# Request for Proposals (RFP)

# The supply of a distributed camera platform to the CSIR

# RFP No. 3252/13/12/2018

| Date of Issue | Thursday, 29 November 2018 | |
|---|---|---|
| Compulsory briefing session | Thursday, 6 December 2018 at 14h00 – 15h00 Building 44, Gripen Boardroom | |
| Closing Date | Thursday, 13 December 2018 | |
| Place | Tender box, CSIR Main Reception, Gate 3 ( North Gate) | |
| Enquiries | Strategic Procurement Unit | E-mail: tender@csir.co.za |
| CSIR business hours | 08h00 – 16h30 | |
| Category | Engineering | |

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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.

### 1    BACKGROUND

The CSIR is developing an intelligent visual surveillance system. The increasing need for intelligent visual surveillance in commercial, law enforcement and military applications makes automated visual surveillance systems one of the main current application domains in computer vision.

This project involves the distributed camera platform necessary for the CSIR's intelligent systems to be developed and tested.

### 2    INVITATION FOR PROPOSAL

Proposals are hereby invited for the supply of a distributed camera platform that can receive input from eight cameras. The platform must be built on the latest technology and include all software libraries. The platform must be deployment ready.

### 3    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.

## REQUIREMENTS

- Three computing units with one unit operating as a central unit and the other two as capture units.
- Each capture unit, interfaces to four cameras, with camera data received through ethernet directly into GPU memory.
- The camera feeds from each capture unit are passed from GPU memory through ethernet directly into the central units GPU where all the data is then displayed.
- Each camera can be controlled from the central unit or the capture unit.
- The capture unit can also display the camera feeds received from the cameras connected to it.
- All camera data are time synchronised.
- The cameras are mounted on a single stand such that all eight cameras are within the same plane with adjustable viewing angles.
- Each camera is powered through ethernet.

## FUNCTIONAL SPECIFICATIONS

**Cameras:**
- Colour, c-mount lens, 3.45um pixel pitch, Sony IMX267, 4096x2160, camera equivalent to Blackfly S.
- All lenses connected to the cameras should be equal, the specifications are left to the contractor.
- Support IEEE1588
- Support Power-Over-Ethernet

**Mechanical stand:**
- Stand must support eight cameras in the same plane.
- Standard configuration is for cameras to be mounted in a circle 45°apart.
- Each camera mount to have adjustable azimuth and elevation.
- It must be possible for the stand to be carried by a single person.
- The stand must fit inside a standard car.

**Computing Units:**

- GPUs supporting GPUDirect for video or DirectGMA for video.
- Motherboard to support atleast 16x PCIe link between ethernet card and GPU which will allow successful GPUDirect/DirectGMA implementation.
- Cameras connected and powered through ethernet.
- Camera data synchronised through IEEE1588
- Data throughput of 10FPS for full resolution of cameras.
- Data throughput of 50FPS at reduced resolution.
- Data received directly into GPU memory through ethernet.
- Data send directly out of GPU memory thourh ethernet into central unit GPU.
- Interface equipment (Mouse, Keyboard, Screen)

**Software:**

- C++ Library to control cameras from central unit and capture unit.
- Python Library to control cameras.
- C++ Library to receive captured images into OpenCV from central unit and capture unit.
- Python Library to receive images into numpy.
- GUI to control cameras from central unit and display images.
- GUI to control cameras from capture unit and display images.
- Support Linux 18.04 and Windows 10.
- GPU implementations either Vulcan or OpenCL or CUDA.
- GUI limited to Qt5 implementation.

**DELIVERABLES**

**Systems Engineering Documentation**

- Project timeline.
- System requirements.
- System technical specification.
- System design.
- System diagrams.
- Acceptance test procedure.

- Equipment specifications.

**Distributed Camera Platform**

- A single system as specified by requirements including software demonstrations.
- Source code.

**Software ATP Demonstrations**:

**GUI Demonstration**

- Demonstrate the GUI on the central unit with the complete system.
- Demonstrate the GUI on the capture unit with the complete system.

**Framerate Demonstration**

- Demonstrate system running at full resolution 10FPS all 8 cameras on central unit.
- Demonstrate system running at reduced resolution, 50FPS all 8 cameras on central unit.

**System Timing Delay**

- Demonstrate system delay from camera captured image to display on capture unit.
- Demonstrate system delay from camera captured image to display on central unit.

**System Performance Indicators for each processing unit.**

- Active display of ethernet bandwidth usage as absolute value and percentage.
- Active display of GPU bandwidth usage as absolute value and percentage.
- Active display of GPU processing load as absolute value and percentage.
- Active display of RAM bandwidth usage as absolute value and percentage.
- Active display of CPU processing load as absolute value and percentage.
- Active display of current image latency.

**Using Performance Indicators display performance difference between**

- Using GPUDirect/DirectGMA for PCIe data transfers.
- Using CPU for PCIe data transfers.

## 4   FUNCTIONAL EVALUATION CRITERIA

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

| Evaluation Criteria | Weight | 0 | 5 | 7 | 10 |
|---|---|---|---|---|---|
| Track Record and Experience of **distributed low latency systems**. | 30% | No experience of **distributed low latency systems**. | 3 to 4 years of experience in **distributed low latency systems**. | 5 to 6 years of experience in **distributed low latency systems**. | 7 years and more experience in **distributed low latency systems**. |
| Track Record and Experience **building integrated software**. | 20% | No experience of **building integrated software** | 3 to 4 years of experience in **building integrated software** | 5 to 6 years of experience in **building integrated software** | More than 7 years of experience in **building integrated software** |
| References where **similar systems were successfully delivered**. Provide 4 reference letters. | 50% | No references provided. | 1 reference provided. | 2 – 3 references provided. | 4 or more references provided. |

4.2   Proposals with functionality / technical points of less than the pre-determined minimum overall percentage of 70% and less than 50% on any of the individual criteria will be eliminated from further evaluation.

## 5    ELIMINATION CRITERIA

Proposals will be eliminated under the following conditions:

- Submission after the deadline;

- Failure to meet the functional specification;

- Proposals submitted at incorrect location;

- Non – attendance of the compulsory briefing session;

- Only an EME or QSE of minimum level 1 & 2 B-BBEE suppliers will be considered for this tender.


## 6    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;

- provide the CSIR of 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

### 7    VENUE FOR PROPOSAL SUBMISSION

All proposals must be submitted at:

- **CSIR GATE 03 - Main Reception Area** (in the **Tender box**) at the following address

  Council for Scientific and Industrial Research (CSIR)
  Meiring Naudé Road
  Brummeria
  Pretoria

### 8    TENDER PROGRAMME

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

- Issue of tender documents:        29 November 2018
- Compulsory briefing session :     06 December 2018
- Closing / submission Date:        13 December 2018

### 9    SUBMISSION OF PROPOSALS

9.1    All proposals are to be sealed.  No open proposals will be accepted.

9.2    All proposals are to be clearly marked with the RFP number and the name of the tenderer on the outside of the main package. Proposals must consist of two parts, each of which is placed in a separate sealed package clearly marked:

  **PART 1:** Technical Proposal:

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

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

9.4    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.

## 10   DEADLINE FOR SUBMISSION

Proposals shall be submitted at the address mentioned above no later than the closing date of *Thursday, 13 December 2018* 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.

## 11   AWARDING OF TENDERS

11.1   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.

## 12   EVALUATION PROCESS

### 12.1   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.

### 12.2   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.*

## 13  PRICING PROPOSAL

13.1  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.

13.2  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.

13.3  Price should include additional cost elements such as freight, insurance until acceptance, duty where applicable.

13.4  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.

13.5  Payment will be according to the CSIR Payment Terms and Conditions.

## 14  VALIDITY PERIOD OF PROPOSAL

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

## 15   APPOINTMENT OF SERVICE PROVIDER

15.1   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.

15.2   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.

15.3   Awarding of contracts will be announced on the National Treasury website and no regret letters will be sent to unsuccessful bidders.

## 16   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 3252/13/12/2018 - The supply of a distributed camera platform"*** 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.

## 17   MEDIUM OF COMMUNICATION

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

## 18   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.

## 19  CORRECTNESS OF RESPONSES

19.1  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.

19.2  The tenderer accepts that any mistakes regarding prices and calculations will be at their own risk.

## 20  VERIFICATION OF DOCUMENTS

20.1  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.

20.2  *One hard copy and one electronic copy (CD or USB memory key)* of each proposal must be submitted. In the event of a contradiction between the submitted copies, the hard copy shall take precedence.

20.3  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.

20.4  If a courier service company is being used for delivery of the proposal document, the RFP description must be endorsed on the delivery note/courier packaging to ensure that documents are delivered to the tender box, by the stipulated due date.

## 21  SUB-CONTRACTING

21.1  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.

21.2  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.

## 22  ENGAGEMENT OF CONSULTANTS

The consultants will only be remunerated at the rates:

22.1  Determined in the "Guideline for fees", issued by the South African Institute of Chartered Accountants (SAICA); or

22.2  Set out in the "Guide on Hourly Fee Rates for Consultants", by the Department of Public Service and Administration (DPSA); or

22.3  Prescribed by the body - regulating the profession of the consultant.

## 23  TRAVEL EXPENSES

23.1  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:

23.1.1  Only economy class tickets will be used.

23.1.2  A maximum of R1300 per night for accommodation, dinner, breakfast and parking will be allowed.

23.1.3  No car rentals of more than a Group B will be accommodated.

## 24  ADDITIONAL TERMS AND CONDITIONS

24.1  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.

24.2  Copies of any affiliations, memberships and/or accreditations that support your submission must be included in the tender.

24.3  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.

24.4 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.

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

## 25  CSIR RESERVES THE RIGHT TO

25.1 Extend the closing date;

25.2 Verify any information contained in a proposal;

25.3 Request documentary proof regarding any tendering issue;

25.4 Give preference to locally manufactured goods;

25.5 Appoint one or more service providers, separately or jointly (whether or not they submitted a joint proposal);

25.6 Award this RFP as a whole or in part;

25.7 Cancel or withdraw this RFP as a whole or in part.

## 26  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: 3252/13/12/2018**

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.3252/13/12/2018 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              ………………………………..