



Central Tool Room & Training Centre

MSME - TOOL ROOM, BHUBANESWAR

AS 9100, ISO 9001, 14001, 28001 & OHSAS 18001 Certified
A Govt. of India Society, Ministry of Micro, Small and Medium Enterprises



Notice for Expression of Interest(EOI) to set up IOT Lab.

Central Tool Room & Training Centre (CTTC) Bhubaneswar, invites proposals from interested Original Equipment Manufacturers (OEMs)/Authorized Resellers, meeting eligibility criteria as detailed in the EOI document, to set up IOT Lab for 60 student capacity on turnkey basis. For detail Scope of Work on Turnkey Basis under the EOI Please visit the website: www.cttc.gov.in . Interested parties need to submit their proposals along with requisite documents by post or by hand to General Manager, Central Tool Room & Training Centre, B-36, Chandaka Industrial Area, Bhubaneswar – 751024. The last date and time for submission of response to this EOI is 22.12.2021, 5.30 PM.

The bidders meeting the eligibility criteria and securing minimum qualifying score as per the EOI Document shall be shortlisted.

The shortlisted bidders has to participate on e-tender for techno commercial bidding by logging on to e-procurement portal <http://eprocure.gov.in/eprocure/app>. Central Tool Room & Training Centre, Bhubaneswar reserves the right to accept or reject any EOI, and to annul the process and reject all EOIs at any time prior to short listing of bidders without assigning any reason whatsoever.



General Manager.

Central Tool Room & Training Centre

B-36, Chandaka Industrial Area, Bhubaneswar-751024

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CTTC Bhubaneswar invites Expression of Interest (EOI)

For

Selection of OEM/Reseller for
establishment of IOT lab at its
campus on turnkey basis

(Last date of Submission: 22.12.2021)

CENTRAL TOOL ROOM & TRAINING CENTRE
BHUBANESWAR

(A MSME Technology Centre under Ministry of MSME, Govt. of India)

B-36, Chandaka Industrial Area, Near Infosys, Po-KIIT, Bhubaneswar, Odisha – 751 024,

Email: cttc@cttc.gov.in, Website: www.cttc.gov.in

ABOUT CTTC BHUBANESWAR

Central Tool Room & Training Centre (CTTC), Bhubaneswar has been established under the Technical Co-operation program between the Government of India and Denmark as a Govt. of India Society. The management of affairs of the center rests with the Governing Council constituted by Ministry of MSME, Govt. of India. The center started functioning in 1991 with the Training department followed by Production in the year 1994. The center has emerged as one of the pioneer institutes & technology center of world class in India having state-of-the-art machines and equipment.

Name of the work: Turnkey installation of IOT Laboratory at Central Tool Room & Training Centre (CTTC), Bhubaneswar for 60 student's capacity.

CONCEPT

CTTC Bhubaneswar intends to offer high technology demand driven modular courses on IOT and is interested for establishment of a suitable lab in its main center premises. The allotted space should be designed for delivery of all lessons & practical and students can learn and practice IOT without any hindrance. The project is a turnkey project where the selected Bidder will be responsible for the supply of the technological product / lab Hardware and software, commissioning of the lab along with Training of institute personnel & faculties. It must be state-of-the-art and relevant to the industry and should cater to the current and futuristic requirements. About **750** Square Feet (32 x 24 feet) of covered area has been considered for establishment of lab purpose. The details of the area & layout of the space is enclosed as Annexure. The IOT Lab should be an interdisciplinary focused on developing skill excellence in the field of Design, Digitalization of IOT and should meet the demands of the industries' ever-changing processes. The lab Launchpad has 3 core stages:

- EXPERIENCE - IOT on high-end systems powered by Setup IOT where students and participants can experience content.
- LEARN - Learn the basics on how to conceptualize, plan the flow and develop these interactive experiences. Consume learning content on the go with tracking and get a certificate at the end.
- CREATE - Create Experiences and showcase to peers (prototyping, testing feedback). See how well their concepts fare with respect to their peers.

SCOPE OF WORK UNDER EOI.

- The scope of work encompasses the following key activities:

Step1: Preparation of the Laboratory

A room of size **750** Square Feet (32 x 24 feet) is available for the purpose. It is required to supply and install all the materials to build the IOT laboratory to fulfill the required objectives. The Expression of Interest should include Planning, design, preparation of working drawing for interior and execution of works. The IOT facility will be used by CTTC team including faculties and other students. The scope of work encompasses the following key activities:

- The lab should bring together manufacturing, automation and data management leading to intelligent collaboration, monitoring and process management in real-time.
- It should be a modular setup enabling the training to be conducted in increasing order of complexity: modules, stations and complete system.
- The IOT setup and the software provided in the Manufacturing process lab should emulate and simulate the physical system with identical properties.
- The setup should be IOT enabled and compatible for an IOT system to be connected to the hardware and collect data and monitor performance, in the future.
- The Lab setup for IOT as per our infrastructure and should produce proposed complete layout design & drawing along with the equipment/ machines/ tools/ hardware/ accessories specification to be supplied with the EOI.

Step2: Supply of Lab. Equipment:

IOT LAB- IOT lab should be fully automated in way that the control of everything to done in automatic manner and equipped with intelligent maintenance system. It should consist of following and other processes involved in manufacturing:

- Modular system
- Data Management and cloud management
- Digitalization of different sensors
- Bio metric/RF id-controlled entrance
- Intelligent maintenance system
- Energy Management
- Over All Equipment Effectiveness (OEE)
- Troubleshooting of hardware and software.

Note: The above mentioned system are indicative only. OEMs/Resellers may suggest better system with latest specifications and futuristic technology. The bidders should produce proposed complete layout design & drawing along with the equipment/ machines/ tools/ hardware/ accessories specification to be supplied with the budgetary offer.

Step 3. Services & Training of Personnel:

1. Integration, Configuration and testing of the supplied software.
2. Project documentation including user manuals and operation and troubleshooting guides.
3. Training to CTTC team for operation and user level maintenance of the system.
4. Training of Trainers.

The selected agency shall be required to undertake to provide the technical training to the personnel involved in the use of the **IOT** lab at the Institute premises immediately after completing the installation of the lab.

The supplier is required to install and demonstrate the equipment as per the approved design & drawing within the stipulated delivery schedule. Otherwise Penalty clause may be applicable.

The bidders should produce proposed complete layout design & drawing along with the equipment's/machines/tools/hardware items specification to be supplied with the EOI and it should consist of the Bill of Materials along with standard printed catalogue.

The learnings shall enable the students/lecturers utilize the IOT Lab to successfully create simulations, learnings, training and engaging content for higher learning curve and immersive demonstration.

Live working demo of the functionality may be perform in the presence of staff members/faculties and students.

1. GENERAL DESCRIPTION OF THE SYSTEM:

- a. Work Bench
 - b. Home Automation model
 - c. Smart Agriculture Model
 - d. Smart Healthcare Model
 - e. Controller
 - f. Bluetooth Module
 - g. RTC Module
 - h. GSM Module
 - i. GPS Module
 - j. Micro IOT With all Module
 - k. Digital Storage Oscilloscope
2. IOT based application.
 3. Operation & maintenance manual: One set hard copy and one set soft copy with the equipment to be supplied.
 4. Web application.
 5. Required bundle of software with license (60 users)

LEARNING OBJECTIVES:

1. Learn about IOT and Digitization of entire Value chain management
2. Understand and simulate the concept of various building blocks associated with IOT such as Embedded, Integrated & Digital workforce.
3. Understand the concepts of IOT.
4. Learn about the architecture and design of IOT systems.
5. Understand the benefits of IOT systems.
6. Learn about the remote monitoring and controlling of sensor in real time.
7. Understand the relation of data communication to cloud through IOT Gateway module and OpenPlatform Communications (OPC).

Function:

The complete system will be made up of a minimum of 11 different stations and performing different type of industrial work. The System with IOT should represent a miniature factory which shall include the industry standard processes such as

1. Work Bench

An integrated workbench consisting of instrument panel and working table should suitable for students to learn and perform various experiments of electronics and IOT related subjects. Instruments should internally electrically connect and should be fitted in the panel such that only front panel and necessary interfaces are easily accessible to use. Structure of workbench should be made up of 1.5 mm thick CRC powder coated pipes with top made up of good quality 19 mm thick plywood and covered with 1.8 mm off white colour mica. The bench working area should be covered by 2 mm thick antistatic mat which help students to controls static discharge as static cause interference or damage to students, equipment and circuitry.

Structure and design of Workbench should follow the below specifications:

1. The basic structure should be made of 38 x 38 x 1.5 mm CRC powder coated pipes for sturdiness.
2. The overall dimensions of Workbench should be not less than W = 1200 mm; D = 750 mm; H = 1150 mm
3. MS drawers 03 numbers W = 275 mm; D = 375 mm; H = 100 mm and thickness 1.2mm with handle & separate lock on each drawer should be provided
4. For the panel section, raised back height of 1200mm from floor with matching height support from the side at a depth 500mm for instrument housing with a MS Panel strip below it for housing Electrical Sockets and Switches for external use.
5. Two Pole MCB (32A) to be provided for safety of Workbench
6. Workbench should work on Mains Supply - 230V AC, 50 Hz
7. Soldering station (230V,60W,Temp range-180 to 270) and digital multimeter (Measurement Functions: DC &AC V Range: -1000 V ,DC & AC I Range -20A ,R,C,DIODE,F,TEMP)mounted below the overhead shelf
8. Using actual industrial based digital storage oscilloscope (DSO)(100MHZ,2CH), digital multimeter and soldering station.
9. Every work station consists of O/P: +-12V @5A, +-5V @5A, 220V AC, Regulating Variable DC 0-24V @4A (with short circuit, overload protection), I/P: 230V AC/50Hz, 2 Sockets.

2. Home Automation model

- System should have ready made dummy home mounted with CCTV camera.
- Motion Sensor, Smoke Sensor, LPG Gas Sensor, Fire Sensor, CO2 Sensor, Relay.

3. Smart Agriculture Model

- A dummy field/ garden with sensors.
- Soil Moisture Sensor, Leaf Wetness Sensor, Sprinkler.

4. Smart Healthcare Model

- A dummy hospital with sensors.
- Heart Rate Sensor, Galvanic Skin Response, Temperature Sensor.

5. Controller(Operating voltage: 5V,GPIO PIN -40 NOS,)

6. Bluetooth Module(Operating voltage: 5V)

7. RTC Module (Operating voltage: 5V)

8. GSM Module ((Operating voltage: 5V)

9. GPS Module(Receiver Frequency :157542 MHz,5V)

10. Micro IOT With all Module

- RGB LED
- RELAY
- DOT MATRIX
- BUZZER
- LCD
- LDR
- PUSH BUTTON
- POTENTIOMETER
- BREADBOARD
- RESISTOR
- LORA MODEL
- NRF MODEL
- CAMERA MODULE
- LOAD CELL
- GYROSCOPE
- ACCELEROMETER
- MIC
- SPEAKER

11. Sensor

- Heart Rate Sensor(Operating voltage: 5V ,Output Signal Analog Voltage)
- Soil Moisture Sensor (Operating voltage: 5V ,Output Signal Analog Voltage)
- Ultrasonic Sensor (Operating voltage: 5V Detection Range : 2 Meter)
- IR Sensor (Operating voltage: 5V Detection Range : 2 Meter)

- PIR Sensor (Operating voltage: 5V Detection Range : 2 Meter ,Output Signal Analog Voltage)
- Dust Sensor (Operating voltage: 5V)
- Flex Sensor (Operating voltage: 5v)
- Gas Sensor((Operating voltage: 5V ,LPG GAS)
- Temperature & Humidity Sensor -(Supply : +5V DC ,Operating Humidity : 0 to 100 %RH ,Temperature Range: 0 to 100 C ,Output Signal : Analog Voltage)

12. MOTOR

- DC MOTOR (Operating V/I: 5V/1A)
- SERVO MOTOR (Operating V/I: 5V/3-5A)
- STEPPER MOTOR (Operating V/I:5V/3-5A)

SOFTWARE: -

This will consist of a suitable interface software package which includes an Implementation System of the integrated Manufacturing Execution System (MES) Production, and IOT based application.

Note: The specification of above-mentioned equipment are indicative only. OEMs/Resellers may suggest better equipment with latest specifications and futuristic technology.

ELIGIBILITY CRITERIA

- ❖ Bidder should be the manufacturer/authorized Reseller. Letter of Authorization from original equipment manufacturer (OEM) specific to the EOI should be enclosed.
- ❖ An undertaking from the OEM is required stating that they would facilitate the Bidder on a regular basis with technology/product updates and extend support for the warranty as well.
- ❖ OEM should be nationally / internationally reputed Company.
- ❖ In the EOI, either the authorized dealer on behalf of the OEM or OEM itself can submit EOI, but both cannot submit simultaneously for the same item/product in the same EOI.
- ❖ If an authorized dealer submits bid on behalf of the OEM, the same authorized dealer shall not submit a bid on behalf of another OEM.
- ❖ Sample photograph for offered items may be asked from EOI during technical evaluation & Presentation.

- ❖ OEM engaged in development & selling of similar type of turnkey project execution in at least 5 projects all over India.
- ❖ The OEM should have annual turnover Rs.1 crores for the any two financial years (2017-18, 2018-19 and 2019-20) and should submit audited statement and financial assessment copy/Income Tax Return Copy showing their net balance / Profit for last three financial years.
- ❖ The bidder should not have black listed by any Govt. Agency. A declaration in this regard to be submitted in the letterhead of the bidder.

PROCEDURE OF EOI EVALUATION AND FOR SHORTLISTING

- ❖ CTTC Bhubaneswar will evaluate the technical proposal received on EOI closing date. The scrutiny will be based on profile and track record of bidder, past experience of similar nature & magnitude.
- ❖ The shortlisted interested bidder has to participate on e-tender for techno commercial bidding through e-Procurement portal. <http://eprocure.gov.in/eprocure/app>. The bidders would be required to enroll / register on the e-procurement website <http://eprocure.gov.in/eprocure/app> For Submitting bids, the bidders are required to have Digital Signature Certificates issued by any of the Certifying authority of India
- ❖ Scrutiny of EOI: The EOIs received will then be assessed on the eligibility criteria mentioned at EOI document. EOIs found not meeting the eligibility criteria shall be considered non-responsive and shall be rejected.
- ❖ CTTC reserves the right to revert back to individual bidders with further clarifications / queries on the EOI. The bidder has to respond to the queries within the specified time mentioned in the covering letter.
- ❖ The EOIs shall be evaluated by the committee on following parameters against the maximum marks as shown against each:

Sl No.	Parameter	Maximum marks to be awarded
1	Experience in similar turnkey projects (min.5) with successful completion and performance certificate from the reputed customers during last 3 years ending on 31.03.2020. <ul style="list-style-type: none"> • Past Experience on similar Turnkey Projects: 5 or more projects: - 40 Marks • Each Project: - 08 Marks. 	40
2	Financial Strength of OEM: <ul style="list-style-type: none"> • Annual Turnover \geq 01 Cr - 25 Marks. <li style="padding-left: 100px;">\geq 50 lakh - 15 Marks. <li style="padding-left: 100px;">\geq 25 lakh - 10 Marks. • Less than 25 lakhs: - 0 Marks. 	25
3	Overall concept & proposal for the project: <ul style="list-style-type: none"> • Specification – 10 marks. • Layout – 10 marks. 	20
4	After sales support/Product Support network: <ul style="list-style-type: none"> • OEM/ Reseller must submit address and number of employee of functional service center in India. 	15
TOTAL		100

Note: Minimum qualifying marks is 60. CTTC reserve the right to lower the qualifying mark for shortlisting the agency, if there is inadequate eligible agency.

- ❖ **PRESENTATION BY THE ELIGIBLE BIDDERS:** The bidders meeting eligibility criteria shall next may be asked to make a presentation (approx. 30 minutes) about their proposals including architectural virtual model, drawings & proposed specifications of items in their Technical Proposal before a selection committee constituted by CTTC, Bhubaneswar.