

REQUEST FOR PROPOSAL



To: ALL BIDDERS

CTBTO Ref. No.: 2024-0148/JIBRIL

(PLEASE QUOTE ON ALL COMMUNICATIONS)

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

E-mail: procurement@ctbto.org

Attn:

Phone:

Date: 15 Aug 24

Fax:

Email:

Subject: Development and Maintenance of the Web-Connected Graphics Engine
(WEB-GRAPE) on a Call-off (WOs based).

Deadline for Submission: 20 Sep 24

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,

O-I-C



for: Sally Alvarez De Schreiner
Chief, Procurement Services Section

ACKNOWLEDGEMENT FORM

Solicitation No: 2024-0148 Title: Development and Maintenance of the Web-Connected Graphics Engine (WEB-GRAPE) on a Call-off (WOs based).	Closing Date: 20 Sep 24 Vienna Local Time: 17:00
--	---

Procurement Staff: Othman Jibril

CTBTO Req. No.: 0010025208

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 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.

This Request for Proposal (RFP) is for the provision of *Development and Maintenance of the Web-Connected Graphics Engine (WEB-GRAPE)* services as described in the attached Terms of Reference.

The Proposal shall meet all requirements stated in the Terms of Reference and be submitted in accordance with these Instructions for Preparation and Submission of Proposals. For this project, the Commission is seeking capabilities, which will ensure that the services are delivered, and the tasks are accomplished expeditiously and at a reasonable cost.

2. Documents included in this RFP

This RFP consists of the following documents:

- (a) Letter of Invitation
 - These Instructions for Preparation and Submission of Proposals, Bidder's Statement Form and with the following Attachments:
 - Attachment 1: Technical Compliance Matrix
 - Attachment 2: Evaluation Criteria and Method
 - Attachment 3: Price Schedule Form
 - Attachment 4: Procedure for submission of electronic offers in 2 sealed files
- (b) Statement of Confirmation
- (c) The Commission's Model Contract and its Annexes A – B;
 - o The Commission's General Conditions of Contract (Annex A), incorporated herein by reference, found at www.ctbto.org under [CTBTO General Conditions of Contract](#)
 - o The Commission's Terms of Reference (Annex B)

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

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 Bid

The Proposal shall be typed, dated and signed by an official legally authorized to enter into contracts on behalf of your organization. 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 the attached “PROCEDURE FOR SUBMISSION OF ELECTRONIC OFFERS IN 2 SEALED FILES”.

Bids sent by regular e-mail, unless clearly submitted as electronically sealed bids as indicated above and following the instructions outlined in Attachment 4 will not be considered and may lead to the rejection of the bidder from the procurement process.

Alternatively, the Bids may be submitted in physical form in two sealed envelopes as follows:

- (i) **One sealed envelope shall contain 1 (one) original of the Technical Proposal clearly marked as “Original Technical Proposal”. This envelope shall also contain a memory stick with 1(one) pdf of the Technical Proposal.**

No pricing/financial information shall be included in the Technical Proposal. Note however that the list of items (without the prices) shall be included in the Technical Proposal.

- (ii) **The second sealed envelope shall contain 1 (one) original of the Financial Proposal marked as “Original Financial Proposal”. The second envelope shall also contain a memory stick with:**
 - 1(one) pdf of the Financial Proposal; and
 - 1(one) pdf of the Financial Proposal without prices

The outer envelope containing the 2 envelopes shall be clearly marked as follows:

NAME OF PROJECT: [Description indicated in Letter of Invitation]

CLOSING DATE: [Date indicated in Letter of Invitation]

CTBTO REF. NO.: [Number indicated in the Letter of Invitation]

"DO NOT OPEN BEFORE THE CLOSING DATE"

The envelope containing the Original Proposal shall be sent to the following addressee:

Chief, Procurement Services Section
Office E0918
CTBTO, Vienna International Centre
Wagramer Strasse 5, A-1400 Vienna, AUSTRIA

6. Closing Date and Time

Instructions for preparation and submission of Proposals – Request for Services

The Proposal shall be received by the Commission not later than the closing date and time indicated in the Letter of Invitation or as may be extended by the Commission.

7. Request for Clarifications and Contacting the Commission

The Commission will issue clarifications, if required. Bidders are requested to e-mail any questions pertaining to this RFP as soon as possible after receipt of the solicitation documents, but in any case, no later than 10 business days prior to the Closing Date. No requests for clarifications will be entertained after this time. Questions will only be accepted via e-mail be sent to:

E-mail: procurement@ctbto.org
Subject: RFP No. 2024-0148/JIBRIL - Request for Clarifications

The Commission will make all reasonable efforts to issue the clarifications not later than 7 business days prior to the Closing Date.

Except in case of responding to a RFP clarification, no Bidder shall contact the Commission on any matter relating to the Proposal or this RFP 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.

8. Eligible Goods and Services

The services and goods (if any) to be rendered under the Contract shall have their origin in the States Signatories of the Comprehensive Nuclear-Test-Ban Treaty (CTBT), the list of which is available at our website www.ctbto.org under [Status of Signatures and Ratifications | CTBTO](#). For purposes of this paragraph, "the origin" means the place from where the materials, goods and/or from which the services are supplied.

9. Type of Contract and Payment

The Commission intends to conclude firm fixed unit prices Contract(s) based on the attached Model Contract. The terms and conditions of payment for services are described in Clause 13 of the attached Model Contract.

10. 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 parts:

- I. **Technical Proposal;** and
- II. **Financial Proposal;**

providing, but not limited to, the following information:

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 Proposal. Note however that a complete list of the items being offered (without the prices) shall be included in the Technical Section of the Proposal.

Bidders are required to complete and follow *Attachment 1: Technical Compliance Matrix* provided as part of Instructions for Preparation and Submission of Proposals.

Point of Contact

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

Supplier Registration Form

Bidders must submit the Supplier Registration Form available at www.ctbto.org under [Supplier registration form | CTBTO](#)

Statement of Confirmation and Bidder's Statement Form

Statement of Confirmation and Bidder's Statement Form shall be duly signed and submitted together with the Proposal.

Documents Establishing the Eligibility and Qualifications of the Bidder

The Bidder shall furnish documentary evidence of its status as an eligible and qualified supplier in accordance with the requirements set forth in the Terms of Reference. In order to award a contract to a Bidder, its qualifications must be demonstrated and documented in the Proposal to the Commission's satisfaction.

Description of Services

An explanation of the Bidder's understanding of the services to be provided and an overall preliminary operational plan for the execution of the services by providing a section-by-section response to the Terms of Reference indicating how the Bidder meet or will meet each of the technical requirements.

The Commission will take into consideration the on-boarding time (off-site/on-site) needed to get familiar with the systems. The Proposal shall clearly state how many person-days are expected to be necessary for the Contractor's staff to familiarize with the system landscape. The estimated on-site/off-site days needed to get familiar with the systems shall be listed as a separate item in the proposal.

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.

Commission's Inputs

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

Personnel

Curriculum vitae of key personnel proposed for this contract, including technical experience to perform the Work, to be include in the Technical Proposal.

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.

Use of former Preparatory Commission for the CTBTO ("Commission") employees in the preparation of Quotations:

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 Quotation 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.

In accordance with the Terms of Reference, the Contractor shall establish and maintain a Team Roster, for which at a minimum, the following information shall be provided for each of these staff as part of the Technical Proposal: Name; Role; Employed since; Type(s) of Service(s) from Section 3 in which the staff may be involved and Curriculum Vitae. Each member of the Team Roster shall be appropriately skilled and experienced to carry out the role and service(s) listed in the Team Roster.

Sub-Contractors

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 your organization shall be fully responsible for the performance of sub-contractors. All sub-contractors shall be legally established in one of the CTBTO States Signatories the list of which is available at www.ctbto.org under [Status of Signatures and Ratifications | CTBTO](#).

PART II: FINANCIAL PROPOSAL

Bidders are required to prepare the Price Schedule using *Attachment 3 (Price Schedule Form) as applicable*, attached to these Instructions for Preparation and Submission of Proposals. In presenting the cost for each item, adequate justification and calculation must be included in the Financial Proposal.

Clear and detailed explanations would enable the Commission 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.

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.

11. Completeness and Correctness of the Proposal

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

12. Validity of the Proposal

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

13. 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.

14. Evaluation of the Proposal and Award

- (a) The Commission will conduct the evaluation 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.

15. Negotiations of the Proposal

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

16. 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 for the submission of the Proposal. The Proposal may not be modified subsequent to the closing date.

17. 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.

18. Costs of preparation and submission of the Proposal

Bidders 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.

19. 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.

BIDDER'S STATEMENT
PLEASE STATE BELOW & SUBMIT WITH PROPOSAL

Delivery Time:

Shipping weight (kg) and Volume (m³) – if applicable:

List of recommended consumables and spares including prices and details on local availability, if applicable (please tick):

For one year period For a period of

Warranty period if applicable (it shall be for a **minimum of 24 months**, starting from the acceptance of the goods/services by the Commission) – please tick below as applicable:

For a two-year period For a period of

Availability of local service in Vienna, Austria (if any):

State country of origin or assembly of all items 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 quotation : **Yes** **No**

Confirmation that the bidder has reviewed the Commission's General Conditions of Contract and Model 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:

ATTACHMENT 1

Technical Compliance Matrix

Provision of Maintenance and Enhancements of the Web-Connected Graphics Engine (WEB-GRAPE) for the CTBTO

Below 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 II of this document must be completed.

Part I

Item	Minimum content
1. Executive Summary	<ul style="list-style-type: none">• Provide an overview of proposal
2. Experience, Resources and Project Management	
2.1 Corporate Profile and Values	<ul style="list-style-type: none">• Background of company, ownership, size, location, profile• Company business structure and its authority to execute all Work under the Contract.• If a consortium, provide a clear explanation of the business relationship between the members and governance for the execution of this project.• In case the Bidder requires the services of subcontractors, the Proposal shall include:<ul style="list-style-type: none">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 organization.• The scope of work and nature of subcontracting.
2.2 Corporate Experience	<ul style="list-style-type: none">• The proposal should detail the Bidder's experience in executing work of similar scope and complexity.
2.3 Requirements for the Contractor	<ul style="list-style-type: none">• The Proposal should address and describe all requirements spelled out under Section 6 of the Terms of Reference (ToR).

2.4 Risk Management	Please provide a detailed risk assessment plan at the beginning of the project including identifying potential obstacles to successful software delivery. Risks, including technical issues, scope changes, responses to the standard and urgent/emergency issues, resource constraints, schedule delays, integration issues, and third-party dependencies, should be regularly updated with project milestones. Please check Section 7 of the ToR for more details.
3. Meeting the Requirements	
3.1 Understanding of the ToR	<ul style="list-style-type: none"> • Please describe your understanding of the services that are to be provided under this ToR, detailing key assumptions that impact the Technical Proposal. • Please discuss how you propose to address some of the sample tasks listed in Section 5 (Scope of Work) of the ToR.
4. Contractor's key staff	
4.1. Visa & Work Permits	Provide written confirmation that the Bidder understands and agrees to take responsibility for obtaining any Visa and/or work permits, which may be required to perform the Work under the Contract. The CTBTO does not sponsor work permits for contractors.
4.2. Documentation and Reporting	<ul style="list-style-type: none"> • Provide written assurance that all reports, documentation, and communication (written and oral) supplied to the Commission shall be in English and submitted in electronic form. • Provide written assurance that all documentation will adhere to the IDC Documentation Standards, samples of which will be provided to the successful Contractor.
5. Model Contract	
<ul style="list-style-type: none"> • A statement that the bidder has carefully reviewed the Model Contract and its Annexes and agrees with all its terms and conditions. 	

Part II- Compliance Matrix				
Ref No. of ToR	Requirements <i>A section-by-section response to each section of the Terms of Reference is included in the Proposal</i>	Bidder's Response		Indicate the section in your Proposal and ensure that it is sufficiently described in the Proposal
		<i>Please tick whichever is applicable</i>		
Requirement for the Contractor				
		"Yes"	"No"	
7.2a	A list of a minimum of four (4) web-based (scientific) visualization software projects shall be provided			
7.2a	A minimum of two (2) years of prior experience with Agile software development processes			
7.2b	A minimum of one (1) year experience working with modern issue tracking and ticket management systems, preferably Jira.			
7.2b	A minimum of two (2) years' hands-on experience with all elements of the software development lifecycle			
7.2c	The staff turnover has been below 20% per year over the past three (3) years.			
7.2d	A warranty period of two (2) years after the completion of the user acceptance testing			
7.2e	Working hours of the assigned Team will be adjusted for a sprint meeting that overlaps at least two hours with the Commission's working hours (9 a.m. to 5 p.m. CET/CEST)			

Requirement for the Contractor's Personnel				
7.3a	Advanced university degree in Physics, Mathematics, Computer Science or Software Engineering, or a related scientific/ technical subject			
7.3a	Confirmation of excellent communication skills in English for each key personnel (an international certification is a plus)			
7.3b	Minimum of three (3) projects, in designing web-based GUIs for (scientific) visualization software and for processing, displaying and analysing geo-spatial data Management components.			
7.3c	Minimum of two (2) projects, with open-source software for processing and converting vector and raster geo-spatial formats. Experience with rasterio is an advantage			
7.3d	Minimum of two (2) projects in the last five (5) years, in using Python with numpy, pandas and Xarray			

7.3e	Minimum of two (2) projects in the last five (5) years, with Javascript web development frameworks, specifically React and TypeScript. Experience with Deckgl and OpenLayers is a plus			
7.3f	Minimum of two (2) projects in the last five (5) years, configuring, running and developing Mapserver applications (https://mapserver.org/). Understanding and experience with using MapServer in a scalable containerized environment is an advantage			
7.3g	Minimum of two (2) projects in the last five (5) years, developing and deploying complex Kubernetes projects, using Terraform and Helm. Experience with Microsoft Azure is a plus			
Risk Management				
8	The Contractor shall provide a thorough risk assessment plan at the project's commencement to identify potential risks that could impact the successful execution of the outlined software development activities in these Terms of Reference			

**Attachment 2
Evaluation Criteria and Method**

DEVELOPMENT AND MAINTENANCE OF THE WEB-CONNECTED GRAPHICS ENGINE (WEB-GRAPE)

No.	Ref No. in TOR	1.QUALIFICATION REQUIREMENTS (PASS/FAIL)	PASS/FAIL
		Requirements for the Contractor (PASS /FAIL)	PASS/FAIL
1	7.2 b)	The Contractor must demonstrate prior experience with Agile software development processes.	PASS/FAIL
2	7.2 c)	The Contractor shall provide confirmation of a minimum of one (1) year experience working with modern issue tracking and ticket management systems, preferably Jira.	PASS/FAIL
3	7.2 d)	The Contractor shall have hands-on experience with all elements of the software development lifecycle: eliciting and documenting business process flows, use cases, requirements, quality management plans, user acceptance testing, and end-user training. To confirm their suitability, the Contractor shall provide a concise description of their methodology and past practical approaches in software projects.	PASS/FAIL
4	7.2 e)	Confirmation that the staff turnover has been below 20% per year over the past three (3) years.	PASS/FAIL
5	7.2 f)	Confirmation of a warranty period of two (2) years after the completion of the user acceptance testing. Terms and conditions of post-warranty support and bug fixes should be available and clearly specified.	PASS/FAIL
6	7.2 g)	Confirmation that the Contractor adjusts the working hours of the assigned Team for a sprint meeting that overlaps at least two hours with the Commission's working hours (9 a.m. to 5 p.m. CET/CEST).	PASS/FAIL
		Requirement for the Contractor's Personnel on the team level (PASS /FAIL)	PASS/FAIL
	7.3 a)	Advanced university degree in Physics, Mathematics, Computer Science or Software Engineering, or a related scientific/ technical subject.	PASS/FAIL
	7.3 b)	Excellent communication skills in English are essential. Please provide confirmation for each key personnel.	PASS/FAIL

Only bidders who pass all above criteria will be considered for the point system evaluation (2nd stage)

No.	Ref No. in TOR	2. TECHNICAL REQUIREMENTS - EVALUATION CRITERIA AND METHOD	Points		
			Max Points	Factor	Weighted score
		Quality of the Proposal			
1	1 - 7	The extent to which all aspects of the ToR have been addressed in sufficient detail and clarity.	5	4	20
2	4	Understanding of the scope of work and the responsibilities of the Contractor	5	10	50
3	7	The extent to which the Risk Management Plan has been prepared in sufficient detail and clarity.	5	2	10
		Subtotal	15		80
		Requirements for the Contractor			
4	7.2 a)	The Contractor must have extensive experience in developing web-based (scientific) visualization software of similar complexity for geo-spatial data under Linux. A list of a minimum of four (4) software projects of this kind proving such experience shall be provided, as defined in Section 7.1.3.	5	10	50
		Subtotal	5		50
		Requirements for the Contractor's Personnel on the team level			
5	7.3 c)	Extensive experience, with a minimum of three (3) projects, in designing web-based GUIs for (scientific) visualization software and for processing, displaying and analysing geo-spatial data.	5	5	25
6	7.3 d)	Extensive experience, with a minimum of two (2) projects, with open-source software for processing and converting vector and raster geo-spatial formats. Experience with rasterio is an advantage.	5	3	15
7	7.3 e)	Extensive experience, with a minimum of two (2) projects in the last five (5) years, in using Python with numpy, pandas and Xarray.	5	4	20
8	7.3 f)	Extensive experience, with a minimum of two (2) projects in the last five (5) years, with Javascript web development frameworks, specifically React and TypeScript. Experience with Deckgl and OpenLayers is a plus.	5	4	20
9	7.3 g)	Extensive experience, with a minimum of two (2) projects in the last five (5) years, configuring, running and developing Mapserver applications (https://mapserver.org/). Understanding and experience with using MapServer in a scalable containerized environment is an advantage.	5	3	15
10	7.3 h)	Extensive experience, with a minimum of two (2) projects in the last five (5) years, developing and deploying complex Kubernetes projects, using Terraform and Helm. Experience with Microsoft Azure is a plus.	5	3	15
		Subtotal	30		110
		TOTAL - Technical Evaluation	50		240

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: The technical proposals that have passed stage 1 of the technical evaluation process, will be evaluated against the weighted criteria set forth in the evaluation matrix above.

In order to pass this stage, bidders must obtain minimum **30 points** and a **score** of at least **148** and in accordance with the scoring table indicated

TABLE 2

Points	Explanation - to be considered when assigneing the points
0	Unsatisfactory - Response incomplete, inadequate and/or non-responsive to the criterion. Bidder does not clearly understand the criterion.
1 - 2	Does not meet the minimum technical, functional, or performance related criterion.
3	Meets the criterion
4	Exceeds the criterion is most areas.
5	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, subject to contractual acceptability.

The Contract will be awarded to the bidder who receives the highest combined score resulting from the technical and financial evaluations, subject to contractual acceptability.

ATTACHMENT 3
Price Schedule Form

DEVELOPMENT AND MAINTENANCE OF THE WEB-CONNECTED GRAPHICS ENGINE (WEB-GRAPE).

Description (ToR): Tasks under Section 3 (Scope of Work)	Unit	QTY	FIRM	Optional	
			Initial Call-off period 36 months or Max. 1500 person days. Unit Price	1st Optional Extension 12 months or Max. 500 days Unit price	2nd Optional Extension 12 months or Max. 500 days Unit Price
Off-site Rate: Max. Est. 460 person-days per year	Person/Day	1			
On-site Rate Max. Est. 40 person days per year (excluding Travel Cost).	Person/Day	1			
Travel Cost:			Unit Price	Unit Price	Unit Price
(i) Return Ticket (RT)=Trip per person. Max. est No. of trips: 2 trips x 2 persons= 4 RTs per year	RT/Trip	1			
(ii) DSA (Daily Subsistence Allowance) per On-site working day: 40 days per year	Day	1	Do not quote for DSA -Please see below notes	Do not quote for DSA - Please see below notes	Do not quote for DSA -Please see below notes

NB:

- 1) Please specify currency (**USD or Euro only**). The rates shall be firm and fixed throughout the term of the Contract.
- 2) This is a unit-based Contract. The exact number of working days will be determined/called-off in the form of Work Orders (WOs) at the rates quoted in this Attachment.
- 3) The person-days noted are an upper limit, and the Commission reserves the right, at its sole discretion, to call-off fewer person-days or no person-days at all.
- 4) For evaluation purposes, bidders shall provide the cost of return ticket.**
- 5) Bidders shall not quote for Daily Subsistence Allowance (DSA), it shall be calculated and paid based on the values provided by the International Civil Service Commission (ICSC) and available in their website (as applicable at the time of issuing the work order (WO)).

Attachment 3

“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 (labeling 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 offer 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.

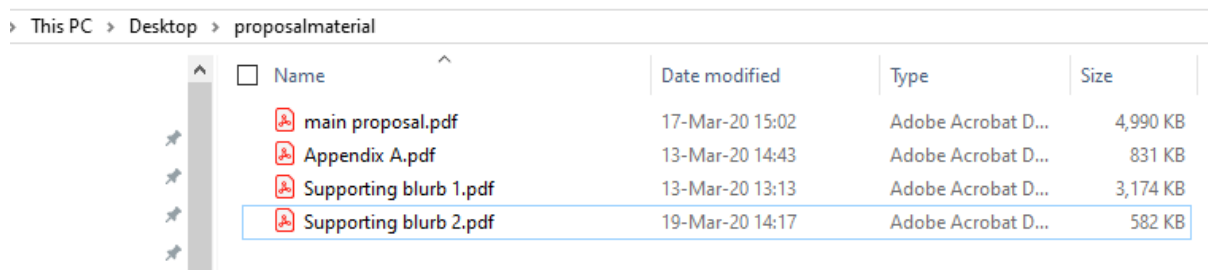


Figure 1 An example set of files to be submitted

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 filename, 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.

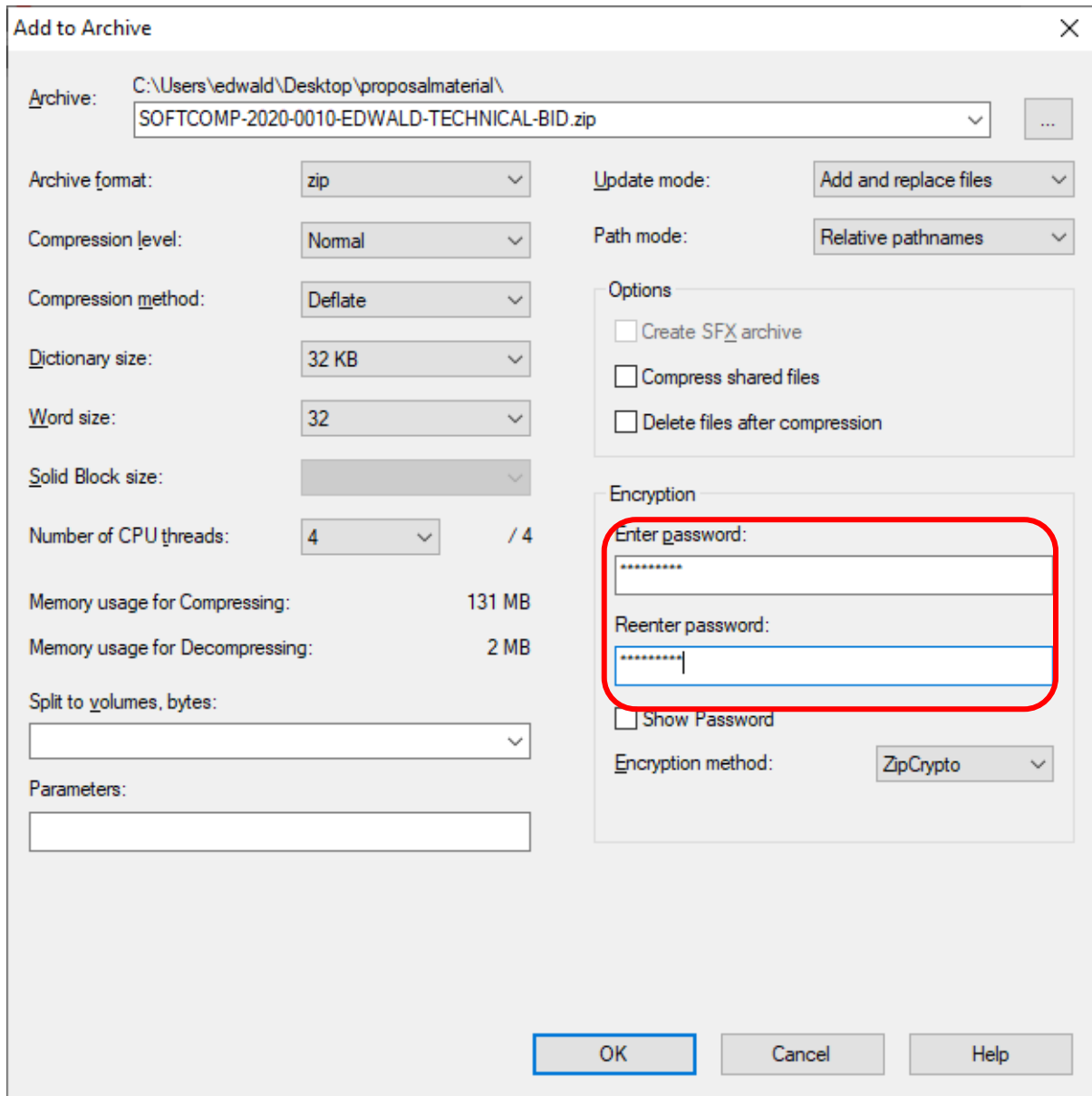


Figure 2 Creating an Archive

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.)

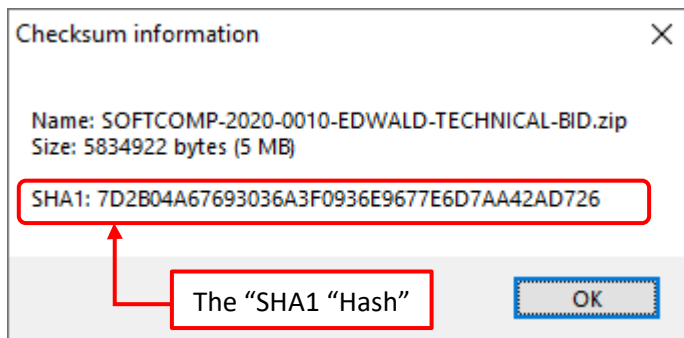


Figure 3 SHA1

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.

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

MODEL CONTRACT No. 2024-xxxx

(SAP No.xxxxxxxxxx)

between

THE PREPARATORY COMMISSION

FOR THE COMPREHENSIVE NUCLEAR-TEST-BAN TREATY

ORGANIZATION

and

CONTRACTOR NAME

for

the provision of services pertaining to

**DEVELOPMENT AND MAINTENANCE
OF THE WEB-CONNECTED GRAPHICS ENGINE (WEB-GRAPE)**

This Contract comprises this cover page, a table of contents, 9 (nine) pages of text, a signatories page, a List of Annexes and 3 (three) Annexes (A to C)

August 2024

TABLE OF CONTENTS

1	DEFINITIONS	3
2	AIM OF THE CONTRACT.....	2
3	ENTRY INTO FORCE AND DURATION OF THE CONTRACT.....	4
4	COMMENCEMENT AND COMPLETION OF THE WORK.....	4
5	STANDARD OF WORK.....	4
6	RESPONSIBILITIES OF THE CONTRACTOR.....	4
7	ORGANISATION OF CONTRACT IMPLEMENTATION.....	5
8	WARRANTY.....	5
9	PERMITS, NOTICES, LAWS AND ORDINANCES.....	5
10	PROTECTION OF PERSONS AND PROPERTY	5
11	RESPONSIBILITIES OF THE COMMISSION	6
12	CONTRACT PRICE	6
13	PAYMENT	7
14	TEMPORARY SUSPENSION OF WORK.....	8
15	DELAYS AND EXTENSION OF TIME	8
16	CONTRACTOR'S CLAIMS AND REMEDIES.....	8
17	ENTIRE AGREEMENT	9
18	DISCREPANCIES.....	9
19	SEVERABILITY	9
20	NO WAIVER.....	9
21	CONTRACT AMENDMENT	9
22	TRANSMISSION OF NOTICES AND OTHER DOCUMENTS.....	9
23	EFFECTIVENESS.....	10
24	SOFTWARE LICENCE.....	11
	SIGNATORIES PAGE.....	12
	LIST OF ANNEXES.....	13

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 to provide services namely, for the provision of *Development and Maintenance of the Web-Connected Graphics Engine (WEB-GRAPE)* (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 Work in the form of WO within a period of thirty-six (36) months from the Effective Date or the performance of a maximum of 1500 person-days by the Contractor, whichever occurs first (hereinafter referred to as the “**Call-off Period**”). The commencement and completion date for the performance of the Work (hereinafter referred to as “**Commencement Date**” and “**Completion Date**”, respectively) will be set out in the respective WO.
- (ii) The Commission shall have the option to extend the Call-off Period (2) two times, each extension of twelve (12) months or the performance of a maximum of 500 person-days by the Contractor, whichever would occur first subject to the availability of funds, under the same terms and conditions as those of this Contract. 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 extensions will be implemented through a written notification to the Contractor by the Commission.

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 and Annex C.
- (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.

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. 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 28 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 subcontractors 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 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 firm Call-off Period specified in Clause 4(i) above, the firm fixed labor rates/fees set out in Annex C;
- (ii) subject to sub-clause (b) below, for each WO issued during the optional extension of the Call-off Period specified in Clause 4(ii) above, the firm fixed labor rates/fees set out Annex C for the relevant extension period;
- (iii) per diem charges (DSA), which cover lodging, meals and incidental travel expenses, based on the United Nations Daily Subsistence Allowance (UN DSA) rates effective at the time of the respective travel (the WO, will include the UN DSA rates applicable at the time of issuance of the WO), unless agreed otherwise by the Commission in the relevant WO;
- (iv) the actual incurred travel costs, excluding DSA, on the basis of simple economy return tickets for the most direct route, and payment by the Commission not to exceed the estimated travel costs in the relevant WO by more than 10%;

(hereinafter referred to as the “**Contract Price**”).

- (b) In the event that the Commission decides to extend the Call-off Period earlier than the end of the initial Call-off period, as foreseen in Clause 4 of this Contract, the Contactor will be paid for the person-days called off in this period as follows:
 - (i) until the expiry of the initial Call-off Period, the 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 (subparagraph (a)(ii)), as applicable.
- (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 any WO 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:

*Chief, Procurement 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 invoices related enquiries:

Payments@ctbto.org

(b) The Contractor:

For Contractual Issues and Invoices and Related Enquiries:

Name:

Position

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. 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

DEVELOPMENT AND MAINTENANCE OF THE WEB-CONNECTED GRAPHICS ENGINE (WEB-GRAPE**)**

1	INTRODUCTION	3
2	BACKGROUND & OBJECTIVES	4
3	SCOPE OF WORK	7
3.1	Objectives.....	7
3.2	Requested services.....	7
3.2.1	<i>Familiarization</i>	<i>7</i>
3.2.2	<i>Operational 3rd-level support.....</i>	<i>7</i>
3.2.3	<i>Selection of sample tasks to add functionalities.....</i>	<i>8</i>
3.2.4	<i>Selection of sample tasks to enhance functionalities</i>	<i>8</i>
3.2.5	<i>Selection of sample tasks for technical enhancements.....</i>	<i>8</i>
3.3	Output and deliverables	9
4	ORGANIZATION OF WORK	10
4.1	WO Project call-off.....	10
4.1.1	<i>Initiating Work.....</i>	<i>10</i>
4.1.2	<i>Completion and Acceptance.....</i>	<i>10</i>
5	WORK LOCATION AND TIMEFRAME	11
5.1	Location of performance	11
5.2	Timeframe	11
6	RESOURCES PROVIDED BY THE COMMISSION	12
7	REQUIREMENTS FOR THE CONTRACTOR	13
7.1	Contractor’s responsibilities	13
7.1.1	<i>Constitution of the Contractor’s key personnel</i>	<i>14</i>
7.1.2	<i>Maintenance of the key personnel; conditions of amendment</i>	<i>14</i>
7.1.3	<i>Level of detail for (software) project description</i>	<i>15</i>
7.2	Contractor’s requirements.....	15
7.3	Contractor’s key-personnel requirements.....	16
8	RISK MANAGEMENT	18

1 INTRODUCTION

The Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organisation (hereafter referred to as the Commission), located in Vienna, Austria, is the international organization establishing the global verification system under the provisions of the Comprehensive Nuclear-Test-Ban Treaty (CTBT), which bans any nuclear explosion below or above the Earth's surface, underwater and on the surface of the water or in the atmosphere. The verification system includes the International Monitoring System (IMS), a global network of monitoring stations that employ waveform technologies (seismic, hydro-acoustic and infrasound) and radionuclide technologies (particulate and noble gases), a global satellite communications infrastructure (the GCI), an International Data Centre (IDC), and the capability to carry out on-site inspections (OSI).

The IDC supports the verification responsibilities of the Commission by providing data products and services for effective global monitoring. The IDC collects and analyses data from the IMS network to detect and locate possible nuclear events. The data are automatically processed by computer algorithms and then interactively analysed and reviewed by human analysts. Near-real-time data and data products/bulletins are distributed by CTBTO's Preparatory Technical Secretariat (PTS) to the State Signatories.

More information on CTBTO is available at www.ctbto.org.

2 BACKGROUND & OBJECTIVES

The aim of the radionuclide (RN) stations is to monitor the distribution of radioactive aerosols and radioactive noble gases in the atmosphere globally. In its final state, the radionuclide network comprises 80 stations that automatically send data to the IDC. Each station has multiple measurements per day (so-called samples), the number of which varies depending on the measurement system. Atmospheric transport modelling (ATM) supports the analysis of source or receptor locations of radionuclides by tracing the travel paths of radionuclides backwards or forward in time through the atmosphere.

The operational ATM system developed and used at the CTBTO produces Source-Receptor Sensitivity (SRS) fields for each RN station and sample measurement. They specify the location of the air masses prior to their arrival at any radionuclide station of the IMS network. Each SRS field is a matrix containing values indicating the transported dilution factors of an initial tracer concentration by means of meteorological data for a specific period. Calculating the SRS fields with ATM requires the use of meteorological data. The IDC uses the data from the European Centre for Medium-Range Weather Forecasts (ECMWF) and the National Centres for Environmental Prediction (NCEP). The SRS result is based on a backward simulation (from an initial to an earlier time) and aims to reveal a source region from which one or more potential radionuclide releases related to detections at RN stations might have originated. ATM simulations from an initial to a later time, on the other hand, the so-called forward mode, also produces an SRS field that is defined as a ‘plume’. It can be used to enhance RN monitoring satisfactorily when there is knowledge of a potential source location by forecasting where the plume heads and which IMS station might be affected the days following an event. SRS fields are stored as ASCII files, including the information about coordinates (latitude, longitude), time step and SRS values. Meteorological data are stored in GRIB ("General Regularly distributed Information in Binary form", a WMO (World Meteorological Organisation) data format) and NetCDF (Network Common Data Format) data formats, while the ATM results are stored in binary files.

For visualising the ATM output and its derived advanced products (specific algorithms applied to SRS data), the IDC has designed and developed the Web-connected Graphics engine software: **Web-Grape**. The Commission uses Web-Grape for its own analyses but also provides Web-Grape to the Member States of the CTBT allowing them to perform their verification tasks. The original Web-Grape, formerly known as Web-Grape Desktop, was developed in IDL, the Interactive Data Language.

	2003	2004	2014	2017	2020	2022	2023	2024
WEB-GRAPe Desktop (IDL* based)	WEB-GRAPe Desktop initiated	WEB-GRAPe Desktop deployed	Enhancements v.1.7.6	Enhancements v.1.8.2	<i>Last upgrade to version 1.8.6 (end of development)</i>	In use (NDC-in-a-box)	In use (NDC-in-a-box)	In use (NDC-in-a-box)
WEB-GRAPe IBS** (Python/JS)			WEB-GRAPe IBS initiated	WEB-GRAPe IBS deployed	Enhancements V2.0	Enhancements V3.1.4	Enhancements V3.1.9	Enhancements V3.2.2
WEB-GRAPe Desktop (Python/JS)						Initiated new Desktop version	WEB-GRAPe Desktop deployed (Dec. 2023)	Enhancements V3.2.2

Figure 1 – Twenty years of Web-Grape development. (* Interactive Data Language; ** Internet-based Services.)

Since IDL comes with a license, users have encountered limitations because of the high costs involved with such a license. Due to the requirement of making all software accessible to its member states, software developed at the CTBTO nowadays has to be fully open-source.

To give users easier access to Web-Grape, the Commission has developed an internet-based version (Web-Grape IBS), which allows visualization of the SRS fields interactively on a website using SRS files on PTS-based servers without the need for downloading data. Due to the request to have an additional, local, open-source version to apply more computationally demanding tasks, a new desktop branch was developed. The software architecture was designed in a way so that the same Python APIs are used in both versions, the IBS and Desktop. This enables us to minimize new product development and maintenance. We intend to keep this approach and expand on it.

The Terms of Reference (ToR) herein pertain to the new Web-Grape IBS architecture, whereas the IDL version is mentioned as a reference for previously developed functionalities that might be transferred in the future. Where appropriate, the online version is annotated as “Web-Grape IBS”, the new desktop version based on the same software architecture as “Web-Grape Desktop”, while “Web-Grape Desktop (IDL)” is used for the old Web-Grape Desktop version based on IDL. A timeline is shown in Figure 1.

The Web-Grape Desktop application is built using Electron. The "front-end" part uses React and Typescript Javascript open-source libraries. The “back-end” part uses a Node server to call Python APIs. Web-Grape IBS is a containerized application utilizing a microservice architecture that is deployed on a Kubernetes cluster in Microsoft Azure. The required infrastructure to run Web-Grape IBS is defined using Terraform and the Kubernetes cluster topology is defined with Helm. The current server-side implementation of Web-Grape IBS version is built on open-source components, including Mapserver, Nginx web server and the Django web framework.

With both Web-Grape Desktop versions (old IDL-based or new Python/JS engine-based), SRS files need to be downloaded from a server, which is managed through the application, reducing the time and potential errors.

Both Web-Grape IBS and Web-Grape Desktop currently have fewer functionalities than Web-Grape Desktop (IDL) (see Figure 2), while Web-Grape Desktop still has fewer functionalities than Web-Grape IBS. Figure 2 shows the status of the new Web-Grapes compared to Web-Grape Desktop (IDL).

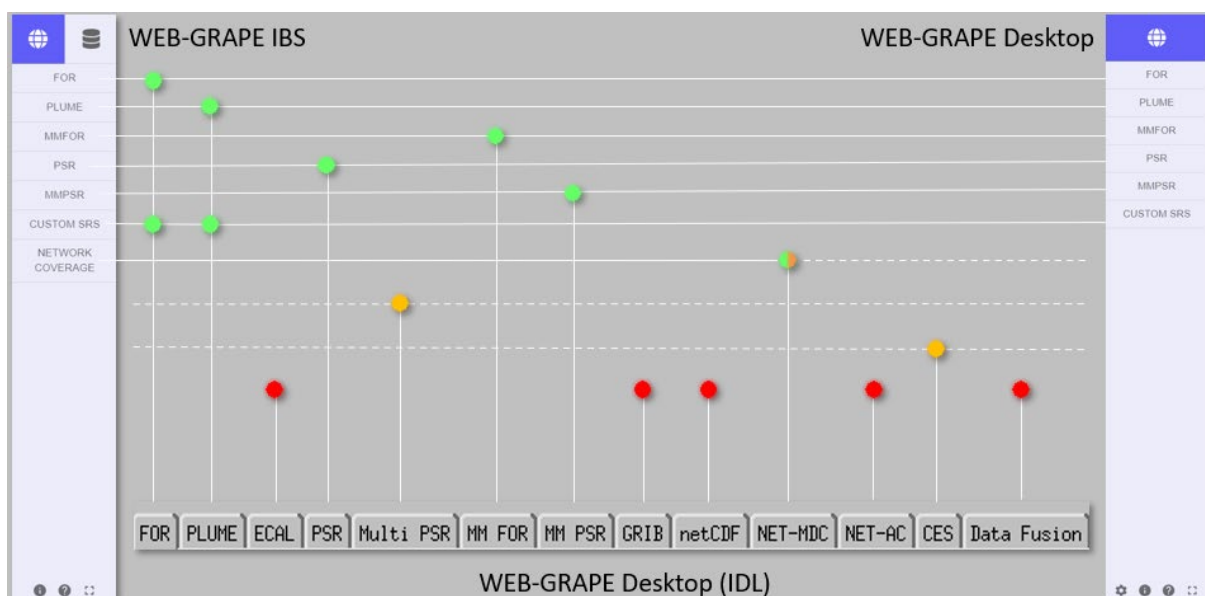


Figure 2 – Combined schematic connecting the functionalities (FOR, PSR, etc.) of the three Web-Grapes: differences and outlook. Green is current (April 2024), orange is to be implemented in the new versions whereas red is not. Section 3.2 discusses functionalities to be added shown here and functionalities not shown here (i.e., not available in Web-Grape (IDL)). A connecting solid white line means available in the two new versions

enhance by a green coloured dot. A dotted white line combined with an orange dot refers to a to-be-added functionality.

The following Section 3 describes the Scope of Work with examples of functionalities that either need to be enhanced or added for Web-Grape IBS and Web-Grape Desktop. Since these are examples, this list might be progressively extended during the Contract with functionalities and enhancements the Commission sees fit. Please note that all new functionalities should fit in the existing architecture, exposing an API that can be called exactly the same way from the Node server in Web-Grape Desktop and from the React client in Web-Grape IBS. The Contractor is encouraged to describe and explain how this will be achieved.

3 SCOPE OF WORK

This section describes the scope of work under the Contract.

At the time when the work is called off (see Section 4 for the Organization of Work), the detailed scope of the Services shall be defined.

3.1 Objectives

The Commission seeks to establish a Call-Off Contract under these Terms of Reference (hereinafter referred to as “ToR”). The ToR forms the technical framework for supplying software engineering and architecture design services for the maintenance and development of Web-Grape IBS and of Web-Grape Desktop (IBS-based) related to the objectives outlined in Section 2.

The Contractor shall support the Commission in the Services defined under Section 3.2.

3.2 Requested services

The Commission seeks to develop, enhance and maintain the two Web-Grape versions, “IBS” and “Desktop”, over the course of this Contract. This section contains a non-exhausted list of requested Services for Web-Grape, which should be considered as examples of tasks for the Work under this Contract.

As the work progresses and new requirements may evolve, the Commission shall ask for any other task (not already listed in the below “Selection of tasks”) necessary to improve and enhance the Web-Grape software. This would include adding new derived products from raw data, upgrading and maintaining the existing software components or proposing improvements for already existing implementations.

For every significant change or requirement to the software, the Contractor shall deliver an updated Software Requirements Document (SRD) and/or Software Architecture Document (SAD) to be approved by the Commission. The requirements shall be high-level and documented as use cases, with the architecturally significant use cases elaborated more fully. The documents shall include justification why the recommended solution is the most suitable one for the Commission.

The Contractor shall be required to perform any other duties as assigned by the PTS.

3.2.1 Familiarization

Should the Contractor not be familiar with Web-Grape (either IBS or Desktop versions), it shall interview and work with the staff of the Commission to study and learn about Web-Grape to be able to perform the Services specified in Section 3.2 and propose potential enhancements or suitable additions.

The familiarization is expected to take up to 30 person-days during the first call-off period, depending on the Contractor's prior experience with Web-Grape. CTBTO’s staff will provide all necessary access to the CTBTO’s infrastructure for Web-Grape and the available material for Web-Grape.

3.2.2 Operational 3rd-level support

The Contractor shall provide 3rd-level support for the operational instance of Web-Grape IBS and Web-Grape Desktop. The Contractor shall respond to any issues classified as critical by the Commission (e.g. that concern the operational deployment of WebGrape-IBS and Web-Grape Desktop) within at most one (1) working day.

The Contractor shall write, review, and update software documentation and procedures and enhance workflow status monitoring, logging, and reporting.

3.2.3 Selection of sample tasks to add functionalities

- **Displaying meteorological data**

The visualization of raw meteorological data, such as wind fields, are of high interest in many cases. Reading and processing these data to display them in WebGrape will be a new functionality and requires some knowledge about NetCDF and GRIB formatted data.

- **Sample Association (SA)**

A sample (measurement sample) association functionality allows for linking samples close in time (“sample episodes”) likely related to the same nuclear event. In Web-Grape IBS there is a feature called “Intersection”, which provides for a given backward simulation (SRS file) a list of all facilities - other IMS stations, IPFs (Isotope Production Facilities), or NPPs (Nuclear Power Plants), etc. - together with a time stamp, which intersected the path of the air masses (i.e., were included in the field of regard). Sample Association needs to be implemented and is an extension of this “Intersection” feature. It allows the user to visualize the information as graphs and 2D maps (like PSRs).

- **Expanding the PSR correlation algorithm and their options**

In case of multiple detections at one or more IMS stations, the powerful Possible Source Region (PSR) functionality computes correlation coefficients between the measured and simulated activity concentration values based on the ATM (SRS values), for each grid point in space and time. Both Web-Grape IBS and Web-Grape Desktop have adopted the two algorithms that were implemented in Web-Grape Desktop (IDL) to compute the correlation coefficient: the *Pearson coefficient* and the *Spearman’s rank coefficient*. However, both algorithms include all values, even very small SRS values close to a certain threshold, which is not always wanted by a user. Two additional options for *displaying* the data became available, one for both the Pearson and Spearman’s Rank correlation coefficients and one (separate from the correlation methods) by simply counting the overlapping SRS files for all included samples. These options, allowing a user to have more control over the data, can be expanded upon. The *Kendall rank coefficient* is a statistic showing whether two variables may be regarded to be statistically dependent; this is often used as a test statistic.

The PSR algorithm is generated manually by providing the required input by a user. It is foreseen that a semi-automatic approach will be developed and implemented.

3.2.4 Selection of sample tasks to enhance functionalities

- **Graphical User Interface (GUI)**

The current GUI is based on React and TypeScript. The required changes and enhancements to the GUI will be acquired alongside the development of new functionalities and as we learn about user experiences. For example, requests can be to add more information for the user or to provide a new projection type or colour palette. Additionally, new features to interact with the underlying data or connect to new data sets are possible.

- **Enhancing current algorithms to improve performance**

This could involve an investigation in methods to improve the computational performance or to find a better visualization option to be able to better interpret the results. Some products might also need alternative mathematical solutions to select from.

3.2.5 Selection of sample tasks for technical enhancements

- **Technology Updates and Performance Improvements**

The technology stack of Web-Grape-IBS will need to be kept up to date. This may include adapting to the depreciation of the Docker runtime in an upcoming Kubernetes release as well as other changes and upgrades in the technology stack.

Furthermore, resource utilization of the application needs to be monitored closely and potential performance improvements shall be recognized, proposed and implemented after consultation with the Commission's staff.

- **Improvement of memory management**

Currently, all necessary data are loaded to memory when jobs are processed (in both Web-Grape IBS and Web-Grape Desktop). This becomes more problematic the bigger the jobs and, hence, the required size of data. A job can be understood as loading and visualising the raw data and applying postprocessing measures, like calculating derived products or scaling. Such a job could be to produce and visualise the *Network Coverage* product for a full year, which means processing thousands of files. Smaller jobs, such as visualising two (2) weeks of data, would also benefit from better data and memory management.

The Contractor shall propose, after consulting with the Commission's staff, alternative methods or tools to improve memory management.

- **Reduce I/O traffic to disk**

A typical Web-Grape Desktop request comprises computing polygons in the "back-end" (Python) and saving the results on disk. Afterwards, the "front-end" (Node/Javascript) reads the previously stored file, loads it into memory and renders it eventually. This results in a lot of I/O traffic from and to the disk. While "front-end" and "back-end" tasks are processed on different machines in the Web-Grape IBS version, both tasks are processed on the same machine in Web-Grape Desktop. This is due to the fact that Web-Grape Desktop was derived from the IBS version. The Contractor is required to propose a solution to reduce the I/O traffic for the Web-Grape Desktop version.

3.3 Output and deliverables

The Contractor shall submit a report for each WO, as defined in Section 4.1.2, to the Commission electronically via email and within the first five (5) working days after the WO finished, describing all the activities performed during the preceding WO, including but not limited to:

- A summary of tasks done.
- A summary of problems that have arisen.
- Status of tickets, bug reports, and possible fixes (if applicable).
- Status of all active development tasks.
- Intermediate results if available.
- Status and updated plan for all active development tasks.
- Time spent on each activity worked on (stored in Jira).

All documentation shall adhere to the IDC Software Documentation Standard, which expresses precise requirements for elaborating, reviewing, approving, and using IDC software-related documents. This Standard will be shared with the Contractor at the start of the project. Guidelines and recommendations from this Standard are proposed for the deliverables described in Section 4.1.2.

4 ORGANIZATION OF WORK

The Commission may ask for Services as described in Section 3.2.

4.1 WO Project call-off

The work will be called off in the form of Work Orders (WOs). Each WO shall include the exact scope of work and the required deliverables to be performed and delivered by the Contractor.

4.1.1 Initiating Work

Since the IDC follows the Scrum software development methodology, WOs generally follow Scrum sprints and cover software development services to be performed within approximately four (4) weeks. Therefore, a WO is 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 the case of a WO issued outside of the Scrum framework, the Commission will supply the Contractor with the work to be performed in writing. The Contractor shall respond with an estimate of the number of person-days required to complete the work and the delivery date. After the estimate and delivery date are accepted, the Commission will issue the WO to the Contractor.

The Contractor shall perform the work only after receipt of the WO.

4.1.2 Completion and Acceptance

At the end of a particular WO, the Contractor shall submit to the Commission the deliverables within the period of performance stated in the respective WO. The deliverables may include:

- Updated Software Design Documents.
- Updated Software User Guide.
- Description of how to use the programming interfaces developed under this Contract.
- Updated source code for software and common libraries, including documentation.
- WO Report.

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

5 WORK LOCATION AND TIMEFRAME

5.1 Location of performance

For all tasks, the Contractor's personnel will be expected to work off-site of the premises of the Commission in Vienna, Austria. The Commission will provide the Contractor remote access to the relevant infrastructure in the PTS network. The infrastructure comprises but is not limited to, software, servers, web services, LANs, and databases.

The Contractor may be required to travel to the Headquarters of the Commission in Vienna, Austria for an **on-site** visit, as applicable. A maximum of **two (2) persons per visit twice per year, each lasting up to five (5) days** (forty (40) person-days in total and four (4) travel arrangements per year), to be confirmed with the Contractor. The Commission shall agree upon the on-site days before issuing the WOs. In case on-site work is required at the PTS headquarters in Vienna, Austria, the Commission will provide at its premises a suitable work environment (workspace, meeting rooms for presentations and training, standard stationery, internet connection) to the Contractor's personnel to perform the services under the Contract, as required.

All travel arrangements shall be the Contractor's responsibility if travel is required. The Commission shall reimburse travel costs (other than daily subsistence allowance (DSA) based on the most direct and economical route upon presentation of supporting documents and in accordance with the Contract provisions. Per-diem amounts shall be based on the applicable United Nations DSA rates published by the International Civil Service Commission (ICSC).

5.2 Timeframe

The Commission seeks to establish a **Call-Off** Contract for a period of **three (3) years of 1500 person days and two (2) optional extensions of one (1) year each and 500 person days per extension**. The volume of the services serves only as an indication, and the Commission reserves the right, at its sole discretion, to call-off more, less or no person-days at all. The maximum number of days includes both off-site and on-site work.

The commencement and completion date for the performance of the work (hereinafter referred to as "Commencement Date" and "Completion Date", respectively) will be set out in the respective WO.

6 RESOURCES PROVIDED BY THE COMMISSION

For designated Contractor Personnel the Commission will provide:

1. Remote access (Cisco VPN + SSH) to designated computer systems (servers) and software configuration management (version control).
2. During on-site work: office space for on-site work and standard office supplies, computer hardware and computer software.
3. During on-site work: access to Internet, e-mail, telephone, and facsimile.
4. Physical access to selected areas of the Vienna International Centre; however, strict conditions and limitations on access and use of any accessed code or documentation described above will apply as contained in the Contract. Access will be granted only upon request and approval by the relevant internal bodies.
5. The Commission will make the relevant source code, SRS data and documentation available to the Contractor (e.g. access to CTBTO's GitLab and Jira).
6. The Commission will make qualified staff available to assist and cooperate in responding to information requests from the Contractor to allow the Contractor to carry out the Work.

All other resources are to be provided by the Contractor.

7 REQUIREMENTS FOR THE CONTRACTOR

7.1 Contractor's responsibilities

For off-site work, the Contractor shall provide its own infrastructure, hardware, and software environment necessary to complete its work under the Contract. The Contractor shall communicate with the Commission via video conferencing (preferably MS Teams), electronic mail, or telephone. All costs incurred by the Contractor because of such communication with the Commission for the performance of work under the Contract shall be borne by the Contractor.

Any new technology, framework, software library or program must be open source, as defined by the Open-Source Initiative (OSI). The Contractor shall maintain the software using the CTBTO's own Git/GitLab version control system. All source code releases shall be delivered via this system.

The IDC guidelines for requirements engineering shall form the basis for eliciting and documenting requirements.

The Commission has a change management process that covers reporting and tracking software problems and releases software updates in its Development, Testbed, and Operational environments. An Integrated Ticketing System based on the Jira software supports this change management process. The Contractor personnel shall familiarize themselves with this process and follow it when applying changes and releasing software. The time spent on the tickets must be recorded in Jira by the Contractor's personnel. The Commission's Configuration Change Board shall approve all software and configuration changes.

The Contractor shall deliver a source code through incremental releases according to the Agile software development methodology (preferably Scrum). In particular, the Contractor shall follow the "Release Early, Release Often" (RERO) software development philosophy, which emphasizes the importance of early and frequent releases in creating a tight feedback loop between developers, testers, and users. Each new delivery shall include a description of what changes were made relative to the previous release and a list of files modified by each change.

All source code developed under this Contract shall follow the best practice for Coding Standards (which include industry's standard linters, the required implementation of unit tests, and use of open standards and open-source libraries where possible). The code shall be developed for Kubernetes/Microsoft Azure for Web-Grape IBS and for Windows (11) and Linux (currently RHEL/CentOS 9.x) with a matching version of EPEL (Extra Packages for Enterprise Linux) for Web-Grape Desktop. Any third-party software not already included in the RedHat Enterprise distribution or EPEL must be installed locally with the application software.

The Contractor shall update the respective documentation to reflect changes caused by any upgrade to the software. Software documentation must include a Software User Manual, a Software Design Document and a Software Test Plan. All documentation shall adhere to the IDC Documentation Standards.

Both standards will be made available to the Contractor upon request after the entry into force of the Contract. Existing available open-source solutions may use coding and documentation standards as defined in those projects.

7.1.1 Constitution of the Contractor’s key personnel

In its Proposal, the Contractor shall provide details of key personnel expected to be involved in the off-site work for the Commission. At a minimum, the following information shall be provided for each of these key personnel:

- Name
- Nationality
- Role
- Employed since

(Also specify whether the key personnel are a permanent member or are contracted for the duration of the Contract on an ad-hoc basis.)

- Type(s) of Service(s) from Section 5, which the key personnel will perform.
- Curriculum Vitae

The Contractor shall demonstrate:

- The capability and capacity of the suggested key personnel to tackle the Services described in Section 5.
- The compliance of the suggested key personnel with the requirements set out in Section 7.3.

7.1.2 Maintenance of the key personnel; conditions of amendment

The Contractor shall maintain an up-to-date version of the key personnel (hereinafter called “Team Roster”) for the duration of the Contract. The Contractor shall inform the Commission when personnel is to be removed or added to the Team Roster and if personnel details are modified.

Suppose the Commission estimates that the Team Roster lacks the capacity or capability to perform a specific work within the specified timeframe or quality. In that case, the Contractor shall provide, within five (5) working days after the Commission makes a request, the details of skilled and experienced personnel to be added to the Team roster for consideration by the Commission.

The Commission shall be entitled to confirm whether the proposed Team roster amendment is acceptable.

Before issuing a WO, as described in Section 4.1.1, the Contractor is requested to propose a list of personnel to the Commission working under this WO. The personnel to be proposed shall be selected from the Team Roster.

The Contractor shall ensure that each Team member:

- is dedicated to the project during the contract period (unless otherwise agreed); and
- is not reassigned from the project without the prior written consent of the Commission.

The Contractor shall satisfy the following mandatory requirements when submitting the Proposal:

- An established pre-screening process to identify suitable staff.
- By naming a relevant successful project in the CV, provide reasonable evidence that the proposed Team is appropriately skilled and experienced to carry out the WO.

The Contractor shall satisfy the following mandatory requirements at the start and throughout the Contract:

- Familiarization with IDC’s IT infrastructure and services is required and should be conducted right from the start as part of the first WO.
- Provision of training to address a gap in knowledge identified after a Team member has started their assignment, at no cost to the Commission, upon request by the Commission.
- Adding or replacing poor-performing Team members at no cost to the Commission upon request by the Commission.

The Commission shall be entitled to confirm whether the proposed Team is acceptable.

The Commission reserves the right to seek an immediate replacement for any Team member deemed unsuitable for the assigned tasks as determined by the Commission. If no suitable replacement can be provided by the Contractor, the Commission reserves the right to terminate the assignment of the unsuitable Team member with immediate effect. Continuity of personnel for the full implementation of this Contract is an important consideration. Therefore, the Contractor shall take necessary measures to ensure a seamless transition when taking over the Services and keep changes to personnel assigned to the Commission to a minimum throughout the duration of the Contract.

7.1.3 Level of detail for (software) project description

In case a list of (software) projects is required to prove existing experience, the description of each such project should include the following information:

- 1) Objectives, deliverables and description of the (software) project.
- 2) Release date, duration and approximate man-days of the project.
- 3) Main programming languages/technologies used.
- 4) Development methodologies used.
- 5) If applicable, specific scientific methods/key features used.
- 6) Selected key-personnel involved in the respective project, including their roles and contributions.
- 7) Draw a comparison of the project’s scope and complexity to the requested Services.
- 8) Any kind of (publicly) available reference, such as publications, Git repositories, manuals etc.

To avoid duplication, if a single software project covers multiple items of the requirements list, it is possible to refer to the same software project repeatedly.

7.2 Contractor’s requirements

The Contractor shall satisfy and prove the following mandatory requirements:

- a) The Contractor must have extensive experience in developing web-based (scientific) visualization software of similar complexity for geo-spatial data under Linux. A list of a minimum of four (4) software projects of this kind proving such experience shall be provided, as defined in Section 7.1.3.
 - The Contractor must demonstrate a minimum of two (2) years of prior experience with Agile software development processes.
- b) The Contractor shall provide confirmation of a minimum of one (1) year experience working with modern issue tracking and ticket management systems, preferably Jira.
 - The Contractor shall have a minimum of two (2) years’ hands-on experience with all elements of the software development lifecycle: eliciting and documenting business process flows, use

cases, requirements, quality management plans, user acceptance testing, and end-user training. To confirm their suitability, the Contractor shall provide a concise description of their methodology and past practical approaches in software projects.

- c) Confirmation that the staff turnover has been below 20% per year over the past three (3) years.
- d) Confirmation of a warranty period of two (2) years after the completion of the user acceptance testing. Terms and conditions of post-warranty support and bug fixes should be available and clearly specified.
- e) Confirmation that the Contractor adjusts the working hours of the assigned Team for a sprint meeting that overlaps at least two hours with the Commission's working hours (9 a.m. to 5 p.m. CET/CEST).
 - A monthly sprint meeting is foreseen, but this might change to any time frame as deemed necessary by the Commission.

7.3 Contractor's key-personnel requirements

When selecting the Team, the Contractor shall ensure that the following minimum requirements are met by at least one (1) team member to provide support as part of the Services. The Contractor shall also ensure the continuity of having at least one (1) member meeting the following minimum requirements during the development (for example, when the original one (1) member needs to be replaced). For each minimum requirement, the Contractor shall specify which proposed key personnel cover the requested experience by providing adequate proof appropriately.

Said minimum requirements are:

- a) Advanced university degree in Physics, Mathematics, Computer Science or Software Engineering, or a related scientific/ technical subject.
 - Excellent communication skills in English are essential. Please provide confirmation for each key personnel (providing an international certification for each team member is a plus)

For the following minimum requirements, the Contractor shall provide the verification of experiences in the form of a (list of) previous (software) project(s), meeting the requirements defined in Section 7.1.3. Please be aware that we favour larger projects that are similar in the complexity and scope of the requested Services rather than smaller ones:

- b) Extensive experience, with a minimum of three (3) projects, in designing web-based GUIs for (scientific) visualization software and for processing, displaying and analysing geo-spatial data.
- c) Extensive experience, with a minimum of two (2) projects, with open-source software for processing and converting vector and raster geo-spatial formats. Experience with rasterio is an advantage.
- d) Extensive experience, with a minimum of two (2) projects in the last five (5) years, in using Python with numpy, pandas and Xarray.
- e) Extensive experience, with a minimum of two (2) projects in the last five (5) years, with Javascript web development frameworks, specifically React and TypeScript. Experience with Deckgl and OpenLayers is a plus.
- f) Extensive experience, with a minimum of two (2) projects in the last five (5) years, configuring, running and developing Mapserver applications (<https://mapserver.org/>). Understanding and experience with using MapServer in a scalable containerized environment is an advantage.

- g) Extensive experience, with a minimum of two (2) projects in the last five (5) years, developing and deploying complex Kubernetes projects, using Terraform and Helm. Experience with Microsoft Azure is a plus.

The Team proposed by the Contractor shall, as complementary as possible, fulfil the above minimum requirements (Team coverage of minimum requirements).

8 RISK MANAGEMENT

The Contractor shall provide a business continuity plan and thorough risk assessment plan at the project's commencement to identify potential risks that could impact the successful execution of the outlined software development activities in these Terms of Reference, including contingency plans, as appropriate. 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 dependencies. The risk assessment plan should be consistently updated, aligning with the delivery of project milestones or significant accomplishments.

Upon the project's satisfactory completion, the Contractor is obligated to 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 software development endeavours.

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>