

प्रौद्योगिकी स्थानांतरण के लिए पसंद की अभिव्यक्ति

EXPRESSION OF INTEREST for TRANSFER OF TECHNOLOGY

"सड़क यातायात अनुप्रयोगों के लिए स्मार्ट विजन कैमरा"

Smart Vision Camera for Road Traffic Applications



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

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Issued by

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1. Introduction

Centre for Development of Advanced Computing (C-DAC) invites “**Expression of Interest**” (EOI) from Indian companies for transfer of technology (ToT) from C-DAC and to subscribe, acquire licenses, market, sell and implement **General Purpose Thermal camera & Thermal vision sensor for Road Traffic applications** on non-exclusive basis.

Through this EOI, sealed financial H1 bid is invited on behalf of M/s Technology Promotion Centre, CDAC, Thiruvananthapuram from reputed firms / companies registered in India, with relevant experience / insights in the manufacturing / marketing / implementation of products through Transfer of Technology (ToT) and Licensing. The following products are developed by C-DAC and are available for Transfer of Technology (ToT) for the industry to manufacture, market and implement for various client projects.

1. General Purpose thermal camera
2. Thermal vision sensor for Road Traffic applications – (TvITS)
3. Traffic Controller Interface (TCI) hardware
4. Vehicle Presence Detection software

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.

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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 Mission mode programmes of C-DAC include High performance computing, grid and cloud computing, Multilingual computing & Heritage Computing, Professional Electronics, VLSI and Embedded systems, Software technologies, Cyber Security & Cyber Forensics, Health Informatics, Intelligent Transportation Systems and others.

3. Brief description about the technology to be transferred

Thermal Vision Sensor (TvITS)

Thermal Vision Sensor is a thermal camera capable of running any industrial / road traffic applications with advanced AI capabilities. The TOT of the system is available in two formats as given below based on vendor requirement.

1) General purpose thermal camera

The knowhow for the manufacture of general purpose thermal camera hardware will be provided along with a streaming application. The knowhow include sharing of knowledge in design, schematics, PCB and source code for realising the thermal camera hardware and development of application and porting to meet the custom requirements of the client.

2) Thermal Vision Sensor for Road Traffic Applications (TvITS)

(TvITS) is an AI based Vehicle Presence Detection system and is a combination of three entities 1) Smart thermal camera embedded with vehicle detection application 2) Virtual loop/ zone configurator GUI for vehicle detection 3) Traffic Controller Interface (TCI) for sending vehicle presence data to the traffic signal controller when operated in vehicle actuated mode. The Smart thermal cameras installed at individual approaches of a traffic junctions in a road traffic network will be networked to the configurator tool hosted at the Traffic Management Centre for remote configuration of camera and detection zones. The configurator tool and TCI hardware are bundled product along with the Smart thermal camera for implementation of a vehicle presence detection sensor in a signalised intersection for the operation of vehicle actuated traffic signal. However, Vehicle presence detection application embedded in Smart thermal camera along with configuration tool and TCI hardware are licensed separately. In this format of deliverables, only binaries of camera firmware will be shared.

Please refer product datasheet for detailed specification (refer Annexure II)

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 – I, subject to the assessment by the C-DAC.
- 4.2. Expression of Interest (EOI) also seeks from interested industry vendors to offer the best price for onetime TOT licensee subscription cost for all the listed items.
- 4.3. The minimum base price for the TOT of the above listed products 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. The vendor offering the highest price in a category shall be designated as H1 price. If the value of H1 price is more than the minimum base price finalised by C-DAC, then H1 bid shall be considered as the final price under that category. If the value of H1 bid is less than the minimum base price finalised by C-DAC, then the base price finalised by C-DAC shall be considered as the final price under that category.

- 4.4. ToT is offered in two modes.
Category I - TOT deliverables with source code for a higher TOT cost and minimal royalty fee.
Category-II - TOT deliverables without source code for a relatively lesser TOT cost (with respect to Category-I) and higher royalty fee.
- 4.5. This invitation of EOI will be open till **23/06/2023**. No companies can offer the price for this product in this EOI invitation after the EOI closure date. The financial bids received till the last date of EOI shall only be evaluated to arrive at the final cost of TOT license.
- 4.6. If there are no respondents to the EOI, the base cost already finalised by the TOT Committee shall be fixed as the license cost for the TOT.
- 4.7. Interested companies may submit the expression of interest (see section 5.0 and section 6.0)
- 4.8. The EOI bids received from the vendors shall be evaluated to discover the best H1 bid.
- 4.9. After the evaluation, the cost finalised by C-DAC for the TOT will be informed to all the bidders who have participated in the EOI.
- 4.10. The draft ToT agreement will be shared with the eligible company. 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 for that product. The company then become eligible for procurement of licenses for the prescribed period from C-DAC.
- 4.11. Participation in this EOI does not guarantee any association with C-DAC, unless the agreement is signed.
- 4.12. The technology is offered on non-exclusive basis.
- 4.13. 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.
- 4.14. C-DAC reserves the right of rejecting any offer without assigning reasons.
- 4.15. 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 and existing ToT partners of CDAC willing to acquire licenses, market, sell and implement the products listed for TOT can apply.

6. How to Apply

Interested companies may send expression of interest by filling the template as per Annexure – 1 along with supporting documents to

Head, Technology Promotion Centre

Centre for Development of Advanced Computing (CDAC)

7. TOT Agreement (How to Subscribe)

- 7.1. The TOT partner is selected based on the expression of interest submitted by interested companies.
- 7.2. If selected, the company shall pay onetime TOT license subscription fee and sign the TOT agreement to become TOT partner of C-DAC. Onetime TOT license subscription fee finalised by C-DAC shall be informed to all the bidders who have participated in the EOI.
- 7.3. CDAC shall sign the technology transfer agreement with the company on receiving the onetime TOT license subscription fee as stipulated in the payment terms.
- 7.4. The license will be granted on Non-Exclusive basis.
- 7.5. No TOT partner will be allowed to quote for any projects based on the above charges unless he enters into an agreement with CDAC and pays the one time TOT license subscription fees. The subscription fees are non-refundable. In case any party offer /quotes the rates without an agreement with CDAC, CDAC will not honour the rates/ will not give the ToT to such party.

8. Software licenses

- 8.1. The software licenses can be purchased by TOT partner only if the partner has a valid one time TOT license subscription with C-DAC.
- 8.2. The software licenses can be purchased by TOT partner on payment of the software license fee separately. These software licenses are needed for the partner to port (embed) the application into the camera hardware for making it SMART.
- 8.3. The software application will have a one year period of warranty support from the date of purchase of software license. During this period, any software updates/releases shall be made available to the ToT partner.

9. One time TOT license Subscription Validity & Renewal of TOT agreement

- 9.1. Payment of one time TOT license fee grants the partner, subscription validity for a period of **3 years** from the date of signing of the agreement
- 9.2. For continued support beyond 3 years the partner can renew the ToT agreement by paying the subscription charges of Rs. 2.00 Lakhs plus applicable taxes before the expiry of valid subscription, which will be valid for a further extended period of two years.
- 9.3. 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.
- 9.4. 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.

- 9.5. The partner should have a valid TOT subscription licenses for providing any technical support on the TOT deliverables made by C-DAC.
- 9.6. Any customisation requirements of the TOT partner shall be entertained by CDAC only if a valid TOT subscription exists. Such customisations shall be undertaken by CDAC at cost basis on mutually agreed terms and conditions.

10. C-DAC Deliverables

- 10.1. On payment of one-time license fee and signing of ToT agreement, the following list of items shall be provided by C-DAC to the TOT partner for production, product marketing support and PoC demonstration.

General Purpose Thermal Camera

1. Technical Manual
2. Bill of Materials
3. Sourcing Details
4. Assembly Details
5. PCB Gerber files
6. Binary Files
7. Schematics
8. Source code & design files
9. Test plan & Procedures
10. Training

TvITS (Vehicle Presence Detection System)

a) Thermal Camera and TCI Hardware

1. Technical Manual
2. Bill of Materials
3. Sourcing Details
4. Assembly Details
5. PCB Gerber files
6. Binary Files
7. Schematics
8. Test plan & Procedures
9. Training

b) Vehicle Presence Detection Software

1. Portable version of the vehicle presence detection application
2. System Architecture & Functional description manual (Technical)
3. Porting manual

10.2. On payment of software license / royalty fee under Category II , the following items shall be provided by C-DAC to the TOT partner for the deployment of software

- i. Subscription license certificate to activate vehicle presence detection software in TvITS
- ii. Software with a valid license downloadable from C-DAC FTP site

11. Training for TOT Partners

- 11.1. C-DAC shall arrange one day product level introductory training to the ToT partner at C-DAC(T) after signing of TOT agreement.
- 11.2. Upon 100% payment of one time TOT subscription license fee detailed production level training and for software application training for installation, configuration and administration of TvITS shall be provided up to two working days. Additional one day training shall be provided on application development and porting for the TOT of General purpose thermal camera.
- 11.3. The training will be conducted at C-DAC(T) premises.
- 11.4. The travel and boarding and lodging expenses of the trainee(s) during the period of training shall be borne by the ToT partner.
- 11.5. 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 outstation training. 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.
- 11.6. 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.

12. Field implementation support

- 12.1. C-DAC(T) shall provide remote support to the ToT partner for installation and configuration of TvITS during the subscription period on case to case basis upon mutually agreed terms and conditions.
- 12.2. If any onsite support is requested by the ToT partner, C-DAC shall support on mutually agreed terms and conditions.
- 12.3. For onsite support outside C-DAC premises 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 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.

13. Direct implementation by C-DAC

- 13.1. C-DAC reserves the right to implement TvITS solution directly at sites where C-DAC is awarded ATCS / ATMS orders for implementation directly by the end user.

- 13.2. If CDAC is implementing TvITS directly, then the cost at which C-DAC will be offering the solution to the end user will be 140% of the software license cost finalised by C-DAC.

14. Payment terms for One Time TOT subscription License and Software subscription License

- a) Indian Companies including MSME shall pay the one-time TOT fee in two instalments. First instalment of 60% plus applicable taxes shall be paid upon signing the agreement and balance 40% plus applicable taxes should be paid at the time of the handover of TOT deliverables
- b) Start-up companies shall pay the one-time TOT fee in three instalments. First instalment of 30% plus applicable taxes shall be paid on signing the agreement. Second instalment of 30% plus applicable taxes shall be paid at the time of handing over of all hardware manufacturing documents and the balance 40% plus applicable taxes should be paid at the time of handing over of all remaining TOT deliverables including software for operationalizing the hardware resource. The payment of 3rd instalment shall be completed within 12 months period of payment of first instalment.
- c) The software activation license shall be procured by the company from CDAC for each unit manufactured and sold to the client.

For any queries please contact:

Section Head (Technology Promotion Centre)
Vellayambalam, C-DAC, Thiruvananthapuram
Contact: 0471 2727508, 0471 2723333 (extn: 220/450),
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

Thermal Vision Sensor for Road Traffic Applications (TvITS) datasheet

About Thermal Vision Sensor

Thermi-Vision 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. Thermi-Vision 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	12-36 V DC
Power over Ethernet (PoE)	PoE A and PoE B
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	
Ethernet/5G/4G	Server communication and configuration
CAN	External Communication Interface

Specifications

COMPLIANCE	
Protection Grade	Housing & Connectors IP67 grade
Shock & Vibration	IEC 60870-2-2
Temperature Range	0 to 55° C
IMAGING & OPTICAL	
Detector Type	Uncooled micro bolometer (Dali DLD384)
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	7 to 19 mm (support for lens of different focal length)
Mounting	Pole mountable



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

Annexure-III Financial Bid Format

(To be submitted by the bidder in sealed envelope)

Price bid for One Time TOT License Subscription cost & Royalty fee

Sl. No	Hardware Product	Category -I		Category –II	
		One Time ToT Fee (Rs.)	Royalty Fee (Rs.)	One Time ToT Fee (Rs.)	Royalty Fee (Rs.)
1	General Purpose Thermal Camera				
2	Thermal camera hardware for vehicle presence detection in Vehicle Actuated/ Adaptive Traffic Management System				
3	Traffic Controller Interface hardware				
4	Vehicle presence detection application software License fee			Not Applicable	