



CTBTO
PREPARATORY COMMISSION

COMPREHENSIVE
NUCLEAR-TEST-BAN
TREATY ORGANIZATION

REQUEST FOR PROPOSAL

To: ALL
BIDDERS

CTBTO Ref. No.: 2026-0101/POLONSKAYA
(PLEASE QUOTE ON ALL COMMUNICATIONS)

Tel. No.: +43 (1) 26030-6350

E-mail: procurement@ctbto.org

Date: 07 October 26

Subject: Provision of Services for Development and Evaluation of a Modern
Infrasound Source Categorization Algorithm on a Call-Off-Basis

Deadline for Submission: 23 Oct 26

Vienna Local Time: 17:00

The Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (hereinafter referred to as the 'Commission') hereby invites you to submit a proposal that meets the requirements of the attached documents.

You are kindly requested to complete and return the acknowledgement form by email as soon as possible.

If you have any questions you should contact the email address indicated above.

Yours Sincerely,


Sally Alvarez de Schreiner
Chief, Procurement Services Section



CTBTO
PREPARATORY COMMISSION

COMPREHENSIVE
NUCLEAR-TEST-BAN
TREATY ORGANIZATION

ACKNOWLEDGEMENT FORM

Solicitation No: 2026-0101

Title: Provision of Services for Development and Evaluation of a Modern
Infrasound Source Categorization Algorithm on a Call-Off-Basis

Closing Date: 23 Oct 26

Vienna Local Time: 17:00

Procurement Staff: Olga Polonskaya

CTBTO Req. No.: 0010030253

Please complete 'A' or 'B' or 'C'
and Return

WITHIN FIVE (5) DAYS

THE PREPARATORY COMMISSION FOR THE
COMPREHENSIVE NUCLEAR-TEST-BAN TREATY ORGANIZATION (CTBTO)

by email to
procurement@ctbto.org

A: We shall submit our proposal

By: _____
(date)

Company Name: _____

Contact Name: _____

Email/Tel: _____

B: We may submit and will advise

By: _____
(date)

Company Name: _____

Contact Name: _____

Email/Tel: _____

C: We will not submit a proposal for the following reason(s)

- ___ our current workload does not permit us to take on additional work at this time;
- ___ we do not have the required expertise for this specific project;
- ___ insufficient time to prepare a proper submission;
- ___ other (please specify) _____

Company Name: _____

Contact Name: _____

Email/Tel: _____

INSTRUCTIONS FOR PREPARATION AND SUBMISSION OF PROPOSALS

1. General

The Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (the “Commission”) with its headquarters in Vienna, Austria, is the International Organization mandated to establish the global verification system foreseen under the Comprehensive Nuclear-Test-Ban Treaty (CTBT), which is the Treaty banning any nuclear weapon test explosion or any other nuclear explosions. The Treaty provides for a global verification regime, including a network of 321 stations worldwide, a communication system, an International Data Centre and on-site inspections to monitor compliance with the Treaty. More information can be found in our website www.ctbto.org

This Request for Proposal (**RFP 2026-0101**) is for the “**Provision of Services for Development and Evaluation of a Modern Infrasound Source Categorization Algorithm on a Call-Off-Basis**” (hereinafter referred to as the “Services/Works”).

For this purpose, the Commission wishes to solicit a competitive offer (Proposal) for the required services in accordance with the attached Terms of Reference. The Proposal shall meet all requirements stated in the Terms of Reference. For this project, the Commission is seeking capabilities, which will ensure that the services are performed in timely manner, acceptable quality and at a reasonable cost.

2. Documents included in this RFP

This RFP consists of the following documents:

1. Letter of Invitation;
2. These Instructions for Preparation and Submission of Proposals, including the Bidder’s Statement and the following attachments:
 - Attachment 1: Procedure for Submission of Electronic Offers in 2 sealed files;
 - Attachment 2: Evaluation Criteria and Method;
 - Attachment 3: Technical Compliance Matrix; and
 - Attachment 4: Price Schedule Form.
3. Vendor Profile Form;
4. Statement of Confirmation;
5. The Commission’s Model Contract and its Annexes:
 - Annex A: The Commission’s General Conditions of Contract, available at [Microsoft Word - 2026-01 General Conditions of Contract](#) and incorporated hereby by reference;
 - Annex B: The Commission’s Terms of Reference with Attachment.

Note: In the event of award, the Proposal will be incorporated as Annex C to the Contract.

6. List of States Signatories of the Comprehensive Nuclear-Test-Ban Treaty (CTBT) available at www.ctbto.org under [Status of Signatures and Ratifications | CTBTO](#) and incorporated hereby by reference.

3. Amendment of RFP Documents

At any time prior to the closing date for submission of Proposal, the Commission may, for any reason, modify the RFP documents by amendment. The Commission may consider extending the deadline in order to allow adequate time for considering the modifications in the preparation of the Proposal.

4. Language of the Proposal

The Proposal and all correspondence and documents relating to it shall be in English.

5. Format and Submission of the Proposal

The Proposal shall be typed, dated and signed by an official legally authorized to enter into contracts on behalf of the bidder. The Proposal shall not contain any interlineation, erasures or overwriting except as necessary to correct errors, in which case such corrections shall be initialled by the authorized person(s) signing the Proposal.

The Proposal shall be submitted electronically according to Attachment 1 “PROCEDURE FOR SUBMISSION OF ELECTRONIC OFFERS IN 2 SEALED FILES”.

6. Request for Clarifications and Contacting the Commission

The Commission will issue clarifications, if required. Bidders shall send their request for clarifications by e-mail as soon as possible after receipt of the solicitation documents, but in any case, no later than **10 (ten) business days prior to the Closing Date**. Questions will only be accepted via e-mail sent to:

E-mail: procurement@ctbto.org
Subject: RFP 2026-0101/Polonskaya - Request for Clarifications

The Commission will make all reasonable efforts to issue the clarifications not later than **5 (five) business days prior to the Closing Date**.

Except in the case of responding to an RFP clarification, a bidder shall not contact the Commission on any matter relating to the Proposal after its submission and until the award of the Contract. Any attempt to influence the Commission in its evaluation of the Proposal or the contract award decision may result in the rejection of the Proposal.

7. Eligible Services

The services to be rendered under the Contract shall have their origin in the States Signatories of the CTBT, the list of which is available in the CTBTO website at www.ctbto.org under [Status of Signatures and Ratifications | CTBTO](#) and incorporated hereby by reference. For purposes of this paragraph, "the origin" means the place from where the services are supplied.

8. Type of Contract and Payment

Type of contract and the terms and conditions of payment are described in the attached Model Contract.

9. Preparation of the Proposal

The Proposal shall contain, but not necessarily be limited to, the information described below. The Proposal shall be composed of the following separate files:

- I. **Technical Proposal** (no pricing/financial information shall be included); and
- II. **Financial Proposal.**

PART I: TECHNICAL PROPOSAL

Please state the reference number and the date of this RFP in the Proposal and any correspondence relating to it.

No pricing/financial information shall be included in the Technical Section of the Proposal.

(a) Point of Contact

The Proposal shall state the contact details and address (name, telephone number, and e-mail address) of the person/point of contact of the bidder dealing with this RFP.

(b) Documents Establishing the Eligibility and Qualifications of the Bidder

Bidder's Statement, Statement of Confirmation and Vendor Profile Forms

Bidders shall furnish documentary evidence of their status as eligible and qualified vendor. To award a contract to a bidder, its qualifications must be documented to the Commission's satisfaction and demonstrate that the bidder has the financial, professional and technical qualifications necessary to perform the services under the Contract.

- The attached **Bidder's Statement, Statement of Confirmation and Vendor Profile Form** shall be duly filled-in and submitted together with the Proposal.
- Qualifications of the Company: bidder shall provide details regarding the qualifications of the Company to demonstrate conformity to the requirements of the ToR (Annex B).
- Qualifications of the Staff: bidder shall provide CV(s) and supporting information regarding the qualifications of the proposed staff to demonstrate conformity to the requirements of the ToR (Annex B).
- Bidder shall provide three (3) reference contacts. The Commission reserves the right to contact these reference contacts to obtain information regarding the bidder's performance.

(c) Documents Establishing Technical Compliance of the Proposal

In addition to the duly filled-in **Technical Compliance Matrix (Attachment 3)** attached hereto, the Technical Proposal shall include a section-by-section response to the Terms of Reference and provide an explanation of the bidder's understanding of the services to be rendered to satisfy the requirements referenced in the Terms of Reference, as well as demonstrated compliance of proposed services, risk management and Team Roster management requirements confirmation.

The bidder may provide additional related content in attachments. The Proposal shall also provide any other relevant issue which the bidder would like to bring to the attention of the Commission whether or not having cost implications.

(d) Sub-Contractors

The Proposal shall include names, legal status, address and qualifications of subcontractor(s), if any, and the scope of the subcontracted services. The Proposal shall provide a statement that the bidder shall be fully responsible for the performance of sub-contractors. All sub-contractors shall be legally established in one of the CTBT States Signatories, the list of which is available at www.ctbto.org under [Status of Signatures and Ratifications | CTBTO](#) and incorporated hereby by reference.

(e) Work permits and Visas

Please note that it is the bidder's responsibility alone to obtain work permits or visa or similar for the personnel proposed to implement this project. The Commission will make no effort nor accept any responsibility for obtaining work permits or visa or similar for the Contractor's personnel.

(f) Commission's Inputs

A description of the expected inputs/resources to be made available by the Commission and at what stage of the services.

PART II: FINANCIAL PROPOSAL

The Financial Proposal shall be prepared in **United States Dollars or Euro** and shall breakdown, separately, the costs for each service required in the Terms of Reference in accordance with attached **Price Schedule Form (Attachment 4)**. The Form shall be duly filled-in and submitted together with the Proposal. Note that clear and detailed explanations would enable us to evaluate the Proposal promptly and proceed with fewer requests for clarifications/justifications in a later stage. This is also a factor influencing the decision for Contract award.

Taxes

The price quoted shall be net of taxes. In principle the Commission is exempt from taxes. Since the arrangement under which such exemption is respected varies from country-to-country, the selected bidder will be informed by the Commission whether tax exemption will occur at source or whether taxes paid by the selected bidder will be reimbursed by the Commission upon submission of the original supporting documentation.

(1) For Austrian companies

The price quoted shall be net of Taxes. All applicable Taxes payable by the selected bidder at the conclusion or implementation of the Contract in respect of the goods/services shall be quoted separately or be separately identified on the Proposal together with information on the nature of the tax and its method of calculation.

(2) For European Union (EU) Companies

The price quoted shall be net of Taxes. All applicable Taxes payable by the selected bidder at the conclusion or implementation of the Contract in respect of the goods/services shall be quoted separately or separately identified on the Proposal together with information on the nature of the Tax and its method of calculation. Due to the VAT exemption applicable to the Commission, no VAT will be charged to the Commission by the EEC Suppliers under the Contract (Ref. EU VAT Council Directive 2006/112/EC, Article 151).

(3) For Non-EU Companies

The price quoted shall be net of Taxes. All applicable Taxes payable by the selected bidder at the conclusion or implementation of the Contract in respect of the goods/services shall be quoted separately or be separately identified on the Proposal together with information on the nature of the tax and its method of calculation. For deliveries to Vienna, Austria, and due to the tax exemption at source applicable to the Commission, no Taxes shall be charged to the Commission under the Contract.

10. Completeness and Correctness of the Proposal

The Commission reserves the right to verify all information furnished in the Proposals through a source of its choice. Any inaccurate information so given may lead to the rejection of the Proposal.

11. Validity of the Proposal

The Proposal shall be valid for ninety (90) days after the deadline for its submission to the Commission, unless an extension of validity has been requested by the Commission.

12. Correction of Errors

The Commission will check the Proposal for any arithmetic errors. If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected.

13. Evaluation of the Proposal and Selection

- (a) The Commission will conduct the evaluation and selection based on the criteria and method specified in **Attachment 2 “Evaluation Criteria and Method”**.
- (b) The Commission reserves the right, as it deems appropriate, to award to a single bidder, to award to multiple bidders in any combination or not to award to any of the bidders as a result of this RFP.

14. Clarifications and Negotiations of the Proposal

The Commission reserves the right to request clarifications on the Proposal and to enter into negotiations regarding the Proposal before awarding the contract under this RFP.

15. Modification and Withdrawal of the Proposal

Bidders may modify or withdraw their Proposals after their submission, provided that written notice of the modification or withdrawal is received by the Commission by the closing date and time for the submission of the Proposal. The Proposal may not be modified subsequent to the closing date and time.

16. The Commission’s Right to Reject the Proposal

The Commission reserves the right to accept or reject the Proposal or to annul this procurement process at any time prior to the award of contract without having to inform the bidders of the grounds therefore, without thereby incurring any liability to the bidders.

17. Costs of preparation and submission of the Proposal

Bidder shall bear all the costs associated with the preparation and submission of their Proposal and the Commission will not be responsible or liable for those costs, regardless of the outcome of this RFP.

18. Proprietary Information

All documentation and information contained in this RFP are proprietary to the Commission and shall not be duplicated, used or disclosed -in whole or in part- for any purpose other than to evaluate them and respond to the Commission's request for Proposal or otherwise without prior written agreement of the Commission.

19. Use of former employees of the Commission in the preparation of Proposals

A bidder must not, in the absence of prior written approval from the Commission, permit a person to contribute to, or participate in, any process relating to the preparation of a Bid or the procurement process if the person, at any time:

- (a) During the 12 months immediately preceding the date of issue of the Solicitation was an official, agent, servant or employee of, or otherwise engaged by the Commission;
- (b) During the 24 months immediately preceding the date of issue of the Solicitation was an employee of the Commission personally engaged, directly or indirectly, in the definition of the requirements, project or activity to which the Solicitation relates.

20. Data Privacy Notice

Any personal data provided to the Commission as part of this procurement exercise, via an offer or otherwise, and required for assessing offers will be treated by the Commission as confidential information and used on a 'need to know basis'.

The personal data that is provided in an offer will be processed by the Commission for the specific purpose of assessing the offer submitted in response to this solicitation and, in the event of award, contract implementation. This personal data forms an integral part of the offer and to any ensuing contracting arrangement and cannot be accessed, verified, rectified or deleted following the offer's submission other than through the bidder's express notification to the Commission of any changes or errors or clarifications requested by the Commission during the evaluation process. This data includes, but is not limited to, the following:

- First and last name;
- Contact information, such as telephone numbers, or mailing addresses;
- Email addresses; and
- Information on skills, expertise and work experience.

In the event of award, Clause 49 (Personal Data Protection) of the Commission's General Conditions of Contract shall apply.

Nothing in these RFP shall constitute a waiver, either express or implied, of the privileges and immunities of the Commission and its employees, which are specifically reserved.

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BIDDER'S STATEMENT PLEASE FILL THIS FORM & SUBMIT WITH THE PROPOSAL
Warranty period applicable (it shall be for a minimum of 24 months, starting from the acceptance of the goods/services by the Commission) – please tick below:
Availability of local service in Vienna, Austria (if any):
State country of origin of services quoted:
Quantity discount and early payment discount (if any):
Include documentary evidence of qualifications to perform the order, which shall establish to the Commission's satisfaction that the bidder has the financial, technical and production capability necessary to perform the order in its entirety and to provide spare parts and other necessary on-going services as required. Included in this Proposal : Yes ☐ No ☐
Confirmation that the bidder has reviewed the Commission's Model Contract and General Conditions of Contract and agreed to all terms and conditions. Yes ☐ No ☐ Remarks:
With regards to the software provided with the equipment, state and confirm whether the software licenses are transferable to third parties, i.e. the Commission or the Commission's State Signatories - list available at www.ctbto.org under Status of Signatures and Ratifications CTBTO. Yes ☐ No ☐ Not applicable ☐ Remarks:
Name: Name & Title of Contact Person: Signature & date:



“Procedure for Submission of Electronic Offers in 2 Sealed Files”

The Commission invites you to submit your sealed offer (Bid, or Proposal) in response to the solicitation forming part of this request.

Please be sure to follow the instructions below very carefully, so that the documents you submit are encrypted, and cannot be opened without an encryption key (password). If the documents are not encrypted, they will not be accepted as part of this tender process.

CRITICAL INFORMATION:

Create separate zip files for the technical offer and the financial offer (labelling them clearly in the title) with different encryption keys. Instructions for how to do this are provided below.

Step 1: You provide the encryption key (password) for the *Technical Offer only* (in accordance with the below instructions)!

Step 2: After the Commission has performed the evaluation of the Technical Offer, if your Technical Offer is considered to be acceptable, the Commission will request the encryption key (password) for the Financial Offer you have already submitted by the tender Deadline.

Should you have any questions, please send an email to procurement@ctbto.org.

We recommend that you leave yourself plenty of time to complete the below process (including getting any necessary assistance from the Commission), as late offers will not be accepted.

INSTRUCTIONS:

1. In a **WINDOWS** environment, one way of meeting the requirements is as follows.

We recommend using the open-source, free software **7-zip**, but if you are comfortable with other tools, the result should be the same, as long as you can apply encryption to the archive. In the below, we'll use 7-zip as an example. (You can download the 7-zip code for Windows at: 7-zip.org)

2. In **LINUX** environment, you can use, for instance, “sha1sum” on the command line.

Creating the archives for submission

Regardless of whether the offer is a single file, or a collection of files, the files are easier to manage if delivered as a single, compressed file. Compressing the archive is a common way to meet size limitations in email systems.

As an example of how to submit your offer in the required format: assuming you are supplier “SOFTCOMP” and have the following files related to the offer for “RFP 2020-0010/EDWALD”. (*You will need to replace these elements with the real information for your actual offer in line with the relevant Instructions for Preparation and Submission of Proposals/Bids.*) Assuming further that you have installed the 7-zip software on the Windows system you are using.

We will only go through the creation of the Technical Offer (Proposal/Bid) component; the Financial Offer (Proposal/Bid) component is similar.

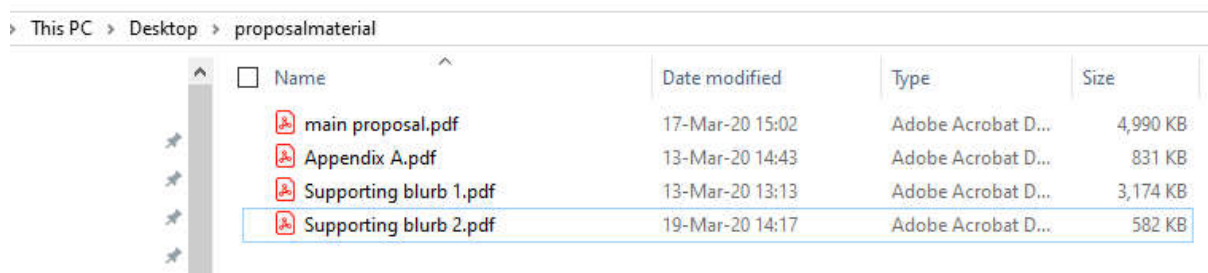


Figure 1 An example set of files to be submitted

Select the four files and right-click; a Dialog box pops up, with one of the options being “7-ZIP >”. Hover your cursor over the “>” part and a few more options appear, select the “Add to archive” option.

Another dialog box pops up (see ‘Figure 2, Creating an Archive’, next page):

Using the standard Windows methods, select a suitable location for the archive (if you don’t change it, the archive gets created right where the selected files are), and give it a name in the form of: “SOFTCOMP-2020-0010-EDWALD-TECHNICAL-BID”, of course replacing all the elements with the true values for the offer in question: the actual company indicator, and the actual RFP/ITB identification string. Note that it is not possible to put a slash “/” in the file name, and therefore put a dash “-” instead. Leave the file extension “.zip” as is.

Leave all the other settings as is, except: **add a password to the encryption** (see figure 2 below). This is done by typing the same password (of your choosing) twice in the two text fields in the lower right hand corner.

Make a note of this password. You must choose different passwords for the two zip archives, that is, the Technical and the Financial Proposal/Bid.

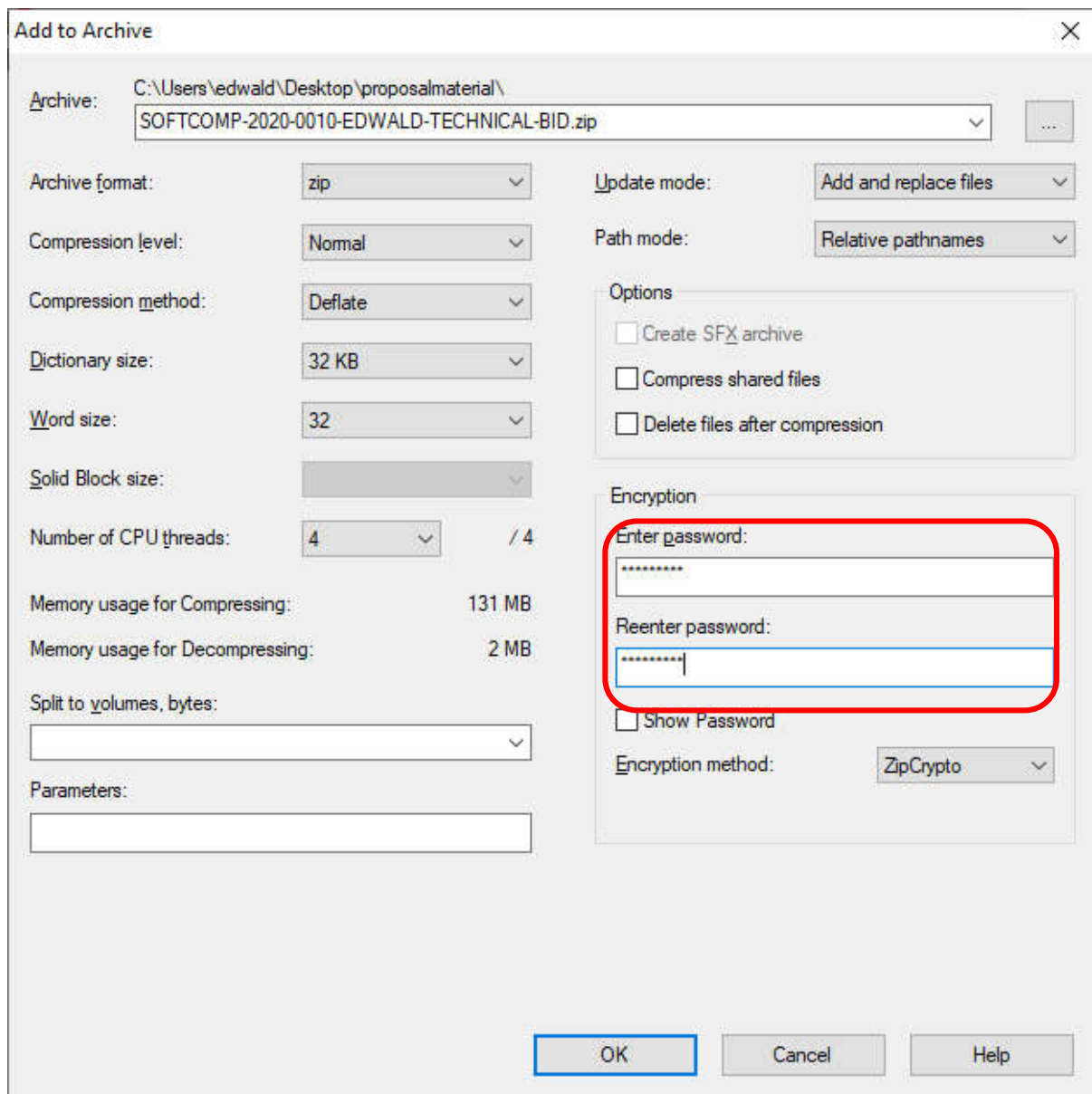


Figure 2 Creating an Archive

Now, we seek the “SHA1 Hash”, and electronic fingerprint of the archive you have just created. The hash is a string calculated from your file(s) and can be used to guarantee that the file has not been modified since you created it. Any change to the file will result in a different hash value.

There are many ways of calculating this; two common options are described below.

If the appropriate functionality is available in your Windows environment: Select the compressed archive in the Windows file manager, (eg. SOFTCOMP-2020-0010-EDWALD-TECHNICAL-BID.zip) and right click. One of the options to select is “CRC SHA >”. Hovering over the “ >” brings a few more options to light, select the **SHA-1** option. A smaller dialog pops up: (see Figure 3, *SHA1* below). Clicking Ctrl-C grabs the contents of this box. You can close the box after copying the contents. (You can paste the contents into a mail message, for instance.)

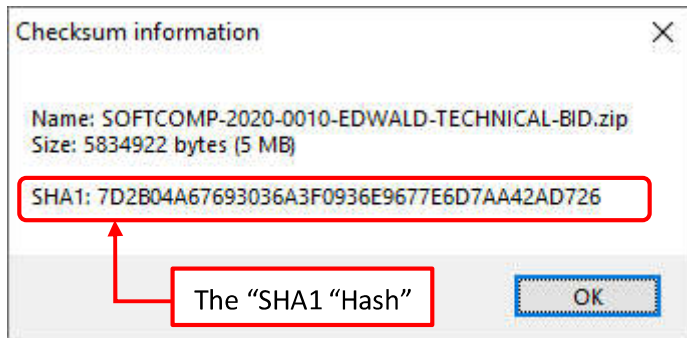


Figure 3 *SHA1*

If this CRC SHA function is not available by ‘right-click’ on your Windows version, you can also do this from ‘the command line’, a slightly more complicated way. Open a CMD window (see sidebar below), move to the folder where your archive is, and execute the command: `“certutil -hashfile SOFTCOMP-2020-0010-EDWALD-TECHNICAL-BID.zip sha1”` where you obviously replace the name of the file with your real file name. The output of this command is the SHA1 “hash”. You can copy-and-paste the string for use in the email (below).

Sidebar: How to open a CMD window in Windows:

The way to open a Command window (or ‘terminal’) depends on the version of Windows you have. The different methods are very clearly described in the following article, but a quick internet search will find multiple descriptions.

<https://www.lifewire.com/how-to-open-command-prompt-2618089>

Finally,

1. Create a new email, Subject: example- “SOFTCOMP-2020-0010-EDWALD”. Add the two compressed archives, that is, the Technical Offer and the Financial Offer archives as attachments. The text of the email should contain the SHA1 information for both archives.
SEND THIS TO: sealed_bids@ctbto.org (note that there is an underscore “_” between “sealed” and “bids”). (Should the email become larger than your mail system allows, you can

try sending the two archives in separate emails. Take care to include the right SHA1 information with each file.)

2. Create a new email, Subject: example- "SOFTCOMP-2020-2010-EDWALD-Technical Offer" the contents of which must contain the Encryption Key for the Technical Offer (the password you used when creating the Technical Offer). (Again, note the underscore between 'bid' and 'keys'.)

SEND THIS TO: bid_keys@ctbto.org

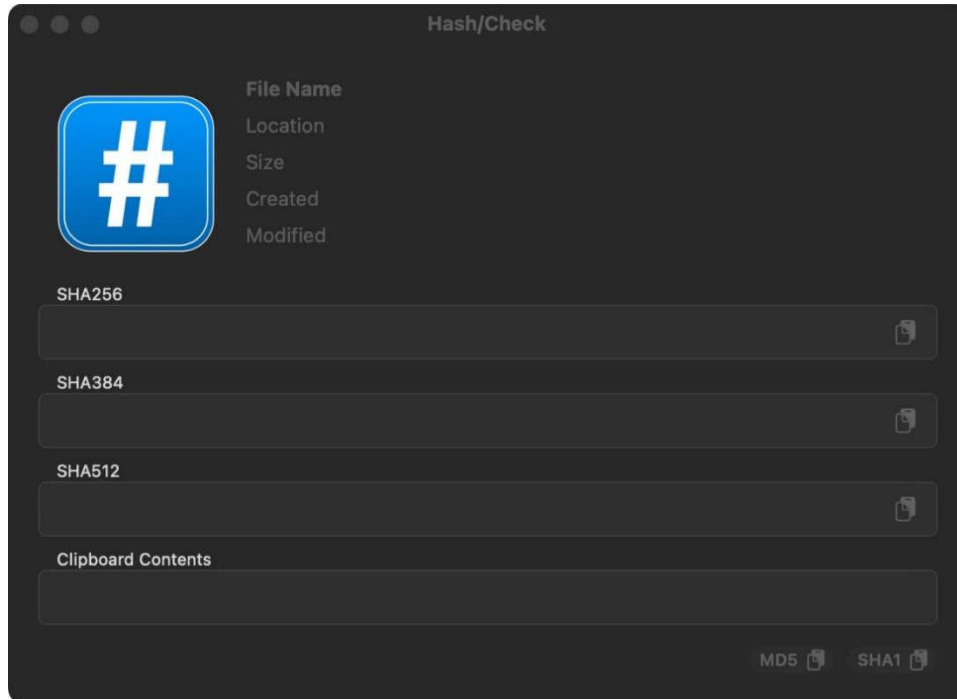
IMPORTANT NOTE: As stated above, only send the Encryption Key for the Technical Offer to the bid_keys@ctbto.org mailbox when sending your Technical and Financial Offer to the sealed_bids@ctbto.org mailbox. **You shall only send the Encryption Key for the Financial Offer to the Commission if and when informed by the Commission that your Technical Offer had been evaluated as "technically acceptable".**

The Financial Offer Encryption Key will need to be provided by you to the same e-mail (bid_keys@ctbto.org) within 48 hours of the Commission's request, clearly marked in Subject: Encryption Key for (example): "SOFTCOMP 2020-2010 EDWALD-Financial Offer". If your Offer is not considered "technically acceptable", the Commission will not request an Encryption Key for your Financial Offer, and it will remain unopened.

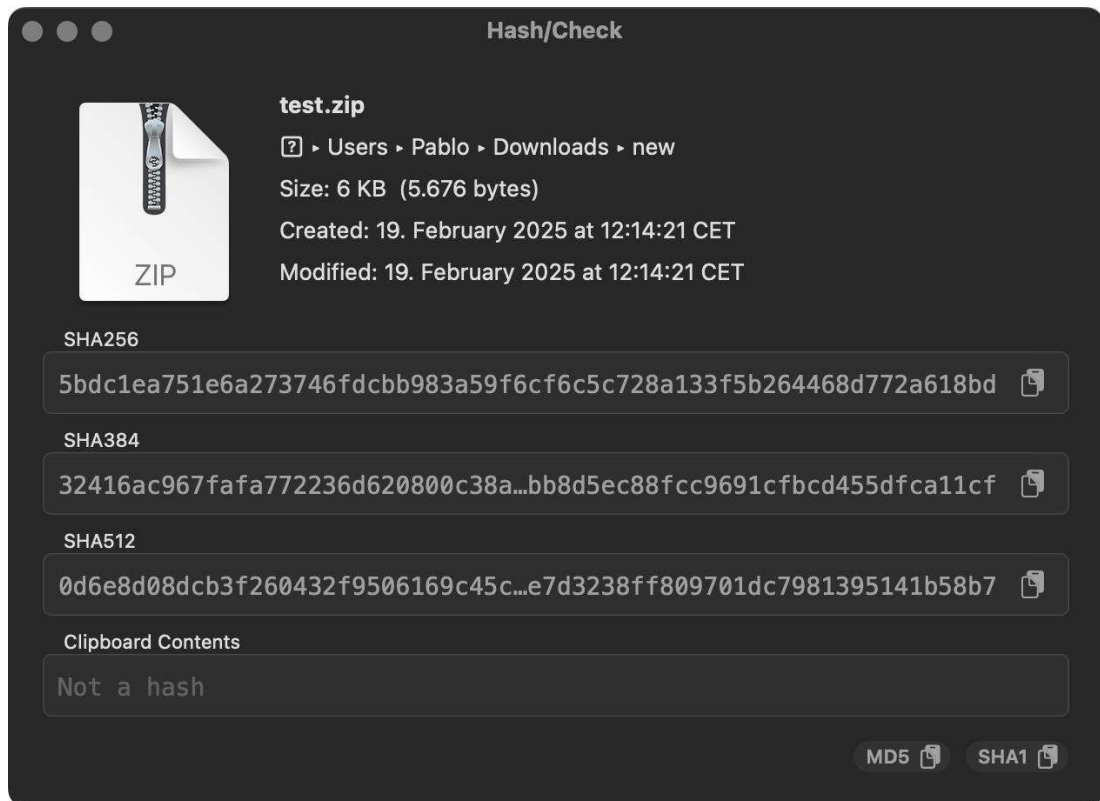
As mentioned above, should you have questions or difficulties, please send an e-mail to procurement@ctbto.org.

For MAC users:

1. Please download Hash/Check app:
<https://apps.apple.com/at/app/hash-check/id1550525767?l=en-GB&mt=12>
2. It is very simple to use. After installing, just open the app and click on “File” to open the zip file you want to inspect.

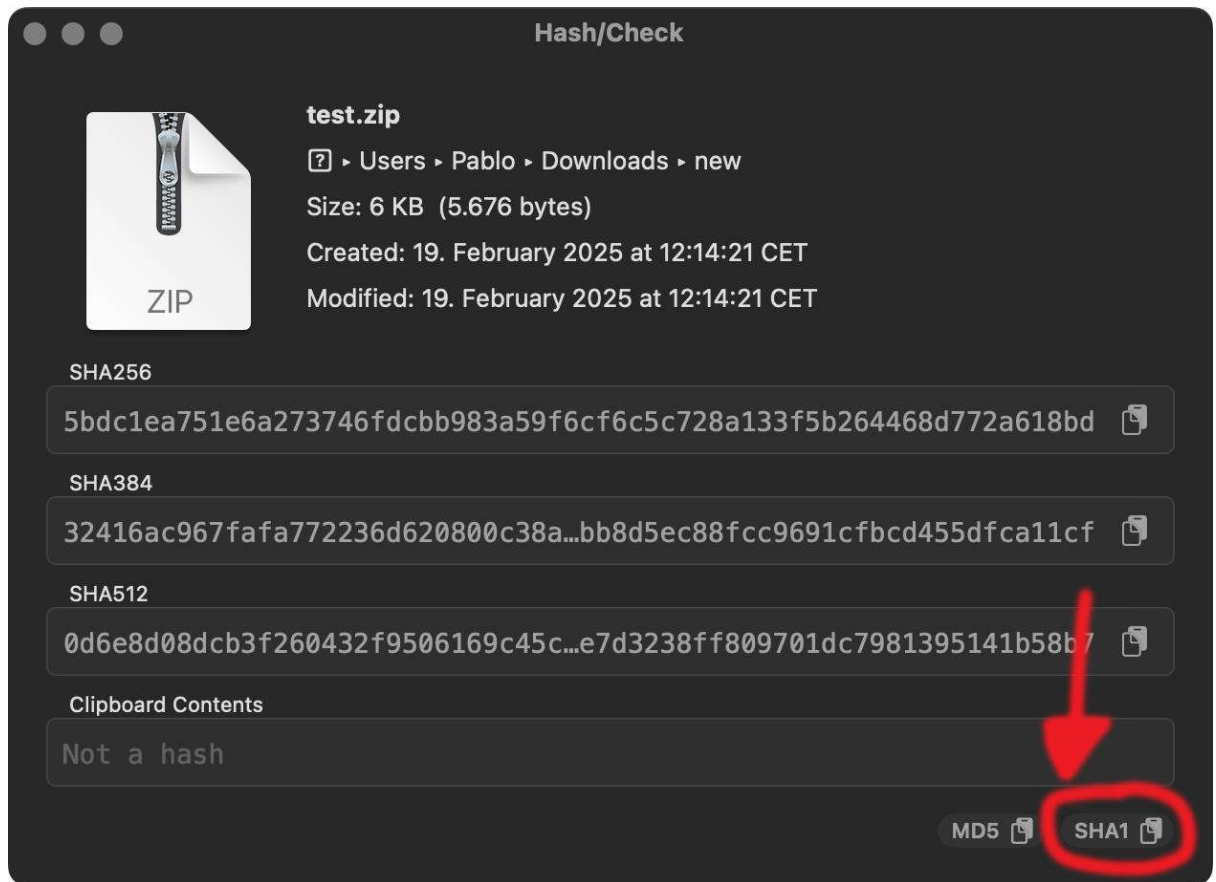


3. Please use your submitted technical and financial proposals

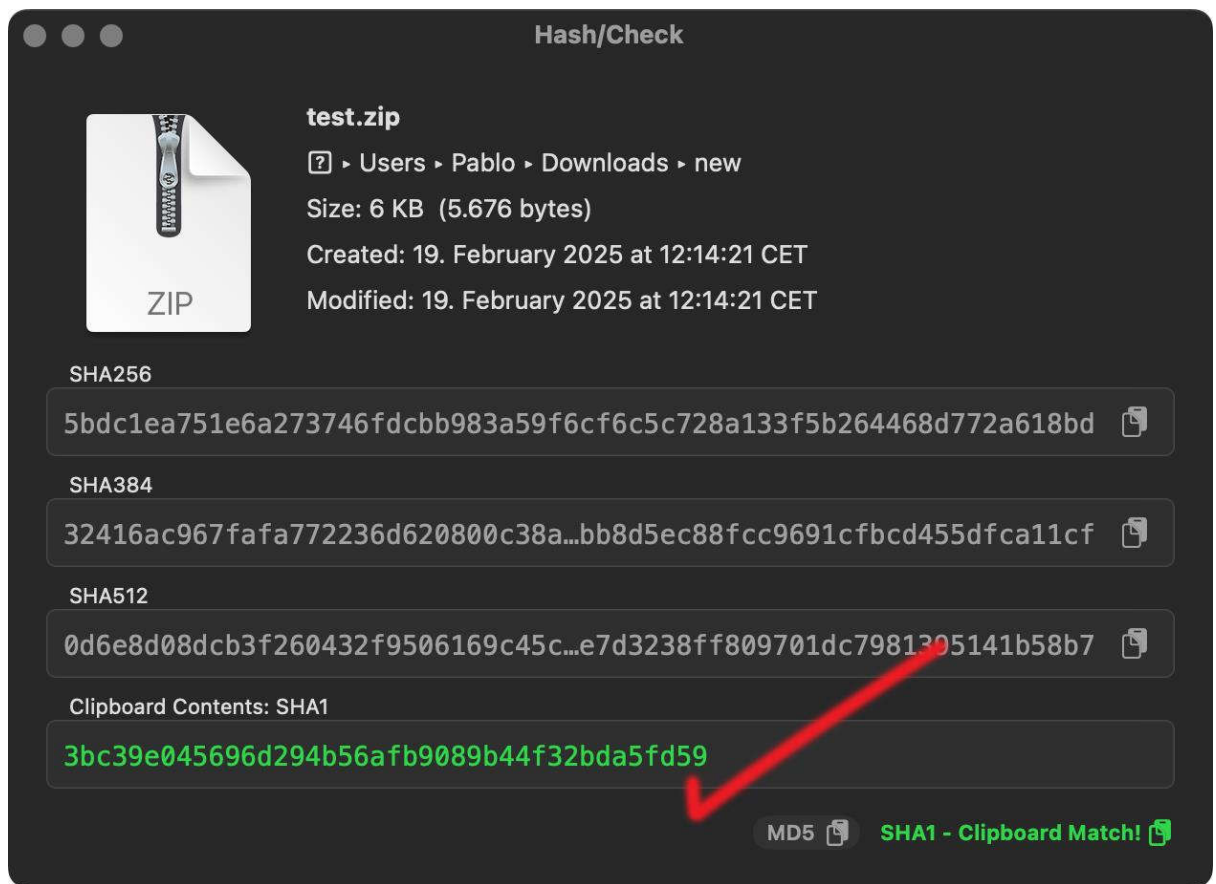


4. And it automatically creates several different hash values ... --- But the one we need SHA1 is not there ...

So you press on the little SHA1 icon on the bottom right ...



5. The SHA1 hash is calculated and copied to the clipboard automatically for further use.



-----OR-----

Another alternative would be to use the terminal and the command: shasum /path/to/file
Here is a little tutorial on how to use it. It is strait forward and simple to use. Please see
attached the instructions as a pdf as well.

<https://osxdaily.com/2012/02/05/check-sha1-checksum-in-mac-os-x/>

Finally,

1. Create a new email, Subject: example- "SOFTCOMP-2020-0010-EDWALD". Add the two compressed archives, that is, the Technical Offer and the Financial Offer archives as attachments. The text of the email should contain the SHA1 information for both archives. **SEND THIS TO:** sealed_bids@ctbto.org (note that there is an underscore "_" between "sealed" and "bids"). (Should the email become larger than your mail system allows, you can try sending the two archives in separate emails. Take care to include the right SHA1 information with each file.)

2. Create a new email, Subject: example- "SOFTCOMP-2020-2010-EDWALD-Technical Offer" the contents of which must contain the Encryption Key for the Technical Offer (the password you used when creating the Technical Offer). (Again, note the underscore between 'bid' and 'keys'.)

SEND THIS TO: bid_keys@ctbto.org

IMPORTANT NOTE: As stated above, only send the Encryption Key for the Technical Offer to the bid_keys@ctbto.org mailbox when sending your Technical and Financial Offer to the sealed_bids@ctbto.org mailbox. **You shall only send the Encryption Key for the Financial Offer to the Commission if and when informed by the Commission that your Technical Offer had been evaluated as "technically acceptable".**

The Financial Offer Encryption Key will need to be provided by you to the same e-mail (bid_keys@ctbto.org) within 48 hours of the Commission's request, clearly marked in Subject: Encryption Key for (example): "SOFTCOMP 2020-2010 EDWALD-Financial Offer". If your Offer is not considered "technically acceptable", the Commission will not request an Encryption Key for your Financial Offer, and it will remain unopened.

As mentioned above, should you have questions or difficulties, please send an e-mail to procurement@ctbto.org.

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Attachment No.2
Evaluation Criteria and Method
RFP 2026-0101 Provision of Services for Development and Evaluation of a Modern Infrasound Source
Categorization Algorithm on a Call-Off-Basis

SECTION 1

STAGE 1

No.	Ref No. in TOR	1.QUALIFICATION REQUIREMENTS	PASS/FAIL
		Minimum Requirements for the Contractor	
1	8.1.a	Bidder has at least five years of demonstrated experience working with infrasound data for example, relevant published papers, completed relevant projects, information in portfolio, etc.	
2	8.1.b	Bidders has at least three years of demonstrated experience working with cluttering models and/or other statistic-based identification/filtering models/methods demonstrated by information on portfolio, published relevant papers, completed relevant projects, etc.)	
3	8.1.c	Proposed staff shall have access to all necessary hardware and software tools to deliver the Service under the Terms of Reference. This includes, but not limited to, access to suitable computing facilities, compilers, and high-level open-source software (e.g. Python, C; available hardware information and software examples can be provided through a Git repository or similar)	
	Ref No. in TOR	Minimum Requirements for each Contractor's staff (a minimum pool of 1-3 people) proposed for the project. Each proposed specialist shall meet the following requirements for the whole duration of Contract:	
4	8.2.a	Advanced degree in geophysics, seismo-acoustics, computer engineering, or in a related field (CV)	
5	8.2.b	Minimum of five years of expertise after graduation in advanced seismo-acoustic signal processing (e.g. CV, information on projects, published papers)	
6	8.2.c	Minimum of three years of demonstrated experience in statistical-based filtering models (e.g.CV, information on projects, published papers)	
7	8.2.d	Track record of relevant scientific publications published in high-quality international peer-reviewed journals (as example, GRL, IEEE, JASA, etc.). This requirement is valid for at least a lead specialist (including when a team of 2 or 3 specialists is proposed)	
8	8.2.e	Confirmation that each proposed staff member has proficient command of written and spoken English	
9	8.2.f	Minimum of five years of demonstrated experience in Python or C programming languages (e.g.CV, information on projects)	
	Ref No. in TOR	Intellectual property. Documentation standards. Data access and publications	
10	7	Confirmation that all software shall follow IDC Coding & Documentation Standards, use Git for version control, and be delivered through GitLab-based CI. The Contractor shall apply RERO (release early, release often) and adhere to the Commission's change management with JIRA and Configuration Control Board (CCB) approvals for releases	

11	11	Confirmation on acceptance of the CTBTO procedures and policy for data access and publications (CTBT/PC-14/1/Annex II, Appendix IV, "Procedures for access to IMS data and IDC products by contractors")	
12	12	Confirmation of adherence to the minimum requirements for technical and organizational measures to protect the confidentiality, integrity, and availability of CTBTO's information and systems throughout the duration of the Contract	
	Ref No. in TOR	Organization of Work, Roster and Risk Management	
13	6.1	Confirmation that for off-site work, the Contractor shall provide a workspace for personnel at its own cost. Services under WOs shall be delivered off-site from the Commission's premises in Vienna, Austria. Some meetings may be scheduled at the Commission's premises in Vienna, if required. The meetings and the applicable number of days shall be agreed upon with the Commission, but not more than once per six calendar months and not more than three days per visit	
14	4, 8.3 and 10	Confirmation of adherence to the minimum requirements for organization of work, roster management and risk management throughout the Contract period	

Only bidders that meet all of the above criteria will proceed to the second stage of the evaluation, including interviews with the proposed bidder's staff.

SECTION 2

STAGE 2

	Ref No. in TOR	2.1.QUALIFICATION REQUIREMENT	Points		
		Requirements for Contractor's staff proposed for the project (based on CVs)	Max Points	Factor	Weighted score
15	8.2.g	At least three years of demonstrated experience in machine learning algorithms would be an advantage (e.g.CV, information on projects). This optional requirement is valid for at least a lead specialist (including in case a team of 2 or 3 specialists is proposed).	5	2	10
	Ref No. in TOR	2.2.TECHNICAL REQUIREMENTS	Points		
		Quality of the Proposal	Max Points	Factor	Weighted score
16	1-11	Extent to which all aspects of the ToR have been addressed in the Proposal in sufficient detail and clarity	5	2	10
	Ref No. in TOR	Understanding of the scope, and proposed approach for below listed service to meet the Objectives, as demonstrated in the Proposal	Max Points	Factor	Weighted score
17	3.1 a	Development of a methodology for infrasound signal grouping and phase classification (e.g. I, lpx, lxx, N, etc.)	5	4	20
18	3.1 b	Evaluation of the ability of the new methodology against StaPro in the IDC automatic processing	5	4	20

19	3.1 c	Evaluation of the ability of the new methodology to produce the necessary inputs for both GA and NET-VISA in the IDC automatic processing (e.g. connection and outputs to database tables) and the evaluation of comparing the output of both GA and NET-VISA with the new methodology vs StaPro	5	3	15
20	3.1 d	Development of the ability to add additional or remove signal/classification categories from the new algorithm, while producing similar event results	5	4	20
21	3.1 e	Development and evaluation of filtering techniques to reduce the number of detections passed to the next stage of the IDC pipeline and pass only the highest quality or most important detections especially if/when more advanced detection methods are used (e.g. 1/3 octave frequency processing for PMCC, MCML)	5	4	20
22	3.3.	In collaboration, the Commission and the Contractor shall present the results of the project at/in at least one scientific conference and/or peer-reviewed publication in accordance with the "Procedures for access to IMS data and IDC products by contractors" defined in Section 11 of the ToR	5	2	10
	Ref No. in TOR	Work service and schedule	Max Points	Factor	Weighted score
23	3 , 8 and 6.2	Proposed relevant staff capacities to deliver all requested services as per estimated schedule provide in the ToR	5	2	10
	Ref No. in TOR	Examples of documentation/methodology	Max Points	Factor	Weighted score
24	3.3 and 8.2.d	Demonstrated relevant experience of the proposed staff in writing and presenting technical reports (e.g. examples of past reports, proposals, publications, etc.)	5	2	10
25	10	Proposed risk management for the provision of services as described in the ToR (e.g. draft of the risk assessment report/plan proposed for the project)	5	2	10
TOTAL - Technical Evaluation			55		155

EVALUATION METHOD:

1. Technical Evaluation

The technical evaluation process will be done in two stages:

1) Stage 1: Technical proposals will first be evaluated against the mandatory requirements outlined in section 1 above, on a PASS/FAIL basis.
Compliance with all mandatory requirements is required in order to pass stage 1 of the technical evaluation and to be further considered for stage 2 of the evaluation process;

2) Stage 2: Bidders (incl. key proposed staff) with offers passing stage 1 will then be invited for an interview and will be assessed together with the Technical Proposal against the criteria set forth in the scoring matrix above and in accordance with the scoring table indicated below.

In order to pass this stage, bidders must obtain a **minumim weighted score of 93** and in accordance with the scoring table indicated below:

TABLE 2

Points	
0	Unsatisfactory - Response incomplete, inadequate and/or non-responsive to the criterion. Bidder does not clearly understand the criterion.
1 - 2	Weak - Does not meet the minimum criterion.
3	Good - Meets the minimum requirements of the criterion.
4	Very good - Exceeds the criterion in some areas.
5	Excellent - Exceeds the criterion in all areas.

2. Financial and commercial evaluation

Once the technical evaluation is finalized, the financial offers of the technically compliant bidders will be evaluated in accordance with the formula given below:

$$X = \text{Max Available Points} * Y/Z$$

Legend:

X= points to be assigned to the offer being evaluated

Y= price of the lowest priced, technically compliant offer

Z= price of the offer being evaluated

The weight of the technical and financial components is **60%** and **40%** respectively.

The Contract(s) will be awarded to the bidder(s) with the offer(s) receiving the highest combined score resulting from the technical and financial evaluations, subject to contractual and commercial acceptability.

ATTACHMENT No. 3

MINIMUM CONTENT OF TECHNICAL PROPOSAL AND COMPLIANCE MATRIX

RFP 2026-0101 " Provision of Services for Development and Evaluation of a Modern Infrasound Source Categorization Algorithm on a Call-Off-Basis "

Below table sets out the Minimum content of the Proposal and the Mandatory Requirements of the Technical Proposal. Bidders are requested to demonstrate compliance with the requirements and add any further information in support of their Proposal. Please refer to the relevant section of the Terms of Reference for further explanation of the requirements. The information provided will form an integral part of the technical evaluation process.

PART I - Minimum Content of the Technical Proposal

Item	Minimum content
1. Executive Summary	Provide an overview of the Proposal.
2. Experience, Resources and Project Management	
Corporate Profile and Values of the Contractor	• Brief background of the company, mission/vision, ownership, size, location, number of personnel by type profile. • Experience and qualifications • Company business structure and its authority to execute all Services under the Contract. • In case the Bidder requires the services of subcontractors, the Proposal shall include: a) Relationship of the Bidder's business to any subcontractor(s) that will be used. b) Names, addresses, legal status, and qualifications of major sub-contractor(s) proposed by your company. c) The scope of work and nature of subcontracting
3. Contractor's specialists (1- 3 staff)/Team Roster	
	CV(s) of the proposed specialist(s), together with any supporting information deemed necessary to demonstrate their qualifications and relevant experience
4. Meeting the Requirements	
Understanding of the ToR scope	In addition to the duly filled-in Technical Compliance Matrix attached hereto below, the Technical Proposal shall include a section-by-section response to the Terms of Reference in the Technical Proposal and provide an explanation of the bidder's understanding of the services to be rendered to satisfy the requirements referenced in the Terms of Reference, detailing key assumptions that impact the Technical Proposal. The Proposal should also include, but not be limited to, the following supporting information: - example of risk management plan - examples of relevant publications and projects - three (3) contacts for references

Part II- Technical Compliance Matrix

Please complete Matrix and include it into your Technical Proposal

ToR Ref #		Compliance (Pass/Fail)	Comments
	Requirement	<i>Please indicate below</i>	<i>Please add comments, details if any. Indicate the section in your Proposal addressing the requirement and ensure that it is sufficiently described in the Proposal</i>
1	Introduction		
1	Confirmation of available capacities to deliver services for Development and Evaluation of a Modern Infrasound Source Categorization Algorithm on a Call-Off-Basis for a period of two (2) years with an annual maximum of 250-person workdays, and option of extension for two (2) subsequent periods of one (1) year each with an annual maximum of 250-person workdays		
3.1	Scope of Services The following Services shall be provided by the Contractor:		
3.1. a	Development of a methodology for infrasound signal grouping and phase classification (e.g. I, Ipx, Isx, N, etc.);		
3.1. b	Evaluation of the ability of the new methodology against StaPro in the IDC automatic processing;		
3.1. c	Evaluation of the ability of the new methodology to produce the necessary inputs for both GA and NET-VISA in the IDC automatic processing (e.g. connection and outputs to database tables) and the evaluation of comparing the output of both GA and NET-VISA with the new methodology vs StaPro;		
3.1. d	Development of the ability to add additional or remove signal/classification categories from the new algorithm, while producing similar event results; and		
3.1. e	Development and evaluation of filtering techniques to reduce the number of detections passed to the next stage of the IDC pipeline and pass only the highest quality or most important detections especially if/when more advanced detection methods are used (e.g. 1/3 octave frequency processing for PMCC, MCML).		

3.2.	Output and deliverables The Contractor shall deliver:		
3.2 a	Methodology for infrasound signal grouping and phase classification in line with ToR		
3.2 b	Evaluation for the new methodology against StaPro in the IDC pipeline in line with ToR		
3.3 c	Ability to update and implement new technologies into the algorithm in line with ToR		
3.3.	Publication of Results		
3.3	In collaboration, the Commission and the Contractor shall present the results of the project at/in at least one scientific conference and/or peer-reviewed publication in accordance with the “Procedures for access to IMS data and IDC products by contractors” defined in Section 11 of ToR		
4	Organization of Work		
4.1- 4.4	Confirmation of adherence to the minimum requirements of work organization, location, communication and services acceptance.		
6	Work Location and Schedule		
6.1	The Contractor shall provide a workspace for personnel at its own cost. Services under WOs shall be delivered off-site from the Commission’s premises in Vienna, Austria. Some meetings may be scheduled at the Commission’s premises in Vienna, if required. The meetings and the applicable number of days shall be agreed upon with the Commission, but not more than once per six calendar months and not more than three days per visit.		
6.1	Confirmation of acceptance of the travel expenses (if any) calculation methodology (return tickets, UN DSA)		
6.2.	Confirmation of acceptance of estimated schedule		
7	Reporting		
7	Confirmation of acceptance of all reporting requirements as provided in the ToR.		

8	Requirements for the Contractor The Contractor shall satisfy the following mandatory requirements:		
8.1 a	At least five years of demonstrated experience working with infrasound data, for example., relevant published papers, completed relevant projects, information in portfolio, etc.		
8.1 b	At least three years of demonstrated experience working with cluttering models and/or other statistic-based identification/filtering models/methods demonstrated by information in portfolio, published relevant papers, completed relevant projects, etc.		
8.1 c	Contractor's staff have access to all necessary hardware and software tools to deliver the Service under this TOR. This includes, but not limited to, access to suitable computing facilities, compilers, and high-level open-source software (e.g. Python, C)		
8.2	Requirements for the Contractor's staff The Contractor shall ensure that each staff (a pool of at least 1-3 staff) dedicated to the Service provision under this Contract shall cover all of the following areas of expertise for the whole duration of Contract:		
8.2 a	Advanced degree in geophysics, seismo-acoustics, computer engineering, or in a related field (e.g. CV)		
8.2 b	Minimum of five years of demonstrated expertise after graduation in advanced seismo-acoustic signal processing (e.g. CV, information on projects, published papers)		
8.2 c	Minimum of three years of demonstrated experience in statistical-based filtering models (e.g. CV, information on projects, published papers)		
8.2 d	Track record of relevant scientific publications published in high-quality international peer-reviewed journals (as example, GRL, IEEE, JASA, etc.) through a list of publications and published relevant papers. <u>This requirement is valid for at least a lead specialist (including when a team of 2 or 3 specialists is proposed)</u>		
8.2 e	Proficient (professional) command of written and spoken English		
8.2 f	Minimum of five years of demonstrated experience in Python or C programming languages (e.g.CV, information on projects)		

	<i>Optional requirement:</i>		
8.2 g	At least three years of demonstrated experience in machine learning algorithms (e.g.CV, information on projects) would be an advantage. <u>This optional requirement is valid for at least a lead specialist (including in case a team of 2 or 3 specialists is proposed).</u>		
8.3	Roster Management		
8.3	Confirmation of full acceptance of the Roster management requirements as provided in the ToR		
9	Intellectual Property and Repository Handover		
9	Confirmation that all source code and related artifacts delivered under this Contract become the property of the Commission upon delivery and shall be provided via the Commission's Git repository in accordance with its standards.		
10	Risk Management		
10	Confirmation of adherence to the minimum requirements for risk management plan throughout the Contract period. Example/draft of risk assessment plan is provided in the Proposal.		
11	CTBTO Procedures and Policy for Data Access and Publications		
11	Confirmation of adherence to the CTBTO "Procedures for access to IMS data and IDC products by contractors" as provided in the Attachment to the ToR		
12	Information Security		
12	Confirmation of adherence to the minimum requirements for technical and organizational measures to protect the confidentiality, integrity, and availability of CTBTO's information and systems throughout the duration of the Contract as provided in the ToR		

Attachment No. 4

Price Schedule Format for RFP 2026-0101 " Provision of Services for Development and Evaluation of a Modern Infrasound Source Categorization Algorithm on a Call-Off-Basis"

Provision of Service in line with ToR	QTY	Unit	Initial Period -2 years or max. of 500 person-days	1st Optional Extension-1 year or max. 250 person-days	2nd Optional Extension-1 year or max. 250 person-days
			Unit Price & Currency	Unit Price & Currency	Unit Price & Currency
<i>Specialist</i>	1	person daily rate			
<i>Return Travel Cost to Vienna, Austria</i>	1	return trip			

Notes:

- 1) Please complete all applicable columns (labor rates and estimated travel cost), even if the rates remain unchanged throughout the entire term of the Contract.
- 2) Please specify currency of Proposal (USD or Euro only). The rates shall be firm and fixed throughout the term of the Contract or for each respective Call-off Period.
- 3) This is a unit-based Call-off Contract. The exact number of working days will be determined/called-off in the form of WOs at the rates quoted in this Attachment. The maximum volume of person-days is just an indication and the Commission reserves the right, at its sole discretion, to call-off more, less or no person-days at all.
- 4) The estimated travel cost is required for the purpose of tender evaluation.
- 5) On-site presence shall only occur upon explicit request by the Commission. The Commission will request the Contractor to submit estimated costs/expenses for travel including, inter alia, airfare and terminal costs before issuing WOs. Travel costs will be reimbursed by the Commission to the following extent:
 - International/regional travel by air: simple economy return airfare for the most direct route between the place of establishment of the Contractor and the premises of the Commission in Vienna, Austria. In exceptional circumstances and with prior written approval of the Commission, the Contractor may be reimbursed for flexible economy return airfare but it remains for the Commission to approve the type of airfare that will be reimbursed.
 - International travel by other means than air travel: the rate accepted by the Commission for the most direct route between the place of establishment of the Contractor and the premises of the Commission in Vienna, Austria.
 - Reasonable terminal expenses, if any: at cost against supporting documents.
 - The actual travel costs paid by the Commission shall not exceed the estimate by more than 10%.
- 6) Daily Subsistence Allowance (DSA) shall be calculated based on the values provided by the International Civil Service Commission (ICSC) for Vienna at the time of issuance of the WOs.

VENDOR PROFILE FORM (VPF) – FOR PRODUCTS/SERVICES/WORK

1. Name of Company:		
2. Street Address:	3. Telephone:	
P.O. Box: City:	4. E-Mail:	
Zip Code: Country:	5. Website:	
6. Contact Person*: Title:		
7. Legal Status (e.g. Partnership, Private Limited Company, Government Institution) PLEASE INCLUDE A COPY OF THE CERTIFICATE OF INCORPORATION		
8. Year Established:	9. Number of Employees:	
10. Gross Corporate Annual Turnover (US\$m)**:	11. Annual Export Turnover (US\$m)**:	
12. Type of Business/Products: Manufacturer ☐ Sole Agent ☐ Supplier ☐ Other ☐ (please explain)		
13. Type of Business/Services/Work: Engineering ☐ Civil Work ☐ Governmental Institution ☐ Other ☐ (please explain)		
14. References (your main customers, country, year and technical field of products, services or work): **		
15. Previous Supply Contracts with United Nations Organizations (over the last 3 years)*** Organization: Value in US\$ Equivalent: Year: Organization: Value in US\$ Equivalent: Year:		

* Please see Privacy Disclaimer on page 3

** Please provide a copy of the most recent audited annual report and accounts. Note: Export includes services or work performed abroad or for foreign clients.

*** Please provide supplementary documentation on these items.

16. Summary of any changes in your company's ownership during the last 5 years:

17. List of Products/Services/Work offered:

Product/Service/Work #	Product/Service/Work Description

18. This section shall be **signed and stamped** by an official legally authorized to enter into contracts on behalf of your organization:

Name:

Title:

Signature:

Date:

Bank Details

Bank Name:

Bank Address:

Exact Account Holder Name:

Beneficiary Details

Beneficiary Name:

(exactly as stated on bank statements)

IBAN:

(if applicable)

Account number:

SWIFT/BIC:

ABA/Sort Code:

Additional Details (if applicable)

Correspondent bank:

Correspondent account number:

Correspondent SWIFT/BIC:

Tax Identification Number:

FOR CTBTO USE ONLY

Evaluated By:

Initials

Date:

Updated By:

Initials

Date:

Remarks:

Privacy Disclaimer for Suppliers Registering via on-line form (website) or physical Vendor Registration Form *

Any personal data provided to the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (“CTBTO”), which is required for assessing your request for registration, will be treated by the CTBTO as confidential and used on a ‘need to know basis’.

The personal data that you provide within your company profile through the registration process will be processed by the CTBTO for the specific purpose of procurement activities in performance of the CTBTO mandate. This data includes, but is not limited to, the following:

- First and last name;
- Contact information, such as telephone numbers, or mailing addresses; and
- Email addresses.

Subsequent to registration, you may request information regarding the processing of your personal data at any time by sending a request to supplier.registration@ctbto.org. The CTBTO will assess such requests on a case-by-case basis, in accordance with its internal policies.

Nothing in this disclaimer shall constitute a waiver, either express or implied, of the privileges and immunities of the CTBTO and its employees, which are specifically reserved.

STATEMENT OF CONFIRMATION

On behalf of (name of firm or organization): _____, I hereby attest and confirm that:

- a) The firm/organization possesses the legal status and capacity to enter into legally binding contracts with the Commission for the supply of equipment, supplies, services or work.
- b) The firm/organization is not insolvent, in receivership, bankrupt or being wound up, and not under administration by a court or a judicial officer, and that it is not subject to the suspension of its business or legal proceedings for any of the foregoing reasons.
- c) The firm/organization has fulfilled all its obligations to pay taxes and social security contributions.
- d) The firm/organization has not, and that its directors and officers have not, within the last five years been convicted of any criminal offense related to professional conduct or the making of false statements or misrepresentations as to their capacity or qualifications to enter into a procurement or supply contract.
- e) The Commission, in the event that any of the foregoing should occur at a later time, will be duly informed thereof, and in any event, will have the right to disqualify the firm/organization from any further participation in procurement proceedings.
- f) The firm/organization did not/will not attempt to influence any other bidder, organization, partnership or corporation to either submit or not submit a proposal/bid/quotation.
- g) The firm/organization will not, in the absence of a written approval from the Commission, permit a person to contribute to, or participate in, any process relating to the preparation of a Quotation/Bid/ Proposal or the procurement process if the person:
 - a. at any time during the 12 months immediately preceding the date of issue of the Solicitation was an official, agent, servant or employee of, or otherwise engaged by the Commission;
 - b. at any time during the 24 months immediately preceding the date of issue of the Solicitation was an employee of the Commission personally engaged, directly or indirectly, in the definition of the requirements, project or activity to which the Solicitation relates.
- h) Neither the organization/firm, its parent entities (if any), nor any of its subsidiary or affiliated entities (if any) have been identified on, or associated with any individual, groups, undertakings and entities identified on, the list established pursuant to the UN Security Council Resolution 1267 (Consolidated Sanctions List).¹
- i) Neither the organization/firm, its parent entities (if any), nor any of its subsidiary or affiliated entities (if any) are subject to any form of sanction imposed by an organization or body within the United Nations System, including the World Bank.

¹ The Consolidated United Nations Security Council Sanctions List can be found on the following website:
<https://www.un.org/securitycouncil/content/un-sc-consolidated-list>

- j) Neither the organization/firm, its parent entities (if any), nor any of its subsidiary or affiliated entities (if any), is engaged in any practice inconsistent with the rights set forth in the Convention on the Rights of the Child, including Article 32 thereof, which, inter alia, requires that a child shall be protected from performing any work that is likely to be hazardous or to interfere with the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development.
- k) Neither the organization/firm, its parent entities (if any), nor any of its subsidiary or affiliated entities (if any) will use the funds received under contracts/purchase orders with the Commission to provide support to individuals, groups, undertakings or entities associated with terrorism.
- l) The prices in the firm/organization's proposal/bid/quotation have been arrived at independently, without consultation, communication or agreement with any other interested companies, competitor or potential competitor with a view to restricting competition.
- m) The Commission shall have the right to disqualify the firm/organization from participation in any further procurement proceedings, if it offers, gives or agrees to give, directly or indirectly, to any current or former staff member of the Commission a gratuity in any form, an offer of employment or any other thing of service or value, as an inducement with respect to an act or a decision of, or a procedure followed by, the Commission in connection with a procurement proceeding.
- n) The Commission shall have the right to disqualify the firm/organization from participation in any further procurement proceedings if it does not disclose to the Commission any situation that may appear as a conflict of interest, and if it does not disclose to the Commission if any official or professional under contract with the Commission have an interest of any kind in the firm/organization's business or any kind of economic ties with the firm/organization.
- o) The firm/organization expressly agrees to abide by the United Nations Supplier Code of Conduct.¹

Name (print): _____

Signature: _____

Title/Position: _____

Place (City and Country): _____

Date: _____

¹ <https://www.un.org/Depts/ptd/about-us/un-supplier-code-conduct>



CTBTO
PREPARATORY COMMISSION

COMPREHENSIVE
NUCLEAR-TEST-BAN
TREATY ORGANIZATION

MODEL CONTRACT

between

THE PREPARATORY COMMISSION

FOR THE COMPREHENSIVE NUCLEAR-TEST-BAN TREATY

ORGANIZATION

and

NAME OF THE CONTRACTOR

for

Provision of Services for Development and Evaluation of a Modern Infrasound Source Categorization Algorithm on a Call-Off-Basis

This Contract comprises this cover page, a table of contents, 7 (seven) pages of text, a signatories page, a List of Annexes and 3 (three) Annexes (A to C)

October 2026

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MODEL CONTRACT

This CONTRACT is entered into between the PREPARATORY COMMISSION FOR THE COMPREHENSIVE NUCLEAR-TEST-BAN TREATY ORGANIZATION (hereinafter referred to as the “Commission”), having its office located at Wagramer Strasse 5, 1400 Vienna, Austria, and _____ (hereinafter referred to as the “Contractor”), having its registered office located at _____ [address] (both hereinafter individually referred to as the “Party” and collectively as the “Parties”).

The Parties hereto mutually agree as follows:

1 DEFINITIONS

In this Contract, words and expressions shall have the same meanings as respectively assigned to them in the General Conditions of Contract and the Terms of Reference. In addition, the following words and expressions shall have the meanings hereby assigned to them:

“**Annex A**” means the Commission’s General Conditions of Contract.

“**Annex B**” means the Commission’s Terms of Reference.

“**Annex C**” means the Contractor’s Proposal.

“**Contract**” means this document, its Annexes and any further modifications or such further documents as may be expressly incorporated in this Contract by the Parties in accordance with Clause 21 below.

“**Contractor**” means the legal entity named in the preamble of this Contract or its successors. The Contractor shall be the only interface for all matters pertaining to execution of the Work under this Contract.

“**Services**” means the activities or tasks to be performed by the Contractor under the Contract as requested by the Commission under the WO.

“**Party(ies)**” means the Commission and/or the Contractor, as the context requires.

“**Rule(s)**” means any regulation(s), official directive(s), ordinance(s), guideline(s), customs and practices.

“**Work**” means all Services to be provided by the Contractor, including its affiliates and/or subcontractors, in order to fulfil all its obligations under the Contract, and the remedying of any defects therein.

“**Work Orders (‘WO’)**” mean orders issued by the Commission which specify the (parts or portions of) Work to be performed by the Contractor upon request by the Commission in accordance with Annexes B and C.

2 AIM OF THE CONTRACT

The aim of this Contract is for the provision of Services for the Development and Evaluation of a Modern Infrasound Source Categorization Algorithm, on a call-off basis (hereinafter referred to as the “Services” or “Work”) to the Commission.

3 ENTRY INTO FORCE AND DURATION OF THE CONTRACT

The Contract shall enter into force upon the date of the last signature by the authorized Representatives of the Parties (hereinafter referred to as the “**Effective Date**”) and shall be valid until the Parties fulfill all their obligations hereunder.

4 COMMENCEMENT AND COMPLETION OF THE WORK

- (i) The Commission shall have the right, but not obligation, to call-off the Works in the form of WOs within a period of 2 (two) years from the Effective Date or the performance of a maximum of 500 (five hundred) person-days per year by the Contractor, whichever occurs first (hereinafter referred to as the “**Call-off Period**”). The commencement and completion date for the performance of the Works (hereinafter referred to as “**Commencement Date**” and “**Completion Date**”, respectively) will be set out in the respective WO.
- (ii) The Commission have the option to extend the Call-off Period two (2) times for a period of 1 (one) year each or the performance of a maximum of 250 (two hundred fifty) person-days by the Contractor, whichever occurs first, subject to the availability of funds, under the same terms and conditions as those of this Contract, and subject to Clause 4(iii) below. The Commission will inform the Contractor about its intention to extend the Work at least one (1) month prior to the expiry of the Contract. The optional extension(s) will be implemented through a written notification to the Contractor by the Commission.
- (iii) The Commission shall have the option to carry over any unused person days balance from one Call-off Period to another, subject to mutual agreement between the Parties, provided, however, that any such carryover shall not result in the total number of person days exceeding the cumulative maximum limit assigned to each Call-off Periods combined as specified in sub-Clauses 4(i)-(ii) above.

5 STANDARD OF WORK

The Contractor shall perform the Work in a workmanlike manner in conformity with standard professional practices, using qualified personnel and in strict accordance with the Contract. The Contractor shall furnish the highest skill and judgement and cooperate with the Commission, including all the Commission's consultants and agents, in best furthering the interests of the Commission and the aim of this Contract. The Contractor shall provide efficient business administration and supervision, and it shall perform the Work in the best way and in the most expeditious and economical manner consistent with the requirements of the Contract.

6 RESPONSIBILITIES OF THE CONTRACTOR

- (a) The Contractor shall provide the Work described in Annex B, Annex C and the WO.

- (b) The Contractor shall provide qualified English-speaking personnel as necessary to perform the Work under this Contract. The key persons shall be available for possible tasks related to the Work throughout the duration of the Contract period. Any replacement of the key personnel shall be made in accordance with Clause 7 of Annex A and Section 8.3 of Annex B.
- (c) The Contractor acknowledges that after the completion of the Work under this Contract, the Commission shall own the Software and source code and related artifacts delivered under this Contract as described in Section 9 of Annex B. All title, ownership rights and intellectual property rights in and to the developed Software shall solely owned by the Commission. The Contractor acquires no title, licenses, right or interest in the developed Software.

7 ORGANISATION OF CONTRACT IMPLEMENTATION

- (a) During the term of the Contract, the Commission has the right, but not the obligation, to initiate performance of the Work through the issuance of individual WOs in accordance with Annex B based on the firm fixed unit prices set out in Annex C and, if applicable travel costs as specified in Clause 12 below. The Contractor shall not perform any Work if not requested by the Commission through an WO. However, the Contractor may propose a WO for the Commission's evaluation.
- (b) The WO issued by the Commission shall be the basis for acceptance, invoicing and payment of any Work performed by the Contractor.
- (c) The performance of the Work shall be made in full in accordance with the respective WO. Partial service performance of a WO will not be accepted and reimbursed without prior written agreement by the Commission.
- (d) The Work shall be performed at the place and within the approved Work Plan specified in the relevant WO.
- (e) The Commission may revise a WO as and when it may deem necessary.

8 WARRANTY

- (a) The provisions of Clause 33 of Annex A shall apply to the Work performed by the Contractor.
- (b) The Contractor shall ensure that the Commission shall experience no loss of service or support level by sub-contractors or repair agents acting on behalf of the Contractor.

9 PERMITS, NOTICES, LAWS AND ORDINANCES

- (a) The Contractor shall obtain and pay for all permits and inspections necessary for the proper execution and completion of the Work that are customarily obtained upon execution of this Contract and that are legally required at the time the Proposal is received by the Commission. This shall include, but not be limited to, work permits, visa, or similar.

- (b) The Contractor shall give all notices required by the nature of the Work.
- (c) If the Contractor notices that the Work or any part thereof required under this Contract is not in accordance with applicable laws and Rules, or with technical or safety standards, it shall promptly notify the Commission thereof in writing.

10 PROTECTION OF PERSONS AND PROPERTY

- (a) The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programmes in connection with the Work.
- (b) The Contractor shall take all reasonable precautions for the safety of, and shall provide all reasonable protection to prevent damage, injury and loss to:
 - (i) all employees on the Commission's premises and all other persons who may be affected thereby;
 - (ii) all the Work, equipment, its spare parts, materials and supplies to be incorporated therein, whether in storage on or off the Commission's premises, which are under the care, custody or control of the Contractor or any of its subcontractors; and
 - (iii) other property on the Commission's premises or adjacent thereto.
- (c) The Contractor shall give all notices and comply with all applicable laws and Rules bearing on the safety of persons and property and/or their protection from damage, injury and loss.
- (d) The Contractor shall erect and maintain, as required by existing conditions and progress of the Work, all reasonable safeguards for the safety and protection of persons and property, including posting danger signs and other warnings against hazards and promulgating safety regulations.
- (e) When the use or storage of combustible, explosive or other hazardous materials is necessary for the execution of the Work, the Contractor shall exercise the utmost care and shall carry on such activities under the supervision of properly qualified personnel.
- (f) The Contractor shall be responsible for the prevention of accidents on the Commission's premises during the execution of the Work.
- (g) In any emergency affecting the safety of persons or property, the Contractor shall promptly act to prevent threatened damage, injury and loss.
- (h) The Contractor shall promptly remedy all damage and loss to any property, referred to in Sub-Clause (b) above, caused in whole or in part by the Contractor, any subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable and for which the Contractor is responsible under Sub-Clause (b) above, except damage and loss attributable to the acts or omissions of the Commission or anyone directly or indirectly employed by it, or of anyone for whose acts the Commission may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to its obligations under Clause 9 of Annex A.

11 RESPONSIBILITIES OF THE COMMISSION

The Commission shall designate members of its staff to act as points of contact for the Contractor to ensure that the Work is carried out in accordance with Annexes B and C and the relevant WO and shall promptly notify the Contractor thereof. The Commission shall respond promptly to requests for information by the Contractor regarding the Work.

12 CONTRACT PRICE

- (a) The Commission shall pay to the Contractor, in consideration of the full and proper performance of its obligations under the Contract, as follows:
 - (i) For each WO issued during the Call-off Period specified in Clause 4(i) above, the firm fixed unit prices applicable to this pursuant to Annex C and, if applicable, actual travel costs (excluding Daily Subsistence Allowance (DSA)) not exceeding 10% (ten percent) of the estimated amount specified in the WO and the applicable United Nations DSA rate, as specified in Section 6.1 of Annex B;
 - (ii) subject to sub-clause (b) below, for each WO issued during the optional extension(s) of the Call-off Period specified in Clause 4(ii) above, the firm fixed unit prices for the relevant period pursuant to Annex C and, if applicable, actual travel costs (excluding DSA) not exceeding 10% (ten percent) of the estimated amount specified in the WO and the applicable United Nations DSA rate, as specified in Section 6.1 of Annex B;

(hereinafter referred to as the “**Contract Price**”).
- (b) In the event that the Commission decides to extend the Call-off Period early, as foreseen in Clause 4(ii) of this Contract, the Contractor will be reimbursed for the person-days called off in this period as follows:
 - (i) until the expiry of the initial Call-off Period, the firm fixed daily rate set out in subparagraph (a)(i) above;
 - (ii) after the expiry of the initial Call-off Period, the daily rate agreed for the respective extension as referred to in subparagraph (a)(ii) above.
- (c) The firm fixed unit prices set out in Annex C shall be held fixed for the entire duration of the Contract.
- (d) The Contract Price shall cover all costs and expenses incurred by the Contractor for the full and proper performance of all relevant obligations under the Contract (including travel, allowances, management and remuneration of the personnel, national income tax, medical insurance, and social security contributions).
- (e) **[PLEASE IDENTIFY WHETHER TAXES ARE APPLICABLE UNDER THIS CONTRACT AND SELECT ONE OF THE FOLLOWING OPTIONS AT THE TIME OF AWARD]:**

The Contractor shall be reimbursed by the Commission for such taxes on the basis of actual amounts paid and duly documented by the Contractor as per Clause 13(e) below.

OR

No Taxes are applicable under this Contract.

13 PAYMENT

- (a) The Contract Price shall be paid upon satisfactory completion of each deliverable for the Work and satisfactory completion of each WO and submission of the following:
 - i) Invoice drawn up in accordance with this Clause 13;
 - ii) Any other documentation that might be required under the applicable WO.
- (b) The Commission will make the payments to the Contractor on the basis of an invoice submitted by the Contractor as per Sub-Clause (d) below. All payments shall be made within 30 (thirty) days of the receipt and acceptance of the invoice, provided that the Work has been satisfactorily completed and has been accepted by the Commission.
- (c) The making of any payment hereunder by the Commission shall not be construed as an unconditional acceptance by the Commission of the Work accomplished by the Contractor up to the time of such payment.
- (d) The Contractor shall submit an invoice electronically, from the Contractor's official e-mail address in PDF format, duly signed and stamped by the Contractor and submitted to the Commission's email address specified in Clause 22 below. Each invoice shall contain the Contract number (CTBTO and SAP numbers), detailed banking instructions, including the name and address of the Contractor's bank, account number, account holder's name and SWIFT, IBAN and/or ABA codes for payment by electronic transfer.

[PARAGRAPH (e) BELOW ONLY APPLIES IF THERE ARE TAXES (SEE CLAUSE 12 (d) ABOVE). IF NO TAXES ARE APPLICABLE UNDER THIS CONTRACT, PARAGRAPH (e) SHOULD BE OMITTED.]

- (e) Applicable Taxes payable by the Contractor and/or its subcontractor(s) in respect of the Work shall be invoiced separately or be separately identified on the invoice. Actual payment of the Taxes must primarily be supported by original documentation such as invoices, bank account statements, transfer orders, or receipts issued by the local tax or customs authorities. If submission of such original documentation is not possible for justifiable reasons, their copies could be accepted by the Commission provided that they are duly signed and certified by local tax or customs authorities. In case the currency in which the Taxes are levied is not the currency of the Contract, bank statements (or equivalent) showing the exchange rate used for the conversion should be submitted to the Commission, in addition to any other supporting documentation.

14 TEMPORARY SUSPENSION OF WORK

The Commission may, at any time, temporarily suspend the Work, in whole or in part, being performed by the Contractor under this Contract by giving 30 (thirty) days' advance notice in writing to the Contractor. The Work so suspended shall be resumed by the Contractor on the basis of a revised time schedule and on terms and conditions to be mutually agreed upon between the Parties.

15 DELAYS AND EXTENSION OF TIME

- (a) If the Contractor is delayed at any time in the progress of the Work by any act or omission of the Commission or by any of its employees, or by any other contractor employed by the Commission, or by changes in the Work ordered by the Commission, or by any causes beyond the Contractor's reasonable control, or by any other cause which the Commission determines may justify the delay, then the time for completion of the Work shall be extended by an amendment to this Contract in accordance with Clause 21 below for such reasonable time as the Commission may determine.
- (b) Any request for extension of the time for reasons referred to in Clause 15(a) above shall be submitted to the Commission not later than 20 (twenty) days after the commencement of the delay, otherwise said request shall be deemed to be waived. Such request shall state grounds for the delay and shall provide an estimate of the probable effect of such delay on the progress of the Work.

16 CONTRACTOR'S CLAIMS AND REMEDIES

In no event shall the Contractor make any claim against the Commission for or be entitled to additional costs or compensation resulting from any delays in the progress or completion of the Work or any portion thereof, whether caused by the acts or omissions of the Commission, including, but not limited to, damages related to overheads, loss of productivity, acceleration due to delay and inefficiency. The Contractor's sole remedy in such event shall be an extension of time for completion of the Work, provided the Contractor otherwise meets the requirements and conditions set forth in this Contract.

17 ENTIRE AGREEMENT

This Contract represents the final agreement in respect of the Work and shall supersede all prior agreements and representations between the Parties in this respect. Annexes A to C and the WOs shall constitute integral parts of this Contract and shall be of full force and effect.

18 DISCREPANCIES

If there are discrepancies or conflicts between any of the documents that are part of this Contract, the document to prevail shall be given precedence in the following order:

- (i) This document;
- (ii) The Commission's General Conditions of Contract (Annex A);
- (iii) The Commission's Terms of Reference (Annex B);

(iv) The Contractor's Proposal (Annex C);

(v) The relevant WO.

19 SEVERABILITY

If any term and/or provision of this Contract is or becomes invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining provisions of this Contract shall not in any way be affected or impaired thereby.

20 NO WAIVER

Failure by a Party to enforce a right shall not be deemed to be a waiver of that right unless otherwise expressly provided in this Contract.

21 CONTRACT AMENDMENT

No modification of, or change in, this Contract, or waiver of any of its provisions, or additional contractual relationship with the Contractor shall be valid unless approved in the form of a written amendment to this Contract, signed by duly authorized Representatives of the Parties.

22 TRANSMISSION OF NOTICES AND OTHER DOCUMENTS

Notices, invoices, reports and other documentation under the Contract shall be delivered or sent to the relevant Party as follows (or to such person/title, address or email address as the Party may substitute by notice after the date of the Contract):

(a) The Commission:

For Contractual Issues:

Procurement Services Section

Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO)

Vienna International Centre

Wagramerstrasse 5, P.O. Box 1200

1400 Vienna, Austria

Tel: + (43 1) 26030 6350

E-mail: procurement@ctbto.org

For submission of invoices:

Accounts Payable

CTBTO Financial Services Section

Vienna International Centre

Wagramerstrasse 5, P.O. Box 1200

1400 Vienna, Austria

Tel: + (43 1) 26030 6292

E-Mail: Payable_Invoices@ctbto.org

For payments and invoices related enquiries:

Payments@ctbto.org

- (b) The Contractor:

Name:

Title

Address

Tel:

Email:

23 EFFECTIVENESS

- (a) Except as provided below, any communication in connection with the Contract will be deemed to be given as follows:
- (i) if delivered in person, at the time of delivery;
 - (ii) if by registered mail or courier, when received;
 - (iv) if by electronic communication, when retrievable by the Commission in document form.
- (b) A communication given under Clause 23(a) above that is received or becomes retrievable on a non-working day or after business hours at the seat of the Commission will only be deemed to be given on the next working day of the Commission.

24 SOFTWARE LICENCE

The Commission hereby grants the Contractor a non-exclusive, non-transferable, irrevocable license to use the Software for the duration of the Contract and for the purpose of doing the Work under the Contract as specified in Annex B. The use of the source code is only for the duration of the Contract and for the Work required under the Contract. All title, ownership rights and intellectual property rights in and to the Software shall remain with the Commission. The Contractor acquires no title, right or interest in the Software, other than the license(s) specifically granted herein by the Commission.

IN WITNESS hereof, the duly authorized Representatives of the Parties have executed this Contract:

For and on behalf of **the PREPARATORY COMMISSION FOR THE COMPREHENSIVE NUCLEAR-TEST-BAN TREATY ORGANIZATION:**

[Name and Position]

Date: _____

Place: Vienna, Austria

For and on behalf of **[REGISTERED NAME OF THE CONTRACTOR]:**

[Name and Position]

Date: _____

Place: _____

LIST OF ANNEXES

ANNEX A: THE COMMISSION'S GENERAL CONDITIONS OF CONTRACT

ANNEX B: THE COMMISSION'S TERMS OF REFERENCE

ANNEX C: THE CONTRACTOR'S PROPOSAL

Annex B

TERMS OF REFERENCE

for the

**Provision of Services for Development and Evaluation of a Modern
Infrasound Source Categorization Algorithm on a Call-Off-Basis**

1. INTRODUCTION

The Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (hereafter referred to as the “Commission” or “CTBTO”), located in Vienna, Austria, is the international organization establishing the global verification system under the provisions of the Comprehensive Nuclear-Test-Ban Treaty (hereafter referred to as the “CTBT”), which bans any nuclear explosion on the surface of the earth, underground, in the atmosphere, underwater and on the surface of the water. The verification system includes the International Monitoring System (hereafter referred to as the “IMS”), a global network of monitoring stations (waveform technologies: seismic, hydroacoustic and infrasound; radionuclide technologies: particulate and noble gases), a global satellite communications infrastructure (hereinafter referred to as the “GCI”), an International Data Centre (hereinafter referred to as the “IDC”) and on-site inspections (hereinafter referred to as the “OSI”). More information can be found at www.ctbto.org.

The Commission seeks to establish a Call-off Contract for a period of two (2) years with an annual maximum of 250-person workdays of Service (hereinafter referred as to “Services and/or Work”) pertaining to the Provision of Services for Development and Evaluation of a Modern Infrasound Source Categorization Algorithm on a Call-Off-Basis.

The Commission shall have the option, but not the obligation, to extend the Call-off Period for two (2) subsequent periods of one (1) year each with an annual maximum of 250-person workdays of Service. At its sole discretion, the Commission reserves the right to call off more, fewer or no person days at all.

The Commission shall have the option to carry over any unused person days balance from one Call-off Period to another, subject to mutual agreement between the Parties; provided, however, that any such carryover shall not result in the total number of person days exceeding the cumulative maximum limit assigned to each of the Call-off Periods combined.

Some meetings may be scheduled at the Commission’s premises in Vienna, if required. On-site presence shall only occur upon explicit request by the Commission. The meetings and the applicable number of days shall be agreed upon with the Commission during the course of the project, but not more than once per six calendar months and not more than three days per visit.

These Terms of Reference (hereinafter referred to as the “TOR”) define requirements for the Provision of Service on Development and Evaluation of a Modern Infrasound Source Categorization Algorithm ((hereinafter referred to as the “Service” or “Work”). This work shall

result in a modernized infrasound categorization step in the IDC automatic pipeline, replacing the Station Processing currently in operation.

2. BACKGROUND

IDC supports the verification responsibilities of the Commission by providing data products and services for effective global monitoring. IDC collects and analyses data from the IMS network to detect and locate possible nuclear events. At the IDC, data undergo automated processing by computer algorithms and interactively analysed and reviewed by human analysts. Near-real-time data and data products/bulletins are distributed to the State Signatories.

2.1. The IMS Infrasound Network

The infrasound network at the IMS currently consists of 54 arrays with the total number of arrays expected to be 60. Each of the infrasound arrays are comprised of a various number of sensors (e.g., 4, 8, 9) in different geometries and environments. The network of infrasound arrays is designed to detect and facilitate location of infrasound sources all around the globe.

2.2. The IDC Pipeline

The IDC pipeline for infrasound data is different from seismic and hydroacoustic data due to the differences in the properties of the waves and the complexities in the wave propagation medium. The IDC pipeline consists of four major steps, consisting of detection, categorization, association, and review. In the detection phase, raw infrasound signals from each array are processed using DTK-PMCC software. The Progressive Multi-Channel Correlation (PMCC) algorithm uses cross correlation between each element in the array to find arrival time differences and coherence values to form pixels (elementary detections). Pixels with like attributes (e.g. frequency, azimuth, velocity, time, etc.) are combined to form families (detections). These families are then sent along in the pipeline for categorization. The categorization step of the IDC pipeline is conducted by Station Processing (StaPro). Like PMCC, StaPro works on the array level, and takes all the attributes from each family from PMCC to determine a signal type (i.e. phase classification). StaPro uses multiple threshold values to determine if multiple detections are a part of the same event and gives each detection a phase label. Once the detections are labelled, Global Association (GA) takes over to try and build events. GA uses all the signals from each array and tries to build events with two or more infrasound stations. Multiple parameters are used and there are other thresholds that constrain GA's ability to associate certain stations and signals. Furthermore, GA brings in seismic and hydroacoustic data to build multi-technology events. GA is the final stage in

the automatic processing at IDC. After GA, the review step is conducted by analysts that look over each event. The analysts can add, delete, or change many attributes, including the naming of the phase of the signal. The analysts can also re-run PMCC and add extra stations to build an event.

2.3. Station Processing Details

There are three subprocesses that StaPro conducts: determination of signal type, grouping signals, and identifying phases. For infrasound, StaPro first determines the signal type by separating noise detections from event detections (i.e. I from N). During the grouping signals phase, StaPro identifies signals believed to have come from a common event as measured at a single station. An arrival is considered an event if the detection is not already part of another group. When an arrival is found, then the remaining detections are examined for compatibility. Compatibility values are calculated for infrasound based on PMCC family attributes (e.g. frequency, duration, azimuth, etc.). The last subprocess for StaPro is identifying phases. StaPro mostly uses the velocity of the signal to determine phase type, which can be I, Ipx, Isx, Ix or N. Seismic phases are needed because infrasound sensors can record seismic events. StaPro labels Ipx as velocities over 5700 m/s and Isx as velocities over 2900 m/s. I phases are also determined by velocity and are arrivals with velocities between 310-450 m/s. Every arrival not classified by one of these velocity ranges is considered an “N” phase. The biggest issue with StaPro is the number of events that get classified as N that should be I. During the interactive review stage, up to 60% of the events have an analyst manually converting an N to an I phase for infrasound signals.

2.4. Introduction of NET-VISA

In 2026, the association step of the IDC pipeline in which analysts received events from was replaced. GA (SEL3) was replaced by Network Processing Vertically Integrated Seismic Analysis (NET-VISA, VSEL3). NET-VISA is a physics based probabilistic model and heuristic inference algorithm, which finds the most probable set of events that can explain a series of arrivals. NET-VISA takes the phase classification outputs from StaPro as part of the inputs for its generative model. Additionally, NET-VISA also takes all the attributes from the PMCC families estimated during the detection step.

2.5. Objectives of the Project

The implementation of the Contract shall result in a modernized infrasound categorization algorithm, which can replace the infrasound Station Processing step currently in the IDC automatic operational pipeline, addressing the following objectives:

- Objective 1: Development a modern methodology for the grouping and categorization of infrasound detections (e.g. phase classification);
- Objective 2: Evaluation of the new methodology/algorithm for infrasound data against the IDC automatic processing algorithm;
- Objective 3: Implementation of the new methodology in accordance with inputs in GA and NET-VISA, as well as workload requirements from the analyst review step;
- Objective 4: Development of documentation and reporting.

3. SCOPE OF SERVICES

3.1 Description of Services

The following Services shall be provided by the Contractor:

- a) Development of a methodology for infrasound signal grouping and phase classification (e.g. I, Ipx, Isx, N, etc.);
- b) Evaluation of the ability of the new methodology against StaPro in the IDC automatic processing;
- c) Evaluation of the ability of the new methodology to produce the necessary inputs for both GA and NET-VISA in the IDC automatic processing (e.g. connection and outputs to database tables) and the evaluation of comparing the output of both GA and NET-VISA with the new methodology vs StaPro;
- d) Development of the ability to add additional or remove signal/classification categories from the new algorithm, while producing similar event results; and
- e) Development and evaluation of filtering techniques to reduce the number of detections passed to the next stage of the IDC pipeline and pass only the highest quality or most important detections especially if/when more advanced detection methods are used (e.g. 1/3 octave frequency processing for PMCC, MCML).

3.2 Outputs and deliverables

The Contractor shall deliver:

a) Methodology for infrasound signal grouping and phase classification.

The Contractor shall provide the source code for the new algorithm based on the agreed coding standards. Additionally, the Contractor shall provide a report with detailed information on the approach, algorithm development, and implementation of the new methodology for infrasound categorization.

b) Evaluation for the new methodology against StaPro in the IDC pipeline.

The Contractor shall produce a report evaluating the ability of the new algorithm against the current IDC pipeline. The report shall compare the results for data at every operating infrasound array for a period no shorter than 24 months. Furthermore, the evaluation of multiple different sources, time of year, and backazimuths must be shown. The evaluation shall quantify the differences in signal categorization between the new methodology and the current pipeline.

c) Ability to update and implement new technologies into the algorithm.

The Contractor shall provide the ability within the new algorithm to easily update and add new features or inputs for the advancement of the methodology. The Contractor shall provide a manual for the algorithm produced, and deliver documentation reflecting how to add, update or extend the existing software package/source code.

3.3 Publication of Results

In collaboration, the Commission and the Contractor shall present the results of the project at/in at least one scientific conference and/or peer-reviewed publication. The submission and publication of results in a peer-reviewed journal is preferred by the Commission as an indication that the work performed is to a high scientific standard. Any such publication shall be subject to the preliminary Commission's review and approval in accordance with the "*Procedures for access to IMS data and IDC products by contractors*" defined in Section 11 below.

4. ORGANIZATION OF WORK

The Services will be called off in the form of Work Orders (WOs). Each WO shall include the exact scope of Work, schedule, assigned specialist, person workhours and the required deliverables to be performed and delivered by the Contractor.

4.1 Initiating work

Since the IDC follows the Scrum software development methodology, WOs generally follow Scrum sprints and cover software development services to be performed. A WO is therefore issued during a sprint planning meeting and the work items to be addressed in that WO (sprint) are recorded in the Commission's JIRA-based tracking system. Initiation of the sprint constitutes the issuance of the WO. In case a WO is issued outside the framework provided by the Scrum methodology, the Commission will provide the description of the work to be performed in writing to the Contractor, and the Contractor shall respond with an estimate of the number of person-days, assigned staff required to complete the work and a delivery schedule. After acceptance of the estimate and delivery date, the Commission will issue the WO to the Contractor. The Contractor shall perform work only after receipt of the WO.

4.2 Completion and Acceptance

At the end of the Service under each WO, the Contractor shall submit to the Commission the relevant deliverables within the period of performance stated in the respective WO. The deliverables will typically include as a minimum:

- Updated source code for software and common libraries, including documentation.
- Updated software design documents.
- Updated software user guide.
- Description of how to use the programming interfaces developed under this contract.

Typically, in accordance with the Scrum methodology, the Contractor will present the Work performed during the sprint, including demonstrations of the newly developed software, during the Sprint Review meeting.

4.3 Invoicing and Payment

The completed Work and deliverables, after being evaluated and accepted as satisfactory by the Commission, will form the basis for invoicing and payment of the Work performed under each WO.

4.4. Communication

A project kick-off meeting via teleconference is to be held shortly after the contract signature for the Contractor to present the project outline. Before the start of each WO, the Contractor shall

provide a draft Work plan to the Commission for review and approval. Monthly meetings are to be remotely held for the contract to update on the progress of the project.

The Contractor for meetings, and other communication shall adhere to the Commission's time zone or to an agreed upon time between both parties.

A final project closure meeting via teleconference is to be held before the completion of the project, at a date to be agreed between the Commission and the Contractor, for the Contractor to present the final project results.

Informal technical progress meetings via teleconference on a schedule appropriate according to the status of the project during the course of the Work can be agreed between the Contractor and the Commission.

The Contractor shall submit at agreed intervals a Progress Report by email, describing the status of the Work, obtained results and any problems encountered.

The Contractor shall submit a Completion Report at the completion of each Work summarizing the main results achieved and the methodology applied.

The Contractor shall be required to submit a brief informal monthly progress report by email, describing the status of the Work, highlighting results and any problems encountered.

5. COMMISSION'S RESPONSIBILITIES

For designated Contractor staff, and to the extent necessary for the Contractor to fulfil the requirements of these Terms of Reference, the Commission will:

- make relevant documentation available for the Contractor.
- to the extent possible, make available high-quality infrasound data.
- to the extent possible, provide detailed information about the IDC automatic processing and transfer this information to the Contractor.
- to the extent possible, provide detailed information about the configuration and operation of IMS infrasound stations.
- make qualified staff available to provide assistance and cooperate in responding to information requests from the Contractor in order to allow the Contractor to carry out the Work.

- provide remote access to the IDC software environment to the Contractor as required and agreed, in accordance with the “*Procedures for access to IMS data and IDC products by contractors*” defined in Section 11 below.

6. WORK LOCATION AND SCHEDULE

6.1. Location

Services under WOs shall be delivered off-site from the Commission’s premises in Vienna, Austria.

The Contractor shall provide their own infrastructure, hardware, and software environment necessary for the completion of its Work under the Contract. The Contractor shall communicate with the Commission by telephone, electronic mail, or video teleconferencing, as appropriate. All costs incurred by the Contractor for the performance of Work under the Contract shall be borne by the Contractor.

Some meetings may be scheduled at the Commission’s premises in Vienna, if required. The meetings and the applicable number of days shall be agreed upon with the Commission, but not more than once per six calendar months and not more than three days per visit.

All travel arrangements shall be the Contractor’s responsibility if travel is required (including visa, hotel). The Commission will reimburse return flight ticket costs based on the most direct and economical route upon presentation of supporting documents.

Payment of daily subsistence allowance (DSA) (including accommodation) shall be based on the applicable United Nations DSA rates published by the International Civil Service Commission (ICSC) and applicable at the time of travel.

6.2. Schedule

An estimated overall implementation schedule for the Contract is linked to objectives (see Section 2.5 of the ToR) and is presented below.

The schedule may be revised, at no cost, during the course of the Contract implementation as may be agreed between the Commission and the Contractor.

	Year 1				Year 2			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Objective1								
Objective2								
Objective3								
Objective4								

7. REPORTING

The reports will be provided by the Contractor as agreed per each Work Order. Besides the software documentation, the Contractor shall document and show proof of the delivery of Services within the related tickets opened in JIRA. All software shall follow IDC Coding & Documentation Standards, use Git for version control, and be delivered through GitLab-based CI. The Contractor shall apply RERO (release early, release often) and adhere to the Commission's change management with JIRA and Configuration Control Board (CCB) approvals for releases.

The Contractor shall ensure that:

- All deliverable material, comments, meetings, presentations, and other communications with the Commission shall be written or conducted in the English language.
- Deliverable documents shall be provided in formats compatible with both Microsoft Word for Microsoft 365 MSO and Adobe Acrobat Reader DC continuous release version 2020.009.20063, unless otherwise specified.
- All materials may be submitted in electronic format, via e-mail and/or secure file transfer sites.
- As a general rule, the agreed Work Plan for the provision of the deliverables shall be followed, unless otherwise agreed with the Commission during the course of the activity.
- A draft Final Report for the Contract shall be provided to the Commission for review and comments three weeks before the final version is delivered. The Report shall summarize the main results of the Project and deliverables. The Services under the Contract can be considered as fully delivered and completed following acceptance of the Final Report and all the deliverables by the Commission.

8. REQUIREMENTS FOR THE CONTRACTOR

8.1 Contractor's requirements

The Contractor shall meet following minimum requirements:

- a) At least five years of demonstrated experience working with infrasound data, for example., relevant published papers, completed relevant projects, information in portfolio, etc.;
- b) At least three years of demonstrated experience working with cluttering models and/or other statistic-based identification/filtering models/methods demonstrated by information in portfolio, published relevant papers, completed relevant projects, etc.; and
- c) Has access to all necessary hardware and software tools to deliver the Service under this TOR and is provided to all Contractor's personnel involved in the Contract. This includes, but not limited to, access to suitable computing facilities, compilers, and high-level open-source software (e.g. Python, C).

8.2 Contractor's staff requirements

The Contractor shall ensure that each staff (up to 3 staff) dedicated to the Service provision under this Contract shall cover all of the following areas of expertise for the whole duration of Contract.

Minimum requirements:

- a) Advanced degree in geophysics, seismo-acoustics, computer engineering, or in a related field (e.g. CV);
- b) Minimum of five years of demonstrated expertise after graduation in advanced seismo-acoustic signal processing (e.g. CV, information on projects, published papers);
- c) Minimum of three years of demonstrated experience in statistical-based filtering models (e.g. CV, information on projects, published papers);
- d) Track record of relevant scientific publications published in high-quality international peer-reviewed journals (as example, GRL, IEEE, JASA, etc.). This requirement is valid for at least a lead specialist (including when a team of 2 or 3 specialists is proposed);
- e) Proficient (professional) command of written and spoken English; and
- f) Minimum of five years of demonstrated experience in Python or C programming languages (e.g.CV, information on projects).

Optional requirement:

- g) At least three years of demonstrated experience in machine learning algorithms (e.g.CV, information on projects) would be an advantage. This optional requirement is valid for at least a lead specialist (including in case a team of 2 or 3 specialists is proposed).

8.3 Roster Management

Throughout the duration of the Contract, the Contractor shall maintain a Team Roster (e.g. names, roles, CVs, proficiency levels, etc.) and in case of key personnel replacement provide pre-screening evidence, an induction plan (1–3 months), knowledge retention measures, and one (1) month notice for planned changes. Every change to the roster will go through technical evaluation and approval by the Commission. The Commission shall approve roster changes and unsatisfactory staff proposed as part of a change or in case of unsatisfactory performance shall be replaced by the Contractor at no cost. Staff proposed for replacement shall have equal or better qualifications and experience. The Commission reserves the right to interview new team members for the Team Roster.

In case of unsatisfactory performance, if no suitable replacement can be agreed upon, the Commission reserves the right to terminate the assignment of the staff with immediate effect. Continuity of staff is an important consideration. The Contractor shall therefore take necessary measures to ensure a seamless transition when taking over the services and keep changes to staff being assigned to the Commission to a minimum throughout the duration of the Contract.

The Commission is not liable for on-boarding or familiarisation time. The onboarding of staff added to the Roster during the implementation phase shall be at the expense of the Contractor.

9. INTELLECTUAL PROPERTY AND REPOSITORY HAND-OVER

All source code and related artifacts delivered under this Contract become the property of the Commission upon delivery and shall be provided via the Commission's Git repository in accordance with its standards.

10. RISK MANAGEMENT

The Contractor shall provide and maintain a risk assessment management plan at the commencement of the Project and update it for each WO to identify potential risks that could

impact the successful execution of the Project and their mitigation strategies. Risks may include but are not limited to technical challenges, changes in project requirements/scope, resource constraints, schedule delays, integration difficulties, and third-party software/hardware dependencies.

Upon the project's satisfactory completion, the Contractor shall conduct a final review of the initially identified risks. Risks that have been effectively mitigated or did not materialize should be officially closed, accompanied by appropriate documentation. The insights gained from the risk management process should be methodically documented and shared with the Commission thereby contributing to the knowledge repository for forthcoming projects.

11. CTBTO PROCEDURES AND POLICY FOR DATA ACCESS AND PUBLICATIONS

The Contractor shall follow CTBTO procedures and policies for accessing IMS data and IDC products by contractors are laid down in the report of Working Group B to the 14th session of the Preparatory Commission for the CTBTO, CTBT/PC-14/1/Annex II and in particular in Appendix IV, "Procedures for access to IMS data and IDC products by contractors" (see Annex to this ToR for more details.)

The Contractor shall within thirty (30) days of Contract completion, certify deletion/return of all IMS/IDC data and derived sensitive datasets from Contractor systems, retaining nothing beyond what is permitted for approved publications.

12. INFORMATION SECURITY

The Contractor shall implement and maintain appropriate technical and organizational measures to protect the confidentiality, integrity, and availability of CTBTO's information and systems throughout the duration of the Contract. Access to CTBTO systems and data shall be granted on a least privileged basis with multi-factor authentication, and access rights shall be reviewed regularly and revoked promptly upon personnel departure or contract end. All data shall be encrypted in transit and at rest, and any identified vulnerabilities shall be remediated in a timely manner commensurate with their severity, supported by annual independent penetration testing. The Contractor shall designate a named point of contact responsible for information security matters for the duration of the Contract.

Where the Contract involves software development, the Contractor shall apply secure development practices throughout the software lifecycle, conducting appropriate security testing prior to any deployment into a production environment and remediating critical and high findings before go-live.

ATTACHMENT: Annex “Procedures for access to IMS data and IDC products by contractors”

APPENDIX IV

PROCEDURES FOR ACCESS TO IMS DATA AND IDC PRODUCTS BY CONTRACTORS

INTRODUCTION

1. Document CTBT/PC-13/1/Annex II states that

“WGB recognizes that, for purposes of the development of the IMS and IDC, the PTS is interested in interaction with the international scientific community. Therefore, in order to develop and optimize the IMS and the IDC, the PTS could request the contributions of organizations for scientific purposes. Such organizations might need to have access to IMS data and IDC products for the purpose of the contracted scientific studies. IDC products for specific verification cases are not involved.”

POLICY FOR ACCESS BY CONTRACTORS

2. CTBT/PC-13/1/Annex II defines the policy for provision of access to IMS data and IDC products to organizations contracted by the PTS to do work for the PTS as follows:

- “Each contractor will access only those IMS data and IDC products necessary for fulfilling its task.
- The IMS data and IDC products will be used only for research associated with the development of the IMS and IDC or for the purposes stated in the contracts.
- Access provided to an organization for the purposes of fulfilling a contract will terminate when the contract is completed.
- The restrictions placed on all users will not exclude the presentation of data or products (or information derived therefrom) for peer review at scientific meetings or in scientific journals and other scientific publications. The inclusion of IMS data and IDC products in scientific journals and other scientific publications will be limited to those required to reflect the scientific achievements.
- The contractor should not redistribute these data to third parties.”

3. IDC bulletins that incorporate event screening criteria shall not be included.

PROCEDURES

4. Procedures to be followed at the PTS to ensure implementation of this policy are as follows.

Contractual Issues for Access by Contractors

5. A scientific organization that submits a proposal to the PTS should state the need to have access to IMS data and IDC products and for what purpose(s). If the proposal is accepted by the PTS, a section defining the terms for access to data and products will be included in the contract.

6. If, during contracted scientific work, a need for access arises that was not foreseen when the contract was signed, the PTS can propose to the contracted scientific organization an amendment to the contract giving the contractor additional access to IMS data and IDC products to the extent needed.

Access by Contractors

7. The IDC is the focal point within the PTS for distribution of IMS data and IDC products.

8. The IDC will give a scientific organization access to the IMS data and IDC products as stipulated in the contract or its amendments.

9. The access will be in accordance with the policy defined in paragraph 2.

10. The IDC may, if appropriate, give the contractor automatic access to IMS data and/or IDC products through the AutoDRM system. Access will be monitored to ensure that only those data and/or products that are agreed to be necessary for the particular contract work are accessed by the contractor.

11. If access through the AutoDRM system is not given to a contractor, access will instead be handled manually by the IDC to ensure that access is only given to the data and/or products as stipulated in the contract.

12. Only requests from the persons authorized in the contract to request IMS data and IDC products will be considered. The number of such persons will be limited to three per contract.

13. Technical assistance with accessing the data and products will only be given to the persons referred to in paragraph 12.

14. The Fusion, Review and Services Unit of the IDC Division will support access by contractors.

15. The IDC will terminate the access when the contract is completed or terminated.

Publications or Presentations

16. The contractor will provide the PTS with a copy of any publication or presentation in advance. If the PTS does not raise any objections within five working days after the receipt by the PTS of the advance copy, the publication or presentation shall be considered as approved. While considering the request for publication or presentation, the PTS will verify that the publication or presentation is limited to the reflection of scientific achievements only. A disclaimer, stating that the PTS is not responsible for the views of the author, should be included in the publication or presentation.

Implementation

17. The PTS will ensure that these policies and procedures are reflected in the terms of any contract where access to IMS data and IDC products is involved, in accordance with standard PTS contracting procedures.