

Frontex/OP/1039/2021/RS

Nautical Charts Web Map Service Design, Transition & Operation

Annex II - Terms of Reference

1. Background Information

1.1. Situation Monitoring and supporting IT systems

One of Frontex' principle tasks is situation monitoring. For that purpose Frontex uses a set of IT systems that allow to compile and maintain the situational picture. These systems are built on the Microsoft and ESRI technology stack and their main applications are based on the ESRI Javascript API . These systems are used within the EU Member States (MS) and Schengen Associate Countries (SAC) border guard community.

1.2. Scope

The envisaged solution is an externally hosted nautical chart OGC compliant web map and web map tile service (WMS/WMTS) that can be integrated into Frontex applications allowing to display maritime information on their natural background. The web map service shall be based on an official ENC.

The service provided shall include the regular updates.

The required map service is for planning purposes only and will **not** be used for navigational purposes.

Within the scope of this procurement are the design and build of the service, the provision of the externally hosted service and quarterly updates from the day the service is in operation.

1.3. Out of scope

Out of scope of this procurement are:

- The provision of Electronic Nautical Charts (ENC);
No ENC vector dataset shall be directly provided to Frontex, neither Frontex will provide ENCs datasets for web map services or updates. Frontex will only consume web map services as described and built on data derived from an official ENC. The tenderer shall make its ENCs available via WMS/WMTS and shall integrate all updates into these services.
- The provision of hardware;
- The provision of software; ¹
- The provision of paper charts.
- The provision of any personal or classified data.

2. Required Tasks/Services

2.1. Required tasks and services

- Build and delivery of the web map services;
- Maintenance & updates of the charts and the services;
- Provision of supporting documentation.
- Provision of usage statistics

¹ The hardware or software required to provide the services shall not be hosted by Frontex.

2.2. Service availability

The provided services shall be accessible 24/7 without any transfer limitation. The service has to be available for at least 98%.

Availability %	Downtime / year (365 days)	Downtime / month (30 days)	Downtime / week
98%	7.30 days	14.4 hours	3.36 hours

The service is considered available if Frontex is able to access the required data with no delay. In all other cases, the service is considered unavailable (fully or partially).

In case of unlikely events of planned unavailability the Contractor shall inform Frontex at least 72h in advance.

In order to track the service availability the contractor shall set up a dedicated monitoring web service to show the status of each independent endpoints.

The contractor must ensure appropriate support and provide access to 1st line support (Customer Service Desk) to report service interruptions.

In case the interruption periods exceed the above mentioned, Frontex will decide if the Contractor shall either extend the delivery of the service for the period consistent with the non-delivery duration or Frontex will apply the financial penalties as specified below.

2.3. Maintenance and Support

Maintenance and supporting services shall be provided as described below:

Maintenance and supporting services (24/7)	Priority 1 issues: the service is not available at all OR major service components are not available	Priority 2 issues: the service is not working partially OR minor service components are not available
Maximum response time	1 hours	4 hours
Maximum expected resolution/workaround time	5 hours	48 hours

In case of service unavailability, Frontex will decide on the Priority of the issue.

PENALTIES Maintenance and supporting services (24/7)	Priority 1 issues: the service is not available at all OR major service components are not available	Priority 2 issues: the service is not working partially OR minor service components are not available
Exceeding maximum response time	10 EUR/For every exceeded hour	5 EUR/For every exceeded hour
Exceeding maximum resolution /workaround time	20 EUR/For every exceeded hour up to 14.4h/month	10 EUR/For every exceeded hour up to 14.4h/month
	30 EUR/For every exceeded hour above 14.4h/month	15 EUR/For every exceeded hour above 14.4h/month

In addition to the above, Frontex reserves the right to request free of charge customized changes to the service, not affecting initial proposal, not exceeding Contractor's workload of 16 working hours per each month. Unused working hours can be cumulated within the existing contract and dedicated to implementation of changes requiring longer implementation effort.

The scope and timeline of changes will be mutually agreed between the Contractor and Frontex each time when a need for change on Frontex side arises.

3. Deliverables

Following deliverables are to be provided by the contractor:

3.1. Web map services

3.1.1 Description

- **Coverage:**
The web map service shall have global coverage.
All zoom levels shall be available for the area delimited by the following coordinates: 30°W 72°N, 45°E 25°N. Outside that area, at least Overview and General Use Bands shall be provided.
- **Source:**
The tenderer shall propose a suitable source taking into consideration chapter 8.1 and provide a detailed explanation (i.e. fit for purpose, value for money) for the selection.
- **Language:**
All features of the charts must be labelled in English.
- **Format:**
The web map service shall be provided in OGC WMS 1.3.0 and OGC WMTS formats. Getmap and getFeatureInfo operations shall be available.
GetFeatureInfo operation shall return information about drawn ENC objects in the location of cursor click.
- **Colours & Symbols:**
The colours and symbols shall be according to the IHO S-52 standard.
- **Projection:**

The web map shall be available in WGS 1984 Web Mercator Auxiliary Sphere projection (EPSG:3857) and WGS 1984 (EPSG:4326).

- Zoom levels & Scales:

Best available scales shall be mapped to the de facto ArcGIS online/BING maps/Google map standard zooms as described below. Features visualized shall depend on selected scale.

20	: 1128.497220
19	: 2256.994440
18	: 4513.988880
17	: 9027.977761
16	: 18055.955520
15	: 36111.911040
14	: 72223.822090
13	: 144447.644200
12	: 288895.288400
11	: 577790.576700
10	: 1155581.153000
9	: 2311162.307000
8	: 4622324.614000
7	: 9244649.227000
6	: 18489298.450000
5	: 36978596.910000
4	: 73957193.820000
3	: 147914387.600000
2	: 295828775.300000
1	: 591657550.500000

- Security:

Minimum security measures applied to prevent unauthorised access are:

- All web services shall be secured by SSL/TLS encryption in version TLS 1.2 at minimum. Preferable is TLS 1.3. The TLS certificate should be signed by one of the worlds recognized certificate authorities (not self-signed by the internal CA etc).
- The connections endpoints have to be specified up to IP (internet protocol) address or host and domain name (fully qualified domain name, FQDN). Network edge devices have to enforce traffic based on those definitions (strict allow rule).

- Number of users:

- The web service shall support approximately 100 concurrent requests.

- The web service shall support 250 unique daily users.
- Masking:
 - Some specific features shall be hidden upon request.
 - Masks defined shall be applied to dynamic and tiled services.

3.1.2 Deliverable quality criteria

- The graphical presentation is readable and features are visible on most suitable scale levels,
- There is no duplication of ENC objects.

3.1.3 Deliverable acceptance criteria

- The web map service has passed user acceptance tests against the criteria established above,
- The web map service can be integrated and visualised in Frontex applications,
- The web map service is delivered according to the high level schedule defined under chapter 7.2,
- The web map service is delivered according to the requested service availability as required under chapter 2.2,
- Access to 1st line support (helpdesk) and 2nd line support is provided as required under chapters 2.2 and 2.3,
- The declaration on compliancy with licenses and IPR as required under chapter 8.1 is signed.

The deliverable is formally accepted by Frontex and the Task / Deliverable Acceptance Form under Appendix 2 is signed by the Frontex Project Manager.

3.2. Web Services Security

Frontex expects that the web service regardless of its role will be developed in accordance with the following guidelines:

- Web Applications Secure Development Guidelines by EC DIGIT SECURITY ASSURANCE Version 3.0 Date: 12/05/2017
- Web Application Security Standard C(2018) 7283 final Date: 26/10/2018
- OWASP API Security Top 10 2019
- For topics not covered by above documents the Application Security Verification Standard Version 4.0.1 by OWASP should be used as complementary measure with selection of controls up to the Level 2. Each detailed entry has to be addressed, marked as out scope (if not service relevant) justified and commented (250 requirements in total).

Frontex may arrange a penetration test at any time to confirm no serious implementation flaws exists.

3.3. Chart updates

3.3.1 Description

Quarterly updates shall be provided according to Notice to Mariners. These updates shall be applied directly to WMS/WMTS service. Updates shall be performed outside Frontex duty hours (08:00 - 20:00 CET) and the maintenance window notification shall be submitted to Frontex at least two working days² before the update.

² From Mondays to Fridays inclusive, excluding Frontex holidays. Frontex holidays usually cover Easter Break, 1-3 May, 9 May, Corpus Christi in June, Assumption Day in August 1 and 11 of November, last week of December and 1 day of January. Detailed list will be provided to the Contractor at the end of each calendar year.

3.3.2 Deliverable acceptance criteria

- Updates are provided quarterly,
- Maintenance windows are established only during the indicated timeframes and within the notification period,
- Updates are comprehensive and reflect Notice to Mariners issued during the update period.

The deliverable is formally accepted by Frontex and the Task / Deliverable Acceptance Form under Appendix 2 is signed by the Frontex Project Manager.

3.4. Documentation

3.4.1 Description

The tenderer shall provide a schedule for the implementation and a document with a detailed description of the service called "Service Description Document" (SDD). The SDD shall at least contain the following information:

- Scope statement
- Definitions
- Risks
- Source description
- Symbolology
- Technical description
- License information

The schedule shall be provided in MS Project 2019 format and describe the different activities and milestones.

3.4.2 Deliverable quality criteria

- The document is clearly structured, i.e. it is organised into chapters, sections, subsections etc. in a clear way,
- The document is compliant with standards and a writing style that support a consistent structure
- The document is consistent and coherent, i.e. ensuring mutual accordance of all types of information inside a document and lack of logical contradictions of information between the submitted documents or between parts of the same document,
- Technical descriptions shall apply UML 2 whenever applicable.

3.4.3 Deliverable acceptance criteria

- The documents are completed as required above,
- The documents are delivered within the period established by the high level schedule defined under chapter 7.2.

The deliverable is formally accepted by Frontex and the Task / Deliverable Acceptance Form under Appendix 2 is signed by the Frontex Project Manager.

3.5. Provision of statistics of usage

3.5.1 Description

The tenderer shall provide monthly statistics of the usage of the service. The report shall at least contain the following information:

- Hits per service

The reports shall be provided at the beginning of the month for the previous month.

3.5.2 Deliverable quality criteria

- Report delivered in the first 7 days of the month.
- Report delivered with a tabular format.

3.5.3 Deliverable acceptance criteria

- The reports are completed as required above,
- The reports are delivered within the period established.

The deliverable is formally accepted by Frontex and the Task / Deliverable Acceptance Form under Appendix 2 is signed by the Frontex Project Manager.

4. Confidentiality and classification

The data requested to be collected and provided is considered non-classified. The purpose and the data provided under this contract shall not be shared with 3rd parties. In addition to that, the contract manager of the contractor shall sign a declaration of confidentiality after contract signature.

5. Frontex data management and dissemination

The data provided under this contract will be incorporated into the Frontex EUROSUR Fusion Services framework. This framework defines the governance, service management and technical structure of information services provision in Frontex for situational picture compilation in order to increase situational awareness.

The data will be fused with other data available to Frontex and shared with selected Frontex stakeholders, such as Member States and partner agencies.

6. Compliancy with EU Data Protection Regulation

The contractor must ensure compliancy with the European Union General Data Protection Regulation (REGULATION (EU) 2018/1725 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL) and must describe in the proposal how the compliancy is achieved.

7. Contract implementation

7.1. Contract type and duration

The contract is expected to be concluded for one year with two possible extensions, each for another year (for a maximum total duration of three years). The extension will be automatically applied unless one of the parties receives formal notification to the contrary at least three months before the end of the ongoing duration. Tenderers shall submit tenders which demonstrate that the services could be provided for a period of 3 years in total.

The contract shall be considered terminated by the end of duration. The Contractor remains liable for the quality of the deliverables for the full duration of the contract.

7.2. Schedule

The following high level schedule is foreseen:

Milestone	Description	Start	End
P0	Contract signature		0wd
P1	Kick-off (at Frontex or via video conference)		P0 + 5wd
P2	Service Design Phase (design and build of service, drafting of Service Description Document)		P1 + 15wd
P3	Service Transition Phase (user acceptance testing, improving of service, delivery of documentation)		P2 + 10wd
P4	Service Operation Phase	P3	End of contract

7.3. Prices and payments

All prices shall be expressed in EURO and exclude VAT.

The payments shall be executed as follows:

- Web Map Service (# 3.1) shall be paid after the delivery & acceptance by Frontex upon presentation of the invoice by the contractor;
- Chart updates (# 3.3) shall be paid on quarterly basis, after the delivery & acceptance by Frontex, upon presentation of the invoice by the contractor.

7.4. Languages

All the documentation delivered within the contract shall be in English. Moreover all communication, whether written or spoken, shall be in English.

7.5. Contractor's management personnel

The Contractor shall be responsible for providing all necessary personnel to ensure the satisfactory performance of its obligations under this contract and shall supervise and be fully responsible and liable for all the services performed.

The Contractor shall nominate a Contract Manager (CM) for all contractual matters (commercial, technical and operational).

CM will act as a single contact point from the Contractor's side. All the correspondence related to this contract will be addressed to him/her.

In case of absence of the CM the Contractor shall ensure a backup and inform Frontex about the change in writing.

7.6. Frontex personnel

For the proper implementation of this contract Frontex will nominate the Frontex Contract Manager (FCM), who will act as a single contact point for all the matters related to the contract implementation.

The communication between the Contractor and Frontex will be mainly performed via e-mail and phone.

8. Proposals

8.1. Licenses and intellectual property rights (IPR)

Proposals must be compliant with the web map source licensing policy and shall not violate any copyright or IPR. In the technical proposal, the tenderer has to acknowledge the compliancy with any licensing party by signing the declaration form attached in Annex VIII.

During the implementation of the project, ENC's shall be supplied by an official ENC distributor.

It is under the Contractor's responsibility to obtain the necessary rights and ensure that all sources utilized for producing the deliverables of the present service's contract may be used by Frontex with unlimited access. All potential costs incurred in the licensing of the necessary property rights shall be included in the price of the tender. For Frontex products derived from that data, Frontex retains the IPR.

8.2. Other information

All the information delivered to the Contractor in this document, its annexes and other referred documents shall be taken into consideration by the Contractor in his offer and during the contract runtime.

The preferred bidder shall not benefit from state subsidies contrary to EU law.

9. Appendices

The following appendices are included:

APPENDIX 1 List of acronyms

APPENDIX 2 Model of Task / Deliverable Acceptance Form

APPENDIX 1

ACRONYM	EXPLANATION
MS	Member States (of the European Union)
SAC	Schengen Associate Countries
ENC	Electronic Nautical Charts
OGC	Open Geospatial Consortium
WMS	Web Map Service
WMTS	Web Map Tile Service
IHO	International Hydrographic Organisation
EPSG	European Petroleum Survey Group

WGS	World Geodetic System
IPR	Intellectual Property Rights
CET	Central European Time
WD	(Frontex) Working Days
UML	Unified Modelling Language
SDD	Service Description Document

APPENDIX 2

Model of Task / Deliverable Acceptance Form

FOR CONTRACT No

Original document - duly signed - to be attached to the invoice

TASK / DELIVERABLE DESCRIPTION

Please give reference to the Terms of Reference and short description of the task or deliverable.

Please describe observations and reservations if any.

In case of Task/Deliverable rejection please detail reasons.

TASK / DELIVERABLE is ACCEPTED / REJECTED

To be filled in by Frontex:

Official responsible for acceptance (in block capitals):	
Date and signature	
Official responsible for final validation (in block capitals):	
Date and signature	