



## National Report of Finland

### Executive Summary

This Report highlights the main activities and achievements of the Finnish Hydrographic Office since NHC 61<sup>th</sup> Conference in March 2017.

- Hydrographic surveys have been performed as planned.
- Production of nautical charts has been performed as planned.
- Project for developing Bathymetric Data management System (Merta) final delivery accepted.
- Project for renewal of the Nautical Chart Production System (Ahti) is in the development phase.
- The implementation project "New vertical chart reference N2000" has started.

### 1. Finnish Hydrographic Office

There have been no major changes in the Hydrographic Office after the last meeting. Staff is now about 50 including 6 consultants. Annual budget for hydrographic activities is about 10 million euros.

The Ministry of Transport and Communications is planning a major reorganization for the year 2019. According the plan two administrations will be established to where existing functions and tasks from the Finnish Transport Agency, the Finnish Transport Safety Agency and the Finnish Communications Regulatory Authority will be reorganized. In addition, a new state owned Traffic Management Company including i.e. VTS -services will be established.

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 27-26 June 2017.

### 2. Hydrographic surveys

During 2017 surveys were proceed on inland lake area in Lake Saimaa Savonlinna – Varkaus (SAVA2016) up to IHO S-44 ed5 standard and FSIS-44. Some pilot projects with LiDAR and MBES were conducted in the nearshore coastal areas. One of the main efforts during 2017 had been in developing bathymetric data management system (Merta). In the [Table 1](#) there are statistics of 2017 on survey task. In [Fig.1](#) there are shown survey projects 2017 and [Fig.2](#) shows re-survey status in Finnish territorial sea and EEZ area at the end of 2017.

Task	Surveyed by	Multibeam [Km <sup>2</sup> ]	Line sounding [Km <sup>2</sup> ]
Lake Survey 2016 SAVA2016	IIC Technologies Ltd	244	152

*Table 1: Survey statistics for 2017.*



*Fig. 1. Survey projects 2017*



*Fig. 2. Hydrographic re-survey coverage in 2017*

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 these days. 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.

[http://www.liikennevirasto.fi/documents/20473/120564/Liikennevirasto\\_merenmittausohjelma\\_2015\\_2020\\_julkisen.pdf/000a9f87-cf9e-422f-80ab-b5c79995b264](http://www.liikennevirasto.fi/documents/20473/120564/Liikennevirasto_merenmittausohjelma_2015_2020_julkisen.pdf/000a9f87-cf9e-422f-80ab-b5c79995b264)

to Finnish Transport Agency Hydrographic Survey Program 2015-2020 (in Finnish).



### Hydrographic data processing and management

The renewal of the Bathymetric database is continuing. The Bathymetric Data Management System (MERTA) will be a system for validating, handling, storing hydrographic survey data and creating surface models and other deliverable data products out of it. Merta final delivery was accepted at the end of February 2018. The aim is that Merta will be taken into use step by step during the spring-summer 2018. Migration of the data will start in April 2018.

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 the Baltic Sea Depth Model within the limits of Finnish national legislation. Information will be updated continuously after new surveys.

## 3. Nautical Charts

### Printed charts

Printed charts in 2017 have been produced as scheduled. New INT chart 1210/ FI954 (1:250 000) according original INT -scheme was published in April 2017. A new edition of nautical chart folio for yachtsmen, F (Merenkurkku, Kvarken) was published. A totally re-surveyed yachting chart from inland waters (482 Vuotjärvi Syväri) was published in April.

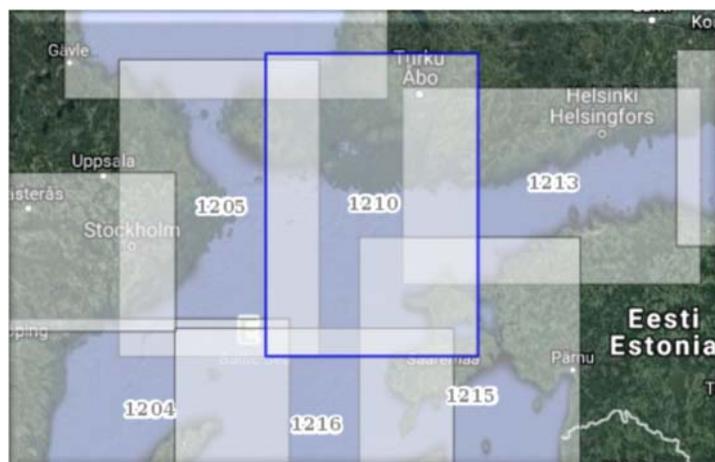


Fig.3. New INT chart 1210

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

*Table 2 Statistics of published New Editions of Finnish nautical charts in 2012 – 2017.*



In 2018 a new nautical chart folio for yachtsmen, D (Turunmaan saaristo, Åbolands skärgård) and K (Keitele and Keitele Canal) will be published during the spring 2018. [Link](#) to a new Finnish chart catalogue 2018.



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

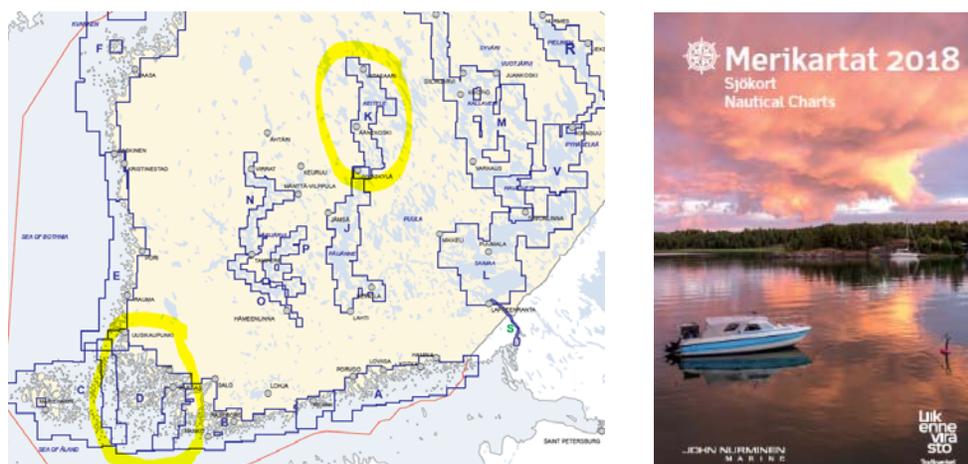


Fig.5. New edition of nautical chart series D and K for leisure craft spring 2018. New Chart catalogue.

Statistics for sold charts are shown below in Table 3. In addition to these there are many adopted charts sold by UKHO. There was a big drop in the sales of paper charts during the year 2016.

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



Sales reduction has contributed etc.:

- limited number of new editions of most selling charts
- increased use of ENC on SOLAS vessels
- increased use of chart plotters on leisure crafts
- economic downturn

### 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 ENCs sold increased 6 %, number of customers 16% and amount of ships using ENCs increased 14 % in 2017. The number of ENC Statistics are shown in *Table 4* and *Table 5*.

*Table 4. Statistics of produced Finnish ENCs*

Released ENCs	2012	2013	2014	2015	2016	2017
<i>New ENCs</i>	8	4	3	25	17	5
<i>New editions</i>	44	33	43	48	38	50

*Table 5: Statistics for the use of Finnish ENCs*

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

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 ENCs 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 competitive bidding

The Procurement process for new nautical chart production system has been finalized. The Finnish Transport Agency decided to award the contract to Teledyne Caris, Inc. that submitted the winning Tender.

Implementation of new ENC and paper chart production system is continuing. System design milestones and first system implementation milestone was passed in 2017. The aim for production to start with AHTI is in November 2018.

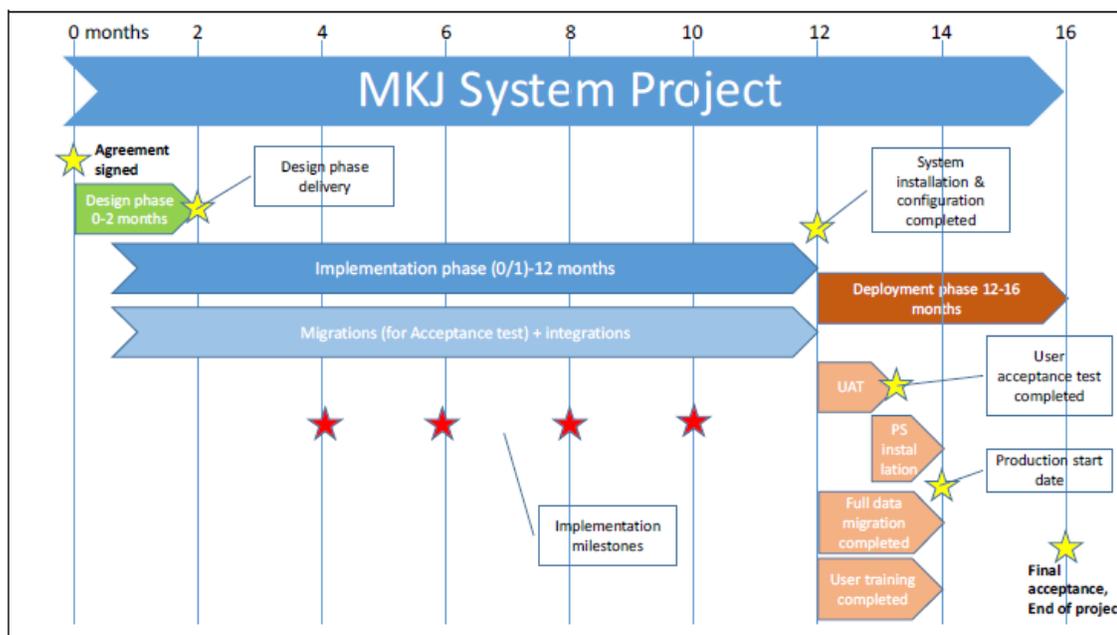


Fig.6. Implementation plan of AHTI-project

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

- ✓ Pilot system testing 5/18
- ✓ Implementation milestones (4) delivered 6/2018
- ✓ System installations and configurations completed and accepted 8/18
- ✓ User acceptance testing of complete system 9/18
- ✓ User training 10/18
- ✓ Data migration and system integrations completed and production start 11/18
- ✓ Deployment phase completed and final acceptance of delivery 12/18

#### Other projects

The new AHTI system will be integrated to LOKI (source data management system), to MERTA (Bathymetric Data Management system) and to Navaid's Registry.

Study to determine specifications and a portfolio for Bathymetric Surface products (based on IHO/S-102), was continued 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.

#### **4. Nautical publications**

NtMs has been published according to the plans. Notices to Mariners are distributed from website as download service (PDF), free of charge. In the beginning of 2017 the additional NtM Online web-service was opened, 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.

Statistics of nautical publications are shown in *Table 6*.

*Table 6: Statistics for nautical publications*

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

## 5. MSI

Finnish Transport 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 239 navigational warnings were published during 2017.

*Table 7: Statistics for navigational warnings*

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

## 6. C-55

Status of hydrographic Surveys

Survey coverage Couverture hydrographique Cobertura hidrográfica	Depth < 200m Profondeur < 200m Profundidad < 200m			Depth > 200m Profondeur > 200m Profundidad > 200m		
	<p><b>%</b> Adequately surveyed Correctement hydrographié Adecuadamente levantado</p> <p><b>%</b> Re-survey required Nécessitant de nouveaux levés Requiere nuevo levantamiento</p> <p><b>%</b> Never systematically surveyed Jamais hydrographié systématiquement Nunca levantado sistemáticamente</p>	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 Atterrissage et navigation côtière Recalada y Pasaje costero			Approaches and Ports Approches et ports Aproches y puertos		
<p><b>%</b> 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><b>%</b> Covered by RNC meeting S-61 Couvert par des RNC conformes S-61 Cubiertas por RNC cumpliendo S-61</p> <p><b>%</b> 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

## 7. Capacity building

Nothing to report.

## 8. 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 will be write down before summer 2018.

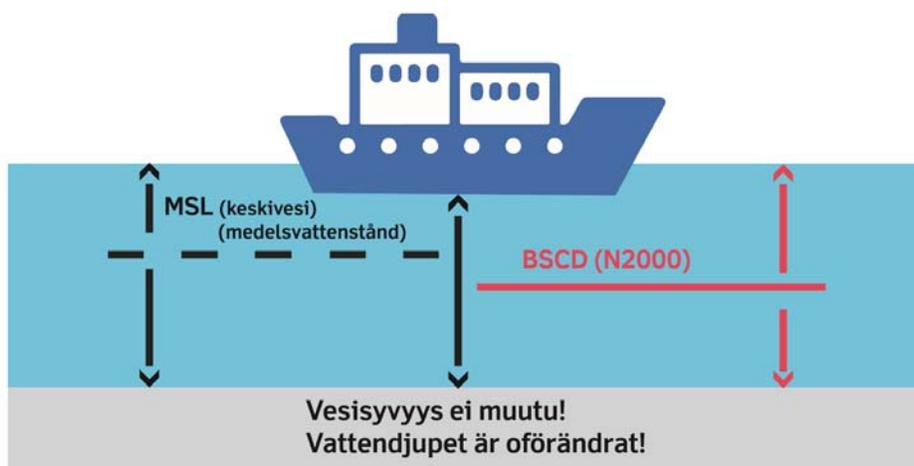


Fig. 7. New vertical system N2000 (Baltic Sea Chart Datum 2000)

## 9. Other activities

Based on the Bilateral Arrangement the adoptions of printed Charts by UKHO have been expanded. Arrangement with Sweden has been updated and arrangement with Estonia is under review.

The FHO has continued the development of "Open Data" services. The new WMTS-service was released with a licensing of creative commons terms and conditions [link](#).



Liikennevirasto  
Finnish  
Transport  
Agency

62<sup>nd</sup> NHC Conference  
10-12 April 2018  
Arkö, Sweden

### Agenda Item B.3 National Report Finland

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/NCPEG, NHC/Workshop on validation of multi-beam data and ARHC/technical committee.

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

## 10. Conclusions

This report highlights the main activities of the Finnish Hydrographic Office since NHC 61<sup>st</sup> Conference in April 2017.