



National Report of Finland

Executive Summary

This Report highlights the main activities and achievements of the Finnish Hydrographic Office since NHC 62th Conference in April 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, experience of new survey techniques (LiDAR) has been gained
- 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 April.
- The implementation of the project "New vertical chart reference N2000" has started.

1. Finnish Hydrographic Office- new organisation

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.



Finnish Transport and Communications Agency



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 1. and 4. June 2018.



2. Hydrographic surveys

During 2018 surveys were completed on Rauma Fairway up to IHO S-44 ed5 standard and FSIS-44. Some pilot projects with LiDAR and MBES were finalized in the nearshore coastal areas in the Archipelago Sea and another LiDAR test project completed. 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 on survey task. *Fig.1* shows re-survey status in Finnish territorial sea and EEZ area at the end of 2018.

Task	Surveyed by	Multibeam m [Km ²]	Line sounding [Km ²]
Rauma Fairway	Meritaito Oy	80	
Archipelago Sea areal surveys	Meritaito Oy	450	LiDAR 60

Table 1: Survey statistics for 2017.



Fig.12. Hydrographic re-survey coverage in 2018

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. As a total Baltic Sea re-survey scheme, the requirements of the HELCOM Moscow 2010 Ministerial Declaration are in progress in all Baltic Sea countries.

Co-operation with Swedish Maritime Administration in service-provider work supervision and LiDAR planning has been most helpful.



Finland is participating in the EU INEA CEF Transport TEN-T grant program FAMOS Odin (2016-2018) application, 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 automatic methods for bathymetric data processing have been developed and will be taken into production use 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 below)

New nautical chart folios for yachtsmen, D (Turunmaan saaristo, Åbolands skärgård) and K (Keitele and Keitele Canal) have been published during the spring 2018

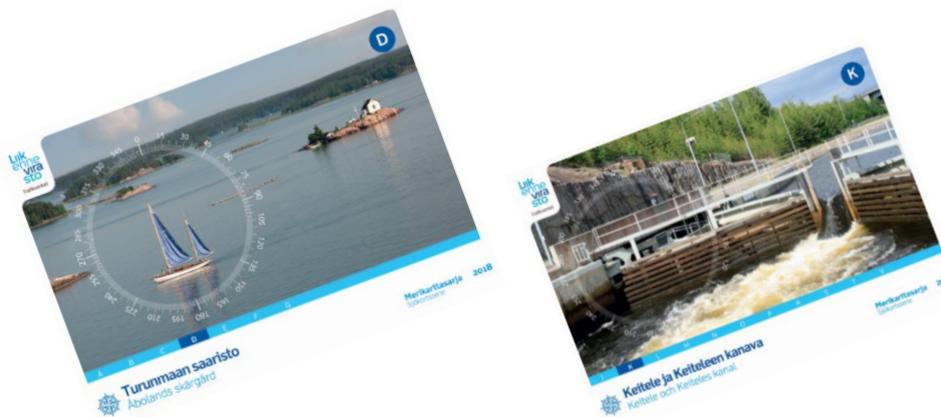


Fig.4. New edition of nautical charts series for leisure craft 2018.

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

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



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



Fig.5. 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

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

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 ENCs increased 30 %, number of customers and amount of ships using ENCs increased about 25 % in 2018. The number of ENC Statistics are shown in *Table 4* and *Table 5*.



Table 4. Statistics of produced Finnish ENC's

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

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Table 5: Statistics for the use of Finnish ENC's

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

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. The critical tasks that are still unfinished and prevent the production start up with the new system are related to data migration and system integrations.

Project schedule is delayed for six months compared to the initial project timetable. Target for the production start up with the new system is 4/18 and for the finalizing of the system renewal project 5-6/18.

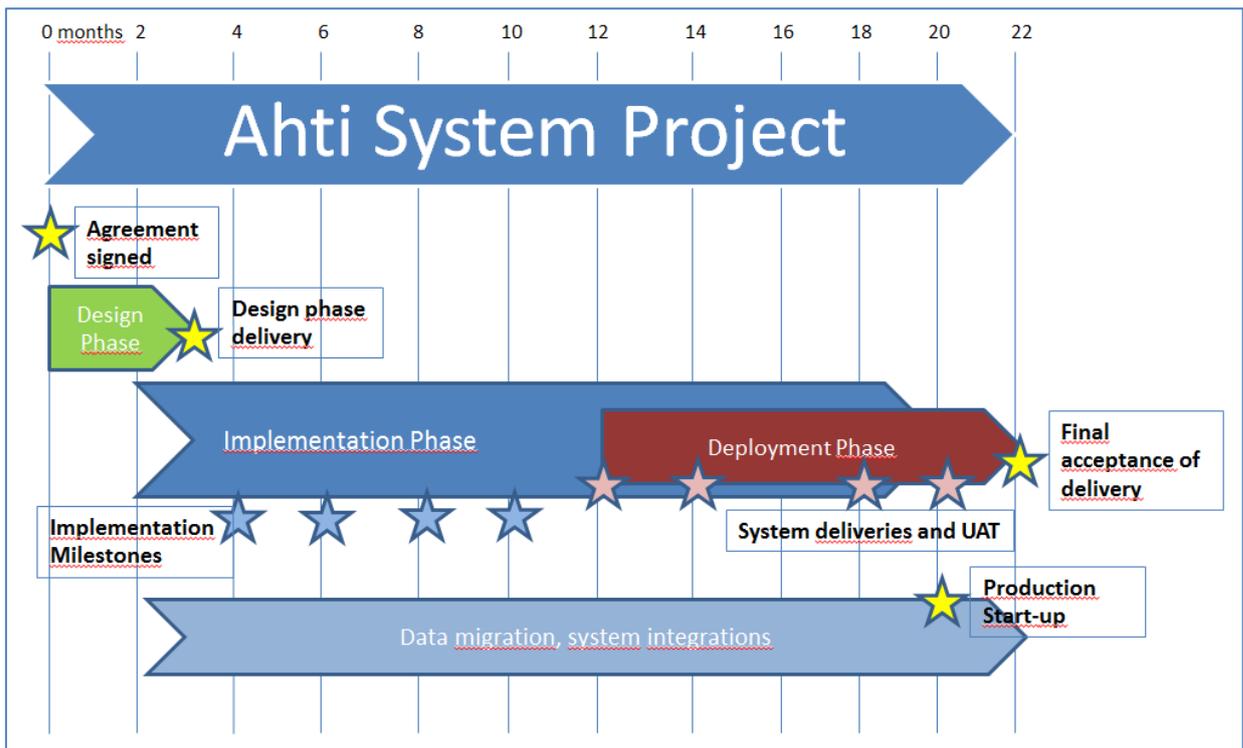


Fig.6. Implementation plan of AHTI-project

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
- ✓ Production start up 4/19
- ✓ Project tasks and deployment phase completed, final acceptance of the delivery 5-6/19

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 - 2020 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.

Table 6: Statistics for nautical publications

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

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 and Communications Agency:

<https://julkinen.liikennevirasto.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.

Table 7: Statistics for navigational warnings

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



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 ■ Re-survey required Nécessitant de nouveaux levés Requiere nuevo levantamiento ■ Never systematically surveyed Jamais hydrographié systématiquement Nunca levantado sistemáticamente	60	35	5	100	0

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 Atterissage et navigation côtière Recalada y Pasaje costero			Approaches and Ports Approches et ports Aproches y puertos		
	■ 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 ■ Covered by RNC meeting S-61 Couvert par des RNC conformes S-61 Cubiertas por RNC cumpliendo S-61 ■ Covered by ENC meeting S-57 Couvert par des ENC conformes S-57 Cubiertas por ENC cumpliendo S-57	95	0	100	100	0	100	100	0

8. Capacity building

Nothing to report.

9. Oceanographic activities

- > The implementation project for "New vertical chart reference N2000" (Batic 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 charts, starting 2020 with a new hydrographic chart data management and production system AHTI.

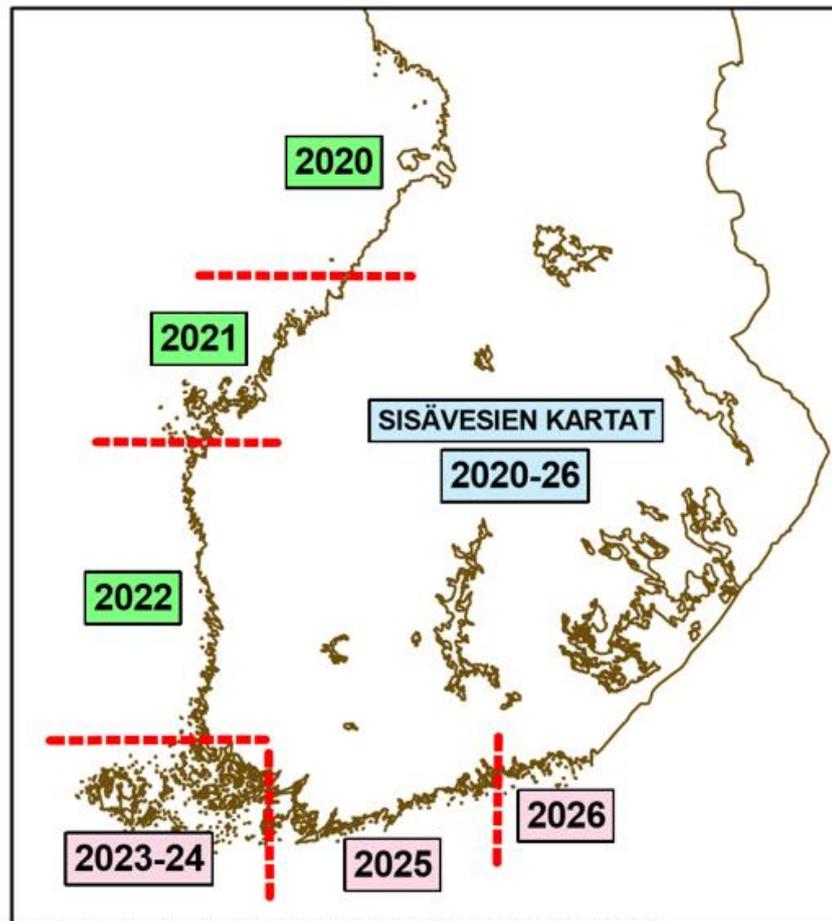


Fig.7. New vertical system N2000 (Baltic Sea Chart Datum 2000)

10. Other activities

FHO has Bilateral Arrangements with UKHO (including adoptions of printed Charts), Sweden, Estonia and Germany.

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, NHC, ARHC (Associate member), BSHC/CDWG, BSHC/BSICCWG (Chair), BSHC/BSDIWG, BSHC/BS-NSMSDIWG, BSHC-HELCOM/MWG (Chair), NHC/NCEP, NHC/NSEG, NHC/Workshop on validation of multi-beam data, ARHC (Associate member), ARHC/OTWG, ARHC/ARMSDIWG.

Finland is member of PRIMAR and take part actively in the work of PRIMAR WGs.

11. Conclusions

This report highlights the main activities of the Finnish Hydrographic Office since NHC 62nd Conference in April 2018.