

MANTAWARE™ SPECTRUM MANAGER

Communicating in a Dynamic Electromagnetic Spectrum

Navies operate in a dynamic and rapidly evolving maritime environment, where advanced Electronic Warfare (EW) systems are increasingly employed by both state and non-state actors. To address these challenges, there is a need for communications systems to be able to utilize data from EW systems. This requires the integration of EW and communications systems to mitigate the effects of interference and maintain reliable communications in a contested electromagnetic environment.

BACKGROUND

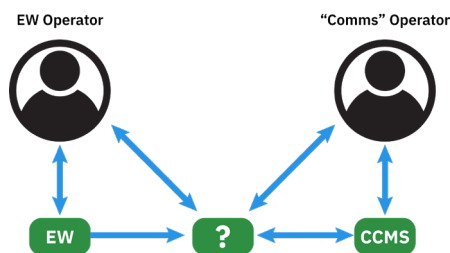
Currently, naval surface forces rely on their own sensors and embarked helicopters for EW and intelligence, surveillance and reconnaissance.

HIGH-LEVEL SOLUTION

Navies require solutions with tighter integration between communication systems and EW systems. A communication system with knowledge of the electromagnetic environment would then be able to correlate jammed or otherwise contended frequencies with communications circuits. The system could then respond (with varying levels of autonomy) to mitigate concerns and optimize communications reliability.

There are key functions required of this new component:

- > **EW integration:** receive raw and/or processed spectral information from one or more EW systems
- > **Communications Control and Management System (CCMS) integration:** integration between the



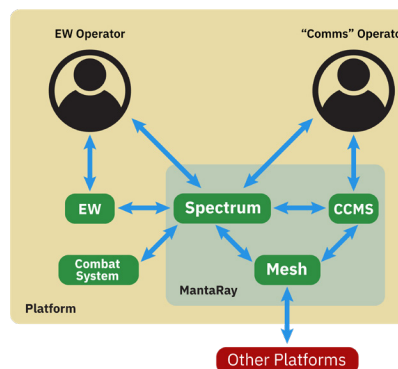
Proposed EW / "Comms" interaction

CCMS and the new component must be bi-directional

- > **Visualisation:** information from both the EW and CCMS should be visualized to provide awareness to operators
- > **Signal classification:** electromagnetic signals should be classified/tagged to aid in decision-making
- > **Circuit correlation:** the system should correlate signals and circuits between the EW system and CCMS to determine any impact on communications reliability
- > **Configurable automation:** the system should support enacting configuration changes to the CCMS

DETAILED SOLUTION - MANTAWARE

MantaWARE is an integrated communications suite, providing core CCMS functionality as well as related communications system integrations and enhancements.

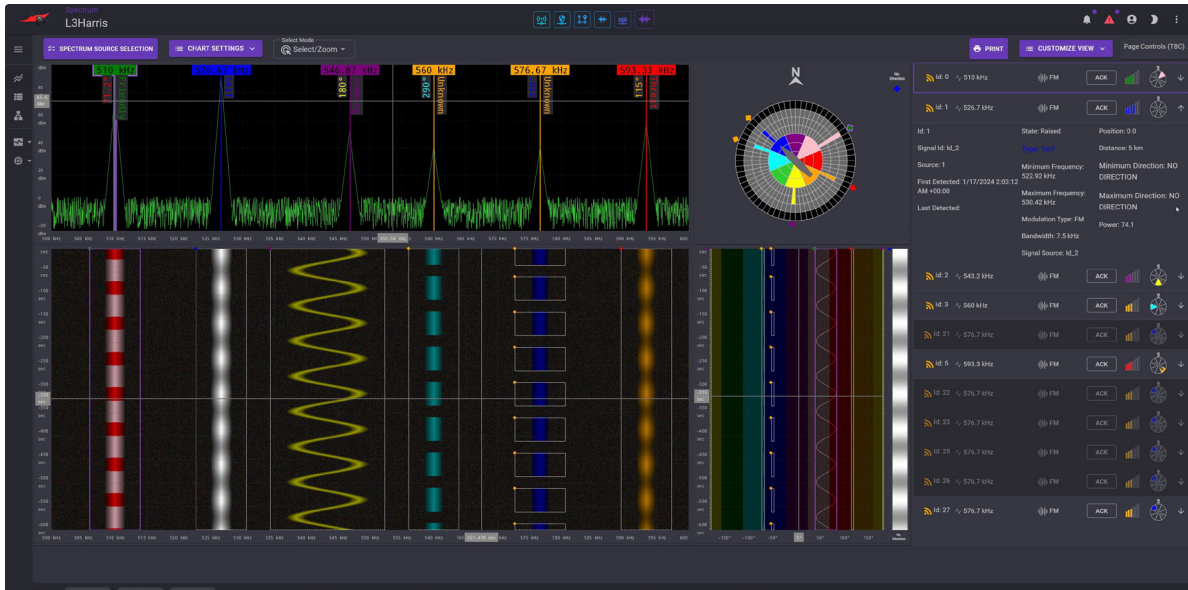


MantaWARE Spectrum diagram



THE MANTAWARE SOLUTION

- > **Spectrum Manager** of the L3Harris MantaWARE unified platform
- > **Pluggable**
External interfaces will be pluggable in nature, allowing integration with a range of EW systems
- > **Visualization**
Both EW and communication system data will be visualised in an integrated manner
- > **Correlation & control**
Classified/tagged signal data from EW systems will be automatically correlated with communications circuits
- > **Fleet coordination**
MantaWARE Spectrum and another MantaWARE component, "Mesh", combine to allow spectrum data to be shared between different platforms in the fleet
- > **Threat positioning**
Directional electromagnetic detections can be shared via MantaWARE Mesh, allowing automatic position fixing of electromagnetic threats using detections on different platforms
- > **System feedback**
Electromagnetic position fixes can be shared back to the EW system or to the combat system. This capability transforms multiple platforms into a spatially diverse system integrated electronic detection system



MantaWARE Spectrum Manager dashboard

MantaWARE is being developed by L3Harris in Australia and Canada.

MantaWARE Spectrum Manager (in consultation with MantaWARE CCMS) will meet the high-level solution needs and provide the following key features and benefits:

- > **Improved situational awareness:** a thorough understanding of the spectral environment would enable navies to more accurately monitor the electromagnetic spectrum and assess enemy EWS threats.
- > **Enhanced spectrum management:** knowledge of the spectral environment would also enable navies to more effectively manage its use of the electromagnetic spectrum.
- > **Improved signal quality:** by analyzing the spectral environment, naval forces could identify and mitigate sources of interference and reduce the impact of electronic warfare systems on its own communication systems. This would improve the overall signal quality, reduce the risk of communications errors, and increase the reliability and security of naval communications.
- > **Greater interoperability:** by sharing knowledge of the spectral environment with other assets or partners, navies could improve interoperability and facilitate more effective communication across the task group.

Knowledge of the electromagnetic spectrum is a crucial factor for the effective operation of naval communications systems in contested operational environments.

The MantaWARE software suite is built to meet next-generation communication system needs.

MantaWARE Spectrum Manager

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L3Harris MAPPS Inc.
8565 Côte-de-Liesse
Montréal, Québec, Canada
H4T 1G5
t +1 514 787 5000 | f +1 514 788 1530
mantaware@L3Harris.com