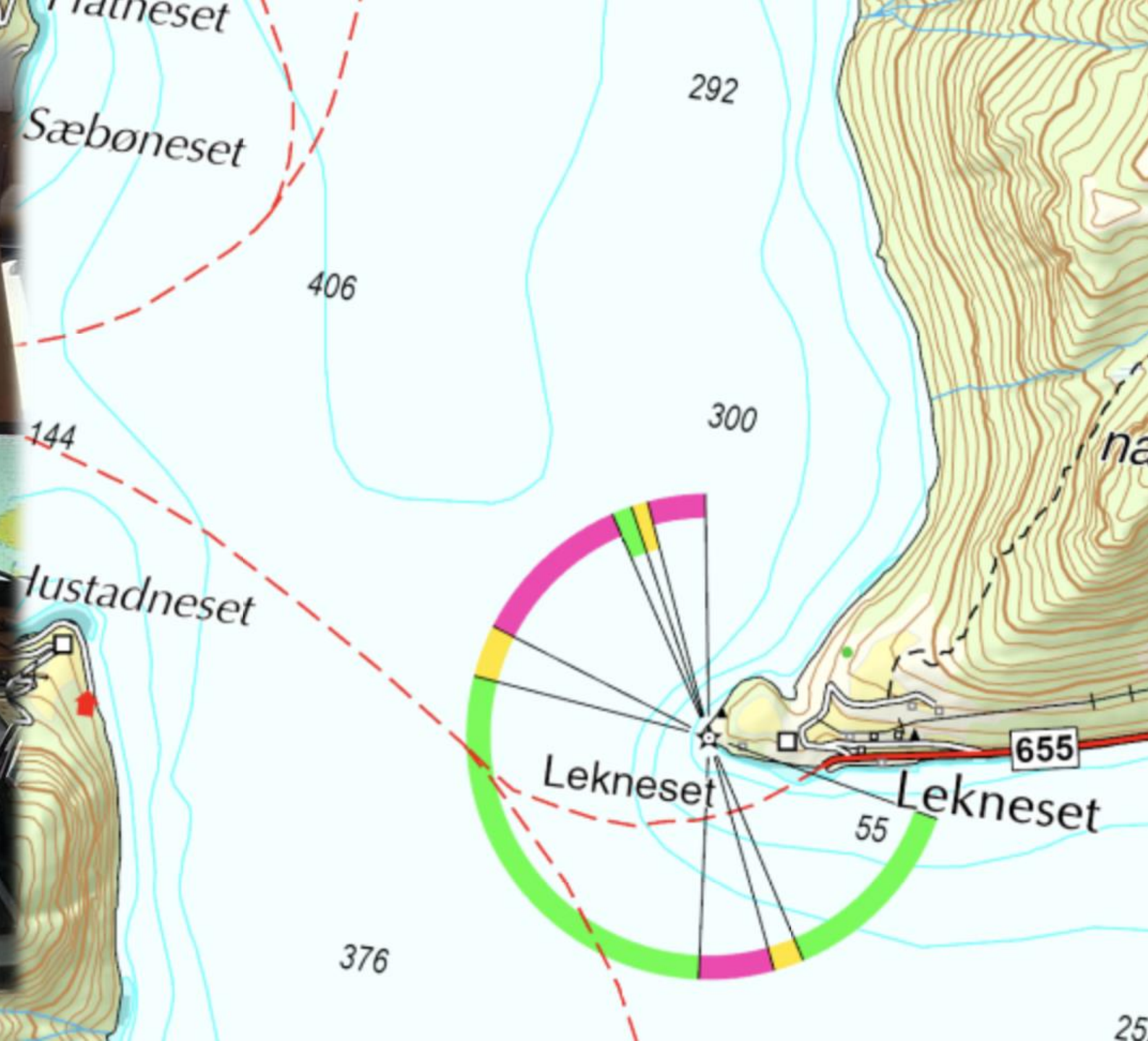




Photo: Nonald Kiersted



Photo: Norvald Kjerstad



UIT The Arctic
University of Norway

ISN University of
South-Eastern Norway

Western Norway
University of
Applied Sciences

NTNU
Norwegian University of
Science and Technology

[Link to thesis](#)

Faculty of Engineering

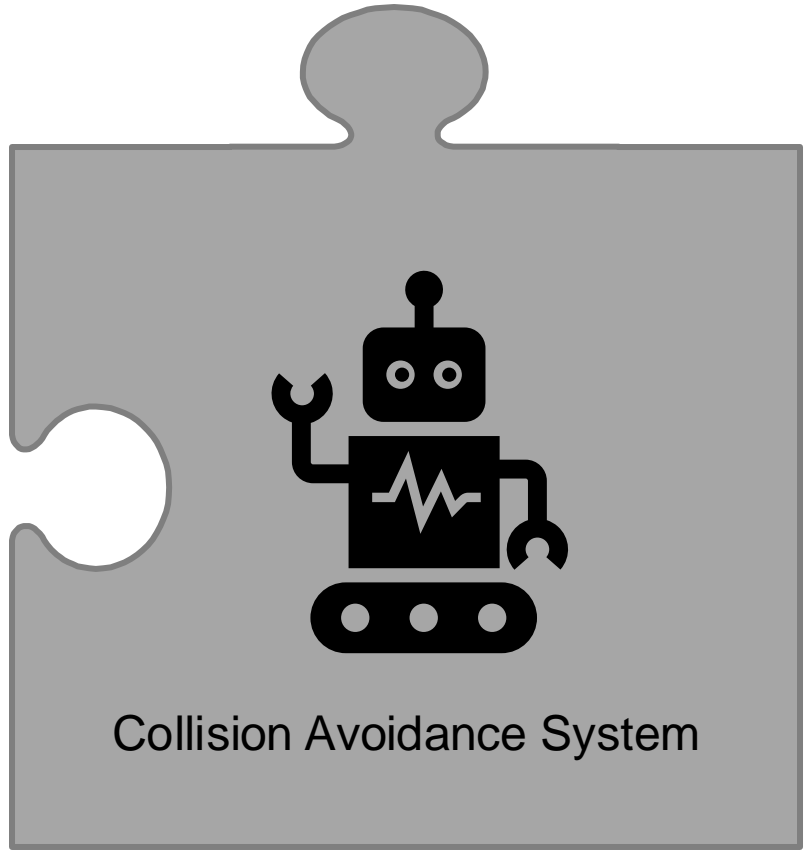
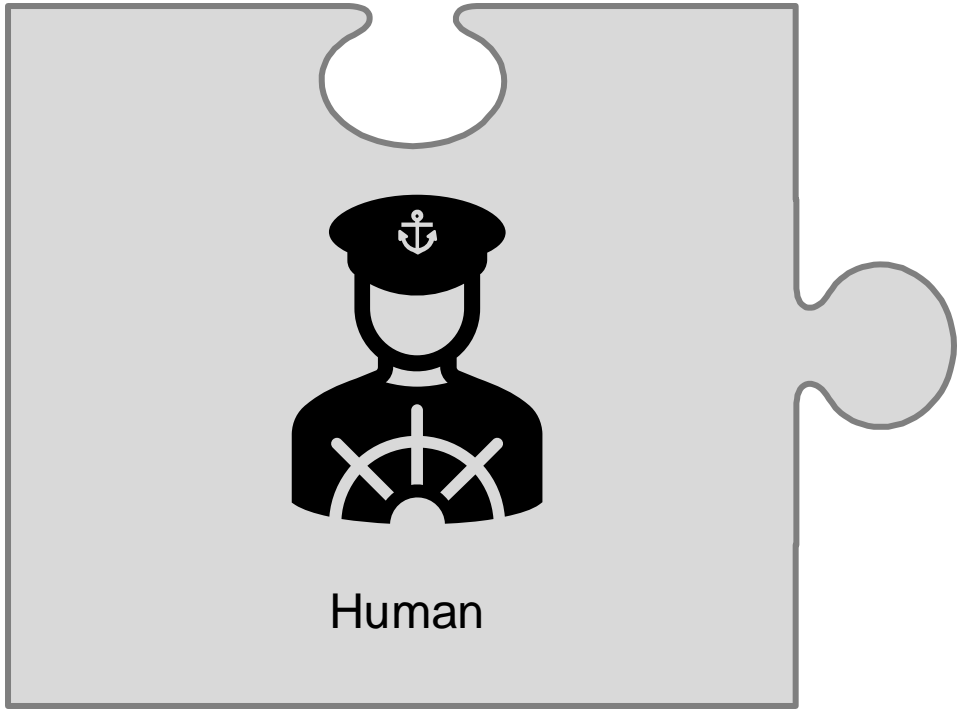
Department of Ocean Operations and Civil Engineering
Norwegian University of Science and Technology

Decision Transparency during Autonomous Collision Avoidance
On Human-AI Compatibility and Autonomous Ships

Andreas Nygard Madsen

Dissertation for the Degree of Philosophiae Doctor, May 2024

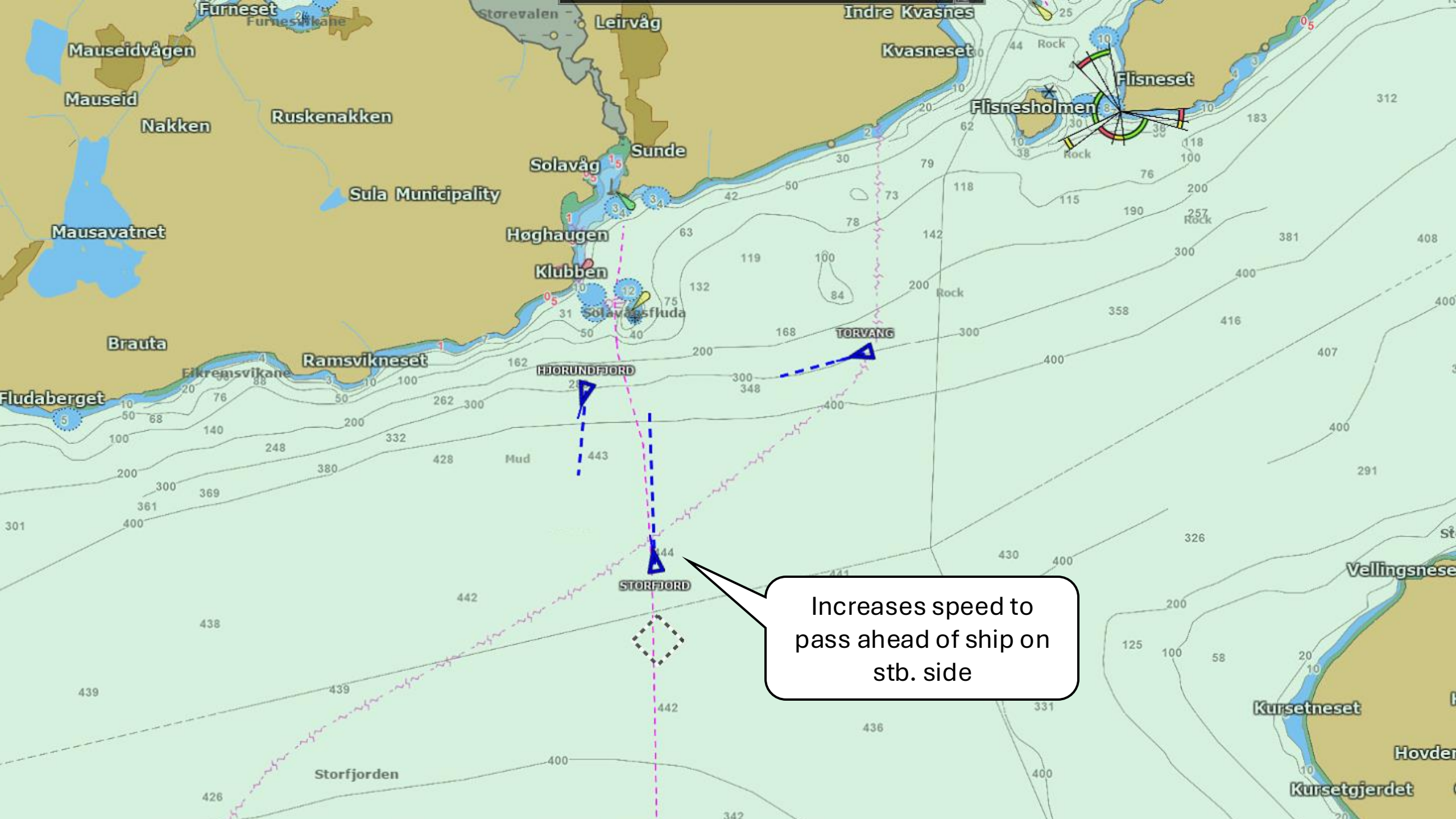




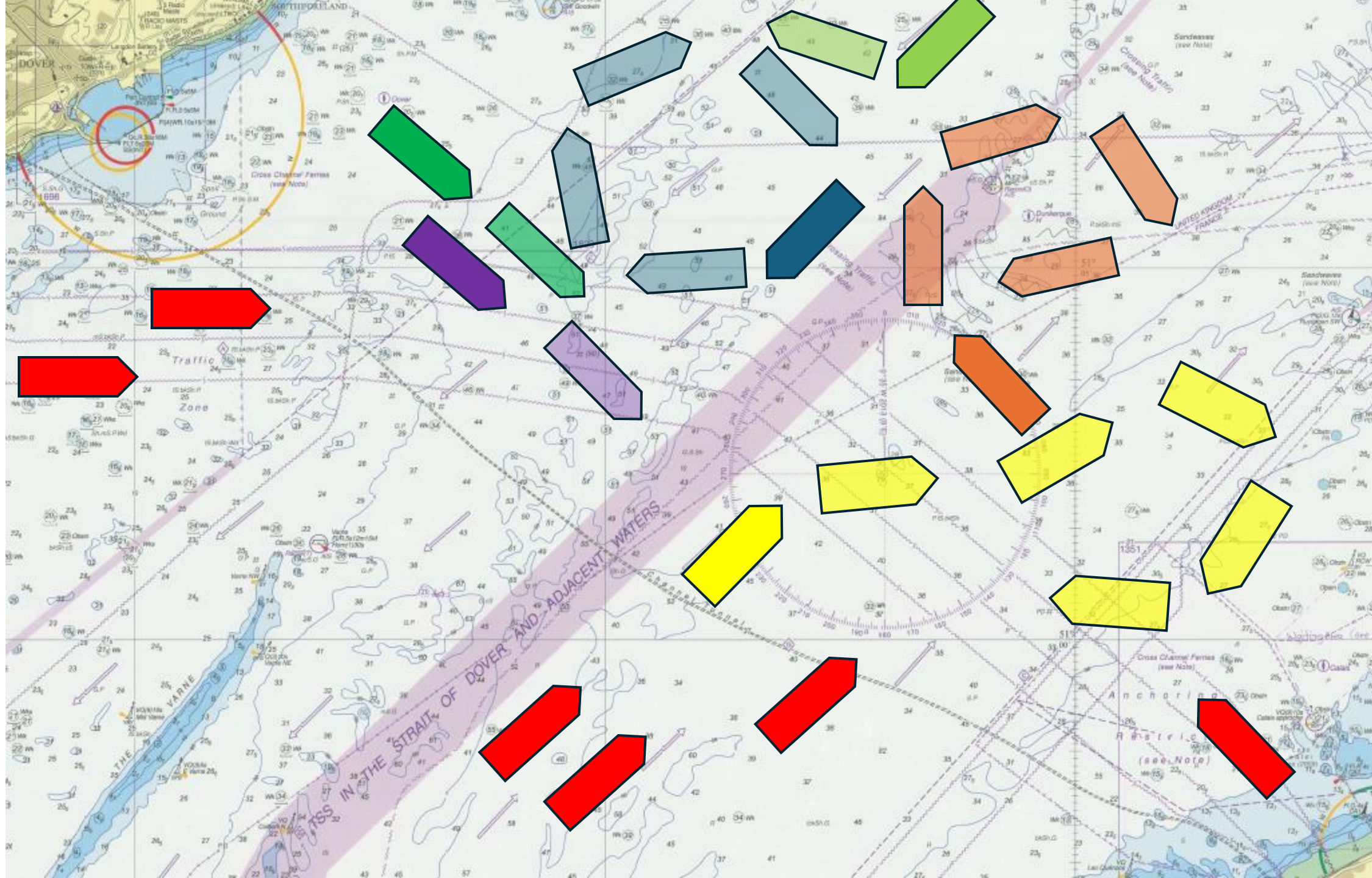


Gives way to a ship on the port side

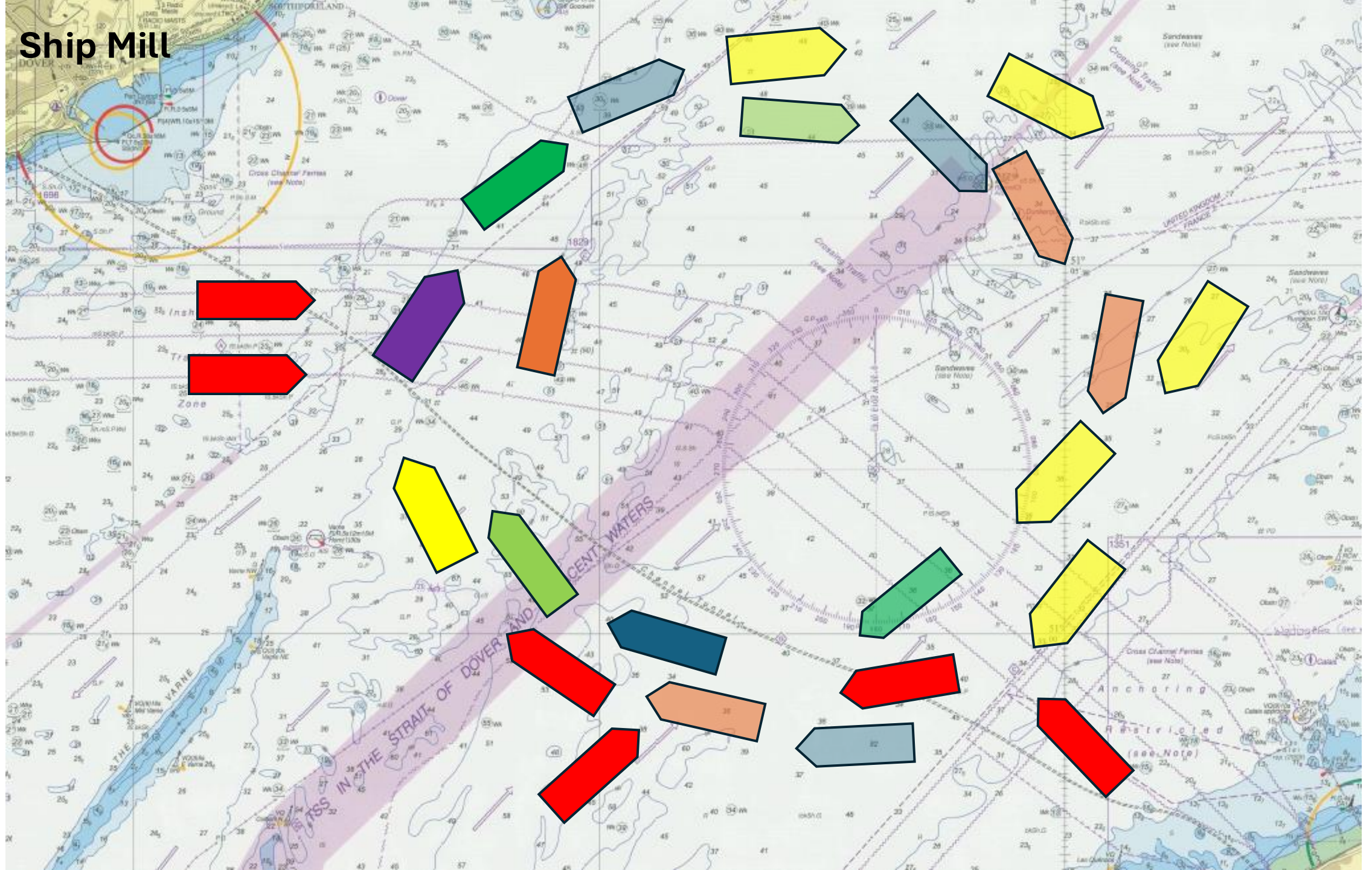
CELEBRITY SILHOUETTE



Increases speed to pass ahead of ship on stb. side



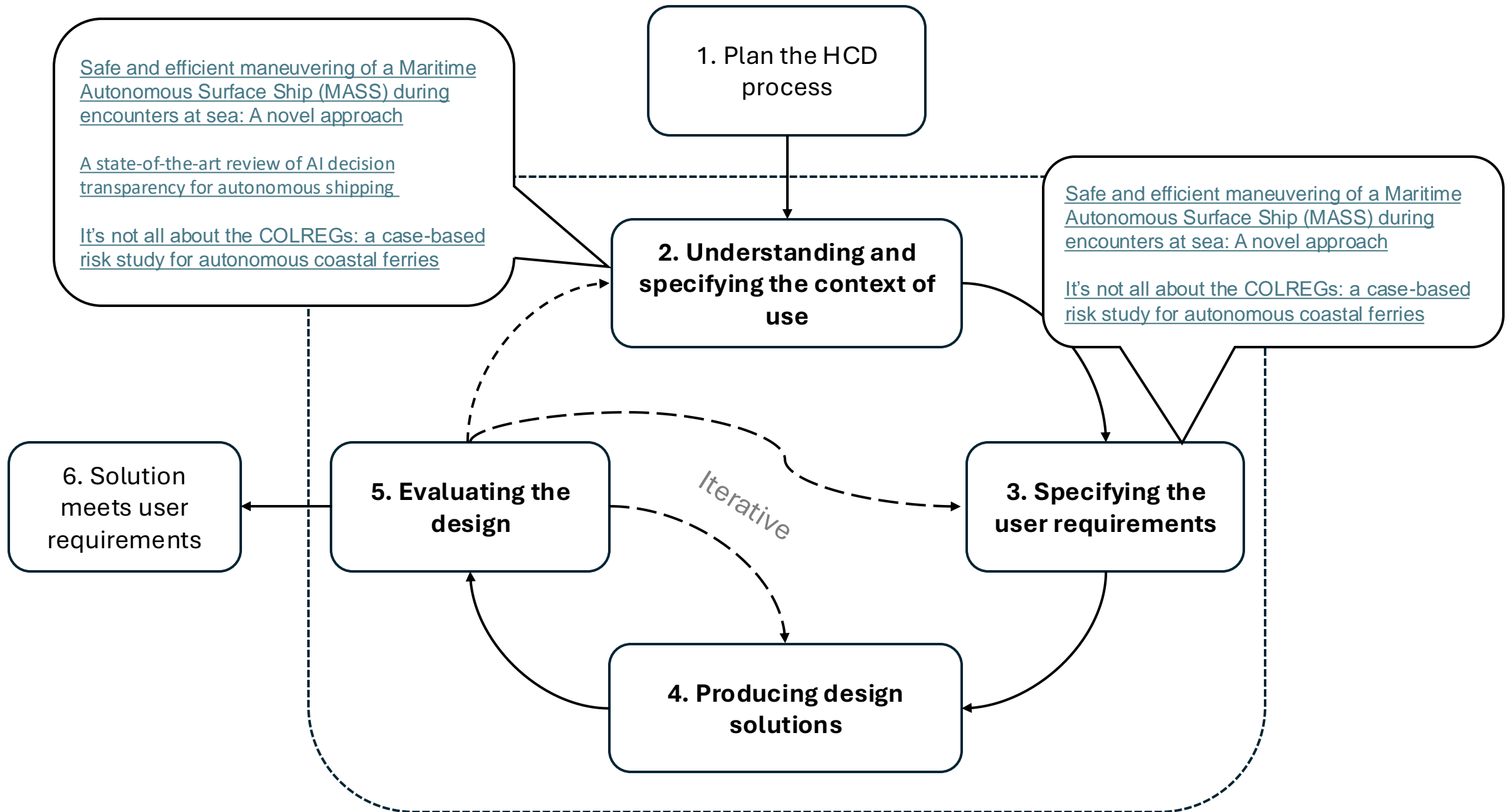
Ship Mill



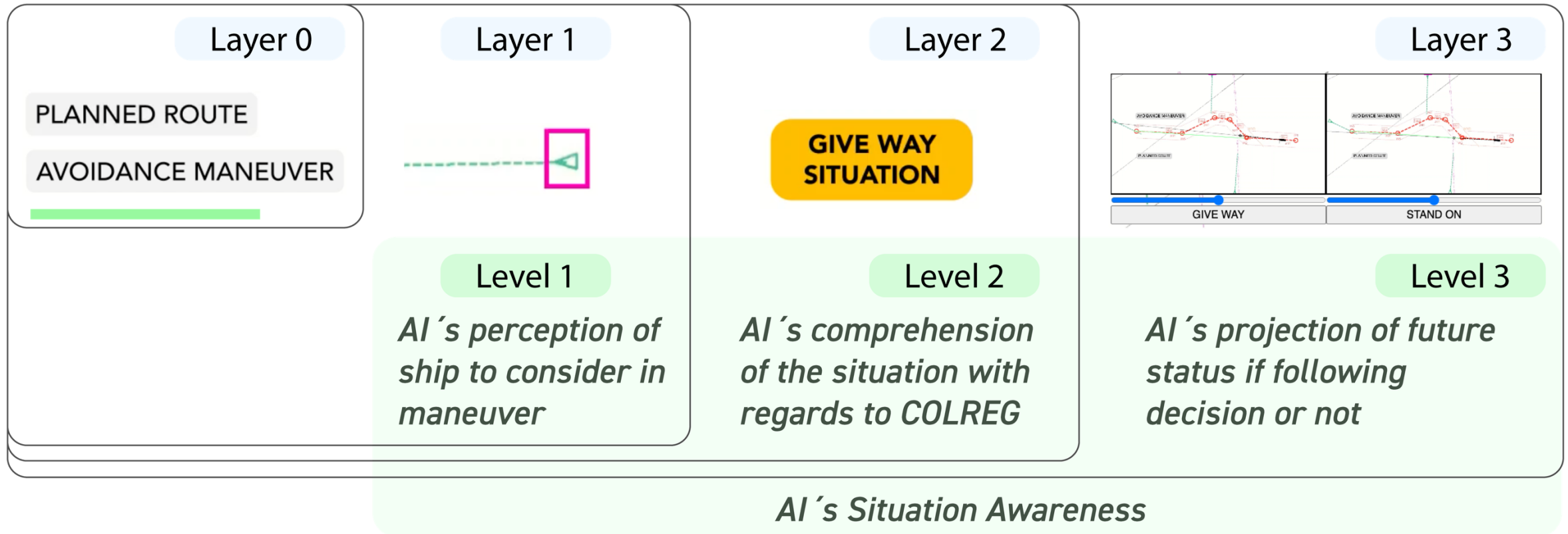
Ant mill gif from [Wikipedia](#)

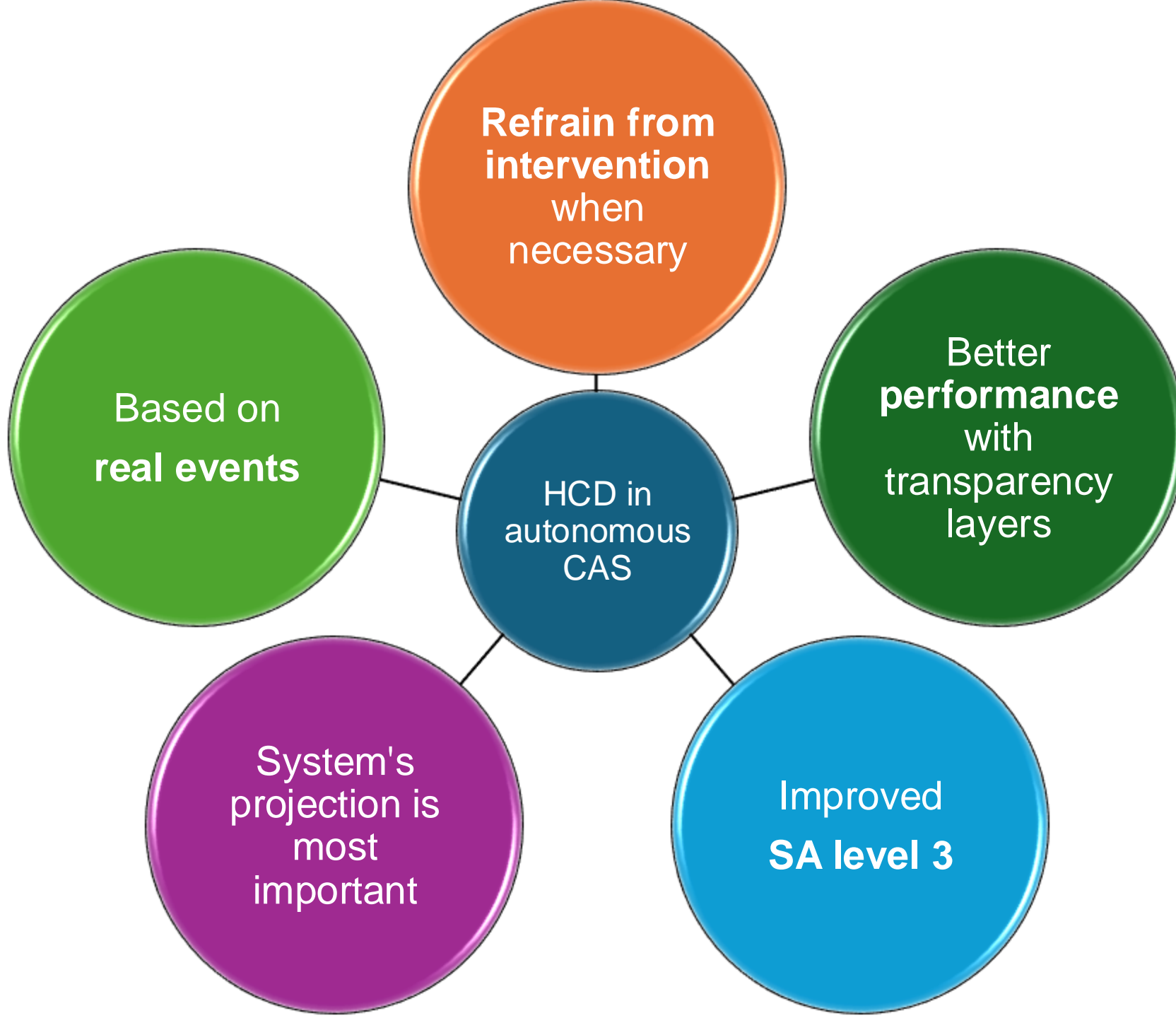






Example of transparency layers based on Endsley's three-level model for SA





Thank you for your attention

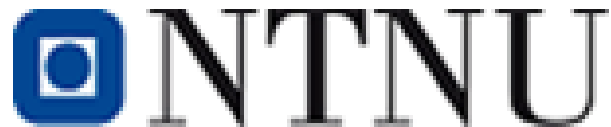
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