# 17: IMPROVING SAFETY IN HAMBURG HARBOUR

Ships currently enter harbours relying on just radar images and verbal information from the team on the adjacent tug boats. Recently a harbour in Hamburg, Germany tested a new system called MARLET (the Maritime LOPOS EGNOS Test Bed) developed by Lopos Technologies GmbH, who initiated the project with sponsorship from the European Space Agency (ESA).

MARLET's aim was to demonstrate the value of EGNOS-based position accuracy and integrity for port manoeuvres and, more generally, for maritime Automatic Information System (AIS) applications.

AIS is an independent, self-organising system that supports surveillance activities in the maritime environment, broadcasting a vessel identifier, direction, speed and other information to all other ships and coastal stations within reach of a maritime VHF communications link. However, there are potential vulnerabilities arising from a lack of standardisation of the GNSS receiver used in AIS.

The MARLET trials were performed in the port of Hamburg in December. This was a tough environment for EGNOS with stacked containers, cranes, docks and other ships. A number of test runs were performed on board tugs, but perhaps the most demanding trial on 2 December involved the tug 'Bugsier' towing a passenger ship, the 'Maxim
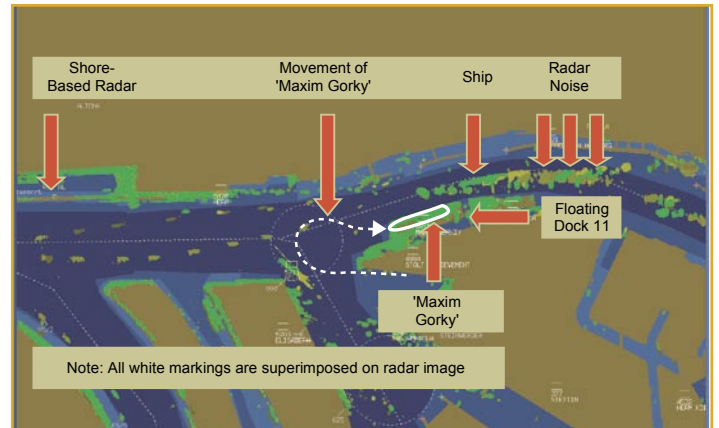
MARLET Trials in Hamburg Harbour

Gorky', from its berth to a floating dock. This included tug-assisted turning and docking. A position accuracy of 1.4m (99.7%) was obtained.

This MARLET demonstration showcased the potential of EGNOS and Galileo to support vessel operations in the port of Hamburg and on the river Elbe. MARLET greatly improves the quality of the AIS standard. This will ultimately support a Vessel Traffic Management and Information System (VTMIS) in which radar and electronic chart images can be combined, for the benefit of safer manoeuvres in confined waters.