HSSC8-INF1

Paper for Consideration by HSSC

Hydrographic Surveying and S-100 standards for competitive shipping

Submitted by:	Sweden
Executive Summary:	The paper (and presentation at HSSC-8) will give an overview of the activities in ongoing projects, Sea Traffic Management (STM) and Finalising Surveys for the Baltic Motorways of the Sea (FAMOS), which we consider important and relevant for present and future activities of IHO and the HSSC. In both these projects the Swedish Maritime Administration acts as lead partner and they are co-financed by the European Union. Sweden is of the opinion that these projects serve well as show cases, as test beds and as innovation arenas with strong links to current and future standardisation activities within the IHO. We propose that a presentation, expanding on this subject, to the IHO Assembly could be part of the HSSC input to the upcoming assembly.
Related Documents:	HSSC8-04C
Related Projects:	

Introduction / Background

The projects described below and now running are the results of several successful preceding projects all with co-financing from the European Union. The predecessor projects of STM were called MONALISA and MONALISA 2.0. The Hydrographic surveys part was introduced in a smaller project "Motorways of the Baltic Sea" and then continued as a large part of MONALISA and now in the FAMOS project.

The present projects are co-financed through the Connecting Europe Facility and more specifically within its horizontal priority Motorways of the Sea.

Analysis/Discussion

The Sea Traffic Management (STM) project started 2015 an will run until 2018. There are over 50 partners from 13 countries. A summary of activitites is given in this extract from the STM webpage,(*www.stmvalidation.eu*).

"By providing vessels with the ability to see each other's planned routes, navigators get a more complete picture of how surrounding vessels will influence their onward voyage. Using this data, other services are able to produce valuable information and offer advice to vessels on their routes, such as recommendations to avoid congestion in areas with high traffic, avoidance of environmentally sensitive areas, and maritime safety information. The information exchange between vessel and port actors will improve planning and performance regarding arrivals, departures and turnaround times."

"……. target concept and key performance indicators for four STM strategic enablers:

1. Voyage Management services will provide support to individual ships in both the planning process and during a voyage, including route planning, route exchange, and route optimisation services.
2. Flow Management services will support both onshore organisations and ships in optimising overall traffic flow through areas of dense traffic and areas with particular navigational challenges.

3. Port Collaborative Decision Making (Port CDM) services will increase the efficiency of port calls for all stakeholders through improved information sharing, situational awareness, optimised processes, and collaborative decision making during port calls.
4. SeaSWIM (System Wide Information Management) will facilitate data sharing using a common information environment and structure (e.g. the Maritime Cloud). This ensures interoperability of STM and other service."

The FAMOS project (*www.famosproject.eu*) is largely focused on hydrographic surveys and to make more high quality bathymetry data available for motorways of the sea. It is a more regional effort with 15 partners from 7 countries around the Baltic Sea. So far this project is divided in two parts, FAMOS Freja 2014-2016 and FAMOS Odin 2016-2018. FAMOS has four major activities:

1. Hydrographic surveying. A substantial effort to complete hydrographic resurveys for areas in the Baltic Sea of major interest to shipping before 2020. This plan is in accordance with decisions and commitments on ministerial level in HELCOM (Baltic Marine Environment Commission – Helsinki Commission). All surveys are performed in accordance with IHO S-44.
2. Vessel navigation for the future. Harmonizing chart datums and preparing for improved satellite navigation. Gravity studies and measurements to calculate a higher quality geoid model. Study effects on under keel clearance (UKC) management with improved vertical positioning.
3. Surveying infrastructure. Improving hydrographic survey equipment and capacity.
4. Data workflow from sounding to chart. Improve processes and production tools within Hydrographic Offices to enhance data quality and efficiency.

In this discussion the Voyage Management is the fundamental part of STM. The ability to define routes and share route information in a standardised manner then forms the backbone to enable further services. Route optimisation may be performed based on a variety of parameters such as weather, ice conditions, traffic situation and other navigational constraints etc. Logistical services in flow management and services for efficient port calls are also initially based on route information.

Together these projects will have a strong impact on the efficiency of vessel operations and maritime logistics. The ability to optimize vessel routing and logistics from a holistic perspective will contribute to decreased costs, a lower environmental impact and better safety for maritime transports. In combination with the hydrographic data and products from the FAMOS project, vessel navigation could be taken to the next level: For instance, vessel routes could be optimized with regard to maximized water depth in order to reduce squat effects. Furthermore, with better UKC management one may be able to increase cargo, without deteriorating safety. Already relatively small increases in draft (centimeters to decimeters) caused by additional cargo can have a significant positive economic effect for a given vessel voyage.

Examples *of relevant standards: IHO S-57/S-101 ENC, IHO S-122 Marine Protected Areas, IHO S-124 Navigational Warnings, IHO S-127 Traffic Management, IHO-S1XX Harbour Infrastructure, JCOMM S-411 Ice Information, JCOMM S-412 Weather Overlay.*

There is an obvious relation from STM to FAMOS activity 2 (and 1). Route optimisation for fuel efficiency in shallow waters requires reliable bathymetry data as input. In order to enter fairways and ports with a minimum UKC margin you need high resolution, high quality bathymetry **as well as** high quality vertical positioning.

Relevant standards: IHO S-44 Hydrographic Surveys, IHO S-102 Bathymetric Surface, IHO S-112 Dynamic Water Level Data.

The fourth activity of STM is also worth noting here although not penetrated in-depth for the purpose of writing this comment paper. It is aiming at an information management structure for data sharing (data distribution). The ongoing standardisation work within IHO is predominantly focused on content standards and not primarily on data distribution. We may foresee that also in our business of shipping and navigation and related areas more

and more ICT systems are web enabled (on line). We suggest that for a number of the S-100 overlay type standards a data distribution through various web services should be an alternative and may need a test bed.

Conclusions

A description of these projects serves as a background and as a general use case for many of the IHO standards (existing, work ongoing or future). When mapping the standards onto this background it could also facilitate a study on discrepancies and help identify where standards are missing.

We also conclude that results of these projects help to improve the economy in shipping operations by e.g. providing information and services to minimise fuel consumption and to maximise vessel loads.

Action Required of HSSC
The HSSC is invited to:

a. note the paper …….
b. consider the proposal to give an expanded presentation at the upcoming IHO Assembly…..
c. take any other action considered necessary ……