

Tender Specifications

Attached to the Invitation to tender

Invitation to tender No. EMSA/NEG/8/2020 for Study on distributed non-repudiation solutions based on Blockchain for SSN

1. Introduction

The European Maritime Safety Agency (EMSA) was established under Regulation (EC) No 1406/2002 of the European Parliament and of the Council¹ for the purpose of ensuring a high, uniform and effective level of maritime safety. Among its tasks, the Agency develops, hosts, operates and monitors the central SafeSeaNet (SSN) system that supports the exchange of maritime safety information among EU Member States (MS), Norway and Iceland (as mandated by Directives 2002/59/EC and 2010/65/EU), and in some cases with countries outside of the EU/EEA. Furthermore, with the EMSWe Regulation (EU) 2019/1239, SSN will serve as a platform for the exchange of data submitted in Maritime National Single Windows (MNSW) by private organisations in different ports (shipping companies and agents).

SSN is a time critical application supporting the maritime safety services. It is administered, operated and monitored by EMSA on a 24/7 basis with a guaranteed availability of 99% over a year with a maximum downtime of 12 hours per event. EMSA has established an operational centre, the Maritime Support Service (MSS), that is manned 24/7 for the first level monitoring and helpdesk related to these applications.

The operation of central SSN involves several entities or users at regional, national and local level, which are public authorities (e.g. port authorities and coastal stations, Port State Control officers, SAR centres, VTS, ship reporting systems, pollution response bodies, etc.). The central SSN system is connected with national SSN systems in each MS which relay information from and to relevant public authorities and systems (e.g. port systems, MNSWs).

The SSN software requires time critical maintenance and support to incidents in the operational version and enhancements delivered as upgraded versions, moving to operations, aimed at including new information in the system, linking information from different system modules, further interfacing with other EMSA maritime information systems, facilitating its operational performance or improving its (user) ergonomics.

2. Objective, scope and description of the contract

2.1 Objective

With the EMSWe Regulation (EU) 2019/1239, SSN will serve as a platform for the exchange of data submitted in MNSWs by private organisations in different ports (shipping companies and agents), in addition to the current data exchanges between public authorities. It is therefore critical that SSN (including national

¹ Regulation (EC) No 1406/2002 of the European Parliament and of the Council of 27 June 2002 establishing a European Maritime Safety Agency (OJ L 208, 5.8.2002, p. 1.).

SSN systems) ensures the integrity and non-repudiation of such data. The current architecture of SSN, which has been designed for the purpose of close-to-public data exchange between authorities, poses problems as it may not sufficiently ensure that MNSW data is not modified and that actions performed on such data are traced. There is therefore a need to analyse if better solutions can be found to ensure the non-repudiation, integrity and traceability of data.

EMSA commissioned a security and interoperability study from August 2019 to March 2020 to define which security measures should be applied in SSN. The study focussed on security issues (e.g. encryption and user access control) and did not propose a specific solution to address the issues above.

The goal of the procedure is to contract the execution of a study proposing a technical architecture for a new SSN system that would be based on a distributed system concept and ensure the non-repudiation, integrity and traceability of data using Blockchain technologies.

2.2 Scope

The study shall assess the following two use-cases:

- A declarant (e.g. shipping company, shipping agent) reports ship departure data in an MNSW and another declarant re-uses this data in another MNSW to report for the arrival of the ship at its next port.
- A maritime authority dealing with a situation with a specific ship retrieves the information about the ship through SSN (system-to-system or user interface).

The outcome shall be a high-level design document with the definition of the architecture and technologies to be used for a solution covering the two use-cases. The solution shall demonstrate the following benefits to EMSA:

1. Guarantee the non-repudiation and integrity of the data by design so that EMSA may not be liable for alteration of the data;
2. Secure data access management covering the end-to-end lifecycle of the data, so that all users of the system can trust that only the users they allow to see the data can see it;
3. Increase the availability of the system by creating a distributed system and removing the single point of failure which is currently the central SSN system operated by EMSA.

A cost analysis must also be included as outcome of the study to understand what the cost for developing and running this type of solution would be.

Technical implementation is not expected within this contract. This contract will consist simply in a technical study for assessing the feasibility of such a solution and if the cost-benefit ratio would justify going ahead with an implementation.

2.3 Project Description

The project will consist of the following tasks:

1. Analysis of the use-cases and derivation of the main business requirements for the high-level architecture.
2. Meetings with stakeholders in EMSA to confirm the business requirements.

3. Proposal of the technologies best suited to fulfil the business requirements.
4. Definition of the high-level architecture and technical specifications of the proposed distributed system.
5. Perform the cost-benefit analysis of the proposed system in relation to the currently existing system.

The project will only focus on the use-cases of the European Index Server (EIS) of SSN, which the overview of the application can be found at <http://emsa.europa.eu/ssn-main/ssn-how-it-works.html>. The reference to the design documentation for EIS is presented in Section 18 of this document (the parts in the documentation not referring to EIS can be ignored).

The analysis of the business requirements in point 1. above, shall cover all the current functionalities (described in Appendices TS.01 to TS.06) and shall take into account the results of the “*Task 3 Report of the Security and Interoperability Solutions Study for SafeSeaNet*” (Appendix TS.08). The use-cases shall be assessed within the context of the EMSWe, and therefore will consider that the EMSWe user registry and access management system is available.

The project will require a high degree of interaction with the Agency and regular meetings shall be foreseen to review the use-cases being analysed and clarify doubts about the same. Preference will be given to face-to-face meetings at the Agency. Because of the novelty of the study and of the high degree of uncertainty about the applicability of the technologies, an iterative process shall be proposed for this project.

2.4 Minimum requirements for the Tender

The minimum requirements for the tender are the following:

1. Project Plan with proposal for dates for the meetings, assuming kick-off on 1st of June 2020, and the planning of the tasks to be provided in the tender. Meetings to be held at EMSA and meetings to be held remotely shall be clearly identified in the project plan. The total duration of the project shall not exceed 4 months.
2. The Project Plan shall demonstrate the iterative process carried out throughout the study,
3. Methodology to be used for use-cases analysis and business requirements derivation shall be explained in the tender.
4. Methodology to be used for derivation of the technical specifications from the business requirements shall be explained in the tender.

3. Contract management responsible body

EMSA Unit 3.3 in charge of Simplification - will be responsible for managing the contract.

4. Project Planning

4.1 Agendas and minutes of meetings

The contractor shall provide as a minimum the following reports for all meetings held with EMSA:

- I. Agenda for the meetings. Prior to a meeting, a detailed agenda, the content of which shall be agreed with EMSA, as well as drafts of the presentations to be made in a meeting, shall be provided;

- II. Minutes of the meetings. The minutes must include at least the topics discussed, decisions taken and action items with indication of the responsible person and deadline of the actions.

4.2 Milestones and Meetings

The baseline for the meetings is to have the meetings in person at EMSA premises. For the progress meetings, remote connections by using voice/video conferencing systems may be used, unless the meeting is for discussion of technical issues that require more time than the normal progress meeting.

The foreseen milestones and associated meetings are the following:

- I. Kick-off meeting where the activities for the respective contract start.
- II. Preliminary Business Requirements review meeting for the first review of the use-cases.
- III. Business Requirements review meeting for the acceptance of the Business Requirements document.
- IV. Preliminary Design Review meeting to assess the suitability of the proposed architecture design and review preliminary draft versions of the design justification and technical specifications documents.
- V. Critical Design Review meeting to review the final draft versions of the design justification and technical specifications documents.
- VI. Final Review meeting. This meeting is to be held before the end of the contract to review the study final conclusions and deliverables.
- VII. Progress meetings. These meetings shall be held on a weekly basis to review the progress of the study, discuss possible bottlenecks of the activities and review the priorities when applicable. The open actions, open issues and risks shall be reviewed at these meetings. Normally these meetings should last maximum 30 minutes. In some cases, and upon agreement of EMSA and the contractor, these meetings may be extended to discuss more technical decisions like functional design issues.

4.3 Deliverables

The minimum deliverables for this contract, which must be in English and in a digital editable format, are the following:

- I. Business Requirements document, with explanation of the use-cases that generated the business requirements.
- II. Design Justification document, with explanation of the technologies selected to fulfil the business requirements and the reason for the selection.
- III. Technical Specifications document, including the derived technical specifications to fulfil the business requirements and a high-level architecture design.
- IV. Cost-Benefits Analysis document, comparing the cost of developing and running of the proposed architecture to the cost of upgrading and running of the current architecture to fulfil the same requirements.

5. Timetable

The estimated date for signature of the contract is June 2020.

6. Estimated Value of the Contract

The maximum budget available for this contract is EUR 40000 excluding VAT.

7. Terms of payment

Payments will be made in accordance with the provisions of the draft **Purchase Order** available in the Procurement Section under the call to tender **EMSA/NEG/8/2020** on EMSA's website (www.emsa.europa.eu).

8. Terms of contract (purchase order)

When drawing up a bid, the tenderer shall bear in mind the terms of the draft Purchase Order.

EMSA may, before the contract is signed, cancel the award procedure without the tenderers being entitled to claim any compensation.

9. Subcontracting

If the tenderer intends to either subcontract part of the work or realise the work in co-operation with other partners it shall indicate in its offer which part will be subcontracted, as well as the name and qualifications of the subcontractor or partner. It should be noted that the overall responsibility for the work remains with the tenderer.

The tenderer must provide required evidence for the exclusion and selection criteria on its own behalf and when applicable on behalf of its subcontractors. The evidence for the selection criteria on behalf of subcontractors must be provided where the tenderer relies on the capacities of subcontractors to fulfil selection criteria². The exclusion criteria will be assessed in relation to each economic operator individually. Concerning the selection criteria, the evidence provided will be checked to ensure that the tenderer and its subcontractors as a whole fulfil the criteria.³ However, the selection criteria may apply individually where it is relevant in view of their nature.

10. Requirements as to the tender

Bids can be submitted in any of the official languages of the EU. However, as the main working language of the Agency is English, bids should preferably be submitted in English and shall in particular include an English version of the documents requested under points 13.5 and 14 of the present Tender Specifications. The tenderer must comply with the minimum requirements provided for in these Tender Specifications. This includes compliance with applicable obligations under environmental, social and labour law established by Union law, national law and collective agreements or by the international environmental, social and labour law provisions listed in Annex X to Directive 2014/24/EU of the European Parliament and of the Council.⁴

The tenderer shall complete the Tenderer's checklist.

If the tenderer intends to either subcontract part of the work or realise the work in co-operation with other partners (Join Offers) it shall indicate it in its offer by completing the form "Statement of Subcontracting / Joint

² To rely on the capacities of a subcontractor means that the subcontractor will perform the works or services for which these capacities are required.

³ To rely on the capacities of a subcontractor means that the subcontractor will perform the works or services for which these capacities are required.

⁴ Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on public procurement and repealing Directive 2004/18/EC (OJ L 94, 28.3.2014, p. 65).

Offer". This document is available on the Procurement Section / Calls for Tenders (Documents for tenderer) of EMSA's website (www.emsa.europa.eu).

The tender must be presented as follows and must include:

- a) A signed **cover letter** indicating the name and position of the person authorised to sign the contract/purchase order, the bank account on which payments are to be made and the email address to be used for contacts during the procurement procedure.
- b) **The Financial Identification Form completed**, signed and stamped. This document is available on the Procurement Section (Financial Identification Form) of EMSA's website (www.emsa.europa.eu).
- c) **The Legal Entity Form** completed, signed and stamped along with the requested accompanying documentation. This document is available on the Procurement Section (Legal Entity Form) of EMSA's website (www.emsa.europa.eu)

Tenderers are exempt from submitting the Legal Entity Form and Financial Identification Form requested if such a form has already previously been completed and sent either to EMSA or any EU Institution. In this case the tenderer shall simply indicate on the cover letter the bank account number to be used for any payment in case of award.

Part A: All the information and documents required by the contracting authority for the appraisal of tenders on the basis of the points 9, 12 and 13.2 of these specifications (exclusion criteria).

Part B: All the information and documents required by the contracting authority for the appraisal of tenders on the basis of the Economic and Financial Capacity (part of the selection criteria) set out under point 13. 4 of these specifications.

Part C: All the information and documents required by the contracting authority for the appraisal of tenders on the basis of the Technical and professional capacity (part of the selection Criteria) set out under point 13. 5 of these specifications.

Part D: All the information and documents required by the contracting authority for the appraisal of tenders on the basis of the **Award Criteria** set out under point **15** of these specifications;

Part E: Setting out prices in accordance with point 11 of these specifications.

11. Price

- a) Price must be quoted for the Study on distributed non-repudiation solutions based on Blockchain for SSN and shall include all the costs to execute the project, including any travel costs required by the tenderer to travel to EMSA for the meetings in the project plan.
- b) Prices must be fixed amounts and non-revisable.
- c) Prices must be quoted in euro.
- d) Under Article 3 and 4 of the Protocol on the privileges and immunities of the European Union, the latter is exempt from all duties, taxes and other charges, including VAT. This applies to EMSA pursuant to the Regulation 1406/2002/EC. Therefore, price and the amount of VAT must be shown separately.

12. Joint Offer

Groupings, irrespective of their legal form, may submit bids. Tenderers may, after forming a grouping, submit a joint bid on condition that it complies with the rules of competition. Such groupings (or consortia) must specify the company or person heading the project and must also submit a copy of the document authorising this company or person to submit a bid.

Each member of the group must provide the required evidence for the exclusion and selection criteria. The exclusion criteria will be assessed in relation to each economic operator individually. Concerning the selection criteria, the evidence provided by each member of the group will be checked to ensure that the group as a whole fulfils the criteria. However, the selection criteria may apply individually where it is relevant in view of their nature.

If awarded, the contract will be signed by the person authorised by all members of the group. Tenders from consortiums of firms or groups of service providers, contractors or suppliers must specify the role, qualifications and experience of each member or group.

13. Information concerning the personal situation of the tenderer and information and formalities necessary for the evaluation of the minimum economic, financial, technical and professional capacity required.

13.1 Legal position – means of proof required

When submitting their bid, tenderers are requested to complete and enclose the **Legal Entity Form** available on the Procurement Section of EMSA's website (www.emsa.europa.eu).

13.2 Grounds for exclusion – Exclusion criteria

To be eligible to participate in this contract award procedure, a tenderer must not be in any of the exclusion situations listed in the Declaration of Honour.

For this purpose, the Declaration of Honour available on the Procurement Section of EMSA's website (www.emsa.europa.eu) shall be completed and signed.

13.3 Legal and regulatory capacity – Selection criteria

13.3.1 Standards / Prerequisites

The tenderer must have the legal and regulatory capacity to pursue the professional activity needed for performing the contract.

13.4 Economic and financial capacity – Selection criteria

13.4.1 Standards / Prerequisites

The tenderer must be in stable financial position and must have the economic and financial capacity to perform the contract.

13.4.2 Evidence

- a) Financial statements or their extracts for the last two years for which accounts have been closed.

- b) Statement of the overall turnover and, where appropriate, turnover relating to the relevant services for the last two financial years.
- c) Tenderers are exempt from submitting the documentary evidence if such evidence has already been completed and sent to EMSA for the purpose of another procurement procedure and the provided documents are up-to-date. In this case the tenderer shall simply indicate on the cover letter the procurement procedure where the evidence has been provided.
- d) If, for some exceptional reason which EMSA considers justified, a tenderer is unable to provide one or other of the above documents, it may prove its economic and financial capacity by any other document which EMSA considers appropriate. In any case, EMSA must at least be notified of the exceptional reason and its justification in the tender. EMSA reserves the right to request at any moment during the procedure any other document enabling it to verify the tenderer's economic and financial capacity.

13.5 Technical and professional capacity – Selection criteria

13.5.1 Standards / Prerequisites

The tenderer's technical capacity will be evaluated based on the following criteria that will be applied to the legal entity(ies) submitting the offer and not to any mother company or company of the same group:

- a) The tenderer shall have proven experience with projects driving change and innovation, where use cases have been analysed and business requirements derived.
- b) The tenderer shall have proven experience in defining architectures for federated and private ecosystems for decentralized digital identity and data exchange, with high-availability and non-repudiation of the data, using blockchain and modern distributed ledger technology.
- c) The tenderer shall have proven experience in defining systems using Hyperledger Indy, Fabric and Sawtooth, R3 Corda, Digital Asset and DAML, Ethereum and EOS, or other similar technologies.
- d) The tenderer shall have proven experience with projects involving enterprise-grade IT Operations.

13.5.2 Evidence

The tenderer shall submit a list of the tenderer's past projects with explanation of what item, of the selection criteria above, the project is addressing and how the technical and professional capacity in question was obtained from the project. The evidence should be presented using the template table below.

Project Description	Selection Criteria	Justification
Project Name with short description of the project (if there is a link to a project website or similar this can be included)	1. Bullet list with the selection criteria items that the project is providing the evidence. 2. ...	1. Bullet list with short explanation of how the project provided the experience required for the respective bullet point of the previous column 2. ...

14. Declaration of Honour (DoH)

Please note that the tenderer shall provide information with regards its situation and on the natural or legal persons that are members of the administrative, management or supervisory body or that have powers of representation, decision or control and beneficial owners.

Upon request and within the time limit set by EMSA, the tenderer shall provide the following evidence concerning itself, the natural or legal persons as listed under the first paragraph, and concerning the natural or legal persons which assume unlimited liability for the debt of the tenderer:

For the exclusion situations described in (a), (c), (d), (f), (g) and (h) of the Declaration of Honour, production of a recent extract from the judicial record is required or, failing that, an equivalent document recently issued by a judicial or administrative authority in the country of establishment of the tenderer showing that those requirements are satisfied.

For the exclusion situations described in (a) and (b) of the Declaration of Honour, production of recent certificates issued by the competent authorities of the country of establishment is required. These documents must provide evidence covering all taxes and social security contributions for which the tenderer is liable, including for example, VAT, income tax (natural persons only), company tax (legal persons only) and social security contributions. Where any document described above is not issued in the country concerned, it may be replaced by a sworn statement made before a judicial authority or notary or, failing that, a solemn statement made before an administrative authority or a qualified professional body in its country of establishment.

The successful tenderer must provide the documents mentioned as supporting evidence before signature of the contract and within the deadline given by EMSA. This requirement applies to each member of the group in case of joint tender.

If the candidate already submitted such evidence for the purpose of another procedure, provided its issuing date does not exceed one year and it is still valid, the person shall declare on its honour that the documentary evidence has already been provided and confirm that no changes have occurred in its situation.

15. Award criteria

The contract will be awarded to the tenderer who submits the most economically advantageous bid (the one with highest score) based on the following quality criteria and their associated weightings:

1. Quality criterion 1 ($W_1 = 30\%$),
2. Quality criterion 2 ($W_2 = 30\%$),

and the price criterion and associated weighting:

3. Price of the bid ($W_{price} = 40\%$).

Quality criterion 1

Quality of the project plan proposed, with respect to its suitability to achieve the project goals within the maximum duration of the project and the iterative approach required for the study. Suitability of the proposed meetings and the number of face-to-face meetings or workshops to discuss the business requirements and proposed architecture will be assessed as part of the quality of the project plan.

Quality criterion 2

Quality of the methodologies proposed for the derivation of the business requirements and technical specifications. The quality of the methodologies proposed will be assessed related to the level of interactivity with the stakeholders being achieved and on how the information will be recorded in the relevant documents. Novel methodologies, such as design thinking, are considered as an added value to the quality of the tender.

For all bids evaluators will give marks between 0-10 (half points are possible) for each quality criterion.

The score is calculated as

$$S = SQ + SP$$

where:

The average quality for quality criterion i is

$$Q_i = \frac{1}{\text{number of evaluators}} * \sum_{\text{evaluator}} \text{mark of the evaluator for quality criterion } i$$

The overall weighted quality is

$$Q = \sum_i Q_i * W_i$$

The score for quality is

$$SQ = \frac{Q}{Q \text{ of the bid with highest } Q} * 100 * \sum_i W_i$$

The score for price is

$$PP = \sum_i \frac{\text{lowest Price}_i \text{ of all bids}}{\text{Price}_i} * 100 * W_{\text{Price}_i}$$

Only bids that have reached a minimum of 50 % for Q_1 , and a minimum of 50 % for Q_2 , will be taken into consideration when calculating the score for quality SQ , score for price SP and score S .

Only bids that have reached a minimum of 60 % for the score S will be taken into consideration for awarding the contract.

16. Rejection from the procedure

Contracts will not be awarded to tenderers who, during the procurement procedure, are in one of the following situations:

- a) are in an exclusion situation;

- b) have misrepresented the information required as a condition for participating in the procedure or have failed to supply that information;
- c) were previously involved in the preparation of procurement documents used in the award procedure where this entails a breach of the principle of equality of treatment, including distortion of competition that cannot be remedied otherwise.

17. Intellectual Property Right (IPR)

Please consult the contract for IPR related clauses.

If the results are not fully created for the purpose of the contract this shall be clearly pointed out by the tenderer in the tender. Information shall be provided about the scope of pre-existing rights, their source and when and how the rights to these rights have been or will be acquired.

In the tender all quotations or information originating from other sources and to which third parties may claim rights have to be clearly marked (source publication including date and place, creator, number, full title etc.) in a way allowing easy identification.

18. List of Appendixes to the Tender Specifications

The following appendixes contain information relevant for the tender.

Appendix TS.01	EIS System Design Document
Appendix TS.02	EIS System Database Design Document
Appendix TS.03	EIS Graphical Interface Design Document
Appendix TS.04	SSN EIS XML Messaging Reference Guide
Appendix TS.05	SSN EIS Web Services
Appendix TS.06	EMSA Applications Exchange – System Interface Guide
Appendix TS.07	EIS Installation and Configuration Manual
Appendix TS.08	Security and Interoperability Solutions Study for SafeSeaNet – Task 3 Report