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**SAAB**



**GateHouse**



# Green routes

DYNAMIC AND  
PROACTIVE  
ROUTEPLANNING



## Dynamic and proactive Routeplanning

*The concept of Green routes is to assist the Captains to create the most environmental and cost effective route available. All routes will be shared and considered between involved ships in order to improve the situation awareness.*

### Background

The AIS system is now established worldwide and it's robustness and reliability are progressing rapidly. New opportunities and "apps" are popping up on an almost daily basis but there's still a great deal to do and we haven't reached it's full potential to serve and assist seafarers.

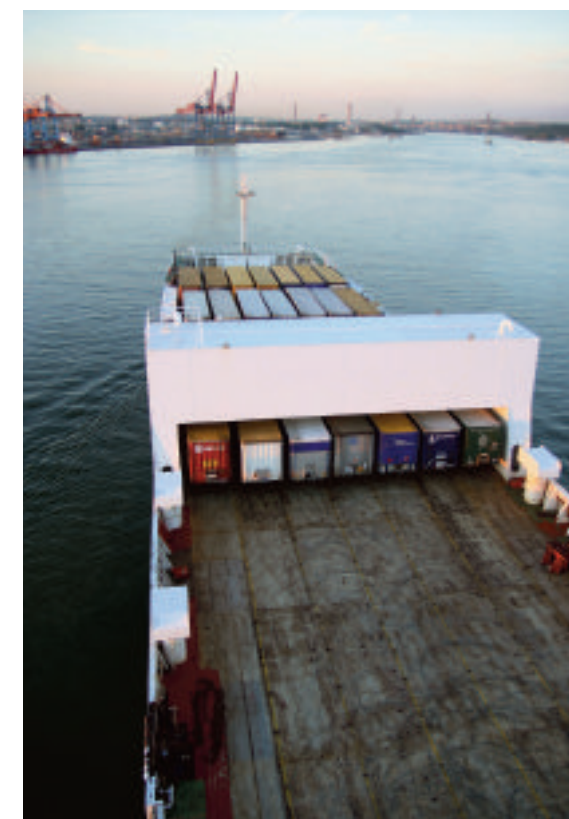
The MONALISA project has identified new opportunities and we have several ideas designed to drive new concepts. We firmly believe that current surface-based maritime operations can be altered to become voyage-based operations. All in order to give ship captains new tools to improve the safety and the performance of their vessels, using the latest and most advanced technology available.

Nowadays, most vessels have a well-defined route, prepared by the captain or his officers, and often the route is optimized with assistance from meteo-consultants and other service providers.

However, one problem at sea – compared with air traffic management, for example – is that ships cannot view each other's routes, voyage plans or destination. Today there's no organized traffic management from shore. Detection and identification of movements are executed by "Surface-based operations".

Of course, we do have a number of ship reporting systems through which ships report vessel data and destination. There's also the Traffic Separation Services where traffic flows are separated by geospatial limitations, marked in sea charts and occasionally enhanced physically with buoys, but the current concept is a reactive one, not a proactive system as represented by the MONALISA project.

” *The Green routes is putting the Captain and the ship in center of the process in order to achieve maximum safety.*







” *The STM concept puts the captain and the ship in center of the process in order to achieve maximum safety and to provide the vessel with assistance, alternatives and optimized voyage plans during navigation from berth to berth.*

## Ideas driving the new concept

*The scope of dynamic and proactive route planning is to present a new concept of “Voyage-based operations”.*

**Sea Traffic Management (STM)** – a methodology similar to Air Traffic Management, (ATM) – can offer, suggest and monitor alternative routes that will increase overall vessel performance.

Likewise, this will be achieved by the introduction of a new service facility: a Sea Traffic Coordination Center (STCC), similar to Air Traffic Control Centers, providing new processes and methodologies of exchanging data between ship and shore, and ship-to-ship.

**The aim of the STM concept** is to use more of a Need-to-Share attitude instead of Need-to-Know approach, as is mostly practiced today. With greater use of System-wide Information Management at sea, we can move closer to the air traffic control concept of sharing voyage plans among parties both in tactical and executional situations.

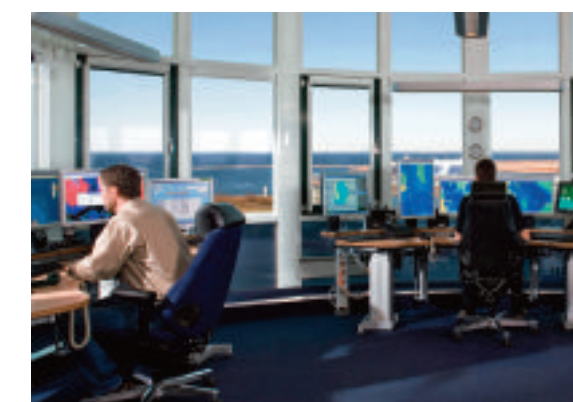
**STM can provide captains** with the optimal available voyage plans for their ships in terms of minimal fuel consumption, shortest route, or other criteria chosen by captains.

The voyage plans will be optimized, calculating with real-time data, such as info from meteo-providers, ports, biodiversity areas, and MSI, etc. All in order to gain the optimal way to go. The routes will be shared and available among other vessels in order to increase the on-board situational awareness as vessels approach potential collision points.

**The STM concept** puts the captain and the ship in center of the process in order to achieve maximum safety and to provide the vessel with assistance, alternatives and optimized voyage plans during navigation from berth to berth.



*A unique and optimized route – can be accessed by the ship's Integrated Navigational Systems.*



*The pre-planned routes will be automatically and/or manually monitored and assisted from the Sea Traffic Coordination Center.*



# Features of Green routes with Sea Traffic Management

## Route planning

A unique and optimized route – based on the captain's requirements, current data regarding the vessel, cargo owner, port capacity, weather, geospatial limitations, actual no-go areas and MSI – can be drawn up by Sea Traffic Coordination Centers in cooperation with the captain.

The route/voyage plan, delivered in a universal data format, can be accessed by the ship's Integrated Navigational Systems.

## Monitoring

The ability of all participating vessels to stay on course of the pre-planned routes will be automatically and/or manually monitored and assisted from the Sea Traffic Coordination Center. Any deviations from agreed routes will alarm the Sea Traffic Coordination Center, resulting in appropriate action by the captain, the owner and/or the authorities.

## Anti-collision aid

The routes of participating vessels will be available for other ships to be downloaded and presented on their INS. This function will be a key additional aid for assisting vessels in order to foresee and pre-plan the manoeuvring of vessels.

## Assistance

Ships can be offered special pilot assistance on different service levels in confined, complex or other areas whenever required by the captain. This could be an alternative to Open Sea pilotage in, for example, non-mandatory waters.

## Flow management

Traffic congestion and prediction of high traffic intensity areas will easily be calculated and appropriate information can be distributed to particular vessels to help them prepare to take precautionary actions. In the longer perspective, suggestions for safer flow management can be calculated and provided to vessels.

## Surveillance

The more ships operating under the "Green routes" umbrella the less unknown ships to be handled by anomaly programs and surveilling authorities, giving them higher quality in their duties.



## CONTRIBUTE TO THE PROJECT

The MONALISA project will continue until the end of 2013. There are several aspects and issues – such as the economic effects or legal impacts of international laws (UNCLOS, SOLAS and STCW etc.) – that will be scrutinized thoroughly within the project and considered in order to get a complete and final version that will cover and embrace all possible questions and issues. All kinds of contributions, comments and inputs regarding our concept "Dynamic and proactive route planning" are of major value and most welcome to us.

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