

This case study briefly describes how Scan-360 has been used to track the movement of riverboats along a busy stretch of the River Thames in central London to investigate operation over water.



### Background

Scan-360 was designed for surveillance over solid ground, not marine environments. However, customer interest and our own curiosity led us to perform some basic testing to determine if the equipment had any major issues when operated over water.

The detection algorithms were not adapted as we decided that for most cases the routines that attempt to compensate for moving foliage would be acceptable for mitigating surface water ripple.

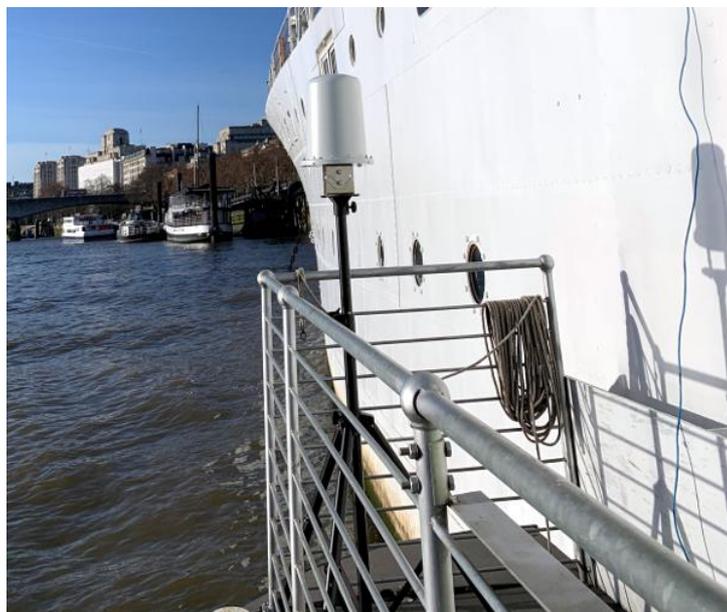
We were kindly allowed to deploy Scan-360 on to HMS Wellington, the headquarters of the Honourable Company of Master Mariners.

The ship, formerly HMS Wellington is now a floating museum, library and conference venue. She has been moored in the heart of London since 1948. Her position on the River Thames is ideal to test the performance of Scan-360 over water.

From the port side a clear view of the Thames is available in all directions. The river was wide enough at this point to give a full 200m radius detection zone across the entire 180 degrees that was visible from the side of the ship.

Scan-360 was mounted on the lower mooring platform. The relatively low height above the water minimises the amount of clutter caused by waves. This is due to the glancing angle being shallower than if the radar was mounted on the upper decks.

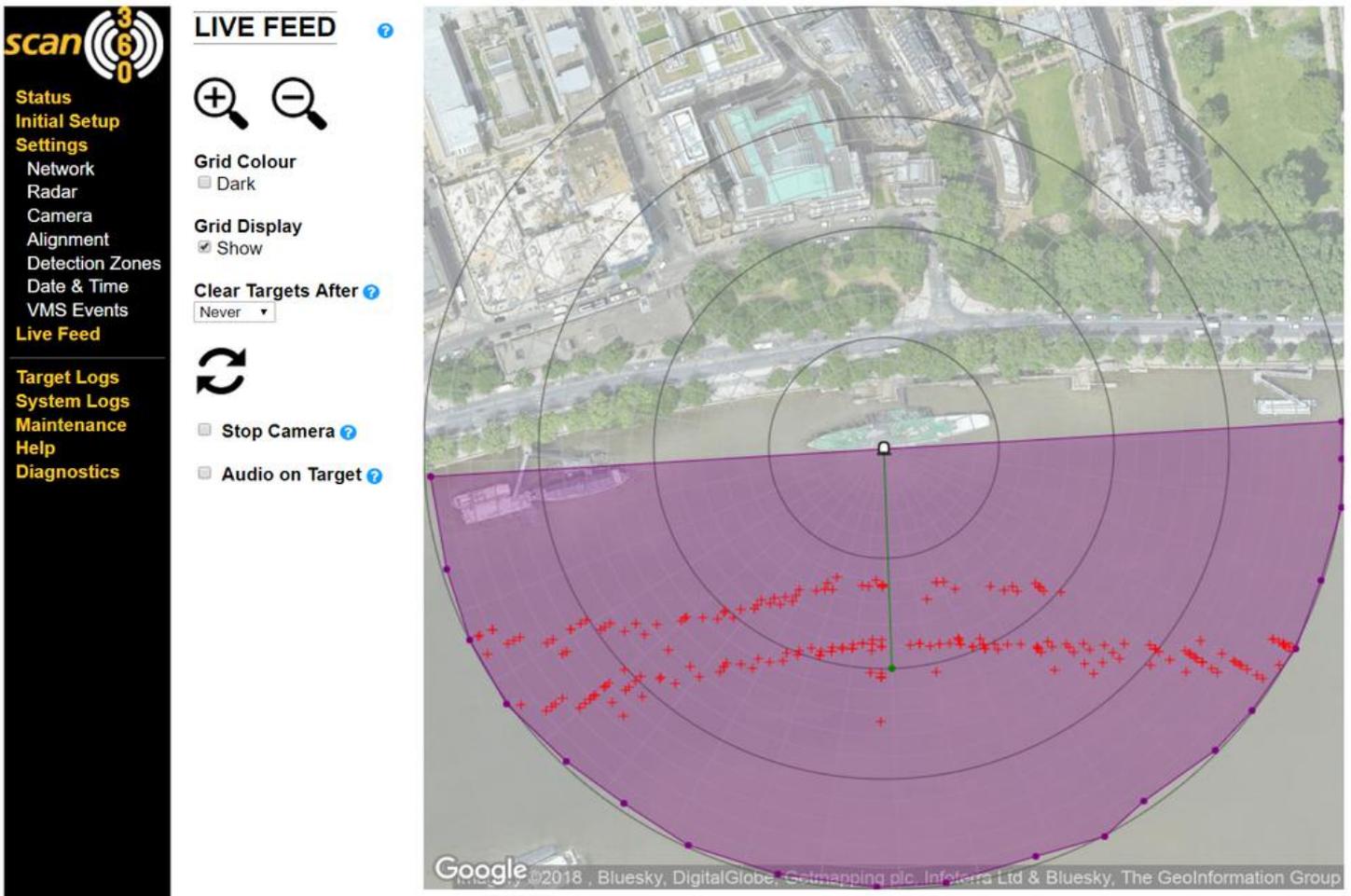
The camera was located on the higher main deck.



## Radar Performance

The task was to detect and track vessels as they approached the vicinity of HQS Wellington.

Shown below, Scan-360's "Live Feed" display clearly shows the route taken by boats moving up and down the Thames. The two rows of red dots indicate the detected positions of both vessels as they traverse the 400m wide detection area. The lower trace shows the detections of a vessel that moved right to left (upriver). The upper trace shows the detections of a vessel that has just passed HQS Wellington, going left to right (downriver). During a full day of testing many such data points were seen that correlated to the location of boats.



Scan-360 accurately determines the precise position of the target even in the presence of small waves, choppy waters and wake from other vessels. The ability of the radar to detect very small boats or swimmers was not tested. We do not expect Scan-360 to be able to detect swimming targets, as they are simply too small compared to the surrounding clutter level from the moving water. From the testing it was clear that once configured correctly, Scan-360 was generally able to detect small and large motorboats on this busy stretch of river.

Where Scan-360 needs to monitor a mix of solid ground and water, the detection zones can be configured with different sensitivities, so any waves or surface movement of the water will not cause excessive false alarms, while at the same time, sensitivity can be higher for areas of solid terrain to maintain the high detection probability.

Footage recorded during the River Thames trial is available on our website.



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