FISHING FOR SUSPICIOUS VESSELS

Windward Maritime Solutions of Israel has developed the world's first system that provides a constant global maritime situation picture. The system, Marint, can locate vessels suspected of smuggling arms, being involved in terrorist activity or illegal fishing and other economic infractions on the high seas. "Pursuant to the discovery of energy fields at sea, the maritime theater has become stormy," says Ami Daniel, company CEO

By Amir Rapaport **Photography: Meir Azulay**

Ami Daniel and Matan Peled

The blip blinking on the huge plasma screen at the offices of Windward Maritime Solutions in Tel-Aviv indicated a suspicious vessel, which had stopped emitting signals and subsequently renewed its transmissions at a distance of a few dozen miles from its last known location.

What did this vessel have to hide during the time it was invisible? Was it involved in arms smuggling or has it experienced just a trivial malfunction?

Every day, the system developed by Windward indicates dozens of 'suspicious' vessels such as the one described above. A single mouse click on the icon of any vessel on the screen can display the complete history of the vessel, and can often provide the explanation for its irregular sailing characteristics. In some cases, a more thorough investigation will be required in order to identify the vessels that take advantage of the endless expanses of the sea to partake in terrorist activity or in prohibited commercial activity, such as the smuggling of goods or illegal fishing in the economic waters of a country that forbids this activity.

Stormy Seas

Windward Maritime Solutions, which monitors each and every vessel on the high seas, was established in Israel about three years ago. Its goal was to provide a continuous global maritime situation picture, based on the fusing of data supplied by satellites (images and communication signals), by coastal radars and from the transmissions/emissions of the vessels themselves. The timing was no coincidence: on the one hand, the major technological developments and cost decreases of recent years made it possible to obtain satellite images of the situation on the high seas at any given moment and at a reasonable cost. On the other hand – the sea has become the arena for global conflicts. The discovery of offshore energy fields launched a series of struggles for control over the boundaries of economic waters and territorial waters around the globe. This was not the only reason why countries and military organizations, as well as various UN organizations, have been showing a growing interest in processes taking place hundreds and thousands of kilometers offshore – an area that up to this point had been almost free for all.

In fact, Windward Maritime Solutions is currently the only organization that monitors whatever goes on at sea on a global scale. The information received from the various sensors is processed by software elements capable of identifying any vessel that has deviated from the shipping routes that match its declared cargo, or has advanced contrary to the pattern that is typical of vessels of the category to which it belongs. Another example of a blinking blip on the display screen: a vessel that has inexplicably changed its flag and call sign, thereby practically changing its identity, probably in order to deceive or mislead the authorities at its next port of call, in Western Africa.

"Much has transpired around the world in recent years in the context of maritime conflicts," says Ami Daniel, CEO of Windward (Daniel is a former Israeli Navy officer, as is Matan Peleg, Daniel's co-founder). "13% of the world's undiscovered oil, as well as 30% of the gas, are in the arctic areas. Numerous disputes are currently underway as to who holds the rights for these fields.

"Many drilling operations are taking place in the China Sea, and naturally, they are also the subject of disputes. Over there, Vietnam claims that China is stealing their islands and drilling rights. There are also disputes between China and Japan, and, of course, there is the dispute between Israel and Lebanon over the boundaries of the economic waters in the area where massive gas deposits were discovered off the Israeli shore. Massive energy fields were discovered off the US shore as well, and they must be protected as well.

"The United Nations Convention on the Law of the Sea (UNCLOS) is an international treaty signed some thirty years ago by most of the world's nations. The Convention is intended to regulate the issue of economic waters and the economic rights to the sea.

"The major change of recent years is that now it is possible to drill far away offshore. Shore-based radars and surveillance systems can only see as far as the horizon – roughly 30-50 kilometers, depending how high you are. When the drilling rigs were close to shore, it was excellent, because you could see everything. However, 'Tamar' and 'Leviathan', the new Israeli gas fields, for example, are located 60 miles offshore, which is beyond the detection range of coastal surveillance. Suddenly, your economic interests are located far offshore. Twenty years ago, it wasn't so bad if you could not see into the sea, as the worst case scenario would have been smuggling activity. Today, when the drilling fields and fisheries are far offshore, you must know what's happening there all the time.

"Take the issue of illegal fishing, for example. The damage it causes annually around the world is estimated at $50 billion, according to data provided by the World Bank. There is a definite economic interest in monitoring the giant ships engaged in illegal fishing, which depletes the fisheries of certain countries.

"As far as the defense issue is concerned, the last 20 years were 'land' decades. The wars in Iraq and Afghanistan were land wars. The Israeli-Egyptian border, the US-Mexico border - they involve a tremendous land effort. Countries invested huge amounts of money in perfecting their land borders, but there is no vacuum – you block one side and the opponent immediately finds a loophole on the other side. The law of connected vessels is relevant in this context, too, and the sea is becoming an increasingly more substantial defense challenge."

Information Explosion

Using satellites to monitor the situation on the high seas is radically different from the use of payloads installed on board manned or unmanned aircraft to monitor the situation in ports or in coastal areas.

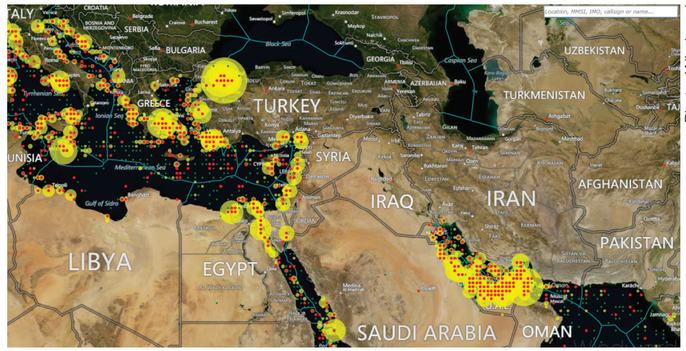

Photo: Windward

"In the past, satellites were secret military assets. Today they are much more commercial," says Ami Daniel. "Satellites are technologically complex – sometimes they see something for a second, and then only another satellite would capture the same area – only half an hour later. You have to monitor thousands of vessels on a regular basis in order to find just a few suspicious ones.

"When you monitor a two thousand square mile area cell, for example, you have an information explosion. Another problem is your ability to use the information to understand what's going on. In each place at sea, fishing is different and the vessels are different - everything is different.

When you monitor one place, you have to judge it as if you are looking at it from up close, rather than from a distance. You need a technology capable of performing a contextual analysis – where everything is normal relative to what you see there. Marint, our system, enables you to monitor the entire world – all the time. It is connected to satellites that monitor the entire world. In principle, everything at sea can be seen. In practice, the vessels that transmit their locations are those that weigh more than 300 tons. We can pick up and locate anyone who transmits all the time – I am referring to mandatory safety transmissions, and the transmissions are picked up by the satellite as well. This helps you define the normal patterns, and in a few years from now they will also pick up all vessels over 100 tons, which would be obliged to transmit the safety transmissions.

"Those transmissions are like the passport of each vessel, but their codes can be altered very easily. It is very convenient, but sometimes it can serve many hostile elements. Since the Americans call anyone who does not transmit over the radio – then everyone transmits. When you do not transmit – you become a suspect. Everyone must transmit to look 'normal'. The issue of illegal fishing produced a wave of fake transmissions. The interest in disappearing or reporting something false accelerated the technological development and availability of 'stolen identity cards' for the high seas. It takes all kinds of shapes – such as altering the transmission code. In fact, you can transmit something but it would be difficult to verify your identity, so we monitor the entire world and build a pattern."

Are you saying that there is no such thing as a single global authority that monitors the situation in all of the world's oceans?

"No such global authority exists. There are two or three satellite owners who sell data for certain regions. They are among our suppliers. We operate in a world of big data. We intend to use numerous servers and process a massive amount of data."

So you do not have independent information sources but you have algorithms?

"Yes. We take numerous databases scattered around the country and use the data for our validation. You claim to be A – and we confirm it. We confirm the identity of the vessel. A lot of information is involved. The ability to say whether or not it is really you is no trivial matter. The big data comes from the place where I cross-check the entire history and begin to ascertain the identity.

"We have people in our employ who specialize in the web and OSINT (Open Source Intelligence). For example, take all of the listening and communication channels and seek information from open sources. If a vessel had been stopped in the past, for example, these guys can take the information from its past, initiate a trace and look for similar patterns by the company that owns the vessel or by other similar companies. Take the Iranian vessels, for example. The US complained about Tanzania, which allowed Iran to use its flag in order to overcome the sanctions. Our people try to look for the next nationality under which Iran would register its vessels, after Tanzania was not allowed to prolong their association with Iran. We are talking about investigations into organizations, corporations and social networks, and we seek information about the vessels themselves.

"Our system has the ability to look for patterns. One of the most powerful features of the system is its ability to draw a graphic description of gas drilling areas. Many corporations are reluctant to state where exactly they operate, for business reasons. Countries around the world show a great deal of interest in their neighbors – where are the drilling areas? Where are the drilling operations of the competition? The system can find this information according to the vessels arriving in the area. The system can float up the areas about which you want information."

Global Clients

In 2012, Windward Maritime Solutions advanced from the start-up phase to being a viable business entity with regular clients, including defense organizations, international organizations and business clients interested in obtaining a continuous maritime status picture. The company expects to bid for a tender by the US federal coastal protection agency very soon.

"Our information is of interest to anyone who cares about the sanctions imposed on a certain country, for example. It is of interest to anyone monitoring the global traffic of oil. It is of interest to those who want to know about smuggling and about things that happen right under their noses, like police departments, coast guard services, etc. Our information can also be of interest to environmental protection organizations. For example, a few months ago we spotted a drill rig off the shore of Nigeria. We dispatched radar satellites to the area and discovered an oil spill around the rig – 1.7 million gallons of spilled oil. The oil company 'Shell' said they had a minor leak and claimed that the rest of the spill came from somewhere else. This oil drifted to shore and encircled a fishermen's village. In the following stage, we could see that the spill had come not only from the rig but also from the vessel next to it. It was offloading oil at sea, so as not to pay customs charges for it when it came to shore.

"In principle, we are service providers," says Daniel. "The clients get access to information we had processed especially for them. We sell access to an analytical system."