

2nd meeting of the IMS Correspondence Expert Group on “Drift Modelling”

Meeting Minutes

Held via videoconference

22 March 2022

version 1.0

Date: 11 April 2022

Background

The 2nd meeting of the IMS Correspondence Expert Group on “Drift Modelling” took place via videoconference on 22 March 2022. The meeting was chaired by Mr Yann Le Moan, EMSA.

EU MS delegations from Belgium, Croatia, Denmark, France, Iceland, Ireland, Portugal, and Spain attended the meeting. The European Commission was represented by Mr Jacob Terling and Alexander Hoffman (DG Mobility & Transport (MOVE), Unit D.2 Maritime Safety). EMSA was represented by 6 participants from different units with experience in SAR, Drift models and/or IMS. The list of participants is attached in Annex 2.

All documentation and presentations may be obtained via Teams (dedicated workgroup) or via EMSA through IMS@emsa.europa.eu.

1. Welcome and Opening

The chairman welcomed all participants and recalled the main purpose of the meeting which is to initiate the work on package 2 (interface requirements drafting). The agenda was adopted without change (see Annex 1).

Mr Jacob Terling, representative of the European Commission, informed the group of an EU initiative for creating a mandatory reporting system for containers lost at sea. This subject will be discussed in Council in view of a Union submission to IMO (CCC8). It was recalled that modelling the drift of containers is an important use case for this expert group.

2. Review of Work Package 1 (list drift models)

EMSA presented a summary table with all the 9 models identified and with reference to the NOOS drift initiative that collects and displays the simulation result from 3 different models. A document with the description and main characteristics of the models will be shared with the group and can still be fine-tuned. Annex 3 lists the models identified.

Several Member States explained how they use one or several of the models identified in the list.

3. Focus on Work package 2: guidelines with requirements

3.1 Mandate, timeline, and deliverable

EMSA recalled the mandate of the expert group (Terms of Reference approved by the HLSG) stressing that it is not part of the scope for EMSA to develop a new proprietary drift model but rather to include the possibility to connect to several existing state-of-the-art drift models.

The objectives of the guidelines were also mentioned as:

- To gather expert knowledge on the user needs (common understanding features and functionalities to be implemented).
- To provide requirements on the drift parameters for connecting to existing models and
- On how to display results in the IMS graphical map interfaces (SEG and IMS Mobile App).

There was a discussion on the use of mobile App and the consensus was that the Mobile App could be used to display the results but not for entering a drift simulation.

The general planning from the guidelines drafting to their adoption was presented to the group. The milestones for validating and approving the guidelines are:

- 3 May, final guidelines sent to the IMS group for validation (meeting on 25 May)
- June, guidelines sent to the HLSG for approval (meeting in July)

During summer 2022, EMSA will prepare the detailed technical requirements.

3.2 Initial discussion on each guidelines' chapter

EMSA prepared a presentation (Work package 2: structure of the guidelines and Seed Questions) with five relevant questions and one slide for each of the seven chapters of the guidelines (as identified in the ToR). The summary of discussion and decision is available below:

Questions&Answers

Question 1: Do you find relevant to use several models for a drift simulation?

The group confirmed that it is relevant to have the possibility to use several models for a drift simulation

Question 2: The IMS interface should propose in priority models that are already being used by SAR services?

The response is yes.

Question 3: In addition to the models using the IAMSAR guidelines approach to calculate maritime drift (see chpt 4.4.3) should we interface with model(s) using probabilistic approaches (e.g. Monte Carlo)?

The group confirmed that models using probabilistic approaches should also be proposed. Several experts confirmed that the model they use follows probabilistic approach with leeway and that the IAMSAR provide a method that allows to calculate the drift “by hand” whereas with existing computing technologies, more advanced method such as Monte Carlo with leeway can be used.

Question 4: Would you need as an option more than 1 object in the same simulation?

The experts confirmed that it would be useful

- to select more than one object in the same simulation
- to simulate the drift of the same object under different initial conditions
- to run 2 simulations and have the result at the same time (should several models are not available).

Question 5: Beside the SAR use cases can you provide examples for other maritime safety use cases.

The expert group identified the following additional uses cases:

- containers adrift, objects adrift
- Ship not under command drift prediction. It would be very useful for example in the vicinity of wind farms to support coastal state
- Dead animals (e.g. whales) that can represent a danger to navigation
- Fish nets
- Investigation of events occurring in the past (to retrieve e.g. ships that could have lost the containers)

This list is not exhaustive but provides the wide scope for using the drift simulation for SAR and maritime safety.

Guidelines: 7 chapters review

Following these questions& answers part, the expert group reviewed the 7 chapters of the guidelines using a presentation prepared by EMSA (Work package 2: structure of the guidelines and Seed Questions). The discussion and decisions taken per chapter is identified below.

1. Identification of user workflow (slide4)

The workflow presented was validated by the group. It was asked to add the possibility to re-run automatically the simulation for +24 h (e.g. specific button) when the search is not conclusive.

2. List of configurable drift parameters for input;

There was discussion on the mandatory and optional inputs needed to run a drift simulation and the identified outcomes were:

- Mandatory input parameters:
 - Simulation name
 - Simulation type (backward or forward)
 - Drifter (object)

- Initial conditions (position or positions and radius / date/time)
 - Duration of the simulation (start and end date)
 - Model selection
- Optional input parameters:
 - Simulation description
 - Number of particles
 - Probability of presence at each position
 - Metocean conditions (wind, current)
 - Selection of the METOCEAN source (public or specific source)

3. List of different types of objects whose drift should be simulated.

It was recalled that this list of objects should cover SAR and maritime Safety purpose. The models have all a library of objects to cover those cases. It was agreed that the IMS interface shall adapt to the list of objects from the selected models.

4. Options for display of drift results (e.g. probability of results);

The general approach proposed for displaying the result is:

- Time element: the interface should show the evolution of the drift in time though e.g. a time slider/timeline
- A trajectory line should be available (e.g. to show the variability due to tides)
- A polygon (that includes the probability of presence) should be available
- Units should be available for all the required fields
- The display of the wind and currents used by the model

5. Definition of user specific near-real time met-ocean data inputs;

- the model will be used with the Metocean data available within the tool(s) selected, at least for the pilot phase.
- It should be possible to enter the Wind and current manually
- During chapter 2 discussion it was identified that there should be a possibility for Member State to connect their national source(s) directly to the model(s) to provide higher resolution in certain areas (e.g. where the conditions change rapidly).

6. Configuration, selection and display of search patterns based on the output model results;

- The IMS interface should propose the search patterns as identified in the IAMSAR volume 2. The IMS interface will not automatically display the search patterns. It will be for the operators to select the pattern, configure its size and place it at the desired position.
- The group agreed for these patterns to be exportable for being shared with SAR assets for example. BE mentioned that they have implemented a solution allowing to broadcast the search patterns via AIS (using AToNs).

7. Display of results in the SEG.

- The drift simulation should be displayed on top of the integrated maritime picture as an overlay.
- Overlapping more than one simulation should be available in order to compare results.
- The operator will choose to display or not specific IMS layers below the drift simulation.
- The result of the simulation should be proposed via S2S. An example was given where it will be relevant for an MRCC to receive in its national system the outcomes of the drift simulation from a model with relevant Metocean data not available at national level.
- The IMS access rights needs to be specific for:
 - Creating the simulation and the search pattern and;
 - Visualising the results.

4. AOB's, summary, conclusions and follow-up actions

The chair thanks all participants for this very fruitful meeting. Based on the feedback and input, EMSA will prepare the first version of the guidelines and send it to the IMS expert group for review. The answers to the questionnaire will be analysed at a second stage to further enrich the second version of the draft guidelines where needed.

Annexes

Annex 1 – Agenda

Annex 2 – Attendance List

Annex 3 – List of drift modelling tools identified

Annex 1 – Agenda

Wednesday, 14 April 2021 – 1st IMS Correspondence Expert Group on “Drift Modelling”

Time	Agenda Item	Speakers
08:45 – 09:00	Registration	
09:00 – 09:30	Opening / Introduction Input from the Commission	EMSA COM
09:30 – 10:00	Presentation of the expert group Mandate (ToR)	EMSA
10:00 -11:30	Focus on deliverable 1: a brief evaluation of the existing public and commercial Search & Rescue and other Maritime Safety purposes drift models	EMSA/MS
11:30 – 11:45	Summary of the follow up actions	EMSA

Annex 2 – Participant List

ID	Country	Organization
1	BE	1 expert from the Agency for Maritime Services & coast, shipping assistance division
2	HR	1 expert from the Ministry of the Sea, Transport and Infrastructure (MRCC)
3	DK	1 expert from the Royal Danish Navy Command (JRCC)
4	FR	2 experts from the maritime affairs
5	IS	1 expert from the Icelandic Coast guard (JRCC)
6	IE	1 expert from the Irish Coast Guard (MRCC)
7	PT	2 experts from the Portuguese Navy: 1 expert from MRCC and 1 expert from the Portuguese Hydrographical Institute
8	ES	SASEMAR - Maritime Rescue and Safety Society (MRCC)

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Annex 3 – List drift modelling tools

Model	Link	Who use it?	Public or Commercial?
MOTHY	http://www.meteorologie.eu.org/mothy/	FR 1 version for SAR 1 for CTR 24/24	Free for French national auth. Agreements with some countries.
SARMAP	http://asascience.com/software/sarmap/	Irish CG, Australian MSA, NL, New Zealand, HR, NL admin for maritime safety, SASEMAR for SAR and training for operator	Commercial
SARIS Search and Rescue Information System	https://www.bmt.org/bmt-saris/	BE MRCC, DK JRCC, NL CG for SAR.	Commercial
OCEAN-SAR	https://www.cmcc.it/data-services-and-products/data-visualization-systems/ocean-sar-search-and-rescue	Hellenic Coast Guards	Available for free on-line for registered users.
SARMASTER	https://www.honeywellaidc.com/products/workflow-solutions/search-and-rescue/sarmaster600	Canada?, Brazil? TBC	Commercial
OSERIT	https://oserit.natural-sciences.be/	BE Navy, RBINS, Belgian DG-Environment. Back up SARIS for SAR.	Inhouse (BE) system with restricted access. Not for Public but available to Maritime authorities.

		50 users (BE, FR, UK, NL)	
NOOS DRIFT	https://odnature.naturalsciences.be/noosdrift/api/accounts/login/	<p>A transnational multi-models ensemble system (CEMS demonstration project).</p> <p>End-users can activate several national model (currently MOTHY, OSERIT and OPENDRIFT) service providers in filing in a unique form and receive analysis results from these (3) models within 30 minutes.</p>	<p>Not available to public.</p> <p>Access granted to users on request.</p>
OVERSEE	https://criticalsoftware.com/en/industries/defence/product/maritime-security-operations https://www.criticalsoftware.com/downloads/resource/oversee-irish-coast-guard https://criticalsoftware.com/multimedia/critical/en/IJL2JryVD-CSW_-_Case_Study_-_Oversee_-_A_Sea_Change_in_UxD.pdf	Portuguese Navy – MRCC Delgada and MRCC Lisbon	Commercial
Open Drift	https://opendrifthub.io/	Norwegian Coastal Administration, Norwegian Clean Seas Association for Operating Companies (NOFO), Norwegian Joint Rescuing Centres, Norwegian Police	Open source software
ProDeriva	Instituto Hidrográfico Portugal	PT (used by MRCCs in addition to oversee)	TBC