Maritime Domain Awareness Starts with Seeing What's on the Sea



An Elbit Systems Seagull unmanned surface vessel operates alongside the patrol coastal ship USS Monsoon (PC 4) in the Arabian Gulf, Nov. 29, during Digital Horizon 2022. The three-week unmanned and artificial intelligence integration event involves employing new platforms in the region for the first time. U.S. ARMY / Sgt. Brandon Murphy

MANAMA, Bahrain – The U.S. Fifth Fleet's Task Force 59 is conducting Digital Horizon, an unmanned systems demonstration featuring a flotilla of different unmanned surface vessels to help build maritime awareness.

Digital Horizon is one of the ways that Task Force 59 is moving ahead with its objective of establish an international fleet of 100 unmanned systems by next summer.

While several platforms are currently operationally deployed by TF 59, Digital Horizon brought 10 new systems to Bahrain to work together to use their sensors and unique capabilities to share data to TF 59's shore-based Robotics Operations Center (ROC) by means of a communication "mesh network." At the ROC, the information is processed and analyzed using artificial intelligence and machine learning to sift through the voluminous data and determine what is normal activity and what is extraordinary so the abnormal contacts can be further investigated.

The unmanned surface vehicles (USVs) taking part in Digital Horizon include Elbit Systems' Seagull; Exail DriX; L3Harris Arabian Fox and MAST-13; Marine Advanced Robotics WAM-V; MARTAC's MANTAS T-38 and Devil Ray T-12; Ocean Aero TRITON; Open Ocean Robotics Data Xplorer; Saildrone Explorer; Seasats X3; and SeaTrac SP-48. Unmanned aerial vehicles (UAVs) are also participating in Digital Horizon, including two vertical take-off and landing systems, Aerovel's Flexrotor and Shield AI's V-BAT, as well as Easy Aerial's tethered UAV, which is carried in a container on top of one of the USVs.

Silvus Technologies is providing the line-of-sight radio communications system and Accenture Federal Services and Big Bear AI are providing data integration and artificial intelligence systems for the exercise. An Ocius USV is also operating off Western Australia and linking into the network.

Each of the different participating platforms offer unique specialized capabilities and attributes. All carried basic sensors such as cameras and AIS transponders. Some had more sophisticated sensor payloads like radar and meteorological. Some are relatively large and fast, while others are small but able to remain at sea for extended periods. Some could deploy small USVs or small aerial surveillance drones, and one could submerge and operate underwater. The USVs had various means of power and propulsion, including diesel engines, solar panels and sails.

The companies that have brought their systems to the exercise responded to a call for industry partners to share their technology and help TF 59 learn how to build effective networks and evaluate commercially available systems capable of performing well in the harsh at-sea environment in the Fifth Fleet area of operations. A selection committee of experts from different disciplines measured the dozens of candidate systems and technologies against a set of criteria to pick the companies to come and take part in Digital Horizon.

For Digital Horizon, Capt. Michael Brasseur, commander of Task Force 59, said TF 59 and the industry partners are taking a methodical approach. “For the purposes of our exercise, we are at the early stages, getting our communications and network established. Then we’ll start daytime operations, and then we’ll go 24/7. What we’re trying to do is not easy to accomplish with these different platforms and technologies, particularly here in the challenging operating environment of the Arabian Gulf.”

While reporters were able to see USVs on the pier, being placed in the water, and operating at sea, Brasseur said the exercise will later employ the UAVs, with the information from each of the platforms “all integrated on a single pane of glass” at the ROC.

“We’ll be running a series of vignettes that emulate real-world operations around this region to test how these systems perform and how the data is integrated,” Brasseur said. “We’ve been working through our communications and making sure we were able to receive and present live video and radar feeds, and making sure that data flow could be integrated into the system where we can leverage the machine learning and AI moving forward with the exercise. The scenarios and the challenges will become more complex as the exercise progresses. We’ll have a better understanding of the limitations of the sensors and the communications, as well as

the power of the machine learning and AI to make sense of all the data.”

TF 59 is already deploying USVs from operational hubs in Bahrain and Aqaba, Jordan, with the objective of having 100 operational platforms by summer 2023. According to Brasseur, meeting that goal will be achieved by including partner nations in the region with a shared interest in creating the most complete understanding of the maritime environment. Digital Horizon will inform how best to employ the available technology to achieve that goal.

“The pace of innovation is amazing,” said Brasseur. “We are challenging our industry partners in one of the most difficult operational environments, and they are responding with enhanced capability, fast.”