

ALERT Joint Industry Project

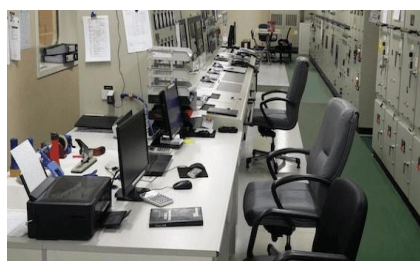
Safely leaving the navigation bridge unattended for periods of time

Can we improve overall safety, efficiency, and the work-life balance for the bridge watchkeeper by introducing periodically unattended navigation spaces¹?



Potential participants:

- National and international seagoing vessel companies
- Equipment manufacturers and developers
- National and international regulatory authorities
- Nautical educational institutes
- Other interested parties



Motivation and background

Fatigue due to irregular working and sleeping hours and monotonous (tiring) working conditions are negatively affecting watch standers in most navigation spaces across oceans and seas. Combined with often excessive working hours when the ship is in port or when the ship transits busy shipping areas, fatigue is frequently the cause of (near) accidents and incidents. Partly because of these working conditions, well-trained seafarers choose to leave their profession, and this again requires the continuous recruitment and training of new crew members to become part of the ship's operation. This situation causes an additional strain on the onboard operation and is a huge financial burden and an unfortunate waste of well-trained talent.

In an effort to address fatigue, the Horizon project (2012) and Martha Project² (2013-2016) focused on changing the watch schedules without reducing the total number of hours of watch standing. New watch schedules were implemented but did not significantly improve the conditions on board.

Radically new approach

The ALERT JIP takes a radically different approach, focusing on periodically unattended navigation spaces without jeopardizing the safe operation.

For several decades, machinery spaces have benefitted from automation systems and 'unattended machinery spaces' designation, to allow machinery spaces to be unattended mostly during the 'dark hours' of the day. Automation systems monitor the technical operation to alert the engineer on duty, when necessary, to any issues needing attention. The set-up of unattended machinery spaces allowed the engineers to dedicate their working hours to the necessary maintenance during the daylight hours and maintain a more favourable and healthier daylight/nighttime sleeping pattern.

¹ Referring to Unattended Machinery Spaces

² <https://www.solent.ac.uk/research/research-areas/human-function-and-health/martha>



Schedule

- The JIP will run for three years.
- The ALERT open meeting was held during the Vessel Operator Forum in November 2024.
- The kick-off meeting to finalize scope and task assignment is scheduled for November 2025.
- Please inform us of your interest

Participant contributions

This work will be conducted as a Joint Industry Project to ensure that we have sufficient experience, capabilities, and facilities available. Results and costs will be shared.

For more information contact MARIN:

Captain Arjen van der Loo

T +31 6 41 04 24 26

E A.v.d.Loo@marin.nl

Dr Ir. Fenneke Sterlini

T +31 6 18 727 102

E F.Sterlini@marin.nl

Ir. Willemijn Pauw

T +31 6 29 721 213

E W.Pauw@marin.nl

The ALERT concept

The ALERT JIP will use a similar principle to allow the navigation space to be unattended for periods of time while not jeopardizing safe operations. The concept:

- Defines automation: tasks to be automated to allow the system to be activated and create time for unattended navigation space
- Establishes alert triggers: specify when crew intervention becomes necessary, considering factors such as navigational challenges, equipment status, and environmental conditions
- Sketches the essential information display that enables watch standers to regain situational awareness to enable decision making. Considering also the time needed to regain cognition.

Scope of work

In the ALERT JIP we will work in close cooperation with volunteering seafarers on the following topics:

- Determine which tasks are carried out during navigation bridge watch standing at sea and establish priority indication for each identified task.
- Define, with input from the consulted crew members, what constitutes safe conditions/situations and establish safety level benchmarks for external conditions (weather, sea state, traffic density, proximity to navigational hazards and land) and vessel-specific factors (cargo configuration, maneuverability, vessel size, operating speed).
- Assess the impact of safe conditions on watch standing hour reduction across different operations. For example by utilizing route simulation methods to quantify operational impacts.
- Create an alerting scheme to notify the watch stander that the safe situation or conditions have changed from the pre-set levels using Human Machine Interface (HMI). Including determining how to build situational awareness.
- Analyze technological requirements and conduct gap analysis against commercially available solutions.
- Validate alert schemes and HMI systems using simulator facilities and collect feedback from designated crew members onboard operational vessels.
- Document the potential impact on (IMO) regulations and assess implications for safety, security, and environmental processes on board.

Deliverables

- Proof of concept of ALERT and how this improves overall safety, efficiency, and the work-life balance for the bridge watchkeeper.
- Description of the ALERT concept including specifications for deployment of the ALERT operational concept and requirements for development of the ALERT system including variables and thresholds.
- Established approval for a trial under umbrella of MASS regulation (MSC.1-Circ.1604 item 1.2.2) in such a way that participants can subsequently successfully apply for trial under the current legal framework.
- Draft-amendment to IMO regulations, specifically to STCW Regulation VIII/2, in order to extend the trial period to permanent, and to extend the conditions for safe unattended navigation spaces.