

प्रौद्योगिकी स्थानांतरण के लिए पसंद की अभिव्यक्ति

EXPRESSION OF INTEREST for TRANSFER OF TECHNOLOGY

“सड़क यातायात अनुप्रयोगों के लिए स्मार्ट विशन कैमरा”

Thermal camera with Vehicle Presence Detection application

and

Traffic Controller Interface (TCI) card



प्रगत संगणन विकास केंद्र
(इलेक्ट्रॉनिकी और सूचना प्रौद्योगिकी मंत्रालय, -भारत सरकार)

तिरुवनंतपुरम, केरल 695033
द्वारा जारी ।

टेलीफोन: 0471 2727508 / 9847069184

ईमेल: tpc@cdac.in

वेब साइट: www.cdac.in

Issued by

CENTRE FOR DEVELOPMENT OF ADVANCED COMPUTING

(The Premier R&D organization of the Ministry of Electronics and Information Technology (MeitY), Govt. of India)

Thiruvananthapuram, Kerala, 695033

Phone: 0471 2727508 Fax: 0471 2723456 Email: tpc@cdac.in

Website: www.cdac.in

Dated: 01st January 2024

Table of Contents

SL No.	Section	Page No.
1	Introduction	3
2	Brief about C-DAC	3
3	Brief description about the technology to be transferred	4
4	Invitation for Expression of Interest	4
5	Who can Apply	5
6	How to Apply	5
7	Signing of TOT Agreement	5
8	TOT License Agreement validity & Renewal	6
9	TOT Deliverables	6
10	Training for TOT Partners	7
11	Technical support	7
12	Cost for TOT	8
13	Annexure-I (Part A & Part B) – (2 pages)	
14.	Annexure -II Brochure with Technical specifications	

1. Introduction

Centre for Development of Advanced Computing (C-DAC) invites “**Expression of Interest**” (EOI) from Indian companies for transfer of technology (ToT) of “**Thermal camera with Vehicle Presence Detection application and Traffic Controller Interface (TCI) card** on non-exclusive basis, to acquire licenses to manufacture, market, sell and implement the product on perpetual basis.

This EOI is in continuation of the previous EOI dated 01.06.2023 for the TOT of “Thermal Imaging based Smart Vision Sensor for Road Traffic Applications” inviting interested bidders to respond with their company details, collaboration details, sales projections and financial bid for their estimated cost payable for the onetime TOT license fee and royalty fee. After evaluation of the technical & financial bids by the TOT committee as per the TOT policy guidelines of C-DAC, the Competent Authority of C-DAC has approved the rates for TOT fee and royalty fee and is now published as part of this RFP.

EOI is invited on behalf of M/s Technology Promotion Centre, C-DAC, Thiruvananthapuram from reputed firms / companies registered in India, with relevant experience / insights in the manufacturing / marketing / implementation of cameras/ similar electronic products through Transfer of Technology (ToT). The Thermal camera with Vehicle Presence Detection application and Traffic Controller Interface (TCI) card are designed & developed by C-DAC under R&D support program of MeitY and is available for Transfer of Technology (ToT) for the industry to manufacture, market and implement for various client projects.

This document details about the product, terms and conditions for companies to propose their Expression of Interest and how to enter into Transfer of Technology (ToT) agreement based on the terms given herein.

2. 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. It is a national Centre of Excellence, pioneering application oriented research, design and development in Electronics and Information Technology.

The Centre has contributed significantly to the growth of the industry in general and the electronics sector in particular through the indigenous development of commercially viable systems and products, foreign technology absorption, adaptation and upgrades, consultancy and training and turnkey implementation of contract projects. The Centre has several firsts to its credits and is the recipient of prestigious national level awards for excellence in application- oriented R & D.

The different technology verticals of C-DAC include High Performance Computing (HPC), Quantum Computing, Artificial Intelligence (AI), Strategic Technologies, Digital India RISC-V

(DIR-V), Software Technologies, e-Governance, Healthcare & Educational Technologies, Cyber Security, Automotive and Communication Technology, Power Electronics & Renewable Energy, Intelligent Transportation Systems (ITS) and others.

3. Brief description about the technology to be transferred

The Thermal Vision Sensor for Road Traffic Applications (TvITS)) features advanced AI capabilities for efficient road traffic management. TvITS encompasses a Vehicle Presence Detection system, comprising three components: a Thermal camera embedded with a vehicle detection application, a Virtual loop/zone configurator GUI tool for vehicle detection, and a Traffic Controller Interface (TCI) card. When operating in vehicle actuated mode, the TCI card transmits vehicle presence data to the traffic signal controller.

A typical installation involves networking thermal cameras at individual traffic junction approaches, connecting them to a PC-based configurator tool hosted at the Traffic Management Centre. This setup allows remote configuration of cameras, detection zones, and monitoring. The bundled products include the PC-based detection zone configurator tool, TCI hardware, and the thermal camera for implementing vehicle presence detection at signalized intersections.

In the outlined Transfer of Technology (TOT) deliverables, the partner will receive the gerber files of camera electronics & TCI card, enclosure drawings, and binary files of camera firmware with the vehicle presence detection application. However, there will be no transfer of design files or source code for the camera or other software applications. TOT partners can potentially use the camera hardware platform to build any other third-party AI applications.

Please refer product datasheet for detailed specification (refer Annexure II) and list of TOT deliverables (refer Annexure-III)

4. Invitation for Expression of Interest

- 4.1. C-DAC invites “Expression of Interest” (EOI) in the format given in Annexure-1 (Part A & Part B). Companies can become TOT partner of C-DAC based on the information furnished in Annexure – 1, subject to the assessment by the C-DAC.
- 4.2. Expression of Interest (EOI) sought from interested industry vendors for acquiring the technology knowhow of Thermal Vision Sensor for Road Traffic Applications (TvITS) developed by CDAC through the Transfer of Technology (TOT).
- 4.3. The cost for the TOT of the Thermal Vision Sensor for Road Traffic Applications (TvITS) product developed by C-DAC has been finalised by the TOT Committee (constituted by the Competent Authority) as per the terms of reference finalised by C-DAC and approved by DG C-DAC.
- 4.4. This invitation of EOI will be kept open till **30/06/2024**. No companies can apply for this EOI after the EOI closure date. However, C-DAC reserves the right to extend the date at the same/ revised terms and conditions after the due date.
- 4.5. Interested companies may submit the expression of interest (see section 5.0 and section 6.0)

- 4.6. The draft ToT agreement will be shared with the eligible company, who is evaluated and qualified based on the documents submitted and verified, and onsite inspection of the manufacturing facility. If the company agree to the terms and conditions of the agreement, the agreement can be signed after payment of the onetime TOT license fee as stipulated in the payment terms. The company then become eligible for acquiring the technology knowhow through TOT for the prescribed period from C-DAC.
- 4.7. Participation in this EOI does not guarantee any association with C-DAC, unless the agreement is signed.
- 4.8. The technology is offered on non-exclusive basis.
- 4.9. 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. 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.
- 4.10. C-DAC reserves the right of rejecting any offer without assigning reasons.
- 4.11. There is neither a business guarantee nor any commitment for funding support from C-DAC to the selected TOT partner.

5. Who can Apply

Any Indian Company including MSMEs or Start Ups willing to acquire technology knowhow for the manufacture, marketing, sale and implementation of Thermal Vision Sensor for Road Traffic Applications (TvITS) can apply for the TOT.

6. How to Apply

Interested companies may send expression of interest by filling the template as per Annexure – 1 (Part-A & Part-B) along with supporting documents to

Head, Technology Promotion Centre

Centre for Development of Advanced Computing (CDAC)
Vellayambalam, Thiruvananthapuram, Kerala, India, 695033
Phone: 0471 2727508 Fax: 0471 2723456
Email: tpc@cdac.in Website: www.cdac.in

7. Signing of the TOT License Agreement

- 7.1. The TOT partner is selected based on the expression of interest submitted by interested companies and evaluated as per clause 4.6 above.
- 7.2. If selected, the company shall pay onetime TOT license fee in part or lumpsum (as per payment milestone mentioned in clause 12) and sign the TOT agreement to become TOT partner of C-DAC.
- 7.3. C-DAC shall sign the technology transfer agreement with the company on receiving the onetime TOT license fee as stipulated in the payment terms.
- 7.4. The TOT license shall be perpetual and will be granted on Non-Exclusive basis.
- 7.5. The onetime TOT license fee are non-refundable.

- 7.6. The TOT agreement is liable to get terminated if the TOT partner fails to manufacture the camera according to the said KNOW-HOW within a period of 12 months from the effective date of signing the agreement. If the TOT partner is unable to set-up production within 12 months due to unavoidable circumstances and causes beyond his control, the TOT partner shall make a request in writing for extension of the time limit before the expiry of the date giving detailed reasons. This request will be carefully examined and considered by C-DAC. The decision of C-DAC in this regard shall be final and binding on the TOT partner.
- 7.7. Right of the IPR generated by C-DAC on the thermal camera and other applications used with the Know-how shall remain with C-DAC.
- 7.8. The TOT partner shall employ his best endeavor to commercialize the said development and sell the equipment on a commercial scale within India and abroad at prices to be fixed by him.
- 7.9. The TOT partner shall report progress of manufacture every three months to C-DAC, till it comes into production. Thereafter, it may report half-yearly regarding the number of equipment made and sold as a part of utilization of the said KNOW-HOW.
- 7.10. Any modifications / improvements which the TOT partner may consider essential while in the process of commercial production of the equipment covered under this TOT may be introduced only with prior permission of C-DAC in writing. Any such modification and improvement shall constitute an integral part of the said KNOW-HOW.
- 7.11. The TOT partner shall notify to C-DAC the change, if any, in its Registered Office / Manufacturing Plant within 15 days of such changes and shall also notify the changes in TOT agreement within the aforesaid stipulated period.
- 7.12. The TOT partner shall not on its own name or in the name of any third party, file any patent Application for the grant of patent of the said KNOW-HOW hereby licensed and shall also not oppose at any time any patent application made by C-DAC.

8. TOT license Agreement Validity & Renewal

- 8.1. Payment of one time TOT license fee grants the partner, MOA validity for a period of **3 years** from the date of signing of the agreement
- 8.2. For continued support beyond 3 years the partner can renew the ToT agreement before the expiry of validity of the MOA, which will be valid for a further extended period based on the terms and conditions prevailing at that time.
- 8.3. If the renewal is initiated after the stipulated period, a fresh TOT agreement need to be signed by the company based on the EOI conditions prevailing at that time.
- 8.4. After five years (from the date of signing the ToT agreement) a new TOT agreement is to be signed by the company based on the EOI conditions prevailing at that time.
- 8.5. The partner should have a valid TOT MOA (not expired) for providing any technical support on the TOT deliverables made by C-DAC.
- 8.6. Any customisation requirements of the TOT partner shall be entertained by C-DAC only if a valid TOT MOA exists. Such customisations shall be undertaken by C-DAC at cost basis on mutually agreed terms and conditions in contract mode.

9. TOT Deliverables

- 9.1. On payment of onetime ToT license fee and signing of ToT agreement, the following list of TOT deliverables shall be provided by C-DAC to the TOT partner for production, product marketing support of Smart thermal camera embedded with Vehicle Presence Detection application, PC based zone configuration tool & Traffic controller interface card
1. TOT Partnership certificate
 2. Brochure softcopy
 3. Technical manual
 4. User Manual
 5. Bill of Materials
 6. Component Sourcing Details
 7. Assembly Details
 8. PCB Gerber files
 9. Binary Files
 10. Schematics
 11. Test plan & Procedure document
 12. Training
- 9.2. On payment of royalty fee for the camera units manufactured, licence key to activate the camera firmware embedded with vehicle presence detection application shall be provided by C-DAC to the TOT partner.

10. Training for TOT Partners

- 10.1. Upon 50% payment of one time TOT license fee detailed production level training for camera hardware manufacturing and training for software installation, configuration and administration shall be provided up to two working days. Additional one day training shall be provided on setting up the development environment for third party application development and porting to thermal camera hardware.
- 10.2. The training will be conducted at C-DAC(T) premises.
- 10.3. The travel and boarding and lodging expenses of the trainee(s) during the period of training shall be borne by the ToT partner.
- 10.4. For training requested outside C-DAC (T) premises air travel, boarding and lodging charges of C-DAC (T) officials shall be borne by the ToT partner. C-DAC shall also charge manpower as per C-DAC rules prevailing at the time of training for any outstation training requested by the TOT partner. Nomination of the C-DAC trainers and period of stay for outstation training will be decided by C-DAC on mutual consultation, depending on the type of training requested.
- 10.5. Additional training may also be given by C-DAC either at the premises of C-DAC (T) or at the location identified by the ToT partner on payment basis at mutually agreed terms and conditions.

11. Technical support

- 11.1. C-DAC shall provide remote support to the ToT partner for production and factory testing of equipment during the TOT license period.
- 11.2. If any onsite support (at the Plant of TOT partner) is requested by the ToT partner, C-DAC shall support on mutually agreed terms and conditions.
- 11.3. For onsite support outside C-DAC premises travel, boarding and lodging charges of C-DAC officials shall be borne by the ToT partner. C-DAC shall also charge manpower as per C-DAC rules prevailing at the time of support request for outstation support. Size of the C-DAC team and period of stay for outstation support shall be decided by C-DAC on mutual consultation, depending on the type of support requested.

12. Cost for TOT

The cost for the TOT is to be paid in two parts – (1) one-time TOT license fee to be paid at the time of signing of TOT agreement and (2) royalty fee to be paid in advance for the total sale quantity booked by the TOT partner to get the hardware & firmware license authenticated from C-DAC

Category-II Thermal camera with vehicle presence detection application and Traffic Controller Interface (TCI) card (Transfer of source code excluded)			
TOT fee	Rs. 10 Lakhs + taxes		
Royalty fee	Rs. 15000 + taxes	upto 100 units	Applicable for sales per partner for unit sale of thermal camera bundled with vehicle presence detection application & Traffic controller Interface card
	Rs. 12500 + taxes	>100 upto 500 units	
	Rs. 10000 + taxes	> 500 units	
Payment Terms			
TOT fee	Rs. 2.5 Lakhs at the time of signing of MOA		
	Rs. 2.5 Lakhs at the time of handing over of TOT documents		
	Rs. 5 Lakhs upon successful production & testing of 5 sample units or within one year whichever is earlier		
Royalty fee	To be paid for the total sale quantity in advance by the TOT partner to get the hardware & firmware license authenticated from CDAC		

For any queries please contact:

Section Head (Technology Promotion Centre)

Vellayambalam, C-DAC, Thiruvananthapuram

Contact: 0471 2727508, 0471 2723333 (extn: 220/450), 9847069184

email: tpc@cdac.in

Annexure –I (Part-A)

Company Profile of the bidder

A.	Company Profile
1.	Name of the Organization: Website:
2.	Name of the Contact Person: Address: Mobile: Landline: Fax: E-Mail:
3.	Year of Incorporation:
4.	Type of Organization a. Public Sector/ Limited/Private Limited/ Partnership/Proprietary/ Society/ Anyother b. Whether 'Foreign Equity Participation (Please give name of foreign equity participant and percentage thereof) c. Names of Directors of the Board/ Proprietors 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: (Include Certificate of Registration)
7.	Number of Offices with addresses (Excluding Registered Office): India, Abroad:.....
8.	Certificate of registration as a manufacturing unit
9.	Permanent Account Number
10.	GST Reg. No.
11.	ISO or any equivalent Certification

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

B.	ESSENTIAL REQUIREMENTS
1.	The organization must be a reputed firm/company/SME/startup/R&D company incorporated in India.
2.	The turnover is to be supported by financial statements of accounts/ Annual reports duly certified by a Chartered accountant/ Balance sheets of last 3 years/ Income tax returns for the last 3 years period.
3.	Company profile, giving details of current activities and management/ personnel structure including evidence of incorporation. The company should be registered and ISO or equivalent certified.
4.	Details of absorption of technology for a product/knowhow 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 Technical: a. B.E./ B.TECH/PhD b. DIPLOMA c. SKILLED TECHNICIANS d. UNSKILLED
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 three 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.	Expression of Interest: Spell out the extent of interest and envisaged market potential

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

Signature with Name & Seal:

Place:

Date:

Annexure II
General Purpose Thermal Camera Brochure



**Thermal
Vision sensor
for ITS applications
(TvITS)**



About Thermal Vision Sensor

TvITS is an AI powered thermal sensor based smart vision camera designed for road traffic applications. The thermal imaging sensor provides high data accuracy in any light conditions (complete darkness or glaring sunlight) and in all weather conditions. TvITS is equipped with in-built hardware electronics capable of running AI based video analytics. The lens mount provides flexibility for interchangeable lenses depending on the application requirement. The camera hardware is capable to deploy different applications.

Specifications

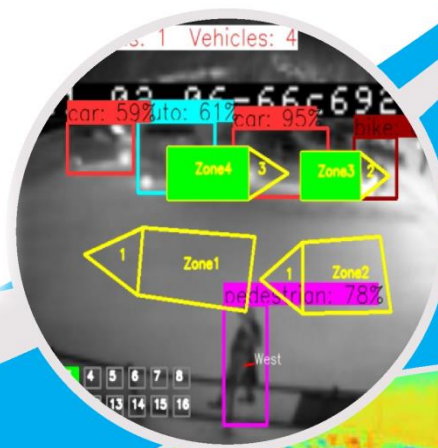
POWER	
Operating Voltage	12-48 DC
Power over Ethernet (PoE)	PoE, PoE+ and PoE++
PROCESSOR SYSTEM (MPSoC –ZU4EV)	
Application Processor	Quad-core ARM Cortex-A53
Operating Frequency	1.5GHz
Real-Time Processor	Dual-core ARM Cortex-R5, up to 600MHz
Graphics Processor	Mali™-400 MP2
Programmable Logic	192 K System Logic Cells
RAM	2 GB DDR4 SDRAM for PS and 1 GB for PL
Flash	8GB eMMC Flash (Expandable)
Video Codec	H.264 / H.265
CONNECTIONS & COMMUNICATIONS	
Configuration	Standalone PC Configuration tool
Ethernet	Server communication and configuration
CAN	Traffic controller interface communication
COMPLIANCE	
Protection Grade	Housing & Connectors IP67 grade
Shock & Vibration	IEC 60870-2-2
Temperature Range	0 to 55° C
FUNCTIONAL	
Number of Detection Zones	8 vehicle detection zones
Detection Distance	Vehicle presence: Upto 20 m

Specifications

IMAGING & OPTICAL	
Detector Type	Uncooled micro bolometer
Spectral Response	8 to 14 µm
Streaming Video	RTSP
Resolution	384x288
Frame Rate	30 FPS
Compression	H.264, MPEG-4
Field of View	Horizontal: 60° Vertical: 50°
Lens Mount Type	Screw Mount
Focal Distance	6 to 19 mm (support for lens of different focal length)

Specifications - Traffic controller Interface

POWER	
Operating Voltage	12V-36V DC
PROCESSOR	
Application Processor	AT91SAM7X512 ARM processor
Operating Frequency	48Mhz
RAM	128Kb
Flash	512Kb
CONNECTIONS & COMMUNICATIONS	
Camera Interface	Up to 6 Cameras Through CAN interface
Output	32 Dry Contact Outputs.



Centre for Development of
Advanced Computing (C-DAC),
Thiruvananthapuram

