



URBAN PLUNGE

Sydney
WATER



Subnero | Subnero Water Assessment Network (SWAN)

Country of Origin: Singapore

Technology Readiness Level: 7



SUBNERO

Description: The [Subnero Water Assessment Network](#) (SWAN) is a cloud-based network of autonomous robots (SwanBots) that monitors the water quality of water bodies while enabling real-time and remote data visualisation on a web browser. The SWAN builds robust communication links amongst multiple SwanBots, third-party data-collecting devices, and external data analytics systems, thereby forming an ecosystem of networks to provide holistic information about the water body through a centralised platform. In addition, it is integrated with robotic intelligence which helps detect hotspots or problematic areas in the water. SWAN addresses the challenges associated with manual water data collection, the traditional approach used in water quality monitoring, which is slow in data acquisition and response time in dealing with issues.



Applicability to Urban Swim Sites: SWAN detects pollutants while navigating the water and notifies the authorities in real-time, who can quickly act on this information to protect the public and ensure their safety at Urban Swim Sites. Whenever the parametric threshold level is exceeded due to a problem in the water, the council will be notified of the issue and location via an alarm on the user interface. This early warning enables the decision-makers to close parts of the site and treat the polluted water before they evolve into major problems. SWAN may also be used as a surveillance platform as the camera in the SwanBot's neck snaps photos of its surroundings periodically.

Technical Risk and Case studies: In 2018, SWAN was used by PUB, Singapore's National Agency, to monitor the water quality in 5 reservoirs in Singapore. The SWAN reduces the reliance on manpower, while collecting spatio-temporal data at improved resolution. Several news articles have been published on the SWAN (an example [here](#)). As the SWAN has only been deployed in Singapore for now, the hurdle would be setting up SWAN in new areas with various network protocols, but this can be overcome with the heterogeneous and modular properties of the SwanCloud which enables it to work with different networking technologies.

Cost & Business Case: The SWAN solution can be offered as a purchase or rental option on a yearly basis. When deployed in Singapore, the monitoring cost can be as low as S\$0.10 (A\$0.11) per sample, as compared to the manual monitoring method which may cost around S\$300 (A\$327) per sample. Therefore, the SWAN enables high-cost savings in monitoring, while providing dense datasets and keeping the authorities informed on the waterway's health.

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<https://subnero.com/products/swan.html>