

## **Invitation of Expression of Interest (EoI)**

*for*

### **Transfer of Technology (ToT)**

*for*

## **High Accuracy Data Acquisition Device for Breast Cancer Detection and other medical applications (MSBC-DAQ)**

C-DAC Thiruvananthapuram would like to invite competent industrial partners for commercialization of **MSBC-DAQ** through **Transfer of Technology (ToT)**. This product is developed under MeitY funded project. The technology will be transferred on non-exclusive basis.

### **1. Brief about C-DAC**

Centre for Development of Advanced Computing (C-DAC) is the premier R&D organization of the Ministry of Electronics and Information Technology (MeitY), Govt. of India for carrying out R&D in IT, Electronics and associated areas. C-DAC Thiruvananthapuram has been working in application oriented research, design and development for various industrial and customer requirements. Centre has acquired competency, expertise and extensive experience in the areas of Healthcare & Educational Technologies, Control & Instrumentation, Communication Technology, Networking, Power Electronics, Cyber Security, Cyber Forensics, Strategic Technologies, Digital India RISC-V (DIR-V), Software Technologies, Intelligent Transportation Systems (ITS) and Emerging Technologies.

### **2. Brief description about the product/technology/prototype to be transferred**

The following technology is planned for Technology Transfer. More details are provided in enclosed brochure.

**High Accuracy Data Acquisition Device for Breast Cancer Detection and other medical applications (MSBC-DAQ)** is an indigenous, reliable & low cost data acquisition device for thermal sensor based early detection and screening of breast cancer. This device can be used for initial screening of women by health sector before referring potential patients for mammography. The system consists of a data acquisition unit (DAQ) and display interface for GUI, data storage and online analysis. The DAQ unit is interfaced/connected to wearable device\* (a body worn fabric material with thermal sensors) covering the Patient's breasts. No special skills or training is required for operating the device except a minimum knowledge to operate a Laptop/ Tablet PC. This device can be easily used by nurses, health care workers or the patient themselves.

The product shall also be used for other medical applications where thermistor based high accurate data needs to be acquired and represented.

\* ToT for Wearable device is available from Centre for Materials for Electronics Technology (C-MET), Thrissur, Kerala

## Salient Features

- **Data acquisition Unit (DAQ) Specifications (Hardware)**
  - Total number of input channels : 40 Nos. (Expandable up to 60 Nos.)
  - Input :  $10 \pm 1K\Omega$
  - Output :  $25^{\circ}\text{C}$  to  $50^{\circ}\text{C}$
  - Communication Interface : Bluetooth
  - Data acquisition rate :  $\sim 1.5\text{s}$  / channel
  - Monitoring Time/ Patient : 15-30 minutes (minimum time-3 mts)
  - Accuracy :  $\pm 0.01^{\circ}\text{C}$
  - Resolution :  $\pm 0.001^{\circ}\text{C}$
  - Power : 3.7V, 1.75Ah Li-Ion Rechargeable battery
- **Software (GUI)**
  - Bluetooth communication via serial port
  - Client registration and logging
  - Online Trending and logging
  - Offline analysis
  - Database storage
  - Report Generation
  - Neural network classifier
  - Breast Thermal Profile Image generation
- **Advantages:**
  - Battery powered and portable
  - Can be used in remote locations
  - Light weight & Easy to use
  - Economical and useful for mass screening
  - No initial setup time
  - OTG based thermistor coefficient update
  - No special skills or training required
  - Does not require specialist interpretation

The brochure containing specifications of the product is attached in **Annexure – A (Download Brochure)**

### 3. Current Status:

Development of the product is complete. The device was subjected to medical safety testing at Electronics Regional Test Laboratory (ERTL) and IEC 6060-1-1 certification was received. The device was used for clinical trials with 42 known breast cancer patients at Malabar Cancer Centre (MCC), Kannur, Kerala and the results were comparable with the primary screening standards for breast cancer such as mammogram, sonogram and ultrasound scan. The device was also used for screening of more than 9000 volunteers during breast cancer screening camps conducted nationwide.

#### 4. List of deliverables as part of the Technology transfer:

- Preliminary ToT document containing
  - System Description
  - User Manual
- Detailed ToT document containing
  - Detailed design document with MSBC-DAQ schematic, BOM, Gerber files and Assembly
  - Test plan and procedure
  - Installation manual
  - C source code for the above applications
  - Production document
  - Source code for GUI or executable

#### 5. Scope of work & Facilities:

a. **Extent of Work:** The Expression of Interest (EOI) is for participation of competent industrial partners for facilitating clinical trials using the above mentioned product through transfer of technology of '**High Accuracy Data Acquisition Device for Breast Cancer Detection and other medical applications (MSBC-DAQ)**'. The technology will be transferred on a non-exclusive basis. The scope of work includes manufacturing of the MSBC-DAQ product, which includes sourcing, fabrication, assembly and testing. C-DAC shall also impart training to the engineers of the ToT partner during different stages of the transfer of technology.

b. **Documentation:**

- C-DAC shall provide its documentation for all sub-systems as per scope of work.
- The identified industry is expected to prepare detailed documents of fabrication, development & testing of various sub-systems in consultation with C-DAC, however the final documentation is entirely the responsibility of bidder.

#### 6. Expression of Interest:

- a. Institution invites "**Expression of Interest for High Accuracy Data Acquisition Device for Breast Cancer Detection and other medical applications (MSBC-DAQ)**", in the format given in **Annexure-B** (which may require customization based on the technology/product/service/prototype being transferred). The industries will be shortlisted based on the information furnished in **EOI for Technology Transfer Format** and assessment by the ToT committee.
- b. The submission of the EOI shall include all such documents that are specified herein to prove the authenticity of their offer and any claim made therein. The burden of proving such claims shall lie with the bidder.

- c. All cost and expenses associated with submission of EOI shall be borne by the bidder while submitting the EOI and Institution shall have no liability, in any manner in this regard, or if it decided to terminate the process of short listing for any reason whatsoever.
- d. The TOT fees and other terms and conditions shall be intimated to the interested companies within 14 days of the receipt of EOI. Once the terms and conditions are agreeable to prospective partner, C-DAC shall sign the MoA for Technology transfer with the partner

## **7. Who can Apply?**

- Industries with experience or interest in Medical Electronics or Information and Communications Technology (ICT)
- Agencies willing to take up the local production of “MSBC-DAQ” by themselves, or in collaboration with Industry partner.

## **8. How to Apply?**

Interested companies may send expression of interest with their details by filling the details along with supporting documents to:

### **Section Head (Technology Promotion Centre)**

Vellayambalam, C-DAC, Thiruvananthapuram

Contact: 098470 69184/04712723333(3425),

email: [tpc@cdac.in](mailto:tpc@cdac.in)

## **General**

The industry willing to take technology for commercial exploitation will be required to enter into a TOT agreement with C-DAC Thiruvananthapuram as per the terms and conditions approved by the competent authority

## **9. Expression of Interest documents (Click to Download)**

- a. Annexure I - Part A
- b. Annexure I - Part B

### Annexure -I (Part-A)

The following details should be submitted along with EOI by the bidder.

|           |                                                                                                                                                                                                                                                                                                                                 |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>A.</b> | <b>Company Profile</b>                                                                                                                                                                                                                                                                                                          |
| 1.        | Name of the Organization:<br>Website:                                                                                                                                                                                                                                                                                           |
| 2.        | Name of the Contact Person:<br>Address:<br>Mobile:<br>Landline:<br>Fax:<br>E-Mail:                                                                                                                                                                                                                                              |
| 3.        | Year of Incorporation:                                                                                                                                                                                                                                                                                                          |
| 4.        | Type of Organization<br>a. Public Sector/ Limited/Private Limited/ Partnership/ Proprietary/ Society/ Any other<br>b. Whether 'Foreign Equity Participation (Please give name of foreign equity participant and percentage thereof)<br>c. Names of Directors of the Board/ Proprietors<br>d. Name and address of NRI(s), if any |
| 5.        | Category of the firm: Large/Medium/Small scale unit / Others                                                                                                                                                                                                                                                                    |
| 6.        | Address of the Registered Office:<br>(Include Certificate of Registration)                                                                                                                                                                                                                                                      |
| 7.        | Number of Offices with addresses (Excluding Registered Office):<br>India: .....<br>Abroad: .....                                                                                                                                                                                                                                |
| 8.        | Certificate of registration as a manufacturing unit                                                                                                                                                                                                                                                                             |
| 9.        | Permanent Account Number                                                                                                                                                                                                                                                                                                        |
| 10.       | GST Reg. No.                                                                                                                                                                                                                                                                                                                    |
| 11.       | Status of ISO9001 or any equivalent Certification                                                                                                                                                                                                                                                                               |

**Annexure - I (Part B)**  
**Technical Collaborations of the bidder**

|           |                                                                                                                                                                                                                                                         |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>B.</b> | <b>ESSENTIAL REQUIREMENTS</b>                                                                                                                                                                                                                           |
| 1.        | The organization must be a reputed firm/ company/SME/startup/R&D company incorporated in India with standing of at least 2 years.                                                                                                                       |
| 2.        | The turnover (for 2 years) is to be supported by financial statements of accounts/ Annual reports duly certified by a Chartered accountant/ Balance sheets of last 2 years/ Income tax returns for the last 2 years period.                             |
| 3.        | Company profile, giving details of current activities and management/ personnel structure including evidence of incorporation. The company should be registered and ISO9001 or equivalent certified.                                                    |
| 4.        | Details of absorption of technology for a product/ knowhow if any that has been taken up on production scale in the past may also be given                                                                                                              |
| 5.        | The manpower strength (Technical: Mechanical, Electrical, Electronics, Software & Non-Technical etc. ) at various levels to be furnished<br>Technical:<br>a. B.E./ B.TECH/PhD<br>b. DIPLOMA<br>c. SKILLED TECHNICIANS<br>d. UNSKILLED<br>Non-technical: |
| 6.        | The list of machine tools /equipment/software/facilities available related with work to be furnished.                                                                                                                                                   |
| 7.        | The in-house technological expertise available to be furnished                                                                                                                                                                                          |
| 8.        | The list of equipment available for inspection and quality control to be furnished.                                                                                                                                                                     |
| 9.        | The industry should have adequate space for undertaking this work. Available space- Covered & Open and location details to be furnished.                                                                                                                |
| 10.       | List of products/technologies worked with as regular activity in last two years. Give the list of products/technologies with general specifications and the customers.                                                                                  |
| 11.       | List of PSUs/ Govt. customers – with contact details (Address, Telephone no., Contact Person)                                                                                                                                                           |
| 12.       | The details of sales, marketing and maintenance network to be furnished                                                                                                                                                                                 |
| 13.       | The list of technical collaborators for various ongoing products may be furnished                                                                                                                                                                       |
| 14.       | The bidder shall provide details of the sub-vendors in case they propose to employ for Part-work.                                                                                                                                                       |
| C.        | <b>Expression of Interest: Spell out the extent of interest and envisaged market potential</b>                                                                                                                                                          |
| D.        | <b>The ToT will be done stage-wise: The preferred stages may be furnished.</b>                                                                                                                                                                          |

\*Note: Data furnished above is by no means a qualification or disqualification. It facilitates comparison. NIL entries against any particular row can also be given and will be considered.

I hereby declare that the above information is true to the best of my knowledge.

Signature with Name & Seal:

Place:

Date:







## Thermal Sensor Based Monitoring System for Early Detection & Screening of Breast Cancer

Thermal sensor based monitoring system for Breast Cancer uses skin surface temperature measurement method for initial screening of women before referring potential patients for Mammography. The system consists of a body worn device with NTC thermistors and a DAQ device which can monitor the breast temperature with an accuracy of  $\pm 0.01^\circ\text{C}$ . The main advantage of the system is that it can detect Breast Cancer at a very early stage.

**Benefits**

- ☐ Non-invasive
- ☐ Painless
- ☐ Involves no radiation exposure or breast compression
- ☐ Economical & Fast
- ☐ Light weight and Easy to operate
- ☐ High degree of sensitivity and accuracy
- ☐ No special skills or training is required
- ☐ Can be used in young women
- ☐ Can be used for community testing

**Features**

- ☐ NTC based skin surface temperature measurement
- ☐ Portable and battery operated
- ☐ Rechargeable Li-ion battery compliant with IEC62133
- ☐ ESD and Battery inrush current protection

**Specification**

|                                                |                                               |
|------------------------------------------------|-----------------------------------------------|
| <input type="checkbox"/> Working Principle     | : Breast skin surface temperature measurement |
| <input type="checkbox"/> Sensors               | : NTC Thermistors                             |
| <input type="checkbox"/> Wearable Device       | : 5 sizes                                     |
| <input type="checkbox"/> Temperature Accuracy: | $\pm 0.01^\circ\text{C}$                      |
| <input type="checkbox"/> Monitoring Time       | : 15-30 minutes                               |
| <input type="checkbox"/> Power Supply          | : 3.7 VDC                                     |
| <input type="checkbox"/> Enclosure             | : ABS Plastic                                 |

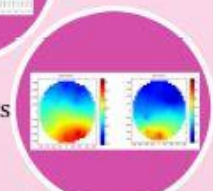
**Intended users**

Hospitals, Community Health Centres, Doctors, Nurses and Health care workers

**Certification**

IEC 60601-1-2 medical electrical equipment (ME) standard





Ministry of Electronics & Information Technology, Govt. of India

## Annexure-B

### Instruction to Bidders by C-DAC

Applications are invited for the purpose of Transfer of Technology (TOT)/commercialization of C-DAC **High Accuracy Data Acquisition Device for Breast Cancer Detection and other medical applications** from organizations with relevant experience.

1. The information to be furnished for Expression of Interest is given in Annexure-I. Interested parties can submit the EOI along with Annexure-I (Part A & B) duly filled in with all relevant supporting documents as mentioned in Annexure-B, Clause 3 as email and subsequently hard copy in sealed envelope.
2. A Pre-bid meeting of all interested Bidders shall be convened to give an overview of the ToT product, clarify the requirements as envisaged by C-DAC and also to address the queries of bidders, if any.
3. The EOI's submitted should be sealed properly and marked **"EOI for Transfer of Technology (ToT) of MSBC-DAQ"** so as to reach the following address  
Address for correspondence: Section Head (TPC), C-DAC, Vellayambalam, Trivandrum 695033.
4. EOI shall be open till **31<sup>st</sup> December 2026**. C-DAC may cancel / amend / reissue the Expression of Interest as and when needed. EOI Opening & Evaluation EOIs shall be opened and evaluated as and when received. However, C-DAC reserves right to open EOI(s) as per its requirements. Intimation will be provided within fifteen working days after opening the application in hard copy and evaluation.
5. To assist in the examination, evaluation and comparison of EOI, C-DAC at its discretion can ask the bidder for the clarification of its EOI. The request for clarification and the response shall be in writing. However no post submission of EOI, clarification at the initiative of the bidder shall be entertained.
6. Bidders, if they chose, may prior to submitting their Expression of Interest, visit C-DAC with prior appointment.
7. Bidders may be called for making a presentation before the ToT Committee.
8. C-DAC representatives may visit bidder's facilities for the assessment if required.
9. C-DAC will issue tender documents to short-listed bidders for the submission of financial bids.
10. At any time before the submission of EOI, C-DAC may carry out amendment(s) to this EOI document and/ or the schedule. The amendment will be made available on the website ([www.cdac.in](http://www.cdac.in)) and will be binding on them. C-DAC authorities may at its discretion extend the deadline for the submission of proposals.
11. C-DAC authorities reserve the right to accept or reject any application without assigning any reason thereof.
12. Bids that are incomplete in any respect or those that are not consistent with the requirements as specified in this document or those that do not adhere to formats, wherever specified may be considered non-responsive and may be liable for rejection and no further correspondences will be entertained with such bidders.
13. Canvassing in any form would disqualify the applicant.
14. All cost and expenses associated with submission of EOI shall be borne by the bidder while submitting the EOI

and C-DAC shall have no liability, in any manner in this regard, or if it decides to terminate the process of short listing for any reason whatsoever.

15. For any clarifications on the Expression of interest document, the following may be contacted through e-mail:

**Details of Contact persons:**

Section Head (Technology Promotion Centre)

Vellayambalam, C-DAC, Thiruvananthapuram

Contact: 098470 69184/04712723333(3425),

email: [tpc@cdac.in](mailto:tpc@cdac.in)