

National Report of Finland

Executive Summary

This Report highlights the main activities and achievements of the Finnish Hydrographic Office since BSHC 23rd Conference in August 2018.

- Finnish Hydrographic Office has been a part the Finnish Transport and Communications Agency Traficom from 1.1.2019.
- The focus of hydrographic surveys is moving towards shallow coastal nearshore areas.
- Production of nautical charts has been reduced due to the system development projects.
- Project for migration of bathymetric data to the new Bathymetric Data Management System (MERTA) is ongoing.
- Project for renewal of the Nautical Chart Production System (AHTI) is in the implementation phase. Deployment of the system will be in September.
- The implementation project "New vertical chart reference N2000" has started.

1. Finnish Hydrographic Office

The Finnish Transport and Communications Agency Traficom was established 1. January 2019.

Traficom is an authority in licence, registration and approval matters. Traficom promote traffic safety and the smooth functioning of the transport system. Traficom also ensure that everyone in Finland has access to high quality and secure connections and services.



The Finnish HO became part of the Agency. Staff in Finnish HO is about 50 including 6 consultants. Annual budget for hydrographic activities is about 10 million euros.

The FHO has been working according to the Quality Management System based on the new ISO 9001 (2015) standard. External Audit by DNV GL was performed successfully on 29 May 2019.

2. Hydrographic surveys

During 2018 Q3 & Q4 and 2019 Q1 & Q2 surveys were completed on the Rauma Fairway and the fairway of Tornio and a new fairway of Oulu. Also a LiDAR test project was supplemented during 2018. One of the main efforts during 2018 had been in developing bathymetric data management system (Merta). In the *Table 1* there are statistics of 2018-2019 on survey task. In *Fig.1* there are shown survey projects 2019 and *Fig.2* shows re-survey status in Finnish waters at the end of 2018.

Task	Surveyed by	Multibeam [km ²]	Line sounding [km ²]
Rauma Fairway 2018	<i>Meritaito Oy</i>	80	
Bay of Bothnia fairways 2019	<i>Meritaito Oy</i>	190	
Gulf of Finland areal surveys	<i>Meritaito Oy</i>	380	LiDAR 60

Table 1: Survey statistics for 2018 (2019).



Fig. 1. Survey projects 2019

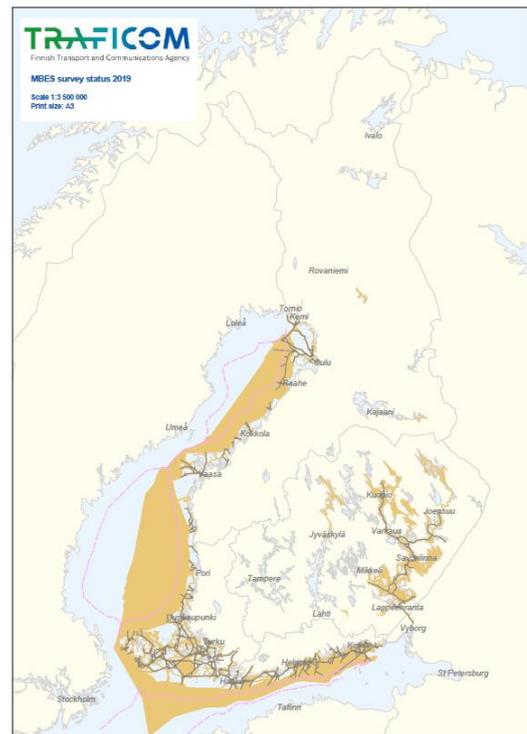


Fig. 2. Hydrographic re-survey coverage in 2019

The Finnish part of the HELCOM-BSHC Revised Harmonised Hydrographic Re-Survey Scheme has been enhanced and the database updated. The HELCOM survey plan has been the driving force to perform the hydrographic surveys in Finnish waters until 2017. The focus of hydrographic surveys now moves towards the inadequately surveyed coastal nearshore areas.

LiDAR has been utilized to replace SBES surveys from shoreline to 6 m of waters, if receiving data.

Finland is participating in the EU INEA CEF Transport TEN-T grant FAMOS Odin (2016-2019 Q1&Q2), headed by Swedish Maritime Administration for support on renewing the bathymetric DB and chart production system. FAMOS Odin has provided fruitful co-operation platform for benchmarking various HO activities.

Hydrographic data processing and management

The migration of bathymetric data to the Bathymetric Data Management System (MERTA) is in progress. The aim is that the progress of migration follows at least the schedule of the project of new vertical chart reference N2000 (BSCD 2000).

New automated tools for bathymetric data processing and contouring has been taken into production with the new Hydrographic Data Management System, AHTI.

External human resources have been rent from private companies in order to ease the workload on data processing and validation tasks.

Several data sets of bathymetric data have been provided for customers within the limits of Finnish national legislation.

3. Nautical Charts

Printed charts

Printed charts for commercial shipping have been produced according schedules in 2018 (see table 2 below).

Due to the implementation of the new Nautical chart production System (Ahti) only the critical new editions have been produced during 2019; five new editions (57, 59, 60, 119, 958) from the Bay of Bothnia have been released.

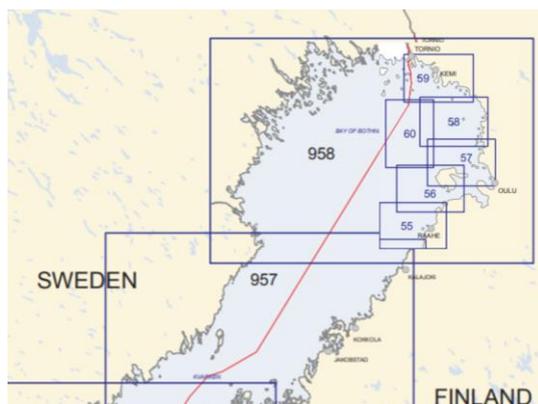


Fig.3. New editions 2019 from Bay of Bothnia.

Published printed charts	2012	2013	2014	2015	2016	2017	2018
<i>General charts</i>	3	2	4	3	3	1	2
<i>Approach charts</i>	10	18	13	11	7	9	6
<i>Harbour charts</i>	6	10	8	2	4	9	1
<i>Chart series</i>	3	3	4	2	2	1	2
<i>Other charts</i>			-			1	

Table 2 Statistics of published New Editions of Finnish nautical charts in 2012 – 2018.

[Link](#) to a new Finnish chart catalogue 2019.



Fig.4. New chart catalogue 2019.

Statistics for sold charts are shown below in *Table 3*. In addition to these there are many adopted charts sold by UKHO. The sales of paper charts was quite stable compared to years 2016 and 2017 during the year 2018.

Chart product (printed)	2012	2013	2014	2015	2016	2017	2018
International traffic							
General charts	1620	1977	1984	1874	1241	1361	1142
Coastal charts							
Approach charts	5379	4943	5434	3939	2800	2513	2811
Harbour charts	1267	1313	2162	718	991	1127	842
Chart series (inland areas)	1998	1490	1538	1412	1525	1075	917
Domestic traffic							
General & approach charts	1000	748	645	747	341	513	349
Chart series (sea areas)	11116	11489	12600	16574	7419	7236	7982
Chart series (inland areas)	1503	1913	2496	1750	698	1588	848
Other charts	0	0	0	74	28	15	11
Total sold copies	24006	24078	26 859	27088	15043	14555	14902

Table 3 Nautical paper charts sold 2012 – 2018.

ENC production and distribution

ENC production and distribution have been realized mainly according to the plans. In 2017, 5 new cells and 50 new editions have been released. The number of sold ENC's increased 30 %, number of customers and amount of ships using ENC's increased about 25 % in 2018. The number of ENC Statistics are shown in *Table 4* and *Table 5*.

Released ENC's	2012	2013	2014	2015	2016	2017	2018
New ENC's	8	4	3	25	17	5	1
New editions	44	33	43	48	38	50	47

Table 4. Statistics of produced Finnish ENC's 2012-2018.

Use of ENC	2012	2013	2014	2015	2016	2017	2018
<i>ENCs sold annually (excluded trial and demo usage)</i>	50832	61022	69982	77533	89927	95193	124555
<i>No of ships(annually)</i>	1769	1908	2270	2713	3212	3659	4626
<i>No of customers (annually)</i>	595	669	793	898	1054	1232	1528

Table 5: Statistics for the use of Finnish ENC's 2012-2018.

S-57 ENC service for derived product producer's and for governmental users i.e. the Finnish Navy and the Finnish Coast Guard was taken into operational use in 2016.

Quality control of ENC's has been further improved in the chart production process. Some software tools for hydrographic data quality control and operation guidance have been enhanced.

Chart data processing and management

ENC and Paper Chart Production System (AHTI) and related services procurement
System renewal project is currently in the deployment phase. Most unfinished project tasks are related to the revision of the paper chart portrayal.

Project schedule is delayed for ten months compared to the initial project plan. New system has been taking into use partly in May 2019 and the deployment tasks and related acceptance testing continues in the project. New target for the full production start up with the new system is in September 2019.

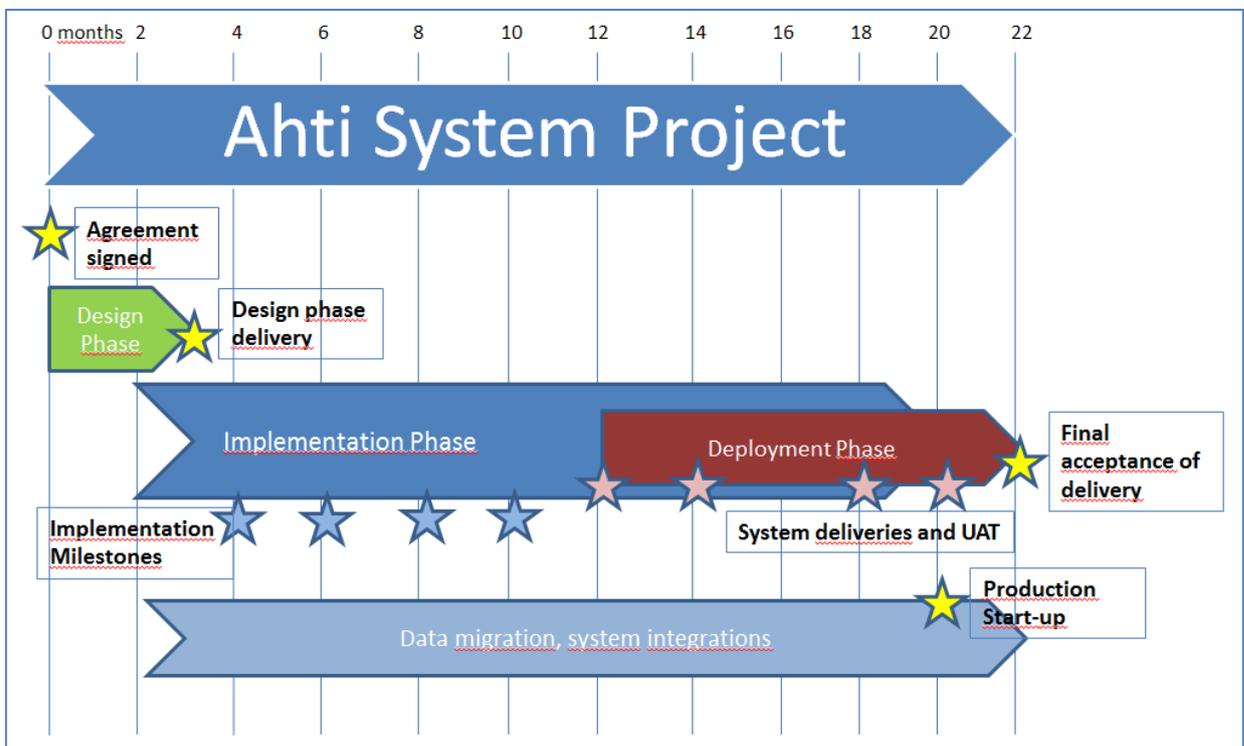


Fig.5. Implementation plan of AHTI-project

Nautical chart production system implementation, data migration, system integrations and deployment (2018-2019):

- Pilot system testing 5/18
- Implementation milestones (4) delivered 6/2018
- System installations and configurations completed and accepted 8/18
- Delivery and user acceptance testing of the complete system (Drop 1) 9/18
- Delivery and user acceptance testing of the complete system (Drop 2) 10-11/18
- User training 1-2/19
- Delivery and user acceptance testing of the complete system (Drop 3) 2-3/19
- Data migration and system integrations finished for production start up 3-4/19
- Delivery and user acceptance testing of the complete system (Drop 4) 5/19
- Partial Production start up 5/19
- User training and full production start up 9/19
- Project tasks and deployment phase completed, final acceptance of the delivery 10/19

Other projects

Study to determine specifications and a portfolio for Bathymetric Surface products (based on IHO/S-102), was finalised as a part of Smart Marine Fairway Project under FTA's DIGI 2016 - 2018 Program.

External human resources have been rent from private companies in order to ease workload on depth data processing to the chart database and quality assurance of printed charts and ENC and for speed up an implementation of N2000 project.

4. Nautical publications

Notices to Mariners are distributed from website as download service (PDF) and NtM Online web-service with capability of viewing the Notices filtered by time of publication, area or charts affected.

The Lists of Lights are published for coastal areas and inland waterways. The Lake Saimaa area is now included as a part of the publication for inland waterways. Lists of Lights are available as downloadable PDFs and in addition, information of lights can be search based on ID, area of interest or related chart product.

Publication /service	2012	2013	2014	2015	2016	2017	2018
<i>Notices to Mariners, vol of publications</i>	32	33	34	34	35	35	35
<i>Number of NtM notices</i>	398	422	397	391	366	388	366
<i>Number of ER updates</i>	449	431	534	605	504	668	776

Table 6: Statistics for nautical publications

5. MSDI

National Geodata Portal

The non-navigational use of hydrographic data has increased exceedingly. View service is in use via the interface of National Geodata Portal The FHO is actively supporting hydrographic

data to the National Geodata Portal. The metadata of FHO is also available at the National Geodata Portal. Inspire specific national spatial data sets have also been created.

Open data view and download services

File download service for viewing and downloading datasets;

- Web Map Service
- Web Feature Service
- Tiled map service (WMTS) for viewing FHO nautical chart data in raster format

The data available from these services is not suitable for navigation and does not meet the requirements for an official nautical chart.

Links:

Finnish Transport Agency:

<https://julkinen.vayla.fi/oskari/?lang=en>

National Geodata Portal Paikkatietoikkuna:

<http://www.paikkatietoikkuna.fi/?lang=en>

6. MSI

Finnish Transport and Communications Agency is responsible for safety radio communications in Finnish territorial waters and for distress radio communications in the deep channels of the Saimaa waterways system

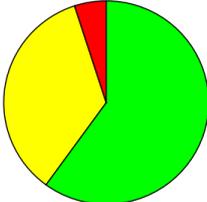
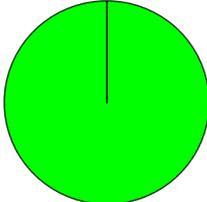
In total 200 navigational warnings were published during 2018.

Publication / Service	2012	2013	2014	2015	2016	2017	2018
<i>Navigational Warnings</i>	412	276	234	236	237	239	200

Table 7: Statistics for navigational warnings

7. C-55

Status of hydrographic Surveys

Survey coverage Couverture hydrographique Cobertura hidrográfica	Depth < 200m Profondeur < 200m Profundidad < 200m			Depth > 200m Profondeur > 200m Profundidad > 200m		
	█ Adequately surveyed Correctement hydrographié Adecuadamente levantado	60	35	5	100	0
█ Re-survey required Nécessitant de nouveaux levés Requiere nuevo levantamiento						
█ Never systematically surveyed Jamais hydrographié systématiquement Nunca levantado sistemáticamente						

Status of Nautical Charting

Coverage of charts published Couverture des cartes publiées Cobertura de cartas publicadas	Offshore passage Navigation au large Pasaje offshore			Landfall and Coastal passage Atterrissage et navigation côtière Recalada y Pasaje costero			Approaches and Ports Approches et ports Aproches y puertos		
<p>% Covered by INT or other paper charts meeting S-4 Couvert par des cartes papier INT ou autres conformes S-4 Cubiertas por cartas de papel INT o otras cumpliendo S-4</p> <p>% Covered by RNC meeting S-61 Couvert par des RNC conformes S-61 Cubiertas por RNC cumpliendo S-61</p> <p>% Covered by ENC meeting S-57 Couvert par des ENC conformes S-57 Cubiertas por ENC cumpliendo S-57</p>	95	0	100	100	0	100	100	0	100
	INT	RNC	ENC	INT	RNC	ENC	INT	RNC	ENC

8. Capacity building

Nothing to report.

9. Oceanographic activities

The implementation project for "New vertical chart reference N2000" (Baltic Sea Chart datum 2000) has started with data conversation, planning and customer information. Implementation plan for changing Finnish nautical charts and related data to the new datum has approved 2018. BSCD 2000 will be introduced on the nautical system charts, starting 2020 with a new hydrographic chart data management and production system AHTI.

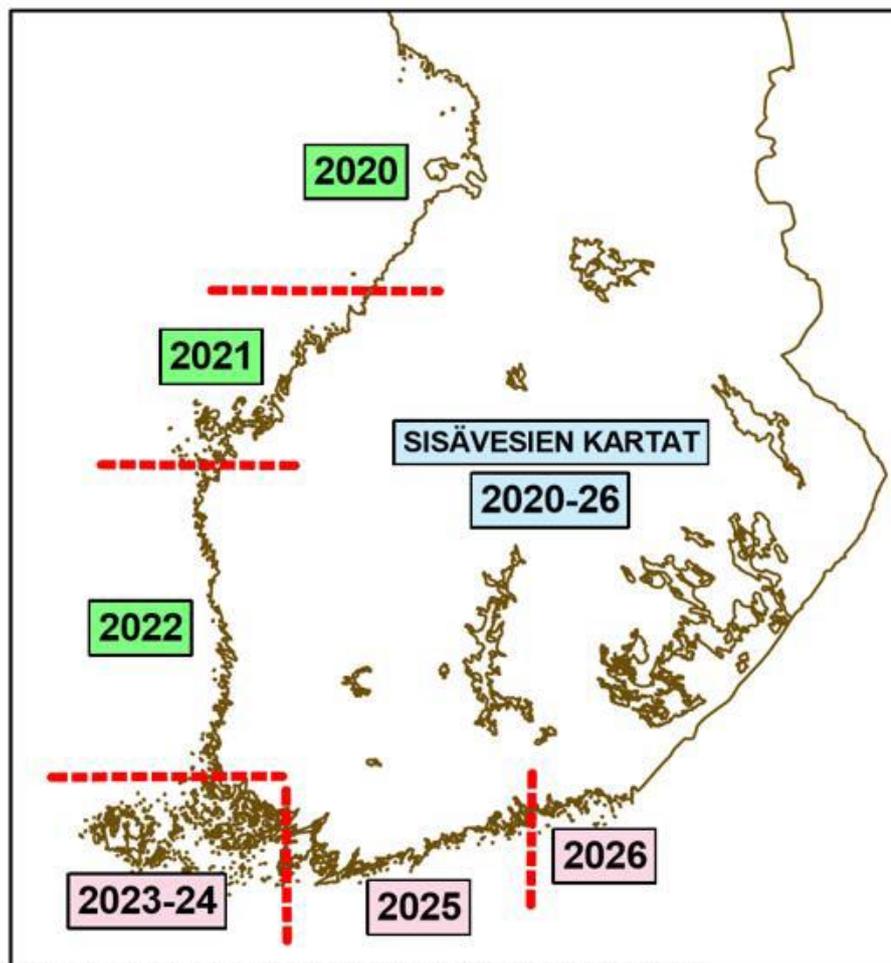


Fig.7. New vertical system N2000 (Baltic Sea Chart Datum 2000).



10. Other activities

FHO has bilateral Arrangements with Estonia, Sweden, Norway, Germany and UKHO (including adoptions of printed charts).

Finland is participating to the following IHO Committees and WGs: HSSC, IRCC/WEND-WG (representing BSHC), IRCC/MSDIWG, HSSC/ENCWG, HSSHC/S-100 WG, HSSC/DQWG, HSSC/NCWG (Chair), HSSC/NIPWG, HSSC/TMCWG, HSSC/S-101PT, HSSC/UKCMPT, BSHC, BSHC/CDWG, BSHC/BSICCWG (Chair), BSHC/BSDIWG, BSHC/BS-NSMSDIWG, BSHC-HELCOM/MWG (Chair), NHC, NHC/NCEPG, NHC/NSEG and ARHC (Associate Member), ARHC/OTWG, ARHC/ARMSDIWG

Finland is member of PRIMAR and current chair of the PRIMAR Advisory Committee. Finland is actively participating Primar WGs.

11. Conclusions

This report highlights the main activities of the Finnish Hydrographic Office since BSHC 23rd Conference in August 2018.