CAMPUS
LE HAVRE-NORMANDIE

THE ENSM MARINS RESEARCH CENTER INAUGURATED

On September 20, the MARINS research center was inaugurated in the presence of Hervé Morin

Published on 26 March 2024

The MARINS simulation platform is one of the essential tools of theENSM Research Center. Designed for research and development purposes in the areas of cybersecurity and situational awareness, it is dedicated to experiments and tests that could not be carried out on an educational platform.

How it works

SAILORS consists of a navigation simulator and two merchant ship bridges, allowing two independent ships to be simulated in a predefined environment with modifiable parameters, such as the weather or other ships.

From the instructor station, a set of malfunctions, cyberattacks and anomalies can be triggered to compromise the data provided by each subsystem.

Also, the MARINS architecture was designed to interact with real maritime interfaces, equipment and communication protocols. Real systems can be integrated and tested as in operational conditions. Integrated gateways are modular to integrate real equipment, manufactured by third parties involved in research experiments. We can then test

innovative technologies in operational conditions and evaluate their relevance and ergonomics.

Test human reaction

Cyber risk relates, of course, to systems and their integrity but also to the effects of an attack on the operation of an installation. The pilot and other crew members are confronted with altered or even distorted information. Human reaction is an essential component of countering attacks, while crew members may or may not have situational awareness.

On this point, MARINS is a completely original piece of equipment as a research tool which offers the possibility of confronting operators with a cyber-attack on a maritime system involving several vessels and of evaluating the effects in action. A set of malfunctions, cyberattacks and anomalies can be triggered from the instructor station to compromise the availability or integrity of the data provided by each subsystem. This could involve, for example, GPS jamming, AIS spoofing, network intrusion, alteration of driving information, etc.

MARINS integrates powerful experiment recording functionalities: scenario data, actions performed, ship responses in association with video from the bridge, physiological data of participants such as heart rate, pupil dilation, etc. The superposition of these traces offers a multidimensional vision of what happened, bringing humans closer to the situation they experienced and the actions they carried out. This enriched vision opens up vast perspectives for research and advances in the knowledge of human factors and the response to complex situations.