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<b>Agenda Item</b>	2 – Matters arising from HELCOM meetings
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## Background

HELCOM is participating as a partner in the project [Baltic SCOPE](#) whose aim is to come up with common solutions for cross-border maritime planning. The project is the implementation of the EU call for proposals MARE/2014/22 and will run 18 months from 16 March 2015 to mid-September 2016. HELCOM role is to provide the project with maritime GIS data, especially on ship movements in the region based on the HELCOM AIS network. Description of the initiative can be found as **Annex 1**.

As part of the SCOPE project the HELCOM Secretariat is exploring more efficient use of HELCOM AIS data in Maritime Spatial Planning, including the production of statistics and high resolution data products on ship traffic and its environmental pressures/risks based on AIS signals received within the Baltic Sea region. In addition to MSP such information can be used in i.a. more regular forms of regional risk assessments related to maritime traffic including risks of spills.

In April 2015, the HELCOM Secretariat carried out interviews with AIS users from the HELCOM Contracting Parties, Norway and the European Marine Safety Agency. The aim of these interviews was to have a better understanding of the best available working procedures, software and hardware for processing AIS data. It was also the opportunity to gather ideas what type of products the HELCOM Secretariat could generate from the AIS data. The results of these interviews are presented in **Annex 2**. The interviews were also used to get an overview of the HELCOM AIS network structure and underlying technology (**Annex 3**).

In May 2015, the Danish Maritime Authority which is hosting the HELCOM AIS database shared with the HELCOM Secretariat AIS data from 2005 until 2014. The Secretariat is now pre-processing the 10 year AIS dataset and is also producing maps for MSP purposes that have been delivered in draft form to the Baltic SCOPE project partners. Some examples of maps produced are available in **Annex 4**.

Information on SCOPE activities by the HELCOM Secretariat have been submitted to and discussed at the HELCOM AIS EWG 26-2015 (May 2015) as well as HELCOM RESPONSE 20-2015 (June 2015).

## Action required

The Meeting is invited to take note of the project activities.

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## Annex 1

### **Baltic SCOPE –Towards coherence and cross-border solutions in Baltic Maritime Spatial Plans**

Call for proposals MARE/2014/22, Lot 2: Baltic Sea November 2014

As part of the ongoing activities within the field of Maritime Spatial Planning (MSP), HELCOM is participating as a partner in the project Baltic SCOPE –Towards coherence and cross-border solutions in Baltic Maritime Spatial Plans, which was submitted to the EU call for proposals MARE/2014/22 within the deadline 14 November 2014.

The Lead partner of the initiative is the Swedish Agency for Marine and Water Management, SwAM. Partners include Federal Maritime and Hydrographic Agency/BSH (Germany), Maritime Office in Szczecin (Poland), Danish Nature Agency (Denmark), Ministry of Environmental Protection and Regional Development of Latvia (Latvia), Estonian Ministry of the Interior (Estonia), State Regional Development Agency/VASAB (Latvia), Nordregio (Intergovernmental), Finnish Environment Institute/SYKE (Finland) and HELCOM.

Taking ongoing MSP processes in the participating countries as a starting point, the project will focus on cross-border consultations for two “real” MSP cases: i) South-West Sweden bordering Denmark, Germany and Poland, and ii) the Latvian sea border with Sweden and Estonia. A series of meetings will be organised among planners and relevant institutional stakeholders to work on transboundary topics in a systematic step-by-step approach. This enables the project to provide real planning solutions for real transboundary issues and a template for dealing with similar issues elsewhere.

A key benefit of this approach is that it will equip planners from the participating countries to take on board transnational considerations when developing their national MSPs. This means that national maritime spatial plans can be prepared based on in-depth information provided by neighbouring countries and common solutions found in joint discussions, leading to greater alignment of national plans.

Up and above the solutions developed for the case study areas, the project will also deliver a set of generic good practices, methods and results which will be filtered into the Baltic MSP process fostered by HELCOM-VASAB MSP WG. These lessons learnt and recommendations will be generated through a comparative analysis of the two cases on the basis of a systematic, integrated research process. The project will also generate recommendations for evaluating the MSP process.

Moreover, it will also generate recommendations for implementing an ecosystem based approach to MSP, the use and exchange of data in MSP, the Strategic Environmental Assessment (SEA) process and institutional stakeholder consultation. Maritime uses to be covered are likely to include shipping, energy, fishery and nature protection areas, although the exact issues and uses to be covered will ultimately depend on the start-up phase where the most pertinent transnational “hot topics” will be identified.

HELCOM, with experiences in regional data exchange will provide input regarding transnational guidance on best practices for the use and exchange of AIS based GIS data on maritime activities. HELCOM will provide the project with maritime GIS data, especially on ship movements in the region based on the HELCOM AIS network. The HELCOM Secretariat will also in a publication draw together lesson learnt on the use of maritime activities data in Baltic Sea MSP, including the case study areas.

HELCOM-VASAB MSP WG 10-2015 was informed by the European Commission that the project had been granted funding. The project is currently preparing for signatures of the contract, estimated to take place during the next weeks. The implementation period will be 18 months from the date included in the final contract. The total estimated budget of the action is euro 2 653 749, HELCOM share of the total budget is euro 156 250.

HELCOM-VASAB MSP WG 10-2015 further supported the Baltic SCOPE project as flagship project under Horizontal Action Spatial Planning under the EU Strategy for the Baltic Sea Region (EUSBSR), and DG Regio is to consider the proposal to make a recommendation to the High Level Group, who makes the final decision on the flagship status.

A kick-off partner meeting was held in Gothenburg, Sweden on 18 and 19 March 2015. Based on information from the lead partner 23 April 2015 the implementation period will be 16 March 2015- mid September 2016.

## Annex 2

## 1. Results of AIS users interviews

This is the result of the interviews carried out by the HELCOM Secretariat. The purpose of these interviews was to get to know how AIS data experts work with data and learn from their experiences. The focus of the interviews was on finding out what type of storage and analysis equipment they use.

Contact		General information			Storage of AIS data		Analysis of AIS data		
Country / Organization	Name and contact	International Data exchange networks	Ideas on what HELCOM should provide	Additional info	Purpose of the storage	Software / Hardware	Types of analysis	Products from AIS data	Software / Hardware
<b>Denmark / Danish Maritime Authority (DMA)</b>	<i>Omar Frits Eriksson,</i> <a href="mailto:OFF@dma.dk">OFF@dma.dk</a>	HELCOM, North Sea and IALA-net. Participating in North Atlantic, American AIS (AISAS?). They provide some European member states data to EMSA.			To provide the countries a compiled version of AIS data in the Baltic Sea.		No advanced analysis.	<a href="#">Online map service</a> for HELCOM Contracting Parties.	They recommend using just a powerful laptop.
<b>EMSA</b>	<i>Yann Le Moan,</i> <a href="mailto:yann.le-moan@emsa.europa.eu">yann.le-moan@emsa.europa.eu</a>	EMSA is managing the central AIS network of all EU member states (+Norway and Iceland). Data flows from servers (Mediterranean Sea, HELCOM, North Sea, North Atlantic). Some countries are also sending their data straight from their AIS national network. There are also 2 satellites providers (Norway and Iceland?).	International agreements following the general framework – Directive 2002/59/EC and SLA (Service Legal Agreements) with the regional servers (Italian CG for Med. Sea server, DMA for the HELCOM server, etc.).	There are two online map services: 1. SafeSeaNet (vessel traffic monitoring) and 2. IMDaTe (vessel behavior monitoring). The plan is to develop an interface proving statistic. It would be interesting to get input from HELCOM about AIS data quality.	Storing about 8 million signals (=rows) per day. The data has to be available online for 2 months. The last 5 years of AIS data are available under request (response to data request should be done within 5 working days). Only public authorities can have request to these data – Business Continuity Facilities (BCF) for example recently with the Bonn Agreement. It is a real challenge to store and handle AIS data. Archiving data is currently under analysis.	The database is from Oracle (free), the work is done under Linux servers on virtual machines. The hardware were developed by contractors and are owned by EMSA (to receive the data flows).	Not so much analysis. EMSA is a raw data (filtered if needed) provider.	Sometimes some small analysis are done for real time monitoring, but not more.	Use of ArcGIS and testing open source server platforms like GeoServer

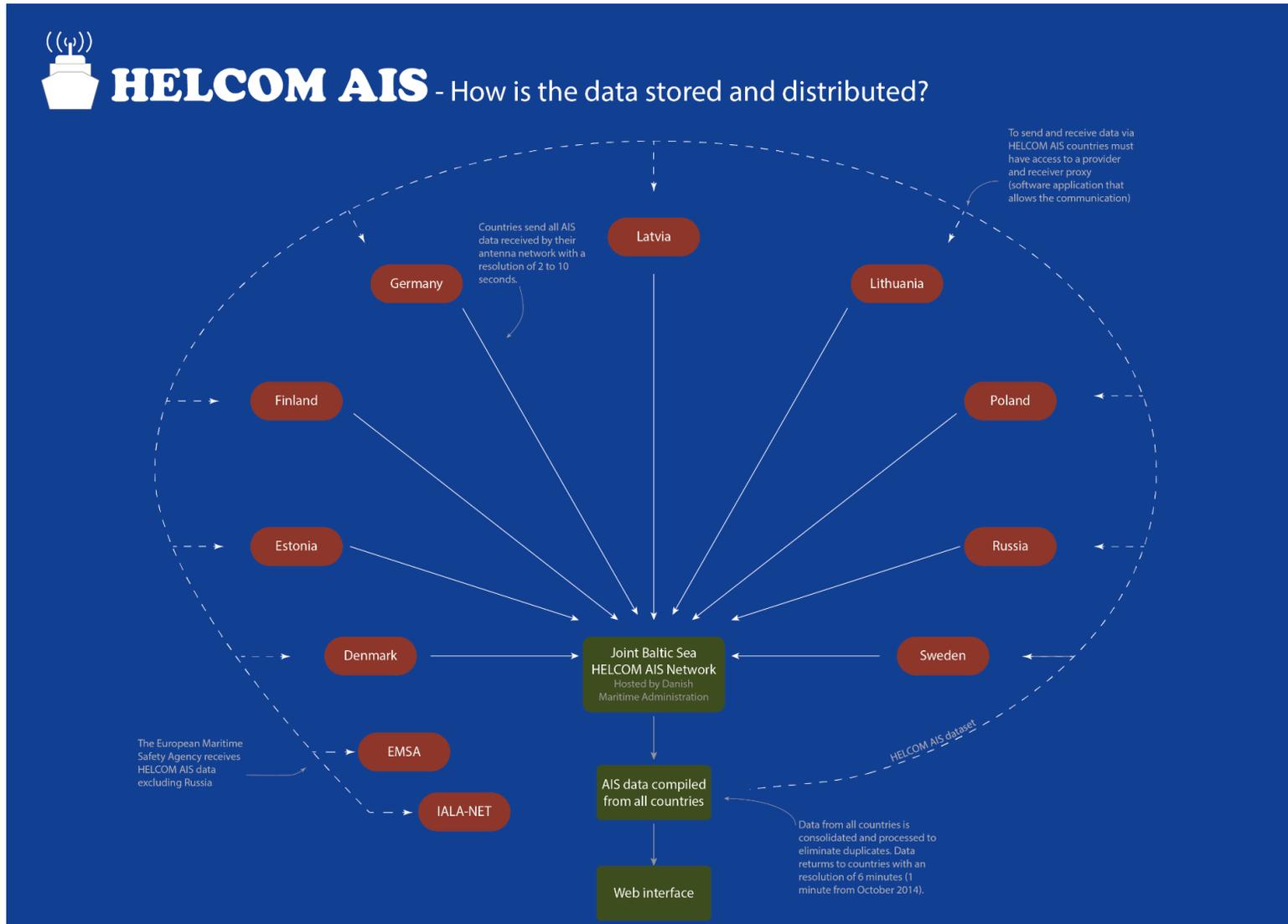
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Country / Organization	Name and contact	International Data exchange networks	Ideas on what HELCOM should provide	Additional info	Purpose of the storage	Software / Hardware	Types of analysis	Products from AIS data	Software / Hardware
Estonia	Alar Siht, <a href="mailto:alar.siht@vta.ee">alar.siht@vta.ee</a>								
Finland / Finnish Meteorological Institute (FMI)	Jukka-Pekka Jalkanen, <a href="mailto:jukka-pekkajalkanen@fmi.fi">jukka-pekkajalkanen@fmi.fi</a>		To show that AIS data is relevant and the use will be increasing.	Not provider of AIS data for external users. Their main focus is on writing science to produce papers.	The have all HELCOM AIS datasets from year 2005 to 2013. They run models and statistics when needed.	Basic storage in CSV divided per month on an external conventional hard disk.	STEAM – models using AIS data for emissions from ships. They use the HIS Fairplay database to have ship properties.	Analysis of emissions from ships, costs of regulations to reduce emissions, etc.	STEAM, they built their own software. No database, they use a simple workflow. Basic laptop, 16GB RAM and 64 bits.
Finland / Finnish Transport Agency	Kaisu Heikonen, <a href="mailto:kaisu.heikonen@tra.fi">kaisu.heikonen@tra.fi</a>			Bilateral agreement with Sweden, Estonia and Poland. No provider of AIS data for external users.	There is a pilot project to store national data.	Cognos for reporting and Hadoop for handling the storage.			
Finland / Finnish Transport Agency	Hanna-Mari Miettinen, <a href="mailto:Hanna-Mari.Miettinen@liikennevirasto.fi">Hanna-Mari.Miettinen@liikennevirasto.fi</a>								
Germany	Christian Forst, <a href="mailto:christian.forst@wsv.bund.de">christian.forst@wsv.bund.de</a>								
Latvia	Gints Ozols, <a href="mailto:gints.ozols@mil.lv">gints.ozols@mil.lv</a>								
Lithuania / Marine Safety Agency (MSA)	Edmundas Trusys, <a href="mailto:edmundas.trusys@msa.lt">edmundas.trusys@msa.lt</a>	EMSA SSN (SafeSeaNet) and HELCOM	It would be very good to have an additional source of data than the AIS national network. Few time the connection with the AIS national network was lost and thanks to the HELCOM AIS data network, it was possible to still have data coming in.	No bilateral agreement with other countries for now, but probably in the future. Work with AIS is new in Lithuania. MSA provides AIS data or giving access to the Lithuanian SafeSeaNet (full access or with some limits, depends of the contract) for government authorities, but they	Monitoring, 1 year history review in the national waters	They developed their own software. IBM blade server + virtual servers (Citrix, VMware), 20 Gb RAM + 1 To for storage. This is enough for national data.	Analysis for different purposes: ships course history, statistics, etc.	To develop graphical interface (homemade). There is already a map service for public and institutions.	Software are developed in-house. IBM Blade server, virtual servers (Citrix, VMware).

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				must sign a contract. Residents confirm their identity (only LT residents) to be able to monitor vessel movements with AIS (very "limitless" (public)).					
Norway / Norwegian Maritime Administration	Harald Åseii, <a href="mailto:harald.aasheim@kystverket.no">harald.aasheim@kystverket.no</a>	HELCOM and North Sea (UK, DK, etc.) international data exchange networks- Norway is running the North Atlantic network (Norway, Iceland, DK and satellites data.	These questions are more and more present in this field. It would be good for HELCOM to provide a report to answer basic questions about AIS. It would also be interesting to explain how AIS data could be merged to other data (e.g. environmental studies) to fulfill the needs of research	No bilateral agreement with other countries. AIS data provider: they provide raw data to companies (i.e. oil industry). These companies managed the data (pre-processing, database, etc.).	Storage of Norwegian AIS data network and North Atlantic. For online data viewer (2 years of data from the Norwegian network and from 2010 for the satellites).	Microsoft software – simple folders in windows explorer. Storage on conventional hard disks.		Map service available: <a href="http://havbase.no">havbase.no</a>	
	Jon-Arve Røyset, <a href="mailto:jon.arve.royset@kystverket.no">jon.arve.royset@kystverket.no</a>	HELCOM and North Sea (UK, DK, etc.) international data exchange networks- Norway is running the North Atlantic network (Norway, Iceland, DK) and satellites data.	HELCOM could get data flows from Havbase.	No bilateral agreement with other countries. AIS data provider through havbase. With an account, one could go deeper in filtering the ship types.	Storage of Norwegian AIS data network and North Atlantic. For online data viewer (2 years of data from the Norwegian network and from 2010 for the satellites).	PostGres (open source DB) with PostGIS extension for handling spatial data. They use a powerful laptop, but nothing special. Could not give the specifications. RAM is important for AIS data.	Pre-processing AIS data to create maps for havbase.no. There is update of the database every night to add more data. The pre-processing is automatic and new layers are generated for havbase. Use of Fairplay and ShiplInfo to cross IMO number and ship characteristics (for emissions calculation).	Everything is going on havbase. The next step is to cross havbase with weather data to be able to predict risks?	PostGres (open source DB) with PostGIS extension for handling spatial data to filter data / calculate distance, etc. Also work with google earth, ArcGIS and google API to produce graphs. A good laptop, but nothing special. Could not give the specifications. RAM is important for AIS data.
Poland	Marek Dziewicki, <a href="mailto:marek.dziewicki@mqdy.gov.pl">marek.dziewicki@mqdy.gov.pl</a>	HELCOM, IALA net, EMSA, NATO (Volpe), Safe Sea		Not a provider of AIS data for external users (public or	National databases, two local databases. The aim of the	Software: GateHouse, Sprint (PL), Oracle.	Traffic intensity, density, ships tracking, legal		Software: GH WebStat (Dk), Coast

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	Grzegorz Zacharczuk, <a href="mailto:grzegorz.zacharczuk@umady.gov.pl">grzegorz.zacharczuk@umady.gov.pl</a>	Net. No bilateral agreements with other countries		government authorities). Not provider of a GIS inline map service. HELCOM could provide some regional risk analysis, dynamical risk analysis, coverage measurements, direct access to AIS Web Helcom portal.	storage is to have independent data source in real time for local application.	Dedicated servers, IBM blade servers, HDD Matrix RAID6 (up to 2TB).	investigations, statistics, coastal route designing. The main products are risk analysis and AIS coverage.		Watch (Se), AIS Log DB (PL). Harware: Desktop PC, servers 2008 R2.
Russia	Andrey Dolzhikov, <a href="mailto:ekuzovinsky@rosmorport.ru">ekuzovinsky@rosmorport.ru</a>  Evgeny Kuzovinsky, <a href="mailto:ekuzovinsky@rosmorport.ru">ekuzovinsky@rosmorport.ru</a>								
Spain	Alejandro Busto González, <a href="mailto:alejandrobq@sasem.gar.es">alejandrobq@sasem.gar.es</a>								
Sweden	Torbjörn Graphe, <a href="mailto:torbjorn.grape@sjofartsverket.se">torbjorn.grape@sjofartsverket.se</a>								
Sweden	Eva-Lotta Sundbald, <a href="mailto:eva-lotta.sundblad@havsmiljoinstitutet.se">eva-lotta.sundblad@havsmiljoinstitutet.se</a>								
Sweden / Linköping University	Anders Grimvall, <a href="mailto:anders.grimvall@liu.se">anders.grimvall@liu.se</a>	They get all of the AIS data of the Baltic Sea area from the Swedish Maritime Administration.	Traffic intensity maps and shipping statistics for Helcom Assessment Areas In addition, I think that Helcom could play an important	No bilateral agreement with other countries. No AIS data provider for external users. Data are only available for partners of the Swedish Institute	They have HELCOM AIS data for 2013 and 2014. They supply AIS data to the working group on shipping at the Swedish Institute for the Marine	SAS 9.3 (Data mining module) and QGIS Desktop 2.4. SAS because it is more documented compared to R and because they are more familiar with this software	Traffic intensity maps, shipping statistics by sea area and type of ship for the entire Baltic Sea and Swedish assessment areas according to the MSFD.	Popular report (in Swedish) about the impact of shipping on the marine environment. In a relatively near future: scientific article about the use of AIS for MSP	SAS 9.3 (Data mining module) and QGIS Desktop 2.4. HP Elite Book 2570p, 64 bits, 16 Go RAM and GB of Hard disk. 1000 GB external hard disk.

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			<p>role by developing:</p> <ul style="list-style-type: none"> <li>- Guidelines for data quality assessment (identification and handling of missing values and obviously erroneous records)</li> <li>- Guidelines for producing traffic intensity maps in spatial scales relevant for different types of assessments and supplying AIS data in a form that is useable for environmental scientists who have a moderate experience of analyzing big data.</li> </ul> <p>If possible, it would also be nice if AIS data could be coupled to detailed ship data for further analysis (e.g. emissions, etc.).</p>	for Marine Environment.	Environment, University of Gothenburg, Chalmers University of Technology (GOT) and Linnaeus University (Kalmar).	HP Elite Book 2570p, 64 bits, 16 Go RAM and GB of Hard disk. 1000 GB external hard disk.	<p>Grid between 100 m x 100 m and 500 m x 500 m.</p> <p>There is a big pre-processing step before analysis: few % of AIS signals contain mistakes.</p>	and data quality issues in using AIS data.	
SYKE	Eeva Saarinen <a href="mailto:Eeva.Sairanen@ymparisto.fi">Eeva.Sairanen@ymparisto.fi</a>								

Annex 3 HELCOM AIS Data Network diagram



#### Annex 4 Examples of maps produced for the Baltic SCOPE project and deliver to the project partners.

HELCOM Secretariat is producing yearly (even monthly if needed) maps on movements of different ship categories (tankers, cargo, passengers, fishing, all shiptypes):

