

Baltic Sea Hydrographic Commission 22st Meeting

Agenda Item C6

FAMOS project status report

2017-08-14

1 Summary

- The FAMOS project is on-going according to plan.
- The first phase of the project, FAMOS Freja (2014-2016) has been finished, and the final reporting (financial and technical) is on-going.
- The second phase of the project, FAMOS Odin (2016-2018) receives almost 11 MEUR of EU co-financing from the CEF Transport programme.
- Operative work in all project activities has been on-going since 2014.
- FAMOS Odin includes five new project partners, including one from Lithuania (the 7th country represented in the consortium). This second project phase also extends the scope of some of the project activities, especially with regard to the Lithuanian involvement and work related to the Baltic Sea chart datum.
- There are some personnel changes in the coordinator's project management team at the Swedish Maritime Administration. Andreas Andersson is from 1 August 2017 the new FAMOS Project Leader. Benjamin Hell is still working part time with project management.

2 What has happened, results?

2.1 Project structure

The FAMOS project is split into several phases, covering the time from 2014 to 2020. The first phase, FAMOS Freja, covered 2014-2016. The second phase, FAMOS Odin, is ongoing and covers the period 2016-2018.

Presently, the project consortium includes the Hydrographic Offices of all Baltic Sea countries except Poland and Russia, as well as national geodetic authorities and institutes and one private company:

- Swedish Maritime Administration (coordinator, SMA)
- Danish Geodata Agency (GST)
- Estonian Maritime Administration (EMA)
- Finnish Transport Agency (FTA)
- German Federal Agency for Cartography and Geodesy (BKG)
- German Federal Maritime and Hydrographic Agency (BSH)
- German Research Centre for Geosciences (GFZ)
- Lantmäteriet (the Swedish mapping, cadastral and land registration authority, LM)
- Lithuanian Maritime Safety Administration (LMSA, new partner in FAMOS Odin)
- Maritime Administration of Latvia (MAL)
- National Land Survey of Finland / Finnish Geospatial Research Institute (FGI, new partner in FAMOS Odin)
- SSPA Sweden AB (new partner in FAMOS Odin)
- Swedish Meteorological and Hydrological Institute (SMHI, new partner in FAMOS Odin)
- Tallinn University of Technology (TUT, new partner in FAMOS Odin)

- Technical University of Denmark (DTU)

For the project partners that already joined the first phase, FAMOS Freja, most activities during 2016 were part of the first project. The new partners in FAMOS Odin started their work in 2016 under FAMOS Odin. From 2017 onwards all activities take place under FAMOS Odin.

2.2 Project activities

The FAMOS project focuses on surveying areas relevant for commercial shipping in the Baltic Sea according to the BSHC-HELCOM re-survey scheme. Furthermore, it serves as a platform for implementing the common Baltic Sea chart datum as proposed by the BSHC Chart Datum Working Group and agreed upon by the BSHC. See also the FAMOS web site at <http://www.famosproject.eu/>. Specifically, the project activities are as follows:

Activity 1: Hydrographic surveying

Hydrographic surveying of approx. 96 000 km² of areas important for commercial shipping in the Baltic Sea, and corresponding production of nautical charts. For the participating BSHC member states, the surveys follow the BSHC-HELCOM harmonised re-survey scheme as decided (latest) at the HELCOM Copenhagen Ministerial Meeting 2013. The BSHC-HELCOM scheme is available online at <http://www.sjofartsverket.se/helcom>.

Activity 2: Harmonizing vertical datum / Vessel navigation for the future

- (1) Implementing a common geodetic vertical Baltic Sea chart reference level in line with the BSHC Chart Datum Working Group goals (BSCD 2000). This includes measurements of gravity during hydrographic surveys, verification of existing gravity data, and the computation of a new, more accurate geoid model.
- (2) Studies related to precision GNSS positioning at sea, with the aim of better UKC control and optimisation.

Activity 3: Surveying infrastructure

Improvements of the surveying infrastructure in terms of survey boats and hydrographic equipment for the Baltic countries. The improved capacities are needed for these partners to achieve the goals set in the BSHC-HELCOM Scheme during later phases of the project.

Activity 4: Data workflow from sounding to chart

Improve and streamline the workflow from Hydrographic survey of depth information to distribution of final nautical products. This includes the redesign of depth databases, procurement of new Chart Production Systems, studies of new IHO standards and the design of a Nautical SDI.

Activity 5: Coordination and communication

Project coordination, communication and outreach.

2.3 EU co-financing from the CEF Transport programme

The first phase of the project, FAMOS Freja, received EU co-financing of up to 11.9 MEUR from the CEF Transport programme (successor to the TEN-T programme). This is roughly one-third of the overall project costs of 33.9 MEUR for FAMOS Freja.

The second phase of the project, FAMOS Odin, will receive further up to 10.8 MEUR in co-financing during 2016-2018, for estimated total costs of 28,9 MEUR.

The project activities, exact goals, time line and detailed budget are agreed upon with the European Commission in "grant agreements". The grant agreement for FAMOS Odin was signed in October 2016.

2.4 Operative work 2016-2017

Activity 1 (hydrographic surveying): The survey season 2016 have been completed successfully with surveys of 7391 km² under FAMOS Freja and 205 km² in Lithuania under FAMOS Odin. The 2017 surveying season is on-going with both project internal and externally procured resources. The total surveyed area for FAMOS Freja 2014-2016 amounts to 31733 km², which is slightly below the target figure but well within the approved span for the goal.

In 2017, SMA has started to procure additional surveys from the open market, covering extensive areas in the Swedish EEZ. The procured survey provider Clinton Marine Survey AB is currently working on the contract with the vessel Northern Wind.

Activity 2 (vertical datum): In FAMOS Freja sub-activity 2.1, four gravity surveys haven been conducted 2016 (in addition to another four surveys 2015):

- North and west of Bornholm (BKG, GFZ, BSH; dedicated gravity survey)
- Bothnian Sea and Bay of Bothnia (GFZ, SMA, LM; piggy-back transit survey)
- Central Baltic off Estonia (DTU, EMA; piggy-back survey)
- Denmark (DTU, Royal Danish Navy, GST; piggy-back survey)

Two more surveys have so far been carried out in 2017 under FAMOS Odin:

- Southern Baltic Sea (BKG, GFZ, BSH; dedicated gravity survey)
- Southern Baltic Sea (SMA, LM; gravimeter sea acceptance test during transit)

Work with databases, geoid modelling and Mean Sea Surface modelling is on-going. GNSS data processing is on-going. The chart datum change in Sweden, has started in the Northern Bay of Bothnia. Currently the project is delayed, as a consequence of the production system change also performed in FAMOS Freja. Finland has started their chart datum change as well.

Lantmäteriet's procurement of a marine gravimeter for use primarily by the Swedish state has been successful and the instrument has been delivered.

Activity 3 (surveying infrastructure): After some delays the procurement of major upgrades for the Lithuanian survey vessel *Varuna* has been concluded with a signed contract. The delivery and installation of the upgrades is expected to happen during 2017. The Estonian procurements of a multibeam echosounder and software have been successful.

Activity 4 (data workflow): Various workflow and software upgrades have been performed by the relevant project partners. Most notably, the new Swedish Chart Production System (CARIS HPD) has been delivered and implemented. ENC production has taken place in the new system since autumn 2016, and currently the existing paper chart cartography is being migrated to the new system. This migration project has encountered some delays. FTA has also procured and is implementing a new Depth Database System and very recently procured the same Chart Production System (CARIS HPD) as SMA.

Activity 5 (coordination and communications): The project has been presented at relevant EU and maritime forums. The project website is available at <http://www.famosproject.eu/>. The final report for FAMOS Freja is currently being worked on. There have been personnel changes in SMA's project management. Since 2017-08-01 the primarily responsible project leader is Andreas Andersson, while Benjamin Hell continues to work in the FAMOS project management at part time.

3 What happens next, results? Operative work

Activity 1: Hydrographic surveying and chart production continue according to plan, i.e. what is specified in the proposal until 2018 and in the BSHC-HELCOM Re-Survey Scheme until 2020. This includes surveys with the partners' own vessel resources, as well as surveys procured from the open market.

Activity 2: Gravity measurement piggy back campaigns are planned to be conducted on a Danish survey vessel. Another campaign will be carried out 2017 on-board the ferry Stena Urd between Travemünde (DE) and Liepaja (LV).

The chart datum change projects will continue in Sweden and Finland.

Activity 3: Implementation of upgrades for Lithuanian survey vessel *Varuna*. Upgrade of Latvian survey boat *Sonars* motion sensor.

Activity 4: Various tasks, including: Procurement and Implementation of Depth Database System (FTA); continued paper chart cartography migration (SMA); work with renewing depth database (GST).

Activity 5: FAMOS Freja has ended at the end of 2016, and project management focuses on the Final Report for the European Commission (technical and financial), with submission deadline at the end of 2017.

The meeting is invited to

- Take note of this report.