SHARKNET and Aeris Provide Emergency Connectivity Solutions

CASE STUDY

"We need to work with a service provider that can provide reliable connectivity over multiple locations, as diving takes place worldwide and people often travel long distances when taking part in a dive. For this reason, we are delighted to be working with Aeris, which is renowned for offering reliable global IoT connectivity."

Maurizio Banfi,
CEO, SHARKNET

In the U.S. alone, diving is a multi-million-dollar business. Worldwide, there are more than 1.2 million registered divers. And since our planet surface is 71% water, it seems obvious that this sector only will grow as technology expands the diving experience.

But as with many sporting activities, diving has some risks involved. Statistically, diving still is safer than driving, or skydiving, or even running a marathon. But anytime you need to rely on equipment for breathing, then risk becomes a factor. The industry's goal is to minimize diver accidents and injuries for those enjoying the beauty of being underwater. Additionally, once safety has been addressed, many divers want some history of their dives, their locations, depth achieved, time underwater, and a slew of additional insights.

Most times, divers carry an abundance of tools they may need if trouble arises, including various detection aids that may help surface personnel spot a diver. In addition to the surface marker buoy, divers may carry mirrors, lights, strobes, whistles, or flares. But sometimes, even that is not enough, especially if not near the surface.

Going forward, questions for the diving industry circle around safety (emergency contact, location finders, etc.), acquisition of diving histories, and the ability to acquire, transmit, and store diving-specific data.

Cost as a Concern

When in open water scenarios, the ability to collect and use data is hindered by the high cost of connectivity. Satellite transmission has some obvious advantages for global coverage, even in the middle of the ocean. But the disadvantage is the high costs of both the satellite module and the subscription to data connectivity services. The cost structure of a satellite-based solution would have made SHARKNET a tool suitable only for professional use, pricing itself out of the massive non-pro market. Another option was required.

Connectivity is Key

Obtaining, sending, and storing dive-associated data is a non-trivial event when out at sea or beneath the water. Issues arise in spite of the fact that the service contracts of major cellular providers can extend up to 14 nautical miles from the coast. This coverage would be more than enough for the needs of most free divers, scuba divers, and other open water sports enthusiasts. But actual coverage (both at sea and ashore) is not always reliable and varies from operator to operator. This level of inconsistency could prove fatal to those counting on constant contact with support personnel.

What SHARKNET, and the industry as a whole, was trying to accomplish included heightened safety measures, as well as a comprehensive dive log, powered by reliable, always-on connectivity, regardless of location, carrier, or technology.

Case in Point: SHARKNET

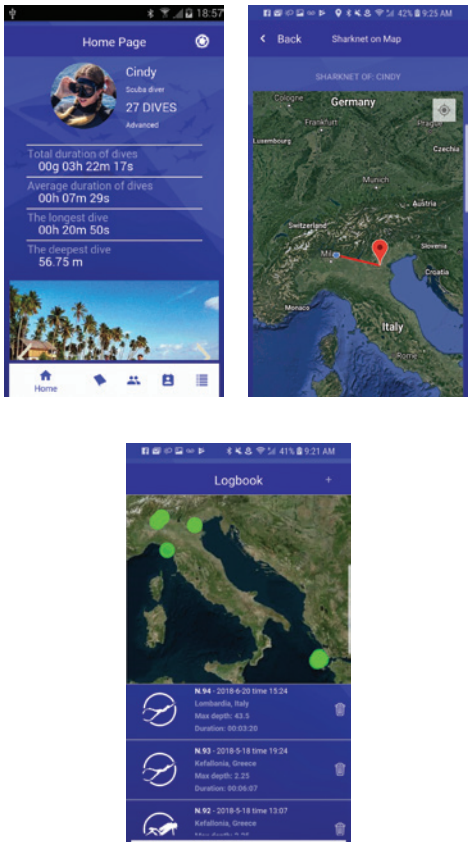
SHARKNET provides a sturdy emergency communication tool for underwater environments. The basic components of SHARKNET include a GPS receiver, a depth and temperature sensor, an accelerometer, a cell phone module, a processor, a light-emitting diode (LED), and a Bluetooth module. At the onset of a dive, a GPS receiver monitors the geographical position and the imbedded phone module answers incoming text messages from diver-designated assist personnel.

Once the dive is underway, both GPS and cell phone signals are lost. The processor then turns off the phone and stores in memory the last GPS position as the starting point of the dive. After that, the processor stores the diver's depth, temperature, location, and attitude (standing/horizontal/upside down) as measured by the accelerometer every few seconds.

The device, which can withstand depths of 500 meters, comes with an emergency alert feature that can send a person's position automatically to chosen contacts or emergency services. If the person gets into trouble underwater, they can tap the device and send it to the surface with the assistance of a buoyancy aid. The accelerometer recognizes the double tap and notifies the processor. This makes the LED quickly flash and, if at the surface, the phone module transmits an alarm message to to all chosen addresses through text, phone or email.

Upon resurfacing, SHARKNET reacquires a final diving location GPS fix, stores it, and then transmits all data to the SHARKNET server via its phone module. When the server receives a data file, it associates it to the user owning the device that transmitted the data, providing each user with their own historic logbook, including an account of all dives and personal statistics displayed on a map.

The lynchpin to the entire SHARKNET system is reliable, always-on connectivity. Finding a technology partner with a cost-efficient, carrier- and technology-agnostic connectivity solution was integral to success.



Dive data is accessible to users, and can be shared to provide useful information to the dive community

Benefits of a Solution

SHARKNET chose to work with Aeris for its IoT connectivity needs after an extensive testing period where they compared the performance of the Aeris Connectivity Platform (ACP) with those of major operators in Europe.

SHARKNET selected Aeris in order to increase world-wide phone coverage and improve reliability. For all its devices, the company selected a global connection plan dedicated to the communications among machines, that was agnostic with respect to the connection provider, and allowed devices to always lock onto the connection that works best, regardless of who the provider might be. In other words, it does not matter if the SIM is provided by one provider and the area is covered by separate provider — the device always will connect to the network that works the best.

The ACP provided heightened coverage and greater reliability, the two key requirements for the SHARKNET solution. Furthermore, it is expected that many of SHARKNET's devices will only be in use, on average, for six months of the year so the company required a partner that would not charge fees when the devices were not in use. The company acquired the flexible pay-for-only-what-you-use pricing plan that it needed.

This solution guarantees the highest service availability and, at the same time, keeps the cost of the device and the monthly fee at reasonable rates.

ABOUT SHARKNET:

SHARKNET is a start-up of PoliHub, the accelerator of the renowned Polytechnic University of Milan. After 20+ years of work in marine technologies, SHARKNET founders decided to turn to recreational and professional diving. The aim is to make diving safer and, at the same time, to provide the diving community with the activity tracking and social sharing features that are so common in most land sports. The actual scuba or free diving experience is as it always has been: the device is just to be worn. Upon surfacing, all dive details will appear in the users' smart phones and, only when needed, a double tap to the device will call for help.

Visit **www.sharknet.com** or follow them on Facebook **@DiversNetworking** to see their progress and get in touch with them.

Contact them
at **info@sharknet.tech**

ABOUT AERIS:

Aeris is a technology partner with a proven history of helping companies unlock value through IoT. For more than a decade, we've powered critical projects for some of the most demanding customers of IoT services today. We strive to fundamentally improve their businesses by dramatically reducing costs, accelerating time-to-market, and enabling new revenue streams. Built from the ground up for IoT and road tested at scale, Aeris IoT Services are based on the broadest technology stack in the industry, spanning connectivity up to vertical solutions. As veterans of the industry, we know that implementing an IoT solution can be complex, and we pride ourselves on making it simpler.

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