

## Navigational Situational Awareness at Sea

Being aware of our surroundings is essential to be safe at sea. Situational awareness is like being healthy. It requires a conscious effort to stay vigilant and proactive. Situational awareness involves being mindful of your surroundings and making informed decisions in various contexts. Yet, in spite of situational awareness being fundamental to run a safe ship, it's possible that seafarers are not fully aware of what it is or why it's so important.

So, let's talk about situational awareness. Situational awareness is your ability to identify, recognize, and process cues from your surroundings regarding the task you are engaged in. It is the awareness of the changing environment and events and the sense of what could happen next. Bear in mind that situational awareness applies to teams as well as individuals. Team situational awareness involves an individual's awareness of their surroundings, tasks, goals, and the activities of other team members.

At any 1 time, members of the team may either be in or out of the loop of information. A crew member's situational awareness is determined by their competencies, education, experience, biases, goals, their ongoing workload, emotions, and many other factors. There are three stages of situational awareness made up of 3 separate processes or levels of information. 1st, the perception of the elements in the environment. 2nd, understanding the current situation.

And 3rd, projecting or predicting the future of that situation. These stages are influenced by the situation's goals and objectives and the preconceptions and expectations around it. This will all feed into the seafarers decision, which is also influenced by the system's capabilities and design, their stress and workload, automation, information processing, and long term memory stores. Once a decision is made, the actions will be performed and that will initiate the whole cycle again. For example, when the ship is approaching a port, planning ahead on how the team intends to manoeuvre the ship is fundamental at each phase of the plan.

As a ship arrives near a port, the approach plan usually consists of phases. In the initial phase, the ship can utilize its engine and rudder for manoeuvring and compensate for the circumstances under its own power.

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During the intermediate phase, the ship reduces speed to enter a dock, basin, or approach berth adhering to restricted space or speed limitations. In the birthing phase, when all attention is focused on the moment of contact alongside the berth and the mooring operation, the team may not give equal attention. Now can you link that to situational awareness taking into account a large number of variables such as wind, current, draft, freeboard, shallow water effect, tugs in assistance, traffic inbound and outbound, and human elements such as fatigue, stress, etcetera, and then projecting the future of that situation.

As can be seen in this figure, environmental factors may play an immediate, intermediate, or long term role in the formation of an individual's situational awareness. And don't forget, technology is very important to accurately describe what is happening at these 3 levels. Now let's talk about factors that may negatively impact situational awareness at an individual and team level. Sometimes information is not shared, but also team members may use the same information differently depending on their goals, responsibilities, and roles. It's important to communicate clearly and even to think out loud.

Lack of proper procedures in particular puts the individual or team in a gray area where no 1 may be able to predict outcomes with any certainty. Routine might cause seafarers to not note gradual changes until there's a tipping point of sudden realization. Confirmation bias. It's the tendency of individuals to overestimate their own abilities, the accuracy of their information, or their control over situations. Failure to prioritize or plan ahead can result in disruptions.

Being constantly aware of the situation is crucial for efficient decision making. Task intensity might cause crucial elements to be overlooked because of tasks that are too challenging for the person to handle. A lack of experience may make it difficult to prioritize duties or recognize their significance in order to assess the evolving situation. Unergonomic equipment or equipment which conveys information in such a way that it is hard to understand or interpret might affect your situational awareness. Perception of time is another factor because time can feel faster or slower than reality.

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This is a big 1. Complacency. Assuming everything is under control. When things are repetitive and slow, you might no longer pay attention to routine or familiar tasks. For example, crew on a ferry calling at the same port several times a day may no longer check the voyage.

It's crucial not to make false assumptions and avoid confirmation bias. According to Ensley and Kiris, individuals who lost situational awareness performed worse when faced with automated system warnings and they lost time adapting to the situation. A decrease in situational awareness during critical ship operations may also cause decisions to be delayed, resulting in events such as entering the port area at high speed, being unable to make the necessary maneuvers, or becoming stranded. There you have it. Being able to maintain situational awareness and the ability to identify when it has been lost and counter it is a fundamental part of successful bridge resource management.

A heightened level of situational awareness allows for the anticipation and mitigation of potential risks. Effective communication, improved performance, and efficient problem solving are natural outcomes of situational awareness, all of which contribute to overall safety and productivity. Reduced stress, error prevention, and better adaptability are all advantages of promoting resilience in dynamic circumstances by ensuring that resources are directed where they are most needed. Situational awareness helps in better decision making by giving people a clear grasp of their environment, allowing them to make more informed and timely decisions.