



Arctic Council SAO plenary meeting (eDocs code: ACSAOUS203) 5-6
October 2016, Portland, Maine, U.S.A.

Document Title

Arctic Ship Traffic Data (ASTD) Project Plan

Agenda item number

6.5.3

Submitted by

PAME

Document filename

EDOCS-3860-v1A-
ACSAOUS203_Portland_2016_6-5-3_ASTD_Project_Plan_February_
2016. PDF

Number of pages, not including this cover sheet

10

Type (e.g. report, progress report, etc.)

Project Plan



ARCTIC SHIP TRAFFIC DATA (ASTD)

PROJECT PLAN

FEBRUARY 2016

PAME
Protection of the Arctic Marine Environment



ARCTIC COUNCIL



Arctic Ship Traffic Data (ASTD) Final Project Plan 3rd of February 2016

PROJECT OVERVIEW	2
PURPOSE	2
OBJECTIVE	2
PROJECT LEAD	2
SYSTEM USERS	2
PROJECT TIMEFRAME	2
BACKGROUND	2
GEOGRAPHICAL COVERAGE	3
ASTD STRUCTURE	3
SHIPPING ACTIVITIES DATA	4
DATA REPOSITORY	4
WEB-BASED PRODUCTS AND APPLICATION	5
MAIN COMPONENTS AND TIMELINE	5
FINANCIAL CONSIDERATIONS	6
PHASE III: DATA REPOSITORY ESTABLISHMENT AND WEB APPLICATION	7
PROJECT TEAM	8
EXPERT GROUP	8
RISKS	8

Acknowledgement of funding and support

We gratefully acknowledge the financial support provided to this project by the Nordic Council of Ministers.



norden

Nordic Council of Ministers

Project Overview

Purpose

The **Arctic Ship Traffic Data (ASTD)** project is an initiative from *The Protection of the Arctic Marine Environment* (PAME), a working group of the Arctic Council. The project will collect historical information about shipping activity in the Arctic from the Arctic Council member governments to use for trend analysis and related purposes under the realm of the Arctic Council.

Objective

To develop a long-term, sustainable collection of Arctic shipping activities consisting of a data repository with selected ship traffic information provided by the Arctic Council governments and a web application/tool to extract information from the repository, allowing for periodic trend analysis.

Project lead

The USA is the project lead and facilitates close collaboration with the ASTD expert group with support from the PAME Secretariat.

System Users

The Arctic Council and its subsidiary bodies would be the primary ASTD system users with the PAME Secretariat as the central point of contact for system access, data requirements generation and reports.

Project timeframe

The project has already been initiated as a part of previous and current PAME Work Plans. The established expert group has identified four major milestones:

1. Final project plan/approval (February 2016)
2. Systems Design Document (SDD) (April 2016)
3. Data sharing agreements (September 2016)
4. System delivery (February 2017)

The goal is for the final product to be launched by the end of the U.S. Arctic Council Chairmanship (Spring 2017).

Background

The project is based on the database developed in 2005 for the release of the Arctic Marine Shipping Assessment Report (AMSA 2009). It is therefore an initiative derived from the AMSA 2009 Report and builds on similar principles, but will be applying a more advanced technology for data collection and presentation. This project has the same goal, but will look to secure sustainability by collecting and providing ongoing historical shipping data, rather than collecting information for a given year like the 2005 AMSA database did. The **Arctic Ship Traffic Data** (ASTD) project will use the same geographical scope as its predecessor where each Arctic member government defined its own Arctic waters. The data from 2004 was collected through questionnaires that contained information such as the number of vessels operating in the Arctic Council member government's waters, the type of vessels, cargo carried, operational routes, fuel used, engine size, date of operation, etc. This project is

a significant step by PAME to reduce the knowledge gap of circumpolar ship traffic in the Arctic as its member governments have been actively looking for ways to increase vessel traffic awareness since 2011.

The ASTD project will allow PAME, and the Arctic Council member governments and the Arctic Council as a whole, to facilitate trend analysis on ship traffic in the Arctic, including the number of ships in the Arctic, types of ships, exact routes and other related and relevant information. The trends can be used for the council members Arctic affairs. Products will benefit a wide-range of audiences, as the data repository will allow for the production of graphics, maps and tables of ship traffic information to be used in reports/analyses and other initiatives.

A draft project plan for the project (*formerly known as the Arctic Shipping Data Service – ASDS*) was drafted in 2014 and introduced at the PAME I 2015 meeting (February). The meetings Record of Decisions (RoD) under AMSA III(B) – Arctic Marine Traffic Systems stated:

*PAME welcomes the Secretariat’s submission of the Arctic Shipping Data Service (ASDS) Draft Project Plan and requests that the Secretariat, in consultation with AIS technical experts identified by member governments, **further develop the draft intercessionally for consideration at PAME II-2015**. Member governments are invited to inform the Secretariat of their technical experts no later than 15 March. (Link: [PAME I 2015 Working Group Meeting Report](#))*

The PAME Work Plan 2015-2017 was approved by Arctic Council Ministers in Iqaluit, Canada, in April 2015. The PAME work plan for the AMSA recommendation III(B) on Arctic Marine Traffic Systems states:

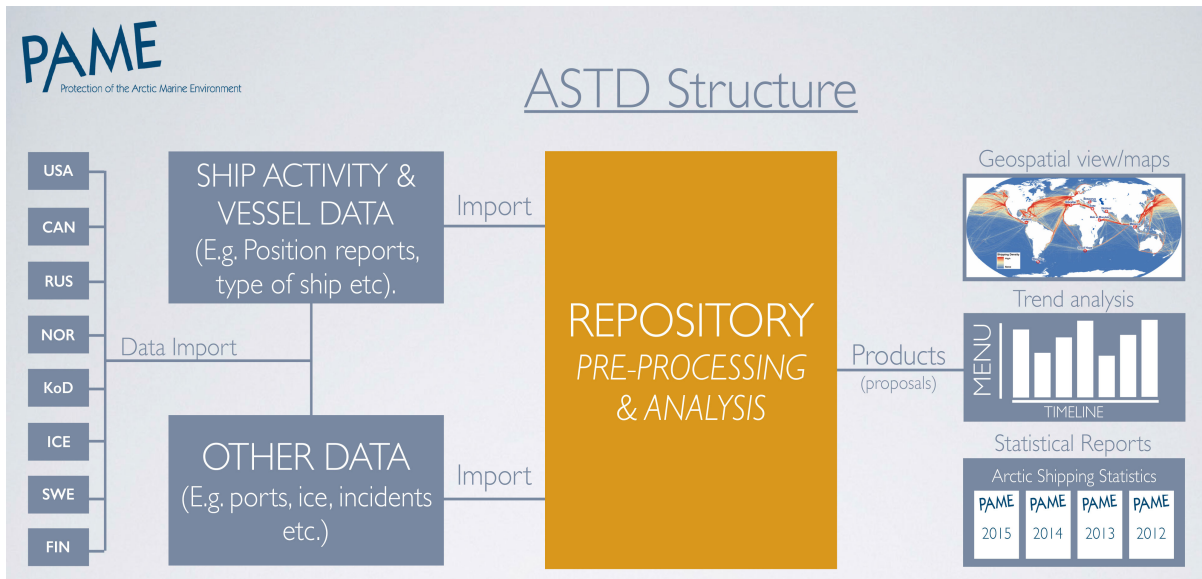
Continue to pursue opportunities including, as appropriate, through the proposed Arctic Shipping Data Service (ASDS), for updating Arctic ship traffic data contained in the AMSA Report (data collected in 2005) for use in studies, assessments, trend analyses, and the development of recommendations that enhance Arctic marine safety and support protection of Arctic people and the environment etc.

Geographical Coverage

The geographical coverage for this project will simulate the coverage of the 2004 shipping database as per the AMSA 2009 and therefore cover the central Arctic Ocean, in addition to its surrounding seas and waterways, including: the Bering Sea, the East Siberian Sea, the Chukchi Sea, the Beaufort Sea, the Davis Strait, Baffin Bay and Labrador Sea, the Greenland Sea, the waters around Iceland and the Faroe Islands, and northern parts of the Norwegian Sea, the Barents Sea, the Kara Sea, and the Laptev Sea.

ASTD Structure

The illustration below was prepared by the ASTD Expert Group at their meeting in September 2015 (parallel to the PAME II-2015 meeting) to demonstrate the flow of the main steps of the project, i.e. from the data stream as provided and agreed to by the Arctic Council member governments to the repository and finally to the possible phases of proposed final products, e.g. maps, trend analysis and statistical reports.



Shipping Activities Data

The shipping activity and vessel data from the Arctic Council member governments will be based on a data sharing agreement between the Arctic Council member governments. Furthermore, a Systems Design Document (SDD) will be developed to outline specifics on the data (e.g. format, functional availability and scalable cost options) to be included in this project. Both products will go through a review and negotiation process within PAME before finalizing as per the project timeline.

The ship activity & vessel data is envisaged to be based on Automatic Identification System (AIS), Long-range identification and tracking of ships (LRIT) data and on port arrival notifications from vessels to Arctic Council member state government agencies or ports.

Data repository

The data repository will collect historical data (e.g. a month old data) from the Arctic Council member governments as per a pending data sharing agreement and SDD (subject to PAME review and negotiation). The data sharing agreement will include language of data access and control and the SDD will include a section for connectivity security requirements for information assurance.

The illustration above shows information sources in two main categories: ship activity & vessel data, and other data.

The ship activity & vessel data will hold the basic data needed for various analyses. The aim is that it will also have the ability to filter the output to facilitate further analysis of the data.

- ✓ The following predefined outputs could include e.g.: passage line crossings; voyage track of individual vessels; density plots illustrating vessel routes and route topology; etc.
- ✓ The filtering capabilities may include e.g.: time; geography; vessel type (AIS ship types); vessel identity (*Maritime Mobile Service Identity* (MMSI)); etc.

The predefined outputs can be used for various trend analyses through appropriate use of the filtering mechanism.

Other data such as sea ice concentration is readily available from various sources such as MET institutions, through www.arcticweb.dk, www.barentswatch.no etc. Specific collection

of this data will thus not be a priority for this project but the aim is that the data repository will have such capabilities if needed and/or requested by member governments.

Web-based products and application

A web application will be developed to extract data from the data repository. Details on a possible web application will be included in the SSD and are subject to a final decision and agreement by PAME. Examples of possible final products will be explored to provide an application that can illustrate maps, trend analysis and statistical reports.

Main Components and timeline

This ASTD is a multi-phased project with PAME approval required for each phase which will facilitate financial planning and budgets.

PHASES AND COMPONENTS	TIMELINE
PHASE I - Preparations and finalize project plan	
Components: ✓ Finalize the ASTD project plan for submission and approval at PAME I 2016	February 2016
PHASE II: Systems Design Document (SDD) and Data sharing agreement	
Components: ✓ Start work on drafting a data sharing agreement ✓ Produce a Systems Design Document (SDD), which outlines specifically all technical aspects of the project and includes cost options for specific aspects of the data repository and the web application/tool. ✓ Final and agreed data sharing agreement ready to be signed by Arctic Council member governments	February 2016 April 2016 September 2016
PHASE III: Data Repository establishment and web application	
Components: ✓ Collection of data to the data repository. ✓ Development of web application to extract data from data repository	September 2016 November 2016
PHASE IV: Product production	
Components: ✓ Extracting data to produce maps, graphics, tables etc. ✓ Production of Arctic shipping Statistics Report	FY17 and beyond
PHASE V: Maintenance and updates	
Components: ✓ Data repository, web application and products	Beyond FY17

Financial Considerations

Consistent with the over-all Arctic Council approach, the development of the Arctic Ship Traffic Data Project (ASTD) will be financed through voluntary contributions and in-kind support from member governments. The proposed stepwise approach with PAME approval required for each phase will facilitate financial planning and budgets. Unless otherwise indicated, Arctic member government participation will be through in-kind support. The PAME Secretariat will provide administrative support from its normal annual budget.

ACTION / ITEM	Responsibility	Estimated Costs 2015-2017 (includes in-kind)
Project management		
Overall project coordination and research, including: <ul style="list-style-type: none"> ✓ Prepare and organize expert group meetings, both face-to-face and by GoToMeetings. ✓ Preparation of project documents and consults with PAME HoDs on progress and preparation for workshops. 	PAME Secretariat in close coordination with the ASTD lead.	\$40,000 (in-kind)
PHASE I: Preparations and finalize Project Plan		
Meetings, travel, document productions and overview: <ul style="list-style-type: none"> ✓ Several teleconferences ✓ Face-to-face meeting in Malmö & Tromsø ✓ Production of draft project plan ✓ Overview of related documents and content 	ASTD Expert Group & PAME Secretariat	\$30,000 (in-kind)
PHASE II: Systems Design Document and Data sharing agreement		
Two face-to-face meeting, teleconferences, document production <ul style="list-style-type: none"> ✓ Meeting back-to-back with PAME I 2016 ✓ Meeting back-t-back with PAME II 2016 ✓ Multiple teleconferences (approx. 1 per month) ✓ Documents for review and update from expert group/expert groups 	ASTD Expert Group & PAME Secretariat	\$50,000 (in-kind)
PHASE III: Data Repository establishment and web application (details below)		
Establishment of the main components of the project to include data exchange arrangement and web application to extract data (data administration, exchange and storage). Following 3 costing scenarios were considered: <ol style="list-style-type: none"> a) PAME Separate system b) Symbiotic HELCOM system with reduced data rates (HELCOM currently hosted by Denmark) c) Another symbiotic system hosted by an Arctic Council member government: 	ASTD Expert group members	\$121,000 (FY17) \$60,500 (FY17) \$121,000 (FY17)
PHASE IV: Product production		
Producing trends/maps/analysis, outreach <ul style="list-style-type: none"> ✓ Extracting data from database ✓ Production of items for analysis ✓ Preparation and production for statistics reports ✓ Outreach of project products 	PAME Secretariat/other users	\$30,000 (in-kind)

PHASE V: Maintenance and updates**Costs estimated per year after 2017*

✓ Data repository, web application and products		\$20,000 (in-kind)
---	--	-----------------------

NOTE: All cost are approximate and are estimates for the work of the whole expert group and are funded by member governments through in-kind support. The PAME Secretariat will provide administrative support from its normal annual budget and will apply for external funding in consultations with the lead country and the ASTD expert group members, if needed.

PHASE III: Data Repository establishment and web application

The ASTD expert group members explored a number of costing scenarios for data administration, exchange and storage and narrowed these scenarios down to the following three costing scenarios that would meet the SDD requirements and system operational need (the costs at this point are preliminary estimations). The costs are expected to increase each year as data storage will increase as new data becomes available.

Costing scenarios:	Estimated costs FY2017	Estimated costs FY2018	Estimated costs FY2019
a) <u>Separate PAME system</u> : Would require PAME to establish the operating system from a contractor. The cost is likely to be 120.000 USD per year, increasing each year as data storage need increases	\$120,000	\$156,000	\$191,000
b) <u>Symbiotic HELCOM system</u> : The HELCOM data exchange system exchanges data between EU members in the Baltic Sea Region and supplies these to EMSA. It is possible to expand the HELCOM data exchange system to accommodate the needs of PAME, however this would need to be agreed with the present HELCOM stakeholders. This cost estimate includes the man-hours needed to administrate the system and the associated computer server.	\$60,500	\$78,000	\$95,000
c) <u>Another symbiotic system hosted by an Arctic Council member government</u> : This would require an offer by an Arctic Council member government to host. The costs could be around the costing scenario a). The system would require hardware and software, security controls, etc that are not previously established with a pre-existing system as option b).	\$<\$120,000<\$	\$<\$156,000<\$	\$<\$191,000<\$

Project Team

The USA is the lead country for this project with technical support and guidance from the nominated experts. The PAME Secretariat supports the lead country and the expert group in the project activities, including background work on the project, consultation on proceedings, facilitating meetings/workshops etc.

Expert group

A call for nomination of experts (then called AIS experts) was sent to the eight Arctic Council member governments on March 12th 2015. Nominations from countries came accordingly over the course of a few months.

Country	Expert	Contact info	Office
USA (lead)	Brian Page	Robert.B.Page@uscg.mil	US Coast Guard – Office of Communication and Sensors Capabilities (CG-7611)
Norway	Bjørnar Kleppe	bjornar.kleppe@kystverket.no Phone: 90028347, 90028347, 70231081	Senior adviser – The Norwegian Coastal Administration
Kingdom of Denmark	Omar Frits Eriksson	ofe@dma.dk	Danish Maritime Authority
Russia	Andrei Mikhailov	Tel: +7 (812) 380 7069 Fax: +7 (812) 324 5755 Mobile: +7 (921) 9080017 E-mail: andymikh67@gmail.com	Chief RISS NW Division, North-Western Basin Branch of the FSUE “ROSMORPORT”
Canada	Patrice Côté	Patrice.cote@tc.gc.ca	Transport Canada
Finland	Kaisu Heikonen	Kaisu.Heikonen@liikennevirasto.fi	Finnish Transport Agency
Iceland	Greipur Gísli Sigurðsson	ggs@vegagerdin.is	The Icelandic Road and Coastal Administration (IRCA)
Sweden	Johan Winell	johan.winell@sjofartsverket.se	The Swedish Maritime Administration
PAME Secretariat contacts			
Soffía Guðmundsdóttir, Executive secretary – pame@pame.is			
Hjalti Þór Hreinsson, Project manager – hjalti@pame.is			

Risks

The potential risks can include e.g. delays in data availability and data integration / standardization, lack of funding/support (in kind or other), inability to agree on SSD, etc . The ASTD experts will inform PAME on any risks that may jeopardize the project and will seek their guidance and assistance to fulfill the project’s plan.

PAME

Protection of the Arctic Marine Environment

PAME International Secretariat
Borgir
Nordurslod
600 Akureyri
Iceland

Tel: +354 461 1355
Email: pame@pame.is
www.pame.is