

# Maritime communications: Broadband project goes international

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## Dutch project Discovers the advantages of communications in the internet age

The first phase of a Dutch project to improve understanding of broadband's advantages for shipping industry is approaching completion. The main aim of Broadband@Sea is to examine the technical and economic feasibility of maritime satellite broadband connections.

Dating back to 2006 and formally initiated the following year, this collaboration of marine communications suppliers and Dutch shipping companies was instigated by industry organisation Holland Marine Equipment (HME), shipowner Vroon and communications provider Stratos. Such is the interest it has generated, however, it may become an international effort.

HME's Jan Smits explained it is increasingly important for communication between ships and companies ashore, and between crew and family members and friends, to be carried out fast, efficiently and cost-effectively.

"The focus of the project is on the various maritime broadband satellite connections and the many applications which can use a broadband connection," Smits explained, noting that potential applications of broadband at sea include remote monitoring of equipment such as engines and onboard systems, automatic updates for electronic charts, stock management and inventory control, and regular updates for a range of important systems on board from a shore-based office.

Several shipping companies and equipment suppliers and service providers have committed themselves to delivering input into the project, among them Meteo Consult, Radio Holland, Spectec, Stratos and Wärtsilä Service. Shipping companies involved include Royal Boskalis Westminster, Smit, Vroon, Anthony Verder, Q-shipping and Wagenborg Shipping. HME co-ordinates the project, which has been financed by the participating companies and the Dutch Ministry of Transport and Water. The project also secured the support of the Maritime Innovation Board, which is formed of representatives of the main Dutch shipping companies, maritime suppliers, shipyards and academic institutions.

"The objective of the project might be characterised as: how can a broadband connection on board contribute to benefits such as fuel savings, or increase the quality of the life on board for the crew?" Smits told Solutions. "The main question is what kind of existing applications, or new applications, can be used to provide shipping companies with significant advantages?"

The project was divided into two parts, the first being industrial research. This was conducted in two phases on applications for ships and research on security and technical protocols. Smits described the second part as "pre-competitive developments", covering:

- Saving fuel by the optimisation of weather data and routing information
- Development of a database of components through a web-based portal
- A Maritime Office and Shore-Ship Access Platform, known as MOSSAP.

Project participants have also been examining the capabilities and costs of various types of broadband, including VSAT, Inmarsat and Iridium. Another important aspect has been conducting surveys and interviews with seafarers so as to determine what crew members would like to see from any future broadband system.

“There is a huge amount of interest in broadband and what it can do for seagoing personnel to make life at sea better and more attractive,” Smits explained, “but equally, there is a realisation that ‘open’ forms of communication can easily be hacked, so it is important to investigate how the networks on board can be protected, both from the inside and from the outside, while ensuring that they remain as accessible as possible. We need a protective protocol to be developed that meets international legal and security requirements, and we need a technical protocol which will address the speed and quality of broadband connections. There are, of course, several types of broadband and we have been looking at the best techniques to ensure a perfect connection.

“In Norway they say no officer will come on board if there isn’t an internet connection and email available. With traditional satellite equipment, only the captain had access to, and was in control of, sending email, but people such as Patrick Verschueren at Vroon have been arguing for years that this needs to change. For Vroon – and for the other Dutch shipping companies involved in the project – crew welfare is an important issue, and we therefore need to challenge the existing situation, and make broadband more widely available.

“We have put a great deal of effort into testing the broadband suppliers and their offerings, using the same tests to assess VSAT, Iridium and Inmarsat, whether they are being used to, for instance, download programmes or update charts or access information ashore. Much depends on the type of operation a shipowner has, what kind of ships he operates, his data requirements, the size of his fleet and where those ships operate.”

Describing some of the pre-competitive projects in more detail, Smits said that Meteo Consult’s work went beyond conventional weather routing to include current analysis, with a view to making current data more widely available.

Software developed by the company would log details of a voyage for subsequent performance analysis. Data such as speed, rpm, fuel consumption, draught, wind, waves and current would be logged and updated constantly. “In this way, data will be collected by every ship, as well as in the office on shore, and the data will be used to produce a model for each individual vessel. When planning a voyage in good weather, for instance, the ship could use this data to decide to slow down, and thus reduce fuel consumption, but still arrive on time.”

With such high-level performance data, greater reductions in fuel consumption will be possible, HME and its Broadband@Sea partners believe. “Everyone understands that weather conditions affect fuel consumption, and hence costs, but ocean currents also affect a voyage. Large-scale data about currents has been available for some time, but Meteo Consult’s work suggests that it is possible to provide ships with local current data too, enabling them to make course corrections to save fuel and reduce operating costs.”

Stratos has been working on using broadband to address crew welfare issues, while Spectec has been investigating the concept of a web-based open source platform that would ensure crew can always access updates to technical manuals.

The second pre-competitive project is developing a database that is intended to reduce the money wasted when the wrong parts are ordered. Delivery of the wrong part may occur when, for instance, part numbers are changed, which can have safety or financial implications, such as when a ship cannot leave port. The new system would make user and service manuals, and updates to product manuals, available via the web.

The MOSSAP concept reflects growing awareness of web security. “If a ship is to have a network as a virtual extension of the office ashore, it must be controlled. Not everyone can just access the ship’s net and take the necessary data,” said Smits.

A network such as MOSSAP would enable efficient utilisation of maritime applications (voice and data) on board ship by maximising the satellite channel's capacity. Data applications such as email, intranet, file transfer (digital maps, weather information) or database-access-related services for fleet management and maintenance could be accelerated, cached and compressed. Voice applications could be handled over IP and, preferably, integrated into the operator's local telephony system. Such a network could enable shore-ship remote access to engine and bridge systems, including authorisation mechanisms. Crew retention benefits like telephony, email and internet access would be made available.

At a recent seminar, Wagenborg Shipping presented the results of trials it had conducted on five ships equipped with VSAT installations and an open internet connection. "The crew itself is responsible for the use of the internet connection," Wagenborg spokesman Frank van den Anker explained. The seminar also highlighted a report on broadband suppliers, services and costs that tabulated the differences in a low- and high-data environment, including minimum download times and terminal procurement costs. These were combined to give in-depth details of broadband price structures.

The report's authors explained that it is harder to show the actual cost of the Iridium broadband connection, as it works with packages of data. "If a shipping line decides to use little or no data communication on its vessels, Iridium is the obvious choice. When some data communication is anticipated, it is more efficient to choose Inmarsat or invest in a VSAT environment. Here, the shipping line needs to make a calculation on anticipated data and phone usage, as well as the footprint of the systems," the report stated. "If a global footprint is required, then for the short term, the choice would be Fleet Broadband."

VSAT dealers are combining the footprint of satellite providers to create near-global coverage, a development that will, said the report, establish competition for Inmarsat, the current market leader in satellite communication services.