

# Case Study

## Shark detection sonar solution for Shark Mitigation Systems

**Products:** Gemini sonar  
SharkTec software

**Client:** Shark Mitigation Systems

**Location:** Western Australia

### Background

The controversial topic of shark management has thus far been addressed with strategies such as drumlines, shark nets and tagging systems around the world. Considering the level of controversy surrounding the use of potentially harmful management strategies, Shark Mitigation Systems (SMS) recognised the opportunity to develop 'Clever Buoy', a non-invasive shark detection solution.

Clever Buoy is a near shore shark detection system designed to detect objects in the water column, using state of the art sonar and identification software systems, designed by Trittech, to relay critical information to authorities responsible for beach safety.

The collaboration between Trittech and SMS began in 2014, and has continued to date.

### Project

Using Trittech multibeam sonars, SMS collected data on sharks and other marine organisms from the Abrolhos Islands, off the coast of Western Australia. Trittech used this data to refine the original SeaTec algorithms and adapt them to be more related to sharks, creating SharkTec. Further tests were carried out in Australia at Bondi Beach and the Sydney Aquarium to identify patterns in the sonar data which Trittech then implemented into the SharkTec algorithms.

It was essential that the software was able to both detect and track sharks and provide an early warning to the relevant authorities on the beach.

The Clever Buoy uses Trittech Gemini 720is multibeam sonars, which combine the benefits of high-definition image, medium-range target detection, and a fast update rate; making it ideal for marine life detection. In



conjunction with the SharkTec software, the Clever Buoy creates an alarm that is passed through a cellular network to an application on lifeguards' phones or tablet devices.

The system has been designed to also detect tagged sharks, not only shark that swims within the sonar's range.

### Solution

This breakthrough near-shore detection and warning system was deployed in January 2017 at City Beach, Perth, Australia. The two solar powered Clever Buoy systems active on the beach used a total of six Gemini 720is sonars to create a 'virtual shark net' around the shore of the popular swimming beach.

SMS and Trittech continue to develop the software with periodic assessments of results and data, which allow the system to be continuously improving.

