STM Baltic Sea – time to deploy

Why Sea Traffic Management

Sea Traffic Management (STM) is an answer to the need for improved efficiency in maritime transports; within port areas as well as between ports. The STM concept takes a holistic view on services within shipping, from berth to berth. STM does thus integrates two practices; the practice of the port actor collaboration and the practice of safe and efficient navigation. STM is a concept for optimizing the processes, interaction between stakeholders and exchange of information. Instant exchange of information is an important facilitator for increased situational awareness as a catalyst for improved safety of navigation, optimized capacity utilization, and just-in-time operations. STM has already shown great socio-economic benefits as well as solid business cases for the industry, e.g. bunker/fuel savings, decreased greenhouse gas emissions from shipping, improved utilization of resources, minimized risks, and improved maritime safety.

By providing ships with the ability to see each other's planned routes, navigators get a more complete picture of how ships in the vicinity will influence their onward voyage. The same functionality also provides the opportunities to shore-based actors to enhance planning capabilities. Using this data, other services are able to produce valuable information and offer advice to ships on their routes, such as recommendations to avoid congestion in areas with high traffic density, avoidance of environmentally sensitive sea areas, and maritime safety information. The information exchange between ships and port actors will improve planning and performance for arrivals, departures and turnaround times for ships.

The principles of exchange of information developed within STM also provides the following improvements of the maritime eco system:

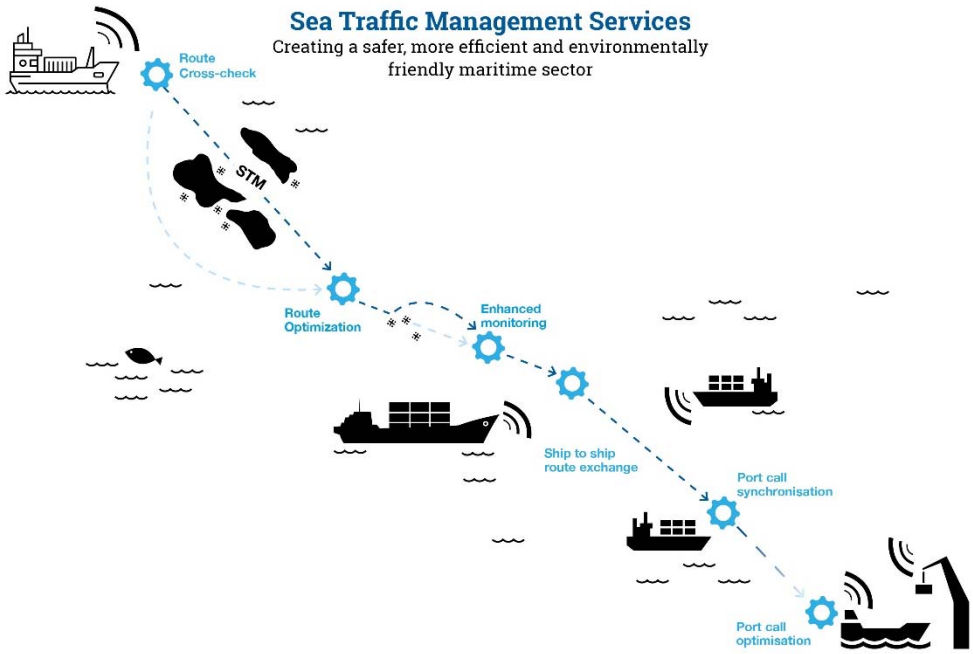
- Just-in-time-operations through better exchange of information between maritime stakeholders facilitates "right and green steaming", green routeing, and optimized sea voyages and port call operations giving rise to e.g. bunker/fuel saving, enhanced safety at sea, minimized harmful green house gas emissions, and optimal infrastructure and fleet utilization;
- Improved predictability of ETA and ETD, which allows improved planning for all involved parties, including hinterland actors in the entire logistic chain;
- New innovative vender-independent services that are interoperable and at low-cost;

- Knowledge of other ships´ intentions providing improved situational awareness, which optimizes resource utilization and decreases the risk of accidents and incidents.

The Sea Traffic Management Programme – Achievements to date

In the definition phase of Sea Traffic Management (within the MONALISA 2.0 project) - co-funded by the EU TEN-T program - the current situation was described, Key Performance Indicators (KPI) were elaborated and a target concept was developed and analyzed from different perspectives (business, institutional, legal, operational and technical).

Central parts of STM are Voyage Management for route optimization, flow management for traffic optimization and Port Collaborative Decision Making (PortCDM) for port call optimization. In this process of sea transportation, sea voyages and port calls are made more efficient through information sharing and common shared situational awareness.



The MONALISA 2.0 project also contributed to a common route exchange format, elaborated and agreed by the manufacturers of navigational equipment with the aim of ensuring interoperability in the exchange of route exchange information from ship to ship and ship to shore. In July 2015, the International Electrotechnical Commission (IEC) approved a new version of its standard IEC 61174:2015 (4th Edition), which relates to the route exchange format. This in turn enables manufacturers of navigational aid equipment to adapt their equipment into a common interoperable environment. The projects MONALISA 2.0 and the STM Validation projects have also contributed to a common port call message format being used for standardized exchanges of time stamps related to port call operations, ship-to-port, port call actor-to-port call actor, port-to-port, and hinterland operator-to-port.

STM Validation Project (2015-2018) is co-funded by EU and its CEF program and is part of the STM programme, is probably the largest e-navigation project ever. In this project, the Sea Traffic

Management Concept is taken from theory to practice and be validated on some 300 ships, 13 ports and 5 shore centres in testbeds in the Nordic area (Baltic Sea and North Sea) and in the Mediterranean Sea. Further testbed areas and projects are at present considered using other types of funding mechanisms to prepare for global deployment as well as engagement in STM. Several regions have shown interest in participating.

The time has now come to initiate the deployment phase of Sea Traffic Management more in detail, at the same time as further applied research, development and validation of the concept is required. Procedures for parallel concept refinement and deployment are established to secure long-term responses to the needs of the maritime sector with an updated concept.

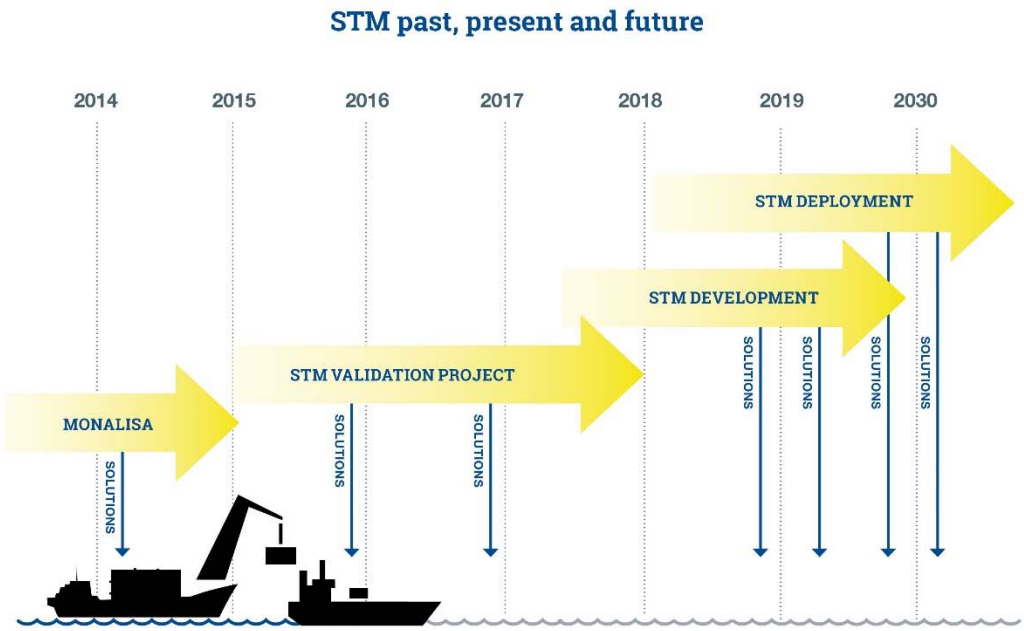


Figure: The development, Validation and Deployment of STM

Baltic Sea – a first deployment area for Sea Traffic Management

The countries of the Baltic Sea region are heavily dependent on shipping for import and export as well as for internal trade. Passenger transport and cruise ship tourism is also considerable. Consequently, the Baltic Sea is one of the most heavily trafficked seas in the world. The volume of shipping in the region has been growing in recent years and represents up to 15% of the world's cargo traffic. This traffic is expected to increase further in the years to come. Simultaneously, ships are growing in size and draught.

Such high traffic density inevitably constitutes a risk for maritime accidents, which can be detrimental and have substantial negative consequences for the Baltic Sea states, due to their dependence of the sea and the fragile ecosystem. Fortunately, the Baltic Sea region already has a relatively good level of maritime safety.

In 2005, the Baltic Sea was designated as a Particular Sensitive Sea Area (PSSA) by the International Maritime Organization, which also means possibilities to regulate the requirements on involved actors in a dedicated area.

The Baltic Sea was also designated as a Sulphur Emission Control Area (SECA) by the International maritime Organization in 1997 and entered into force on 19 May 2006.

IMO's Marine Environment Protection Committee at its seventieth session (MEPC 70) in October 2016 further approved the designation of the North Sea and the Baltic Sea as emission control areas (ECA) for nitrogen oxides (NOX) under regulation 13 of MARPOL Annex VI. The draft amendments to formally designate the NOX ECAs will be put forward for adoption at the next session of the Committee (MEPC 71) in July 2017. The draft amendments to MARPOL Annex VI would see both ECAs enter into effect on 1 January 2021.

During winter, ice-covered waters cause difficult navigation conditions that affect the safety and reliability of maritime transport. At the same time, the sea is environmentally fragile due to its brackish semi-closed waters and densely populated shores.

Further, the Baltic Sea region also has approximately 30 core ports that would need to be connected with the core network corridors to ensure further integration of maritime transport in the logistic chain as well as facilitation of efficient sea transports within the Baltic Sea region.

The deployment of Sea Traffic Management in the Baltic Sea strongly supports the implementation of HELCOM Recommendation no. 34E/2 "Further testing and developing the concept of pro-active route planning as well as other e-navigation solutions to enhance safety of navigation and protection of the marine environment in the Baltic Sea Region". This recommendation aims at supporting the realization of initiatives like Sea Traffic Management to ensure an unhampered information flow between ship to ship, ship to shore/port, and port to port. It also emphasizes the need for development of new services that will be produced for different stakeholders utilizing these services in the area.

A first deployment phase of Sea Traffic Management is now to be launched. It will encompass large-scale deployment of STM on-board ships, by service providers (public and private) and ports.

A number of STM services have been prepared and will be offered to the maritime community. Examples of such services are: Ship to ship route exchange, Route optimization, Route Cross-checking, Route and port monitoring, Ice routeing, Port call optimization, Port call synchronization, Infrastructure and fleet optimization, Facilitated reporting, Optimized and efficient, Pilot route distribution, and efficient exchange of SAR information.

A Developers´ Zone will maintain and support a digital infrastructure for Sea Traffic Management. The Developers´ Zone will also stimulate and support the development and provision of new STM compliant services.

The initiative will also provide transfer of knowledge and technology in order to pave the way for other similar regional initiatives around Europe and globally to be initiated.

Deployment and concept refinement Strategy

Time table

Sea Traffic Management will be deployed in the Baltic Sea Region gradually, supported by HELCOM and the Coastal States of the Baltic Sea and the European Union.

The first deployment phase in the Baltic Sea Region will take place with the start of January 2019 and last until the end of 2023. This deployment will be tightly integrated with further refinement of the STM concept.

Financing

Financing will come from a Public-Private-Partnership

Partnership

The deployment phase will encompass a large triple helix partnership, encompassing all kind of stakeholders like:

All Baltic Sea Coastal States as well as Norway, international organisations like HELCOM, IMO, and IALA, BIMCO, International Chamber of Shipping, International Harbour Masters Association, CIRM and other international associations, academic partners and research institutes, ship-owners and operators, Trans-European Network Ports, Vendors of equipment (ship, shore and IT), cargo owners, classification societies, insurance industry and others.

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