



## Request for Proposals (RFP)

**The provision of engineering services to the CSIR to develop a gas detection imaging system (GasCAM)**

**RFP No. 1006/13/07/2022**

Date of Issue	Wednesday, 29 June 2022	
Closing Date	Wednesday, 13 July 2022 at 16h30	
Place of tender submission	Electronic submission: <a href="mailto:tender@csir.co.za">tender@csir.co.za</a> Mail size is limited to 25MB, if the document exceeds this limit, please send multiple emails. Cloud submissions will not be accepted	
Enquiries	Strategic Procurement Unit	E-mail: <a href="mailto:tender@csir.co.za">tender@csir.co.za</a>
CSIR business hours	08h00 – 16h30	
Category	Professional	

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## **SECTION A – TECHNICAL INFORMATION**

### **1 INTRODUCTION**

The Council for Scientific and Industrial Research (CSIR) is one of the leading scientific research and technology development organisations in Africa. In partnership with national and international research and technology institutions, CSIR undertakes directed and multidisciplinary research and technology innovation that contributes to the improvement of the quality of life of South Africans. The CSIR's main site is in Pretoria while it is represented in other provinces of South Africa through regional offices.

### **2 BACKGROUND**

The Industrial Sensors Impact Area falls under the Manufacturing Cluster in the Division for Advanced Production and Security. The Industrial Systems Research Group has developed a novel electro-optical method and system for facilitating detection of a particular predetermined gas in a scene under observation. The system, called “GasCam”, also comprises a display device configured to display an output image of the gas. The “GasCam” technology is protected by international patent application number PCT/IB2018/057808 entitled: “A Gas Detection System and Method”.

### **3 INVITATION FOR PROPOSAL**

Proposals are hereby invited for the provision of services to the CSIR to support its development of the GasCAM system to advance its progress towards a market-ready product. This will require current knowledge of designing on Intel and/or Xilinx FPGA SoC SoM platforms, in a Linux OS environment as well as experience and skills working with imaging sensors and their associated signal processing requirements.

The bidder must also be the actual person that will be providing the service on site.

### **4 PROPOSAL SPECIFICATION**

All proposals are to be submitted in a format specified in this enquiry. However, tenderers are welcome to submit additional / alternative proposals over and above the originally specified format.

The required engineering services will require substantial as well as recent / up-to-date experience as follows:

- 1) Substantial and recent proficiency with Intel or Xilinx FPGA SoC SoM platforms. Preferably Intel.
- 2) System integration, i.e. the ability to successfully integrate components of the camera system and most especially the following items:
  - a. Optimisation of the power supplies
  - b. Thermal behaviour
  - c. Quality images on displays
  - d. EMI/EMC
  - e. IPXX rating and
  - f. Intrinsic safety

Over and above the basic functioning of the camera, successful functioning of the above-listed items must co-exist in the integrated system.

Skilled in using a schematics and PCB design package, preferably Altium.

- 3) Testing/debugging of the system
  - a. Skilled in analog hardware and high-speed digital hardware debugging
  - b. Skilled in firmware (VHDL) debugging
  - c. Skilled in embedded software debugging (on NIOS soft-core processor in the case of an Intel FPGA solution).

Proficiency with Xilinx and/or Intel FPGAs and FPGA SoC's and their associated development tools, i.e. Vivado and/or Quartus. The Intel and Quartus option would be preferred. Designing and implementing embedded software on a Linux OS in these FPGAs/SoC's.

Skilled in using DDR3/4 with FPGAs and/or FPGA SoC's

- a) FPGA programming
  - Altera (INTEL) devices, Cyclone10, Max10 and Intel FPGA SoC SoMs platforms
  - Using Quartus
  - Using HDL author
  - Fluency in their use, must provide examples of recent and substantial work by the bidder in these fields and at the appropriate level of skill.
- b) Electronic hardware debugging
  - Debugging of high-speed Digital hardware
  - Highly skilled in reading schematics and PCB layouts. Altium was used to generate schematics and PCBs
  - Multilayer PCBs need to be debugged

- Experience with DDR (Double Data Rate) RAM will be an advantage
  - Need to show examples of previous work that was done by the bidder in these fields and at the appropriate level of skill.
- c) Embedded software debugging
- Debugging embedded C-code running on NIOS processor in FPGA, or preferably debugging on an HPS in a Linux OS based environment.

All required hardware and software tools will be provided.

It is expected that points (1), (2) and (3) could take up to 500 hours (circa 5 months) in total and the bid must be for this number of hours. At least 50% a day should be spent on the CSIR project and the requirement on individual days may be greater than this. The engineering consultant needs to be able to come to CSIR Pretoria campus as & when required. Should the bidder have more than one engineer who could simultaneously work on the project tackling points (1), (2) and (3), then this can be an approach to propose, but the total number of combined hours needs to still be 500.

Proposals should include all costs and fees. Proposals should include a CV of the engineer who will be providing the services, which should indicate the relevant qualification and experience information, as well as references. Examples of similar projects completed by the engineer who will be providing the services are to also be included in the proposal. The requirement is for the services of a senior / experienced engineer with direct, hands-on experience of similar system technologies / architectures and this must be explained / motivated in the bid documents.

## 5 FUNCTIONAL EVALUATION CRITERIA

- 5.1 The evaluation of the functional / technical detail of the proposal will be based on the following criteria:

#	Functional/Technical criteria	Weight%
1	Knowledge of a gas imaging platform.	5%
2	Previous successful experience at a senior level on integration of a (camera) system. Especially, good knowledge on integrating: - power supplies,	10%

	<ul style="list-style-type: none"> <li>- thermal behaviour</li> <li>- quality images on displays</li> <li>- EMI/EMC</li> <li>- IPXX rating</li> <li>- intrinsic safety to level Ex ic IIC.</li> </ul>	
<b>3</b>	Substantial and recent skills in FPGA programming (Xilinx and/or Intel FPGAs/SoC devices), preferably Intel. <ul style="list-style-type: none"> <li>- electronic hardware debugging (digital HW with DDR)</li> <li>- embedded software experience in a Linux OS environment</li> </ul>	<b>50%</b>
<b>4</b>	Examples (brief details & references) of substantial and recent FPGA programming (Xilinx and/or Intel FPGAs/SoC devices), electronic hardware debugging (digital HW with DDR) and embedded software projects in a Linux OS environment successfully completed by the consultant.	<b>20%</b>
<b>5</b>	Availability to spend 50% of each working day during the half year on the CSIR project.	<b>10%</b>
<b>6</b>	CV with relevant qualifications and references.	<b>5%</b>
	Total	<b>100%</b>

5.2 Proposals with functionality/technical points of less than the pre-determined minimum overall percentage of 70% will be eliminated from further evaluation.

5.3 Refer to Annexure A for the scoring sheet that will be used to evaluate functionality.

## 6 ELIMINATION CRITERIA

Proposals will be eliminated under the following conditions:

- Submission after the deadline;
- Proposals submitted at incorrect email address
- Incomplete proposal submission
- National Treasury Restricted suppliers

## 7 NATIONAL TREASURY CENTRAL SUPPLIER DATABASE REGISTRATION

Before any negotiations will start with the winning bidder it will be required from the winning bidder to:

- be registered on National Treasury's Central Supplier Database (CSD). Registrations can be completed online at: [www.csd.gov.za](http://www.csd.gov.za);
- provide the CSIR with their CSD registration number; and
- provide the CSIR with a certified copy of their B-BBEE certificate. If no certificate can be provided, no points will be scored during the evaluation process. (RSA suppliers only)

## SECTION B – TERMS AND CONDITIONS

### 8 VENUE FOR PROPOSAL SUBMISSION

All proposals must be submitted at:

- **tender@csir.co.za**
- **All bids must be clearly marked with the bidder's name, and the contents of the email**
- **Emails may be sent in parts if it exceeds 25MB**

### 9 TENDER PROGRAMME

The tender program, as currently envisaged, incorporates the following key dates:

- Issue of tender documents: Wednesday, 29 June 2022
- Last date for submission of queries: Tuesday, 05 June 2022
- Closing / submission Date: Wednesday, 13 July 2022
- Estimate appointment date of successful tenderer: August 2022

### 10 SUBMISSION OF PROPOSALS

10.1 All proposals are to be clearly marked with the RFP number and the name of the tenderer.

Proposals must consist of two parts:

**PART 1:** Technical Proposal: RFP No.: 1006/13/07/2022

**PART 2:** Pricing Proposal, B-BBEE and other Mandatory Documentation:

RFP No.: 1006/13/07/2022

10.2 Proposals submitted by companies must be signed by a person or persons duly authorised.

10.3 The CSIR will award the contract to qualified tenderer(s)' whose proposal is determined to be the most advantageous to the CSIR, taking into consideration the technical (functional) solution, price and B-BBEE.

## 11 DEADLINE FOR SUBMISSION

Proposals shall be submitted at the email address mentioned above no later than the closing date of **Wednesday, 13 July 2022** during CSIR's business hours. The CSIR business hours are between 08h00 and 16h30.

Where a proposal is not received by the CSIR by the due date and stipulated place, it will be regarded as a late tender. Late tenders will not be considered.

## 12 AWARDING OF TENDERS

12.1 Awarding of tenders will be published on the National Treasury e-tender portal or the CSIR's tender website. No regret letters will be sent out.

## 13 EVALUATION PROCESS

### 13.1 Evaluation of proposals

All proposals will be evaluated by an evaluation team for functionality, price and B-BBEE. Based on the results of the evaluation process and upon successful negotiations, the CSIR will approve the awarding of the contract to successful tenderers.

A two-phase evaluation process will be followed.

- The first phase includes evaluation of **elimination** and **functionality criteria**.
- The second phase includes the evaluation of **price** and **B-BBEE** status.

Pricing Proposals will only be considered after functionality phase has been adjudicated and accepted. Only proposals that achieved the specified minimum qualification scores for functionality will be evaluated further using the preference points system.

### 13.2 Preference points system

The 80/20 preference point system will be used where 80 points will be dedicated to price and 20 points to B-BBEE status. If all tenders received are more than R50m, the proposal will be cancelled and re-issued.

## 14 PRICING PROPOSAL

- 14.1 Pricing proposal must be cross-referenced to the sections in the Technical Proposal. Any options offered must be clearly labelled. Separate pricing must be provided for each option offered to ensure that pricing comparisons are clear and unambiguous.
- 14.2 Price needs to be provided in South African Rand (excl. VAT), with details on price elements that are subject to escalation and exchange rate fluctuations clearly indicated.
- 14.3 Price should include additional cost elements such as freight, insurance until acceptance, duty where applicable.
- 14.4 Only firm prices\* will be accepted during the tender validity period. Non-firm prices\*\* (including prices subject to rates of exchange variations) will not be considered.

*\*Firm price is the price that is only subject to adjustments in accordance with the actual increase or decrease resulting from the change, imposition, or abolition of customs or excise duty and any other duty, levy, or tax which, in terms of a law or regulation is binding on the contractor and demonstrably has an influence on the price of any supplies, or the rendering costs of any service, for the execution of the contract;*

*\*\*Non-firm price is all prices other than "firm" prices.*

- 14.5 Payment will be according to the CSIR Payment Terms and Conditions.

## 15 VALIDITY PERIOD OF PROPOSAL

Each **proposal** shall be valid for a minimum period of three (3) months calculated from the closing date.

## 16 APPOINTMENT OF SERVICE PROVIDER

- 16.1 The contract will be awarded to the tenderer who scores the highest total number of points during the evaluation process, except where the law permits otherwise.
- 16.2 Appointment as a successful service provider shall be subject to the parties agreeing to mutually acceptable contractual terms and conditions. In the event of the parties failing to reach such agreement CSIR reserves the right to appoint an alternative supplier.
- 16.3 Awarding of contracts will be announced on the National Treasury website and no regret letters will be sent to unsuccessful bidders.

## 17 ENQUIRIES AND CONTACT WITH THE CSIR

Any enquiry regarding this RFP shall be submitted in writing to CSIR at tender@csir.co.za with ***“RFP No 1006/13/07/2022 - The provision of engineering services to the CSIR to develop a gas detection imaging system GasCAM”*** as the subject. Any other contact with CSIR personnel involved in this tender is not permitted during the RFP process other than as required through existing service arrangements or as requested by the CSIR as part of the RFP process.

## 18 MEDIUM OF COMMUNICATION

All documentation submitted in response to this RFP must be in English.

## 19 COST OF PROPOSAL

Tenderers are expected to fully acquaint themselves with the conditions, requirements and specifications of this RFP before submitting proposals. Each tenderer assumes all risks for resource commitment and expenses, direct or indirect, of proposal preparation and participation throughout the RFP process. The CSIR is not responsible directly or indirectly for any costs incurred by tenderers.

## **20 CORRECTNESS OF RESPONSES**

- 20.1 The tenderer must confirm satisfaction regarding the correctness and validity of their proposal and that all prices and rates quoted cover all the work/items specified in the RFP. The prices and rates quoted must cover all obligations under any resulting contract.
- 20.2 The tenderer accepts that any mistakes regarding prices and calculations will be at their own risk.

## **21 VERIFICATION OF DOCUMENTS**

- 21.1 Tenderers should check the numbers of the pages to satisfy themselves that none are missing or duplicated. No liability will be accepted by the CSIR in regard to anything arising from the fact that pages are missing or duplicated.
- 21.2 Pricing schedule and B-BBEE credentials should be submitted with the proposal, but as a separate document and no such information should be available in the technical proposal.

## **22 SUB-CONTRACTING**

- 22.1 A tenderer will not be awarded points for B-BBEE status level if it is indicated in the tender documents that such a tenderer intends sub-contracting more than **25%** of the value of the contract to any other enterprise that does not qualify for at least the points that such a tenderer qualifies for, unless the intended sub-contractor is an exempted micro enterprise that has the capability and ability to execute the sub-contract.
- 22.2 A tenderer awarded a contract may not sub-contract more than **25%** of the value of the contract to any other enterprise that does not have an equal or higher B-BBEE status level than the person concerned, unless the contract is sub-contracted to an exempted micro enterprise that has the capability and ability to execute the sub-contract.

## **23 ENGAGEMENT OF CONSULTANTS**

The consultants will only be remunerated at the rates:

- 23.1 Determined in the "Guideline for fees", issued by the South African Institute of Chartered Accountants (SAICA); or
- 23.2 Set out in the "Guide on Hourly Fee Rates for Consultants", by the Department of Public Service and Administration (DPSA); or
- 23.3 Prescribed by the body - regulating the profession of the consultant.

## **24 TRAVEL EXPENSES**

- 24.1 All travel expenses for the CSIR's account, be it directly via the CSIR's travel agent or indirectly via re-imbursements, must be in line with the CSIR's travel policy. The following will apply:
- 24.1.1 Only economy class tickets will be used.
- 24.1.2 A maximum of R1400 per night for accommodation, dinner, breakfast and parking will be allowed.
- 24.1.3 No car rentals of more than a Group B will be accommodated.

## **25 ADDITIONAL TERMS AND CONDITIONS**

- 25.1 A tenderer shall not assume that information and/or documents supplied to CSIR, at any time prior to this request, are still available to CSIR, and shall consequently not make any reference to such information document in its response to this request.
- 25.2 Copies of any affiliations, memberships and/or accreditations that support your submission must be included in the tender.
- 25.3 In case of proposal from a joint venture, the following must be submitted together with the proposal:
- Joint venture Agreement including split of work signed by both parties;
  - The original or certified copy of the B-BBEE certificate of the joint venture;
  - The Tax Clearance Certificate of each joint venture member;
  - Proof of ownership/shareholder certificates/copies; and
  - Company registration certificates.
- 25.4 An omission to disclose material information, a factual inaccuracy, and/or a misrepresentation of fact may result in the disqualification of a tender, or cancellation of any subsequent contract.

25.5 Failure to comply with any of the terms and conditions as set out in this document will invalidate the Proposal.

## **26 CSIR RESERVES THE RIGHT TO**

- 26.1 Extend the closing date;
- 26.2 Verify any information contained in a proposal;
- 26.3 Request documentary proof regarding any tendering issue;
- 26.4 Give preference to locally manufactured goods;
- 26.5 Appoint one or more service providers, separately or jointly (whether or not they submitted a joint proposal);
- 26.6 Award this RFP as a whole or in part;
- 26.7 Cancel or withdraw this RFP as a whole or in part.
- 26.8 Use less than the total requested 500 hours depending on project needs.

## **27 DISCLAIMER**

This RFP is a request for proposals only and not an offer document. Answers to this RFP must not be construed as acceptance of an offer or imply the existence of a contract between the parties. By submission of its proposal, tenderers shall be deemed to have satisfied themselves with and to have accepted all Terms & Conditions of this RFP. The CSIR makes no representation, warranty, assurance, guarantee or endorsements to tenderer concerning the RFP, whether with regard to its accuracy, completeness or otherwise and the CSIR shall have no liability towards the tenderer or any other party in connection therewith.

## DECLARATION BY TENDERER

**Only tenderers who completed the declaration below will be considered for evaluation.**

**RFP No:** .....

I hereby undertake to render services described in the attached tendering documents to CSIR in accordance with the requirements and task directives / proposal specifications stipulated in RFP No..... at the price/s quoted. My offer/s remains binding upon me and open for acceptance by the CSIR during the validity period indicated and calculated from the closing date of the proposal.

I confirm that I am satisfied with regards to the correctness and validity of my proposal; that the price(s) and rate(s) quoted cover all the services specified in the proposal documents; that the price(s) and rate(s) cover all my obligations and I accept that any mistakes regarding price(s) and rate(s) and calculations will be at my own risk.

I accept full responsibility for the proper execution and fulfilment of all obligations and conditions devolving on me under this proposal as the principal liable for the due fulfilment of this proposal.

I declare that I have no participation in any collusive practices with any tenderer or any other person regarding this or any other proposal.

I accept that the CSIR may take appropriate actions, deemed necessary, should there be a conflict of interest or if this declaration proves to be false.

I confirm that I am duly authorised to sign this proposal.

NAME (PRINT) .....  
CAPACITY .....  
SIGNATURE .....  
NAME OF FIRM .....  
DATE .....

WITNESSES	
1	.....
2	.....
DATE: .....	

**28 ANNEXURE A**

#	Functional/Technical criteria	Weight%	2	5	10
1	Knowledge of a gas imaging platform.	5%	Has 1 to 3 years of knowledge of a gas imaging platform	Has 4 to 9 years of knowledge of a gas imaging platform	Has 10 years or more of knowledge of a gas imaging platform.
2	<p>Previous successful experience at a senior level on integration of a (camera) system.</p> <p>Good knowledge on integrating:</p> <ul style="list-style-type: none"> <li>- power supplies,</li> <li>- thermal behaviour</li> <li>- quality images on displays</li> <li>- EMI/EMC</li> <li>- IPXX rating</li> <li>- intrinsic safety to level Ex ic IIC.</li> </ul>	10%	The proposal offered presents less than 5 years of knowledge on integrating the various elements listed.	The proposal offered presents between 5 to 9 years of knowledge on integrating the various elements listed.	The proposal offered presents more than 10 years of knowledge on integrating the various elements listed.
3	<p>Recent and substantial skills in developing on an Intel/Xilinx FPGA SoC SoM platform in a Linux OS based environment. Preferably Intel.</p> <ul style="list-style-type: none"> <li>- electronic hardware debugging (digital HW with DDR)</li> <li>- embedded software experience in a Linux OS environment</li> </ul>	50%	Previous experience of less than 5 years of developing on items listed.	Previous experience of between 5 to 9 years of developing on items listed.	10 or more years experience in developing on items listed.
4	<p>Examples (brief details &amp; references) of previous development on an Intel/Xilinx FPGA SoC SoM platform in a Linux OS based environment. Preferably Intel.</p> <ul style="list-style-type: none"> <li>- electronic hardware debugging (digital HW with DDR)</li> <li>- embedded software experience in a Linux OS environment</li> </ul>	20%	Examples of previous FPGA programming (Xilinx and/or Altera/Intel FPGAs/SoC devices).	Examples of previous FPGA programming (Xilinx and/or Altera/Intel FPGAs/SoC devices), electronic hardware debugging (digital HW with DDR) and embedded software projects	Examples of previous FPGA programming (Xilinx and/or Altera/Intel FPGAs/SoC devices), electronic hardware debugging (digital HW with DDR) and embedded software projects in a

					Linux OS environment successfully completed
<b>5</b>	Availability to spend 50% of each working day during the half-year period on the CSIR project.	<b>10%</b>	The proposal offered indicates less than 40% availability.	The proposal offered indicates between 40% and 50% availability.	The proposal offered indicates more than 50% availability.
<b>6</b>	CV with relevant qualifications and references.	<b>5%</b>	Inadequate qualifications to fulfil the requirements of the scope. Personnel assigned to the project have less than 2 references.	Adequate qualifications to fulfil the requirements of the scope. Personnel assigned to the project have 2 to 3 references.	Adequate qualifications to fulfil the requirements of the scope. Personnel assigned to the project have more than 3 references.
	Total	<b>100%</b>			