

SAFEMED GIS - TERMS OF REFERENCE

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1. BACKGROUND INFORMATION

1.1. Contracting Authority

The Contracting Authority shall be the Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC), headquartered at "Maritime House", Lascaris Wharf, Valletta VLT1921, Malta.

1.2. Relevant project background

Currently, the Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC) is implementing a European Union (EU) financed MEDA¹ project entitled "Euromed cooperation on maritime safety and prevention of pollution from ships - SAFEMED". The SAFEMED Project is being implemented in ten Euromed Mediterranean Partners² namely Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, Palestinian Authority, Syria, Tunisia and Turkey.

The primary objective of the SAFEMED Project is to mitigate the existing imbalance in the application of maritime legislation in the region between the Mediterranean Partners that are not members of the EU and those who are members, through promoting a coherent, effective and uniform implementation of the relevant international conventions and rules aimed at better protection of the marine environment in the Mediterranean region by having safer shipping and preventing pollution from ships.

The SAFEMED project is divided into eight major activities each of which are sub-divided into preliminary (P) and/or operational (O) tasks. The results of preliminary tasks will be applied for the planning and implementation of the operational tasks.

Activity 2 of the project addresses the safety of navigation within the Mediterranean region through the promotion and development of Vessels Traffic Monitoring Systems within the Mediterranean Partners. Task 2.3 O of this Activity aims at studying maritime traffic flows within the Mediterranean sea. Sub-action 3 of this Task aims at developing a geographical information system on maritime traffic flows and related risks in the Mediterranean.

2. OBJECTIVE, SCOPE AND DEFINITIONS

2.1. Objective

The objective of sub-action 3 of Task 2.3 O, hereinafter referred to as "the project", is to design, develop, create, deploy, test and deliver, together with documentation, help manuals and training, a Geographical Information System (GIS) as a simple and effective tool for the Contracting Parties to the Barcelona Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean together with the beneficiaries of the SAFEMED Project, namely, Albania, Algeria, Bosnia & Herzegovina, Croatia, Cyprus, Egypt, European Union, France, Greece, Israel, Italy, Jordan, Lebanon, Libya, Malta, Monaco, Morocco, Montenegro, the Palestinian Authority,

¹ The MEDA programme is the principal financial instrument of the European Union for the implementation of the Euro-Mediterranean Partnership. The programme offers technical and financial support measures to accompany the reform of economic and social structures in the Mediterranean Partners.

² Refers to the "Mediterranean Partners" as defined in the 1995 Euro-Mediterranean Partnership (Barcelona Process) and constitutes a wide framework of political, economic and social relations between the Member States of the European Union and Partners of the Southern Mediterranean.

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Slovenia, Spain, Syria, Tunisia and Turkey, in order to help them assess the risks associated with vessels traffic within the Mediterranean Sea, using data on vessels' movements and maritime incidents currently available at REMPEC.

2.2. Scope

The tender is composed of one unique lot covering design, development, creation, deployment, testing, users' training and final delivery of the system.

2.3. Definitions

Area selection: for the purposes of the GIS, a user selects an area as a surface delimited by an ordered set of points, typically with a mouse or by entering coordinates. Only sea surface, coastline and ports are considered.

Ballast: A vessel not carrying any cargo is said to be 'in ballast condition'.

Deadweight (DWT): a measure of how much weight a ship can carry

Gross Tonnage (GT): refers to the volume of all ship's enclosed spaces (from keel to funnel) measured to the outside of the hull framing.

Laden: A vessel carrying any type and quantity of cargo is said to be 'in laden condition'.

LNG: Liquefied Natural Gas

LPG: Liquefied Petroleum Gas

Mediterranean Sea: means the Mediterranean Sea proper including the gulfs and seas therein within the boundary between the Mediterranean and the Black Sea constituted by the 41°N parallel and bounded to the west by the straits of Gibraltar at the Meridian 5°36' W.

Oil tanker: a ship constructed or adapted primarily to carry oil in bulk in its cargo spaces.

Tanker: a ship constructed or adapted for the carriage in bulk of any liquid product.

Vessel: for the purpose of the system, a vessel is a merchant marine ship with a Gross Tonnage of 100 GT or above.

Vessel movement: a movement is a single voyage

- From a port within the Mediterranean to another port within the Mediterranean.
- From a port outside the Mediterranean to a port inside the Mediterranean and vice versa.
- From a port outside the Mediterranean to another port outside the Mediterranean where the Mediterranean Sea was used as the transit route.

3. REQUIREMENTS

3.1. Main expected features

The main expected feature is to enable the user to perform queries (see 3.2: Use cases) on the databases currently available (see 4: Available System Components), related to maritime traffic

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flows and known marine pollution accidents, involving oils or other chemical substances. The result of the queries must be a graphical representation of maritime traffic and/or accidents on an electronic chart, together with details in a tabular format. The GIS will be designed to accommodate updates and possible future evolutions though it is understood that additional features are outside the scope of this project.

3.2. Use cases (non exhaustive examples)

3.2.1. Simple query on the accident database

The user will select with the mouse an area on the on-screen chart of the Mediterranean. The result will be the display of known accidents in the area. Selecting an accident on the chart will result in the display of related available data.

3.2.2. Complex query on the accident database

The user will query the accidents in a given area (selected either with the mouse or by filling in a query box with boundaries of latitude/longitude values) selecting a range of dates and/or spill of a specific product. The result will be the display of known accidents according to selected criteria. Selecting an accident on the chart will result in the display of related available data.

3.2.3. Simple query on the traffic database

The user will query the quantity of movements between Port A and Port B. Port selection can be done via a list or by selecting two points on the chart. The user MUST select a range of dates. The result will be displayed by an arrow on the chart from Port A to Port B, as well as display of data such as number of movements, number of ships involved, detailed breakdown by ship type, etc.

3.2.4. Complex query on the traffic database

The movement database (see 4.1) contains extensive information and one of the purposes of the GIS is to allow the user to perform simply complex queries on it. In this respect, the user will be able to combine a great number of criteria: e.g. select all ports within a zone (e.g. the Adriatic sea) as origin, select a given port or point of arrival (e.g. the Suez Canal), combined with a range of dates (mandatory), a given type of ship, a specific tonnage or range of tonnage, and a given flag. The result will always show the traffic plus display of relevant data (see 4.4.8).

3.2.5. Successive queries

The user will have the possibility to keep the results of a first query when visualising the results of a second one. For example the user will be able to first query the accidents database regarding a specific pollutant in a specific area and display results, then query the quantity of chemical tankers movements in that same area with ports of origin and destination and display results, with results of the previous query still available on screen.

3.2.6. Miscellaneous

Errors in the building of the query will result in the display of a clear and concise error message.

Constraints

Users outside REMPEC will not have the possibility to query movements of a specific ship. However, authorised staff members of REMPEC will have this possibility.

4. AVAILABLE SYSTEM COMPONENTS

4.1. Database on movements of vessels

REMPEC has purchased from Lloyds Marine Intelligence Unit (LMIU) three sets of data on movements of vessels within the Mediterranean Sea.

4.1.1. Vessel calling/transit

This is a historical data extract identifying sailings broken down by vessel type in respect of merchant vessels over 100 GT. This data set identifies 608437 movements for the years 2004 and 2005 with the minimum departure date set to 01/01/2004, minimum arrival date set to 01/01/2004,

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maximum departure date 31/12/2005 and maximum arrival date 15/01/2007³. Definitions of data fields are provided in Annex I.

4.1.2. Laden/Ballast Crude and Product Tanker Call/Transit

This data set identifies 17807 individual laden and ballast calls for years 2004 and 2005 within the Mediterranean and Laden/Ballast transits through the Mediterranean in respect of crude oil movements in tankers over 10,000 DWT and petroleum products in tankers over 60,000 DWT. Data fields are, where relevant, identical to Vessel/Calling transit except for the Laden/Ballast indicator, where values are either "Laden" or "Ballast".

4.1.3. Laden/ballast LNG/LPG Tanker Call/Transit

This data set identifies 18037 individual laden and ballast calls for years 2004 and 2005 within the Mediterranean and laden/ballast transits through the Mediterranean in respect of LNG and LPG tankers. Data fields are, where relevant, identical to Vessel/Calling transit except for the laden/ballast indicator, where values are either "L" or "B".

4.2. Database on accidents

The Centre started collecting data on oil spills and accidents likely to cause spillages of oil in the Mediterranean in August 1977. Since 1988 this information has been complemented with the information on incidents involving hazardous and noxious substances (HNS) other than oil, and since 1989 all such information recorded at REMPEC has been stored in the Centre's database.

The databases have been regularly updated. The information on each event recorded in the database includes information on the date and place of the spill or accident, the ship(s) or installation(s) involved, the source of information, the type and quantity of pollutant, a brief description of the accident and, when available, of actions taken and consequences of the accident.

In 2007, the database has undergone a major overhaul, with deletion of unused/unusable information, corrections of most obvious errors and merging of the oil spills and HNS datasets into a single database in Microsoft SQL format. Details on the database are available in Annex II.

An exact copy of the databases on CD-ROM will be sent upon receipt of the signature of the confidentiality agreement. In order to speed up the process, signed confidentiality agreements may be faxed to the following number, with a cover page mentioning "SAFEMED GIS Confidentiality Agreement": +356 21 339 951, or e-mailed as attachment in Acrobat pdf format to: contact@safemedproject.org, with "SAFEMED GIS Confidentiality Agreement" in the subject line.

Constraints

1. Any query, whether originating from the authorised end-user or as part of an internal implementation process, requiring identification of ships, MUST use the IMO number only, excluding the internal LMIU number or any combination of fields.
2. Historical record of ships (change of flag or other particular) is not kept, the database is movement based, not ship based.
3. Under the current setup, the user will have to select one of three LMIU datasets before performing the query. If the bidder propose a solution to merge all 3 datasets into one this constraint could be removed. However, it remains to be seen whether this is easily feasible, considering that the 3 datasets are extracts from 3 different databases, and

³ This last date can safely be considered an aberration. Less than 200 movements have arrival dates superior to 3 months after the maximum date of departure.

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that sources for recording information may have been different. No work has been carried out so far to check whether a voyage identified in the Tankers/LNG-LPG can be correlated in the general movements database.

4. Licensing issues: the REMPEC accident database is entirely free. It is available for query on the REMPEC website and available for download as a runtime executable. LMIU datasets are licensed under restrictive conditions. For its internal purposes, REMPEC is licensed to use the data provided without restriction. In addition REMPEC may release a version of its GIS system which, amongst other information, will allow users to query and produce graphical representations of maritime traffic flow data based on LMIU supply. This version will solely be available to the designated National Authorities of the Mediterranean partners and the SAFEMED beneficiaries. Designated National Authorities means in practice all States and territories with a maritime border on the Mediterranean as well as Jordan and, in its own right, European Commission/European Maritime Safety Agency (EMSA). This represents around 25 users.
5. Even though it is of no practical consequences for the bid, it is to be noted that data contained in the accident database may not be entirely accurate, due to variations over time in the way accidents have been recorded. The current data, however, is technically consistent in format and exploitable.
6. The GIS will not be used in any way for navigational purposes.

4.3. Waypoints

In order to display a realistic trajectory of the routes taken by the vessels a number of waypoints have been identified, derived from a variety of sources, including the United Kingdom Hydrographic Office, the International Maritime Organisation and REMPEC's in-house expertise. These waypoints define important points of shipping routes such as straits or channels. Account must be taken that there is no comprehensive Automatic Identification System (AIS) coverage in place for tracking ship movements in the Mediterranean and therefore trajectories cannot be 100 % accurate. Two kinds of waypoints are distinguished:

- Internal waypoints. For example, a strait between two Mediterranean islands or Mediterranean countries, such as:
 - The Strait of Messina, between Sicily and the toe of Italy
 - The Strait of Otranto, between Italy and Albania
 - The Corsica Channel, between Corsica and Italy
 - The Strait of Bonifacio, between Sardinia and Corsica
- Connection to other seas: the Strait of Gibraltar, Bosphorus, Suez Canal.

The list of waypoints with their latitude/longitude is available in Annex III.

5. RESULTS TO BE ACHIEVED BY THE CONTRACTOR

Important note: all of the points below must be addressed by the bidder. Solutions must be as detailed as possible and bidders will describe and justify how they address the specific needs of the SAFEMED GIS project. Generic comments will be evaluated poorly. When the use of specific software and/or hardware tools is foreseen, identify it and detail the objective to be achieved.

5.1. General

The Contractor will design, develop, create, deploy and test the Geographical Information System (GIS) of the SAFEMED Project and deliver a consistent system, making use of state of the art

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technical solutions, simple to update and easily usable by users. The system will be accessible from the website of the SAFEMED Project (<http://www.safemedproject.org>).

5.2. Visibility

The GIS interface will comply with the visibility guidelines applicable to projects financed by the European Union. Guidelines are available at:

http://ec.europa.eu/europeaid/work/visibility/index_en.htm

5.3. Availability

The system will be available through the web interface of a modern browser (e.g. but not exclusively Microsoft Internet Explorer 6.0 or later, or Firefox 2.0 or later), with no needs to install specific software on the desktop of the user. The GIS will be used under similar conditions regardless of the operating system of the user (e.g. Windows, Linux, MacOSx). It is understood that even though features will be the same, slight differences of display from one OS to the other will be acceptable.

5.4. Databases

The bid will describe in detail the different databases and schemas and their objectives. Financial implications of the choice of database will be detailed in terms of acquisition, license and maintenance costs, as well as in terms of hardware, as the case may be.

5.5. Waypoints

The GIS administrator will have the possibility to update, delete or change waypoints manually and in batch mode, replacing the current file with a new one. The GIS will then be able to update the calculation of trajectories, taking into account the updated list of waypoints.

5.6. Trajectories

In navigation, the most used path between two ports is the shortest one. Display of routes will follow that rule. The graphical representation of the trajectory will be realistic in respect to the size of the traffic (is it a major or minor route?) and its lining (avoid crossing land surfaces). However, when nearing certain areas or crossing straits where waypoints are present, the calculation of routes will allow for deviations from the shortest possible routes by following waypoints. As a tentative rule, when calculating the shortest route, if there is a waypoint within 5 nautical miles of the radius of any point on the shortest route, the trajectory will pass through that waypoint. The GIS will then recalculate the shortest route to destination from that waypoint, reapply the 5 nautical miles rules, etc. Except when nearing the arrival port of destination, trajectories will always keep at least 1 nautical mile away from the shore. The system will allow authorised REMPEC staff members to modify these rules in a reasonably easy manner.

5.7. Charts

Charts used for the GIS will have at least equivalent or close to equivalent reliability and availability of presentation as the paper chart published by government-authorized hydrographic offices. The chart will contain all information necessary for the purpose of the GIS, and in particular an accurate representation of the coastline of the Mediterranean. Accuracy will be no less than that afforded by the resolution of the display. Upon logging into the GIS, the user will be provided with the standard display at the largest scale possible of the Mediterranean. The user will be able to zoom in and out, and to navigate easily. Default display will be north-up, other orientations are permitted. The chart may display the current scale. The chart will be capable of accepting updates to the data supplied by the provider. The chart will also be capable of accepting updates entered manually by the GIS administrator.

Chart license costs, means and availability of updates will be detailed in the bid.

5.8. Query engine

Describe in detail the search possibilities that will be proposed for the query functionalities (see 3.2 use cases for examples of queries). Describe at least the following topics:

- search criteria
- use of operators (AND, OR, BETWEEN, GREATER THAN...)

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- results order
- limits to the number of results
- aggregation of results

5.9. Language interface

The end-user interface, end-user online help and documentation will be available in the English and French languages, which are the official working languages of REMPEC.

5.10. Display of results

The representation of traffic will have to be legible for the intended use and thus will be presented in an aggregated format. The system will clearly show the user areas where traffic is most concentrated, in a specific area or on a specific route or set of routes. Likewise, the system will clearly distinguish areas where accidents are most concentrated.

The results of queries will be displayed both graphically, on an electronic chart, and in tabular format. The Contractor will propose a functional solution for the human interface. The following topics, at least, will be addressed:

- Presentation;
- Usability;
- Flexibility;
- Personalisation and configuration;
- Text and graphic elements.

5.11. Printing/saving

The system will allow users to print their results. The bid will detail the printing capabilities of the system.

Users will be able to save tabular results in a format compatible with Microsoft Excel 2003 and OpenOffice 2.0.

The bidder will detail proposals on the savings of graphical results from the queries.

All print-outs will bear the following footer: "This GIS was setup within the framework of the EU-financed MEDA project SAFEMED <http://www.safemedproject.org>".

5.12. Online-help

An online-help will be available. It will include a tutorial guiding users on how to get started and make their first queries, as well as a detailed explanation of each feature of the system.

5.13. Training

The Contractor will provide, at the time the system is ready for delivery, a one-day training session in Malta. This training session will cover end-user features as well as administrative tasks.

5.14. System administration

A specific interface for system administration will be available. It will allow performing such tasks as: batch or manual update of datasets, management of users accounts (creation, modification, deletion, permissions) The account for system administration will be different from any other user account. System administration will always be performed internally at REMPEC. The system administrator may be physically more than one person.

5.15. Formats of data update

The Contractor will provide written specifications of the data formats used for the GIS. It will be possible to update the data either by converting the data from the format currently used by the providers or by integrating data sets compliant with the data format used by the system.

5.16. Hardware and hosting

Hosting of the system can be done either remotely or on-site at REMPEC's premises. Bidders may propose either solution or both. Costs, including initial hardware acquisition (if any) setup/licensing and maintenance costs shall be detailed in the bid. Procurement of hardware, software, hosting and maintenance services will be carried out directly by REMPEC under specifications agreed

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between REMPEC and the contractor for the SAFEMED GIS. As such these costs **must not** be included in the total price of the bid.

5.17. Choice of software

There is no preferred type of software, and bidders may propose any choice of software for database, mapping engine, charts or any other software component of the system. For each component, the bid will provide information such as user-base, access to support, access to bug-reporting system, duration of the project, frequency of releases and, if applicable, details on the company or organisation owning or supporting the software.

6. ASSUMPTIONS & RISKS

6.1. Users

6.1.1. End-user profile

End-users will be maritime administration and/or maritime safety professionals. They may also be professionals of prevention of and/or response to marine pollution. Some users may be experienced GIS users, but this cannot be presumed. It can be safely assumed, however, that all users have the standard computer office skills.

6.1.2. System administrator

The system administrator will have at least a minimal knowledge of databases, SQL and command-line procedures.

6.2. Risks

The GIS will certainly raise interest and expectations from the users. In this respect it is important that any associated documentation and communication emphasises precisely what can be expected from the system.

Clarity of graphical representation of results will be a key component for the acceptance of the system.

Responsiveness of the system will also be an important factor for the overall success. In this respect, it should be kept in mind that although there will probably be few simultaneous users, out of a possible maximum of 30, the query engine will have to be able to process complex queries and that each new set of yearly movement data will add around 300 000 new movements to the database. In other words, if it is decided to add, soon after the official launch, data for years 2006 and 2007, the system will have to accommodate twice the current volume of data.

7. METHODOLOGY AND MANAGEMENT

7.1. Methodology

When the use of specific software and/or hardware tools is foreseen, identify it and detail its purpose.

The bid will detail how the Contractor intends to conduct the work. This will include, inter alia:

- Details of human resources allocated to the project together with CV's;
- Constraints, time line, critical milestones;
- description of the general project methodology followed;
- details of project management methods, key deliverables, modalities of delivery and acceptance procedures. These must include, inter alia:

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- Project management documentation: project plan, risk/change management procedure, project status reports;
- Methodologies and tools used to build up the deliverables including additional documentation considered relevant;
- Software development plan;
- Human interface;
- Design documentation;
- Test documentation, including the software test plan,
- User documentation, including training support material;
- System documentation;
- Final version, including software application and supporting documentation;
- Deployment and migration of data;
- Training of users;
- Agenda and minutes of the meetings between REMPEC and the Contractor.

7.2. Deliverables

Working language, working documents and all deliverables must be in English and, wherever stipulated in the present document, in English and French.

All deliverables provided by the contractor must be formally accepted by REMPEC.

7.3. Project management

7.3.1. Responsible body

The Contracting Authority is REMPEC.

The SAFEMED Project coordinator is Mr. Jonathan PACE jpace@rempec.org.

The Project Manager for the SAFEMED GIS is Mr. Albert BERGONZO abergonzo@rempec.org.

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Office working hours:
1 October – 14 June: 08:30 17:30
15 June – 30 September: 08:00 15:30

7.3.2. Management structure

In order to ensure the successful outcome of the project, REMPEC will setup a specific Steering Committee. During the course of the project, the Steering Committee will monitor progress, be in charge of policy decisions, examine technical issues raised by the Project Manager and take remedial decisions if needed. The Steering Committee will be chaired by Mr. Frédéric Hébert, Director of REMPEC, and will be composed of:

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- Mr. Jonathan Pace, Senior Programme Officer and SAFEMED Project coordinator;
- Mr Gabino Gonzalez, Programme Officer, Preparedness and Response Unit;
- Capt. Joseph Zerafa, SAFEMED Project Officer, Maritime Safety;
- Mr. Souhail Ben Mosbah, SAFEMED Project Officer, Accounting and Administration;
- Mr. Albert Bergonzo, SAFEMED Project Officer, Maritime Administration.

8. COMMENCEMENT DATE & PERIOD OF EXECUTION

The intended commencement date is 31 July 2008 and the period of execution of the contract is planned to be 4 months from this date.

9. TRAVELS AND MEETINGS

Three (3) meetings are envisaged. One kick-off meeting, one mid-term meeting and one meeting for final acceptance of the system combined with one-day training session. It is expected that the first two meetings will last one full business day, and the third meeting two full business days, together with corresponding travel time and overnight stays. The meetings will take place at the headquarters of REMPEC in Malta.

REMPEC will cover travel and daily subsistence allowance (DSA) costs for two experts from the contractor for the above-mentioned meetings. DSA must not exceed the per diem rates published on the Web site http://europa.eu.int/comm/europeaid/index_en.htm.

As these costs will be covered by REMPEC, they **must not** be included in the calculation of costs of the bidder.

10. CRITERIA FOR THE AWARD OF THE CONTRACT

10.1. Technical criteria (with a total weight of 80%)

A series of technical criteria will be used to evaluate the technical aspects of the bid. These technical criteria are listed below:

10.1.1. Proposed technical solution (with a weight of 25%):

Bids shall detail, as a minimum, the following topics:

- Technical overview;
- Technologies and products to be used;
- Software architecture (conceptual and components);
- Hardware architecture and hosting;
- Technical approach to Human interface.

10.1.2. Functional coverage and implementation (with a weight of 30%)

Bids shall detail, as a minimum, the following topics:

- Functional overview;
- Waypoints management;
- Trajectory design;
- Charts features;
- Query engine capacities;

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- User-friendliness of Human interface (Display, printing, saving, help, etc.);
- System administration.

10.1.3. Methodology (with a weight of 15%)

Bids shall detail, as a minimum, the following topics:

- Project approach overview;
- Project management methodology;
- Project plan;
- Design methodology;
- Testing methodology;
- Change and risk management;
- Release management;
- Training methods.

10.1.4. Team composition (with a weight of 10%)

Bids shall detail as a minimum the following topics:

- Project team overview;
- Roles and responsibilities;
- Team composition;
- Task assignments.

10.2. Total Price (with a total weight of 20%)

Services procured by REMPEC are normally exempt from all taxes and customs duties or value-added tax, and therefore the total price should reflect this.

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11. DOCUMENT CHECK LIST FOR BIDDERS

As a summary, the following minimum documents should be included in the offers submitted in response to this call for tender:

Document	Content
Cover letter	Signed cover letter indicating name and position of the person authorised to sign the contract.
Financial form	Financial identification form, should be signed and stamped.
Legal entity form	Signed
Declaration on honour	Signed
Technical offer	Proposal covering the technical solution for the technical and functional requirements. The technical offer MUST be enclosed in a separate sealed envelope.
Confidentiality agreement	Confidentiality agreement for LMIU databases. To be signed and returned separately as soon as possible upon receipt of this call for tender.
Financial offer	The financial offer MUST be enclosed in a separate sealed envelope.

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12. ANNEX - I DEFINITION OF FIELDS IN THE VESSEL CALLING/TRANSIT DATABASE

- 1) LMIUNo : ship identification number (internal to the data provider)
- 2) IMONo : Unique ship identification number according to the standards of the International Maritime Organisation (IMO)
- 3) VsIName : name of the ship (may change during the life of the ship, unlike the IMO number)
- 4) YOB : Year of Build of the ship (when keel was laid)
- 5) Vessel_Type : Type of the ship, with either one of the following values:
 - Chemical tanker
 - Container
 - Crude oil tanker
 - Dry cargo
 - Gas tanker
 - LNG tanker
 - LPG tanker
 - Other tanker
 - Passenger/Passenger RoRo
 - Product tanker
 - Other
- 6) GT : (Gross Tonnage), see definitions
- 7) DWT : (Dead Weight) see definitions
- 8) Origin_Port_Id : Identification number of the port of origin (internal to the data provider)
- 9) Place_Name_Origin : Name of the port of origin
- 10) CountryDescription_Origin : Name of the State of the port of origin
- 11) UN_Locode_Origin : United Nations place identification code
- 12) Places_Lat_Dir_Origin : Direction of latitude (North or South)
- 13) Lat_Deg_Origin : Value in degrees of the latitude of the port of origin
- 14) Lat_Min_Origin/Long_Dir_Origin/Long_Min_Origin (self-explanatory)
- 15) Departure_Date : Departure date (time is set 00:00:00 and should be ignored)
- 16) Departure_Date_Est_Ind/Departure_Date_Qual : not relevant
- 17) All fields _Dest ou _Destination : equivalent to "Origin" fields but for destination
- 18) Long_Sec_Dest et Lat_Sec_dest: empty fields
- 19) Fields Arrival_Date_ : equivalent Origin_Date_ but for arrival date

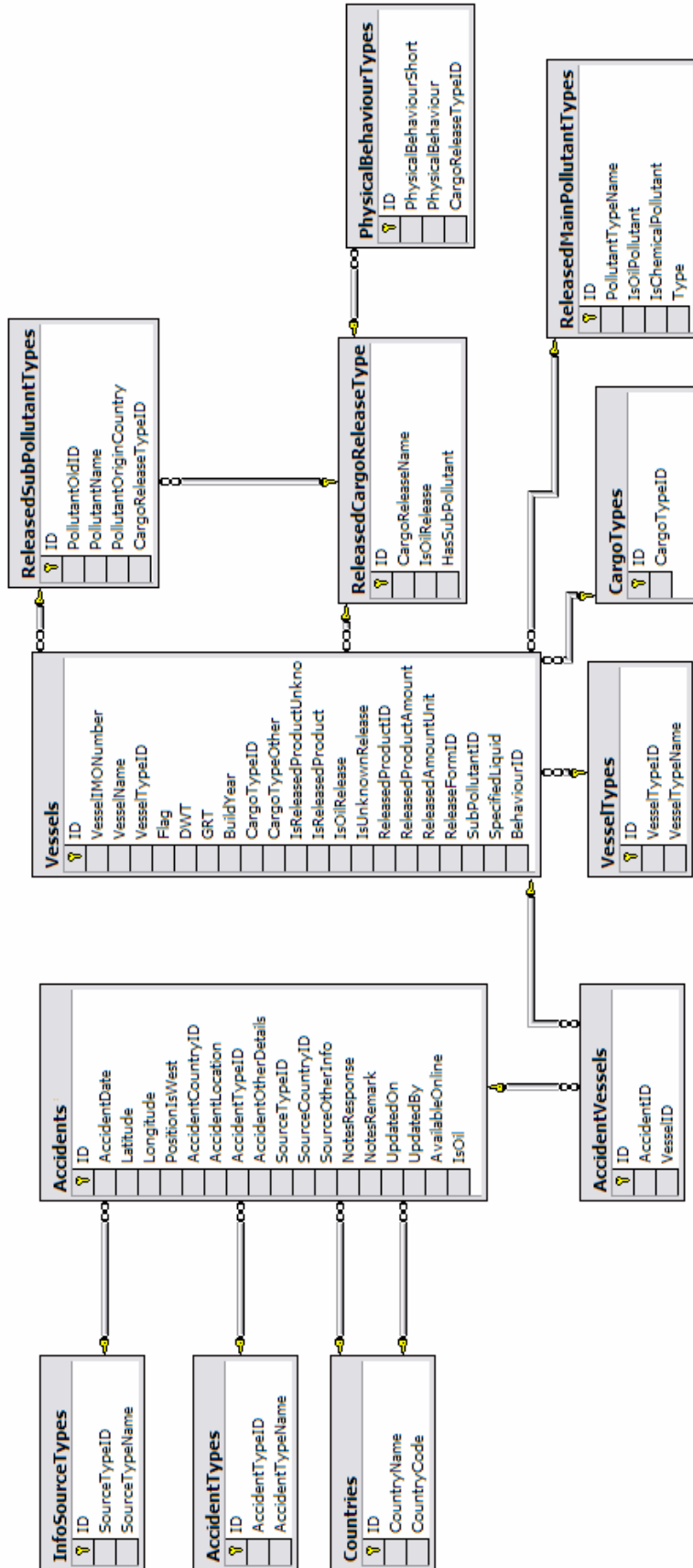
Terms of reference

13. ANNEX II - ACCIDENT DATABASE

The following is a description of the main fields involved:

- **InfoSourceTypes:** This table stores the information about the different available sources of information for accidents.
- **AccidentTypes:** Stores the different accident types and related information.
- **Countries:** This is a list of the countries available and related to accidents.
- **Accidents:** This is the table that stores the accident's general information (like latitude, longitude, accident date, source of information, country of accident, etc). This table uses the *InfoSourceTypes*, *AccidentTypes* and *Countries* as look-up tables. Also note that it uses the *AccidentVessels* table, which is the link between accidents and vessel information.
- **AccidentVessels:** This stores the link between the accidents and vessels.
- **VesselTypes:** Contains the list of different vessel types.
- **CargoTypes:** Stores the different kind of cargo that can be carried by a vessel.
- **ReleasedCargoReleaseType:** Stores the different possible cargo that can be spilled (like crude oil, fuel oil and refined oil products for oils and gas, liquid, solid and packaged chemicals for HNS)
- **ReleasedMainPollutantTypes:** Stores a general name for a pollutant (for example cargo, bunker, bilges, etc).
- **ReleasedSubPollutantTypes:** Stores more specific information about a pollutant.
- **PhysicalBehaviourTypes:** This table is a list of additional information about the released product. It is used in case of chemicals.
- **Vessels:** This stores all the vessels information (including the vessel name, vessel type, the cargo that was being loaded at the time of accident, and the spillage, if any, caused by the vessel). This table uses the *AccidentVessels*, *VesselTypes*, *ReleasedCargoReleaseType*, *ReleasedMainPollutantTypes*, *ReleasedSubPollutantTypes*, and *PhysicalBehaviourTypes*.

Terms of reference



Terms of reference

14. ANNEX III - LIST OF WAYPOINTS

The table below gives values in degrees, minutes.

For example, **31,21** is to be read as: **31 degrees and 21 minutes.**

Excel and KML files of this table is available upon request.

Latitud e deg,min	N	Longitud e deg,min	E/W
31,21	N	32,33	E
41,16	N	9,00	E
41,26	N	10,00	E
38,12	N	15,36	E
38,44	N	15,11	E
38,20	N	15,45	E
42,11	N	10,00	E
38,40	N	8,51	E
38,50	N	8,00	E
35,55	N	14,33	E
36,10	N	14,15	E
40,35	N	14,00	E
36,55	N	12,00	E
37,26	N	12,00	E
37,26	N	9,45	E
37,24	N	9,24	E
37,20	N	9,13	E
37,14	N	9,00	E
37,00	N	3,00	E
37,05	N	3,53	E
37,04	N	4,46	E
37,16	N	6,30	E
36,47	N	2,12	E
36,06	N	3,00	W
45,30	N	13,23	E
44,30	N	13,23	E
35,38	N	27,43	E
36,58	N	26,14	E
37,40	N	25,45	E
37,31	N	25,16	E
37,04	N	24,33	E
37,46	N	24,30	E
37,30	N	23,45	E
36,24	N	23,20	E
36,25	N	22,55	E
36,20	N	22,30	E
37,50	N	23,35	E
37,55	N	22,58	E

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38,15	N	22,27	E
38,15	N	21,22	E
38,14	N	21,30	E
38,17	N	24,48	E
39,00	N	23,37	E
39,17	N	23,32	E
40,29	N	22,44	E
40,00	N	26,00	E
39,17	N	25,30	E
38,44	N	26,19	E
38,44	N	26,35	E
38,27	N	26,50	E
38,30	N	26,20	E
38,10	N	26,10	E
34,40	N	24,00	E
36,30	N	21,30	E
37,44	N	20,00	E
37,20	N	12,30	E
40,20	N	19,00	E
31,38	N	31,47	E
31,45	N	31,41	E
31,38	N	31,48	E
31,44	N	31,57	E
31,44	N	31,58	E
31,32	N	32,13	E
31,35	N	32,22	E
31,42	N	32,35	E
37,32	N	0,33	W
37,33	N	0,31	W
37,34	N	0,30	W
38,37	N	0,23	W
38,42	N	0,26	W
35,59	N	5,25	W
35,56	N	5,36	W
35,56	N	5,44	W
37,31	N	10,02	E
37,31	N	10,12	E
37,13	N	11,01	E
37,10	N	11,11	E
37,40	N	23,44	E
37,50	N	23,38	E