

# Request for Proposal



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## Selection of System Integrator-cum- Implementing Agency for setting up of a Centre of Excellence on skill development on emerging technologies

*RFP No.: OCAC-IF&ITP-467-2023-24015*



## Vol-II | Terms of Reference



### ODISHA COMPUTER APPLICATION CENTRE

[TECHNICAL DIRECTORATE OF E&IT DEPARTMENT, GOVERNMENT OF ODISHA]

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## Abbreviations

AI	Artificial Intelligence
AMC	Annual Maintenance Contract
AR	Augmented Reality
BOM	Bill of material
BOQ	Bill of Quantity
CoE	Centre of Excellence
ESDM	Electronics System Design & Manufacturing
HW	Hardware
IoT	Internet of Things
IT	Information Technology
LOI	Letter of Intent
MAF	Manufacturers Authorization Form
MSME	Ministry of Micro, Small & Medium Enterprises
OCAC	Orissa Computer Application Centre
OEM	Original equipment manufacturer
POC	Point of Contact
R&D	Research and development
SW	Software
VR	Virtual Reality
SI	System Integrator
IA	Implementing Agency
SI-cum-IA	System Integrator-cum- Implementing Agency
OCAC	Odisha Computer Application Centre
E&IT, GoO	Electronics & Information Technology Department, Government of Odisha

## **1 Background**

### **1.1 About the Centre of Excellence**

The entire globe is experiencing a technology revolution, which is fast changing many aspects of our lives. There has been an exceptional level of disruption across the enterprise value chain during this digital era. Advances in digital technologies such as artificial intelligence, robotics, cloud computing, augmented reality, machine learning, the internet of things (IoT), and blockchain are driving this revolution. It has transformed the way businesses operate by empowering them to collect and process massive volumes of data with the goal of bettering their offerings and services. With new and more effective means of learning knowledge, monitoring health, and addressing environmental concerns, technology is transforming healthcare, education, and the environment. The technological revolution is likely to continue to profoundly transform our world, and it is critical to keep up with these changes in order to remain successful in today's fast-paced global economy.

Industry 4.0 is described as the technology-led business transformation of industrial operations. The deployment of Industry 4.0 results in increased performance, condition, and customer experience, supported by an environment of extreme efficiency and innovation acceleration. Across many countries within Asia, including India, governments are focusing to increase production, productivity and efficiency in industrial operations and within organizations.

The proposed CoE can play a significant role in facilitating the adoption and deployment of new technology and processes related with the fourth industrial revolution. By establishing this a CoE focused on emerging technologies and processes, the state can develop a comprehensive strategy for adoption and implementation, identify key success factors and risks, and establish a roadmap for the transformation process. CoE will serve as a hub of evolving technologies with excellence. Technologies like Electronic Systems Development & Embedded Systems, Advanced Manufacturing, Web 3.0, Cyber Security and 5G & 6G Wireless Communications are the pillars of CoE. The centre of excellence will drive innovation, R&D, training and Infrastructure as a service in the areas of Electronics System Design and fabrication, Additive Manufacturing, Cyber security, Data Sciences, Blockchain, Cloud computing and 5G & 6G Wireless communications in the state. The CoE can also provide training and support to students, startups and technopreneurs to build the necessary skills and knowledge required to work with new technologies and processes.

## **1.2 Objective**

Odisha Computer Application Centre, the Designated Technical Directorate of Electronics & Information Technology Department, Government of Odisha, has evolved through years as a center of excellence in Training, IT solutions and e-Governance. It has contributed significantly to the steady growth of IT in the state. OCAC intends to implement CoE, in order to enhance the technical space in the state. The main objective of the initiative is to;

- a) The core objective would be to drive innovation and create a complete ecosystem for Training, Design, Validation, and Proof of Concept to commercial product for the Indian Electronics market.
- b) To provide high quality training in emerging technologies including Industry 4.0 which will be designed and conducted by Industry leaders in each domain
- c) To attract, train and provide technical guidance to potential entrepreneurs and startups to facilitate and accelerate their entrepreneurial journey.
- d) To build use cases and POC's in multiple areas using the technologies deployed in the CoE
- e) To help innovators and inventors to transform their ideas into real life based products / services and support them with marketing and commercialization.
- f) To help reduce risks associated with new entrepreneurial ventures
- g) To disseminate knowledge and technology by acting as a bridge between the academic and the business world
- h) To create new job opportunities.

## **2 Scope of work**

### **2.1 Overview of the Scope**

The Center of Excellence should be an interdisciplinary, industry-supported facility dedicated to creating skill excellence in the fields of Design, Digitalization, and Industry 4.0. The centre shall support a multi-disciplinary learning environment across Technology, Engineering, Science, and Management faculties through training and implementation of industry-relevant technologies and procedures. It should satisfy the demands of the industries' ever-changing processes and aid in the development of skills related to collaboration and innovation. The center should leverage the bidder's capability to draw upon the expertise from various areas of emerging technologies.

- a) The SI-cum-IA shall operate the CoE in the emerging Industry 4.0 technologies by engaging best quality OEMs to provide following services;
  - i) Electronic System Design & Manufacturing
  - ii) Advanced Manufacturing
  - iii) Additive Manufacturing
  - iv) Autonomous Vehicle
  - v) Data Sciences
  - vi) Artificial Intelligence
  - vii) AR & VR
  - viii) Cloud Computing
  - ix) Blockchain
  - x) Cyber Security
  - xi) Autonomous Vehicles
  - xii) IoT
  - xiii) 5G Wireless Communications
- b) Provisioning of the interior design for establishment of CoE.
- c) Design, development and maintain a dedicated and dynamic website for the CoE.
- d) Publish all start-ups, mentorship and infrastructure services on the above mentioned official website.
- e) Publish course content, course curriculum, eligibility, certification, duration of the courses in the official website.
- f) Provide registration and enrolment facility for the courses offered in the CoE in association with the Higher Education Department and Skill Development & Technical Education Department of the State.
- g) Capture attendance of students attending training program.
- h) Provide facility for online payment for students who enrol for the training program.
- i) Provide consulting services, expert advice, and customised solutions catering to needs of industry and business organisations
- j) Provide lab services to students, professionals, start-ups and MSMEs.
- k) Responsible for promotional activities across the social media channels.
- l) Deployment of a single point of contact, who will be responsible for developing and executing a comprehensive marketing strategy that aims to promote the entity's brand, products, and services to a global audience.

- m) Arrange training sessions for the enrolled students in coordination with the OEMs.
- n) Create advanced and effective training plans to enhance skills and critical thinking of students besides providing them opportunity for exposure to industries.
- o) Undertake startup accelerator program for the technopreneurs and student groups from educational institutions across the State.

## **2.2 Project Planning and Management**

The selected bidder shall study and analyze the requirements for establishments of the CoE. During the project implementation, the selected bidder shall report to the authority, on following items:

- a) Results accomplished during the period
- b) Deviations caused if any with respect to the scheduled plan
- c) Modification or upgradation on the proposed plan
- d) Other issues and outstanding problems, and proposed actions to be taken
- e) Any Interventions to be made by OCAC or by the state government
- f) Preparation and submission of progress reports on periodic basis
- g) Issue management to help identify and track the issues
- h) Any changes in the scope finalized during planning phase
- i) Any risk identified during implementation and maintenance phase

## **2.3 OEM Onboarding**

The selected bidder is required to assess the requirements of the government as mentioned in the RFP and propose proven technologies from reputed OEMs to meet the requirements of RFP. It is required that the selected bidder will enclose the Manufacturers Authorization Form (MAF) for the respective Component. The SI-cum-IA shall comply to the below requirements:

- a) All products quoted by the selected bidder must be associated with item code and names and with printed literature describing configuration and functionality. Any deviation from the printed specifications should be clearly mentioned in the offer document by the selected bidder.



- b) The OEM for each product or technology quoted should be in the business of that product or technology for at least 3 years as on the date of release of the RFP.
- c) The OEM for all active components should give a declaration that products or technology quoted are neither end-of-sale nor end-of-life as on the date of installation and commissioning and are not end-of-support till the successful completion of warranty & maintenance period of the project.
- d) Selected Bidder shall ensure OEM support during Comprehensive Maintenance stage for system performance, performance tuning, upgrades etc.

## **2.4 Infrastructure Deployment**

### **2.4.1 Supply and Installation**

- a) The procurement of the hardware & software will be made once the hardware and software requirements have been determined. Selected Bidder shall be responsible for selection of various OEMs for hardware & software procurement.
- b) The selected bidder is responsible for delivery and installation at the destination.
- c) Selected Bidder will be responsible for detailed description of the hardware requirements, expected delivery date, pricing, warranty terms, and other relevant information.
- d) The proposed specification and bill of material will be finalized in line with the requirement for the smooth operationalization of the CoE.
- e) Supply of items as per the details provided in BOM-1 & BoM-2
- f) Any license supplied shall be unrestricted, perpetual and full use licenses
- g) Installation shall be done adhering to the OEM's guidelines and should be as per the specifications provided by the OCAC/Department.
- h) Once the installation is completed, the Selected Bidder will ensure that it is functioning correctly and meeting the intended business requirements.

### **2.4.2 Configuration and Integration**

- a) Component wise configuration to be done by the selected bidder
- b) Necessary integration with 3rd party applications & hardware

## **2.5 Lab Management**

The propose CoE shall have advanced labs, to act as a testing ground for the emerging technologies connected to the fourth industrial revolution, such as ESDM, Cyber Security, Block Chain, AI, IoT, AR & VR, Cloud Computing, Autonomous Vehicles and 5G wireless Communications. The proposed lab shall be set up to achieve following objectives:

- a) Provide outcome-based training in emerging technologies mentioned above keeping a focus on industry 4.0
- b) Support every aspect of product development, from concept design to final product through engineering and manufacturing solutions.
- c) Provide platform to start ups and MSMEs for technological enhancement.
- d) Facilitate research and development related activities.
- e) Facilitate testing and R&D services to necessary personnel/entities.

## **2.6 Monitoring and MIS Application**

SI-cum-IA shall develop and implement the following application modules for smooth management of the center. The IPR of all such modules would be with OCAC.

- a) Website and content management system
- b) Student registration and profile management system
- c) Attendance management system
- d) Student counselling system
- e) Training, certification and evaluation management system
- f) Office Automation System

SI-cum-IA will conduct a detailed functional requirement study and make sign-off with OCAC before starting the development of the application.

## **2.7 Social Media Management**

The SI-cum-IA shall engage the social media expert and domain consultant for managing the social media channels. The deployed team shall perform the following activities:

- a) Capturing social media channels and use in promotion of Directorate along with copyright in all contents.
- b) Ensuring up-to-date information respect to key event in the state by changing or promoting corresponding content (text, photos or other) or display theme at periodic intervals. All content on the social media sites is subject to approval from the user.
- c) Managing the user credentials of social media sites for the Directorate. The SI must submit the credentials to the Directorate on-demand or on-termination/ completion of the work.
- d) The deployed (either off-site or on-site depending on the requirement) resources should have below qualification and experience.

Designation	Qty	Minimum Qualification
Social media expert	3	<ul style="list-style-type: none"> <li>– Education MBA/Masters in Mass Communication</li> <li>– Experience of 3 years of Social Media Marketing experience</li> </ul>
Domain consultant (Social Media)	1	<ul style="list-style-type: none"> <li>– Education MBA with Marketing Specialization or Masters in Mass Communication</li> <li>– Experience of 4 years of Social Media Marketing experience.</li> <li>– Must have strong knowledge and thorough understanding of marketing, advertising and promotional principles Should have in-depth knowledge and understanding of Social Media platforms, their respective participants (Facebook, Twitter, Google+, YouTube, Instagram, Pinterest etc.) and how each platform can be deployed in different scenarios.</li> </ul>

## 2.8 Consultancy Services

The COE will cater to following consultancy services.

- a) Provide consultation activities through workshop or personal Interview
- b) Provide consultation services related to strategy formulation, procurement process, project management approach
- c) Act as the rapid knowledge transfer agent to the user community.

- d) Evaluate and recommend emerging technologies, products, and enterprise-wide solutions
- e) Collaborate to assess the cross functional impacts of business decisions
- f) Provide input on incubation processes and procedures

## 2.9 Training

The center has to deliver certified courses in various technology areas to the students of engineering colleges, polytechnics, ITI's, other colleges and various other institutions across the State. The center should run multiple batches in a day with a combination of classroom and online sessions. Tentative training program outline is hereby given below on which the selected bidder has to provide training:

### 2.9.1 Electronic System Design & Manufacturing

Courses	Objective	Certification
Beginner	A course designed for students who wish to make a career in ESDM Industry. Through this training, students can develop a deep understanding of the various aspects of electronics system design and manufacturing, including circuit design, PCB layout, and prototyping. Special courses would be on EV and UAV	Academic Institution/ Industry Partner/ Industry Association
Intermediate		
Advanced		

### 2.9.2 Advanced Manufacturing

Courses	Objective	Certification
Introduction to Design	This course will guide students through the concept of profile modelling and will allow students to utilize 3D surface and 3D solid modelling tools to create and edit more complex designs. To round out students' foundational knowledge, students will dive into 3D rendering and creating 3D printable models. Then, once they have completed each step of the course, they can bring their newfound skills together into one final 3D modelling project.	Academic Institution/ Industry Partner/ Industry Association
Advanced Manufacturing	Introducing the basics to advanced level of Additive manufacturing process and its unique attributes and offerings while comparing with	

Courses	Objective	Certification
	traditional manufacturing processes.	

### 2.9.3 Cyber Security

Courses	Objective	Certification
Beginner	The Cyber security course will demonstrate to employers that students have foundational knowledge of industry terminology, network security, security operations and policies and procedures that are necessary for an entry- or junior-level cyber security role. It will signal students understanding of fundamental security best practices, policies and procedures, as well as students' willingness and ability to learn more and grow on the job.	Academic Institution/ Industry Partner/ Industry Association
Intermediate		
Advanced		

### 2.9.4 Blockchain

Courses	Objective	Certification
Blockchain Developer	A blockchain developer course is designed to provide a comprehensive understanding of blockchain technology and its applications and equip individuals with the skills necessary to develop blockchain-based solutions.	Academic Institution/ Industry Partner/ Industry Association

### 2.9.5 Data Sciences

Courses	Objective	Certification
Beginner	In this course you will get an introduction to the main tools and ideas in the data scientist's toolbox. The course gives an overview of the data, questions, and tools that data analysts and data scientists work with. There are two components to this course. The first is a conceptual introduction to the ideas behind turning data into actionable knowledge. The second is a practical introduction to the tools that will be used in the program.	Academic Institution/ Industry Partner/ Industry Association
Intermediate		
Advanced		
Data Analytics	This course covers basic statistical concepts that	

Courses	Objective	Certification
	are critical for understanding and using statistical methods. This course explains what statistics is and why it is important to understand the characteristics of your data.	
Data Visual Analytics	In this course, you gain the skills that data scientists and statistical business analysts must have to succeed in today's data-driven economy. Learn about visualizing big data, how predictive modelling can help you find hidden nuggets, the importance of experiments in business, and the kind of value you can gain from unstructured data.	

### 2.9.6 AR and VR

Courses	Objective	Certification
Beginner	Understanding the fundamental concepts and technologies behind AR and VR, such as sensors, displays, tracking, and interaction methods. Acquiring skills for designing and developing AR and VR experiences, such as creating 3D models, programming, and testing. Gaining knowledge of industry-standard tools and software for AR and VR development, such as Unity and Unreal Engine. Learning about the design principles and best practices for creating engaging and effective AR and VR experiences, including user experience (UX) and user interface (UI) design. Examining the current state of the AR and VR industry and exploring potential future developments and applications. Building hands-on experience through course projects, group activities, and individual assignments. Engaging in discussions and debates on the ethical, social, and economic implications of AR and VR technology.	Academic Institution/ Industry Partner/ Industry Association
Intermediate		
Advanced		

### 2.9.7 Cloud Computing

Courses	Objective	Certification
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Courses	Objective	Certification
Cloud Solutions Architect	This professional certificate provides the knowledge and skills you need to start building your career in cloud architecture and helps you prepare for the Certified Solutions Architect.	Academic Institution/ Industry Partner/ Industry Association

### 2.9.8 IoT

Courses	Objective	Certification
Beginner Intermediate Advanced	Internet of Things (IoT) is an emerging area of information and communications technology (ICT) involving many disciplines of computer science and engineering including sensors/actuators, communications networking, server platforms, data analytics and smart applications. IoT is considered to be an essential part of the 4th Industrial Revolution along with AI and Big Data. This course will be very useful to senior undergraduate and graduate students as well as engineers who are working in the industry. This course aims at introducing the general concepts and architecture of IoT applications, networking technologies involved, IoT development kits including Arduino, Raspberry Pi, Samsung ARTIK, and how to program them.	Academic Institution/ Industry Partner/ Industry Association

### 2.9.9 Autonomous Vehicles

Courses	Objective	Certification
Autonomous Vehicles (ADAS)	This course gives you a comprehensive understanding of state-of-the-art engineering practices used in the self-driving car industry. By the end of this course, you will be able to: <ul style="list-style-type: none"> <li>a) Understand commonly used hardware used for self-driving cars</li> <li>b) Identify the main components of the self-</li> </ul>	Academic Institution/ Industry Partner/ Industry Association

Courses	Objective	Certification
	driving software stack c) Program vehicle modelling and control d) Analyze the safety frameworks and current industry practices for vehicle development	

### 2.9.10 5G Wireless Communications

Courses	Objective	Certification
Introduction and 5G Core and Protocols	a) Overview of wireless and cellular communications b) Overview of the 5G NR vision c) Introduction to 5G networks and features d) Discuss 5G spectrum and mmWave e) Learn about Massive MIMO and its impact on wireless technology f) Discuss the evolution of the 5G radio access network (RAN) g) Dive into 5G private networks & industrial IoT h) Overview of 5G security	Academic Institution/ Industry Partner/ Industry Association

### 2.10 Startup Accelerator Program

The purpose of a startup accelerator is to accelerate startup’s growth. It should be a mentor-based program that will provide intensive guidance, support and structure for a set period of time, typically three months to six months.

The bidder should propose startup accelerators that can provide funding, thereby covering early-stage business expenses as well as travel for the three to six-month residency at the startup accelerators. The Startup accelerator program should offer:

- a) Startup accelerators should provide critical connections/ networking.
- b) Startup accelerators should provide technical and business mentoring.
- c) Startup accelerators will create an environment for business growth
- d) Providing physical space along with labs as an add-on feature.
- e) Access to Investors (VC, Angel etc.)



- f) Access to support from large corporates.

The accelerator program should target to reach out to large part of the State's Universities and Institutions (both public and private) in successfully inviting startups and student groups for meaningfully engaging with the accelerator for their growth. The Bidder must present a long-term plan for the Startups Accelerator initiative with realistic outcomes in terms of number of startups incubated at the center. The bidder should also present a plan for the number of startups to be supported during the project along with the areas of technologies which the accelerator program will support.

### 2.11 Warranty & Maintenance

The selected bidder shall carry out warranty & maintenance of all the new hardware & software listed in the BOM-1 & BOM-2 for a period of 5 year from the date of go-live of the CoE. During this phase, the selected bidder shall be responsible for followings;

- a) Replace/repair the defective hardware items.
- b) Provide necessary support for software maintenance

### 2.12 Expected Deployment of Personnel (Onsite)

Sl#	Section	Resource	Qty
a)	Head	Center Head	1
b)	Sales	Business Development – Academic	2
c)	Sales	Business Development –IaaS	2
d)	Sales	Tele callers	2
e)	Sales	Academic Counselors	1
f)	Sales	Marketing & Promotions	1
g)	Academic	Admission Team	2
h)	Academic	Trainers	10
i)	Academic	Academic Coordinators	1
j)	Academic	Examination team	1
k)	Academic	Placement Officer	1
l)	Operation	Operations Head	1
m)	Operation	Finance Manager	1

n)	Operation	Accountant	1
o)	Operation	IT Administrator	1
p)	Operation	IT Support	2
q)	Operation	Administration	1
r)	Operation	Support Staff	2
s)	Operation	Application Engineer	2
Total no. of resources are to be deployed on-site during the contract period			35

### 2.13 Expected Project Timeline & Payment Terms

Payment will be released to the successfully shortlisted bidder in phased manner as stated below:

Deliverables/Milestones	Timelines	Payment	Remarks
Tender Award	T0	i) 50% payment will be released against materials (hardware & software) delivered at Site. Payment against part delivery will be considered.  ii) Another 30% will be released on installation & commissioning and integration of the delivered items.  iii) Last 20 % of the payment will be released after completion of supply of all materials and installation & commissioning as well as integration in all respect for the whole CoE.	Award of Tender to the selected bidder and issuance of LOI.
Agreement	T0 +1 Month		Completion of Agreement signing and award of Purchase Order
Inception Report / Resource Mobilization	T0 + 1 Month		Submission of complete BOM with unit number and cost along with vendor name, model, AMC details & others
Completion of Procurement	T0 + 8 Months		Completion of procurement of all HW & SW for the operations of the Center and submission of invoice with the BOM.
Completion of System Integration	T0 + 10 Months		Completion of System integration and submission of System integration report.
Final Acceptance Test & Go-Live. Engagement of Operation & Maintenance team	T0 + 11 Months		Final Testing and commissioning of individual systems and components, Integrated testing, Uptime certification testing, Go-Live certification and Engagement of Operation and maintenance team.
Warranty and maintenance Management for 5 year payable quarterly		100% (per quarter)	Payment terms would be quarterly post submission of all relevant bills.

**Note:** - All the payments will be made to the successful bidder in Indian Rupees only. Payments will be made after thirty (30) days of receiving the invoice subject to approval from competent authority. The Invoice has to be raised in the name of ODISHA COMPUTER APPLICATION CENTRE, OCAC Building, Acharya Vihar Square, Bhubaneswar-751013, Odisha, India.

Tax shall be shown extra by the Selected Bidder in their invoices for the items applicable. The same shall be paid by OCAC as per actual after verification. Similarly, if there is any tax savings, the same shall be reduced from the payable amount.

In case of any new incidence of tax or any change in existing tax rates taking place during the Agreement Period, that shall be borne and payable by OCAC over and above the agreed price for each item as may be applicable as per the Invoice raised by either Party/Member of the on OCAC. Similarly, any reduction in taxes shall be to the benefit of OCAC. All invoices produced to OCAC for payment should be with TAX invoice.

**CAPEX** may include the cost of Non-IT, IT equipment, active and passive component required for the project.

**OPEX** may include operational expenditure as Manpower cost, Operational Expenses, Other Expenses and Annual Maintenance Cost including comprehensive AMC of all the equipments for 05 (Five) years (Year 1+ Year 2+ Year 3+ Year 4+ Year 5) etc. to be incurred by the bidder for operation and maintenance of Project for 5 years after Go-Live.

## **2.14 Possible Outcomes**

With the successful management of CoE for a period of 5 years following outcomes shall be expected

- a) Approximately 20,000 students per year will get trained through CoE.
- b) Job assistance needs to be provided to all the qualified/meritorious students registered.
- c) 2%-3% of enrolled startups will get formed out of the total enrolled startups
- d) 5%-10% companies/MSMEs will get benefited by collaborating with CoE.
- e) CoE shall facilitate all necessary requirement for conducting research & development projects.

- f) Create revenue opportunities for the CoE through following activities;
  - i) Conducting Joint Research
  - ii) Product Development
  - iii) Providing Consulting Services
  - iv) Conducting Training & Workshops
  - v) Providing Lab Services to startups, MSMEs & Researchers

### **3 Roles & Responsibilities**

#### **3.1 Roles & Responsibilities of OCAC**

- a) To provide a plug and play infrastructure with all necessary electrical and non-electrical setup (Interiors, furniture and fixtures, Classrooms, labs, reception areas, waiting lounges, canteen, office space, electrical backup, air conditioning etc.). The CoE will be to be located at 11th floor spread over 20,000 sq. ft. built-up space of the World Skill Centre, Mancheswar Industrial Estate, Bhubaneswar. The lay out drawing of the above floor area is attached at page 42 (last page) of this document.
- b) Facilitating students to be sent to the centre from various technical and non-technical institutions under the Odisha Government for mid to short term programs.
- c) OCAC may facilitate Education Department for the center to ensure that every such institution under these agencies send a minimum of 250 students per year per college or institution to the center on an annual basis for technology training at a bare minimum fee.
- d) All electrical equipment provided for the plug and play infrastructure will be maintained for the full term of the project.
- e) Facilitate promotional activities.
- f) Maintenance of the physical structure of the premises
- g) To facilitate the selected bidder to connect with other Incubators and trade organizations supported by the Government and getting into definitive agreements with the center for collaborations.
- h) To facilitate interaction with respective departments for Industry 4.0 sensitizations and implementation at cluster level.

#### **3.2 Roles & Responsibilities of Selected Bidder**

- a) Start establishing the center as per the timeline given in Section 2.13 hereinabove from the date of the Purchase order.

- b) Coordinate among & between the stakeholders.
- c) Provide appropriate design and interiors plan for the center.
- d) Facilitate promotional activities across social media platforms.
- e) Make and enhance branding across the globe.
- f) Help in formation of a steering committee which is composed of educationist, technology company senior representatives, incubation companies, venture capitalist and government representatives.
- g) Liaison with respective leading Industry partner/ Corporations for all Certification Training Program.
- h) Liaison with Partners for finalizing the Course Content of the Program.
- i) Implementing Agency along with Partner would take all steps to create employment opportunity for Students.
  - i) Students will be designated as meritorious students based on their performance and attendance in the relevant Training Program.
  - ii) Meritorious students should get minimum two chances for interviews with Potential employers
  - iii) At least 50 % of the meritorious students should get employment opportunities.
- j) Create conducive environment for Startups.
  - i) COE will work as an incubator cum accelerator for Startups for enhancing their potential under the guidance of Startup Odisha.
- k) Implementing Agency will source the students from various colleges for skill development training.
- l) All revenue generated from the CoE will be remitted to OCAC on a quarterly basis in full with break-up and relevant details.

#### 4 Bill of Materials [BOM]

Detail Bills of materials should be provided by the bidder along with the quantities in respect of the following:

##### 4.1 BOM-1 [Hardware and Software]

along with configuration required for setting up entire IT infrastructure for the centers inclusive of Servers, storage, laptops, backend systems, displays etc.)

Sl#	Location	Category	Item	Configuration	Unit	Qty
1)	Server Room	Hardware	Servers	24 core, Intel Xeon Gold processor, 1 TB RAM,1 TB HDD, Connectivity 2x10G, 2x32FC, RPS	No	8
2)	Server Room	Hardware	SAN Storage + SAN Switch	Storage - 300 TB usable on RAID 5, Dual Controller, SAN Switch - 12 Port (HA Pair)	No	Lot
3)	Server Room	Hardware	Core Switch (HA Pair)	48 Port, L3 Switch	No	1
4)	Server Room	Hardware	DC Switch for POE Equipment's (CCTV & Biometric)	24 Port, L2 POE Switch	No	4
5)	Server Room	Hardware	Firewall (HA Pair)	300 User Support	No	1
6)	Server Room	Hardware	10 KVA UPS	10 KVA UPS N+1 with 2 hours backup	No	1
7)	Server Room	Hardware	42U Rack	42U Rack (Server & Network)	No	3
8)	Server Room	Hardware	Network Cable & Accessories	Network Cable & Accessories	Lum Sum	1
9)	Server Room	Hardware	Wireless Controller	Wireless Controller	Lot	1
10)	Server Room	Software	NMS	NMS for IT infra monitoring	No	1
11)	Server Room	Software	End Point Security	Antivirus, Malware protection	No	525

Sl#	Location	Category	Item	Configuration	Unit	Qty
12)	Server Room	Software	Student & Training Management System	Student & Training Management System	No	Lot
13)	Server Room	Software	Server Operating System	Windows / Linux Enterprise	No	
14)	Server Room	Software	RDBMS	RDBMS	No	
15)	Server Room	Hardware	NVR	32 Channel NVR, 6 TB HDD	No	1
16)	Server Room	Hardware	Dome / Bullet Camera	Dome / Bullet 4 MP Camera	No	4
17)	Server Room	Hardware	Access Control	Biometric device for DC Entry & Exit	No	2
18)	Server Room	Software	NAC	Network access control for 500 Users / Endpoints	Lot	1
19)	Server Room	Software	Digital Identity Solution	Blockchain-Powered Identity and Authentication for 350 users	Lot	1
20)	Lab	Hardware	Wireless Access Point	Wireless Access Point	No	10
21)	Lab	Hardware	Workstation - ESDM	i10, 32 GB RAM,500 GB SSD,4 GB Graphics, Win 10,21 inch Display + Mouse	No	60
22)	Lab	Hardware	Workstation - Additive/Advanced Manufacturing	i10, 32 GB RAM,500 GB SSD,4 GB Graphics, Win 10,21 inch Display + Mouse	No	35
23)	Lab	Hardware	Laptop - Additive/Advanced Manufacturing	i10, 32 GB RAM,2000 GB SSD,16 GB Graphics, Win 10,14 inch or higher	No	2
24)	Lab	Hardware	Workstation - AR & VR, Gaming & Metaverse	i7, 32 GB RAM,1000 GB SSD, Win 10,21 inch Display, KB + Mouse	No	30
25)	Lab	Hardware	Workstation - Autonomous Vehicle	i10, 32 GB RAM,500 GB SSD,4 GB Graphics, Win 10,21 inch Display,KB+Mouse	No	30
26)	Lab	Hardware	Laptop for other technology	i7 16GB RAM/1TB SSD, 14 inch or higher	No	300

Sl#	Location	Category	Item	Configuration	Unit	Qty
27)	Lab	Hardware	1 KVA UPS	1 KVA online UPS (30 Mins. Backup)	No	155
28)	Lab	Hardware	Network Cable & Accessories	Network Cable & Accessories	Lum Sum	11
29)	Lab	Hardware	Projector	LED Projector	No	11
30)	Lab	Hardware	Projector Screen	Projector Screen	No	11
31)	Lab	Hardware	Desktop for Projector	i5, 16 GB Memory, 500 GB HDD, Win 10, Dual Display output (Projector and 70" Display)	No	11
32)	Lab	Hardware	Display	70" Display	No	11
33)	Lab	Hardware	Switch	24 ports x1GbE	No	22
34)	Admin	Hardware	Laptop	i5, 16 GB Memory, 500 GB HDD, Win 10, 14 inch Screen	No	45
35)	Admin	Hardware	Network Cable & Accessories	Network Cable & Accessories	Lum Sum	1
36)	Admin	Hardware	Biometric Device	Biometric Device	No	30
37)	Admin	Hardware	Dome / Bullet Camera	Dome / Bullet 4 MP Camera	No	26
38)	Admin	Software	MS Office	MS Office - Lab Instructor, Admin, HR and others	No	45
39)	Admin	Hardware	Miscellaneous	Others	Lum Sum	1
40)	Admin	Hardware	Display	70" Display	No	5
41)	Admin	Hardware	Internet	50 mbps internet	Lum Sum	1
42)	Admin	Hardware	MFP-Mono	MFP High End (Monochrome)	No	2



Sl#	Location	Category	Item	Configuration	Unit	Qty
43)	Admin	Hardware	MFP- Colour	MFP High End (Colour)	No	1

#### 4.2 BOM-2 [Software and OEM Requirement]

Sl#	Lab	Technology	Description	Quantity
1)	Advanced Manufacturing	Advanced Manufacturing	Composite desktop 3d printer with continuous fiber filament	2
			Industrial grade composite printing unit with continuous fiber filament	1
			Industrial grade composite production unit with aerospace grade materials	1
			Industrial grade SLS polymer production system with FR grade material	1
			Direct metal laser sintering systems for medical and aerospace with pulse laser	1
			Consumables & Raw Materials for all the above 3D printers	1 year
			SLA LFS machine with bio compatible resins (FDA certified)	2
			Rapid SLS production machine with 30 W laser and automated post processing	1
			Fused deposition modeling machine for industry applications	1
			Low cost FDM machine	1
			Vacuum Casting machine	1
			Paint Booth	1
			Handheld 3D Scanner	1
			Reverse Engineering Software	1

SI#	Lab	Technology	Description	Quantity
			Metal AM Software	4
			Thermoplastic AM Software	4
			3D CAD designing software Academic	25
2)	Data Sciences	Data Sciences	Private cloud for Hyper-Converged and Scalable Compute	1
			1 API	25
3)	5G Wireless Communications	5G Wireless Communications	Network Controller, Radio Portfolio, Cloud Management, Centralized ENM management, Basebands, routers, Radio dots, Micro radios, macro radios etc	Bundle offer
4)	Autonomous Vehicles	Autonomous Vehicles	VTD toolkit for the creation, configuration, presentation and evaluation of virtual environments – ADAS - Used in SiL, DiL, ViL and HiL applications	25
5)	AR and VR	AR & VR	Cross platform game engine for 3D and 2D games, simulations & other experiences	30
			Advanced All-In-One Virtual Reality Headset	3
			VR Headset	3
			Immersive headset	3
			AR Device (Tablet)	3
			Holographic device with enterprise-ready applications	2
6)	Electronic System Design & Manufacturing	ESDM EV Lab Software	multiphysics simulation software	1
			Mechanical Enterprise Solver	1
			Electronics Enterprise Solver	1
			Electronics Enterprise Prep/Post	2
			Mechanical Enterprise PrepPost	2

Sl#	Lab	Technology	Description	Quantity
			CFD Enterprise Solver	1
			Integrated tool supporting safety analysis for safety-critical electrical and electronic (E/E) and software (SW) controlled systems.	1
			CFD PrepPost	2
			Reliability physics-based electronics design tool	1
			Motion	1
			Motion Drivetrain	1
			Motion Links	1
			Motion Car	1
			Motion Easy Flex	1
			Motion STEP Translator	1
			Motion Parasolid Translator	1
			Motion CATIA Import	1
			HPC Pack	1
7)	Electronic System Design & Manufacturing	ESDM UAV Lab Software	CAE-based sensitivity analysis, multi-disciplinary optimization and robustness evaluation	1
			Mechanical Enterprise Solver	1
			Electronics Enterprise Solver	1
			Electronics Enterprise Prep/Post	2
			Mechanical Enterprise PrepPost	2

Sl#	Lab	Technology	Description	Quantity
			CFD Enterprise Solver	1
			Integrated tool supporting safety analysis for safety-critical electrical and electronic (E/E) and software (SW) controlled systems.	1
			CFD PrepPost	2
			Multiphysics program used to analyse the nonlinear response of structures plus 16 cores	16
			Optical system design software for the design, optimization, visualization and validation	1
			Optical system design software for the design, optimization, visualization and validation Optical Sensor Test	1
			HPC Pack	1
8)	Electronic System Design & Manufacturing	ESDM SW Lab	Automated reliability analysis software, a physics of failure-based electronics design tool	1
			Electronics Enterprise Solver	3
			Electronics Enterprise Prep/Post	5
			photonic simulation software Enterprise	1
			Motor-CAD Enterprise	1
			EMA3D Cable	1
			automated RF, microwave and digital filter design, synthesis and optimization FilterSolutions	1
			HPC Pack	1
			medini analyze Enterprise for Semiconductors	1

SI#	Lab	Technology	Description	Quantity
			Power noise and reliability signoff for digital IP and SoCs-SC-Token	50
			Power noise and reliability signoff for digital IP and SoCs Signal EM	5
			Power noise and reliability signoff for digital IP and SoCs Advanced Low Power	5
			PowerArtist-XP	5
			Chip Power Model	5
			Transistor-level IR drop power noise and electromigration reliability analysis software for analog and mixed-signal chips-MMX	20
			silicon-optimized electromagnetic solver	5
9)	Electronic System Design & Manufacturing	Common pool of Academic licenses	Academic Multiphysics Campus Solution (10/100)	1
			Academic Research SCADE (5 task)	1
			Academic Teaching SCADE (25 task)	1
			EduPack (25)	1
			Academic Lumerical Research (5 Tasks)	1
			Academic Lumerical Teaching (25 Tasks)	1
10)	Electronic System Design & Manufacturing	Metal Additive & Material Science Lab	Additive Suite	2
			Selector	1
			Materials Data for Simulation	1
			Research Advanced Materials - Aero	1
			Research Advanced Materials - Metals	1

Sl#	Lab	Technology	Description	Quantity
			Research Advanced Materials - Polymers	1
			Research Advanced Materials - Composites	1
			Research Advanced Materials - Additive Manufacturing	1
			Research Advanced Materials - Eco	1
			Research Advanced Materials - Electromagnetics	1
11)	Electronic System Design & Manufacturing	Academic Learning Licenses	LEARNING HUB / subscription	25
12)	Electronic System Design & Manufacturing	ESDM PCB Design Software & Package Design	Components Editor	5
			Design Gateway	25
			DG PDF Compiler	5
			DG Analog Simulation Control Unit	5
			DG Analog Simulation Library	5
			DG HSPICE I/F	5
			Design Force	25
			Intelligent Place and Route	10
			Single Board CAM Import	2
			DF ODB++ Import	2
			DF EMD Collaborator	10
Advanced STEP Generator	2			

Sl#	Lab	Technology	Description	Quantity
			Multi Object Design	25
			SiP Design	25
			SoC/PKG/PCB Co-Design	25
			Integration Basic	2
			Integration Advance	2
			Single Board CAM Export	5
			DF IPC-2581 Export	2
			IPC-D-356 Export	2
			DF ODB++ Export	2
13)	Electronic System Design & Manufacturing	ESDM Software Lab	VCS Base	5
			Verdi Base	5
			VC SpyGlass Base	1
			Design Compiler Base Pkg	1
			Custom Compiler Base - Front End	2
			Custom Compiler Base - Back End	2
			PrimeSim HSPIICE Base	5
			PrimeTime Base	1
			VC VIP AMBA AXI4 Base	1
			Asia Pac FrontEnd University Bundle	10

Sl#	Lab	Technology	Description	Quantity
			Asia Pac BackEnd University Bundle	5
			Asia Pac FullCustom University Bundle	5
14)	Electronic System Design & Manufacturing	EV Hardware lab	Electric Drivetrain Experimental Setup for Static Loading	1
			EV Drive Train Educational setup	1
			Hybrid Drive Train experimental setup - Series	1
			Hybrid Drive Train Experimental Setup - Parallel	1
			BLDC Motor   Hub Motor   Induction Motors   Controller – cut section for demonstration & training	1
			Training Setup with chassis, harness, lighting & control system	1
			1250 W motor, controller differential with platform foot pedal etc.	1
			Battery Prototyping & Testing Lab	1
			Cell Capacity Tester · Cylindrical & Prismatic	1
			Cell Testing Machine 26650/186500	1
			Load Capacity Testing Machine with	1
			Spot Welding Machine	2
			18650 – 2600 MAH 3.2V	250
			26650 – 5000 MAH 3.7V	250
			BMS with CAN protocols	5
			LFP – 3.2 V, 50 Ah	20



Sl#	Lab	Technology	Description	Quantity
			For Prototyping of Batteries	20
			EV Charging Infra and Technology Lab	1
			Off Grid PCU, Energy Storage with Monitoring System and off Grid Charging System with HV and HV Harness	1
			V2G Training Module	1
			On-Grid Charging Station with Power Distribution Layout	1
			Electric Vehicle Toolkit & Safety Equipment's	5
			Multimeter, Screw Driver Kit, Vernier Caliper, Micrometer, AMP, Voltage Meter, Techo-Meter	20
			First Aid Kit, Helmet, Face Mask, Gloves etc.	2
			Tool Kit along with Welding Machine	15
			Drive Train, Fuel Cell, EV – Charging, HEV, FCEV, Motors & Controller etc.	2
15)	Drones	UAV HW Lab	LED HD Display with dolby digital sound, Screen Size 32 Inches, Android OS, Windows 11 Pro or latest, 8GB Ram 256 GB SSD, 2 GB Intel Graphic Card, Intel i5 processor, Drone Flight SIM with Multiple Rotor based Drone options, Mutile levels of practice, multiple environment options, Variations of Wind Speed, Real life Graphics	10
			LED HD Display with dolby digital sound, Screen Size 55 Inches, Android OS, Windows 10 Pro or latest, 8GB Ram 256 GB SSD, 2 GB Intel Graphic Card, Intel i5 processor, Drone Flight SIM with Multiple Rotor based Drone options, Mutile levels of practice, mul	1
			1 x APM 2.8 Flight Control Board, 1 x F550 Hexacopter Frame Kit, 6 x A2212 1000KV Brushless Motor For RC Airplane / Quadcopter, 6 x 30A Brushless	40

Sl#	Lab	Technology	Description	Quantity
			ESC, 3 x 1045 Propeller 10in 10x4.5 For Drone, 1 x FS-i6S 2.4G 10CH TX-RX, 1 x APM Pixhawk Power Module with XT60, 1 x Nylon Strap Belt for RC Lipo Battery, 1 x 3D printed Shock Absorber Anti-vibration Set for APM Pixhawk, 5200 mah Lipo Battery 3 cell	
			Complete Screw drivers Set for various Frames, Soldering Iron, Soldering Accessories, Blowers, 5 set Brush, Propellor balancer check Unit, Magnifying Glass, Tool Box, Lippo tester, Thrust tester, weighing measuring unit, Multimeter, Cell Charger, Electric Tape, Cable tie, Shrink tube, DST, Silicon Wire AWG, Battery Strip, XT 60 connector, Bullet Connector, allen Screw, wire cutter, nose pleyer, pleyer, Twiser, HexaBlade, Soft Head Hammer, Ball point hammer, Hot glue gun, heat gun, vernnier callipers, file set, Scissor, Angle Grinder, Electric Screw Driver, Drill machine Stand, Grinder Stand , F Clamp, Adjustable wrench, C clamp set, Screw driver bit set, Drill bit set, Grinding wheels,	40
			3D Printer, Fillaents, Filler gaugae , Insullation tape	1
			Tubes, Sheets of carbon fibres of various thickness	20
			CNC routing machine	1
			Rugged processing Unit for GCS	2
			Data Processing Unit Display 42 inch minimum, Data Processing Computing unit, Connectors for Com between Drone & DPU, Customised GIS tools	3
16)	Electronic System Design & Manufacturing	PCB Lab HW	Substrate Cutting Machine - NE Cut	1
			PCB Prototyping machine – for Drilling and Milling	1
			Brush Cleaning - RBM300 BLC with spare Abrasive roller	1

Sl#	Lab	Technology	Description	Quantity
			PTH Machine - Compacta 30 with chemicals starter kit, Anode assembly set & 3 board holders	1
			Lamination - RLM 419P with 2 nos. each of Etch Resist & Solder mask Film roll	1
			Photoplotter - Film Star -Plus Standard- with starter kit, film punch & Dark room	1
			Double sided vacuum exposure - Hellas	1
			Double sided Spray Developing - Splash D along with chemicals set	1
			Spray Etching - Splash Centre for Spray Etching, stripping & tinning along with chemicals set	2
			Water Treatment Plant - Ionex A with pH meter	1
			Multilayer Press - RMP 210 incl. of starter kit & Favorit with 1000 registration pins/rivets	1
			PCB curing – Hot Air 3000 oven	1
			Stencil Printer for Solder masking, solder paste & legend printing - PrintStar 3000	1
17)	Electronic System Design & Manufacturing	Antennae RF Lab	Signal Generator, 2 - 40 GHz	1
			Option 4, RF Coverage 8 MHz - 2.2 GHz, with a digital down-converter for ultra-low phase noise	
			Option 2B, Mechanical Step Attenuator, 110dB (For Model MG3694C)	
			Field Master Pro Spectrum Analyzer	1
			Frequency Range 9 kHz to 43.5 GHz	
			RF Anechoic Chamber Frequency 800 MHz to 40 GHz	1 set

Sl#	Lab	Technology	Description	Quantity
			Chamber Size (Outer): 3m x 3 m x 2.6m (LWH)	
			3 Axis Positioner with VNA Interfacing Software	
			Broadband Reference Horn Antenna of frequency range 800 MHz to 40 GHz with test Reports.	
			Ultra Low loss Cables Total length 20 meters.	
			Accessories: Adapters, AC, Desktop Computer, CCTV ..... With Complete Installation & Testing	
18)	IOT	IOT	DFRobot LattePanda DFR0444 (Atom X5-Z8300 "Cherry Trail")	8
			Minnowboard Turbot 4210 (Atom E3845)	8
			UP - Atom X5-Z8350	8
			UP Embedded Vision Starter Kit (UP Board + Camera, etc)	8
			UP Squared (Celeron N3350 / Pentium N4200 / Atom X5-E3940)	8
			UP Squared AI Vision X Developer Kit (Board + Camera + Movidius + OpenVINO)	8
			UP Squared RoboMaker Developer Kit (Board + Movidius + RealSense Camera + OpenVINO)	8
			UP Core (Atom X5-Z8350)	8
			UP Core Plus (Atom X5 / X7)	8
			UP Vision Plus X (3 x Intel Movidius Myriad X)	8
			UP AI Plus (Intel Cyclone 10 GX)	8
			UP Net Plus (Intel i211AT Network Interface)	8

Sl#	Lab	Technology	Description	Quantity
			UP Xtreme (8th Gen Core i3/i5/i7)	8
			X11SWN-L (Core i3-8145UE)	8
			A2SAP-L (Intel Atom E3930 "Goldmont" SoC)	8
			Intel Quad Core 8th Gen i5 Tall NUC Barebone Mini PC Kit	8
			Intel NUC Barebone Tall Mini PC Kit Quad Core i7 with ThunderBolt3	8
			Intel Neural Compute Stick 2 (USB)	8
			Intel Nervana NNP-I (PCIe Inference card)	8
			Intel Nervana NNP-T (PCIe Training card)	8
19)	Cyber Security & Blockchain	Blockchain & Cyber Security	Intel Xeon, 128GB RAM, 1 TB SSD	3
			Firewall 100D	2
			Switches 48-Port 10/100G,	4
			Unified Storage Per Student 5GB + VMs space = 2TB	1
			Windows Server 2022 DC Edition or equivalent	2
			Windows Server 2022 CAL or equivalent	25
			Windows SQL Server 2022 or equivalent	2
			Windows SQL Server 2022 CAL or equivalent	25
			Windows 11 License or equivalent	25
			Office 365 or equivalent	25
			Google Cloud Innovator or equivalent	50

Sl#	Lab	Technology	Description	Quantity
20)	Cyber Security	Cyber Security OT Network	Pump House Process	1
			Heat treatment Process	1
			Electroplating Process	1
			OPC UA	1
			OPC DA	1
			TCP	1
			TCP	1
			Ethernet IP	1
			TCP	1
			Redundant SCADA Server	1
			SCADA Client	1
			Production Module and Shop planning	1
			Material Module and Product Tracking & Genealogy	1
			Quality Module + Process Control	1
Maintenance Module	1			
Uni Directional Gateway with OPC UA, SQL & Modbus Connectors	1			
21)	Cyber Security	Cyber Security IT Network	Data Historian Storage	1
			MQTT PUB	1
			Dashboard & Reports	1

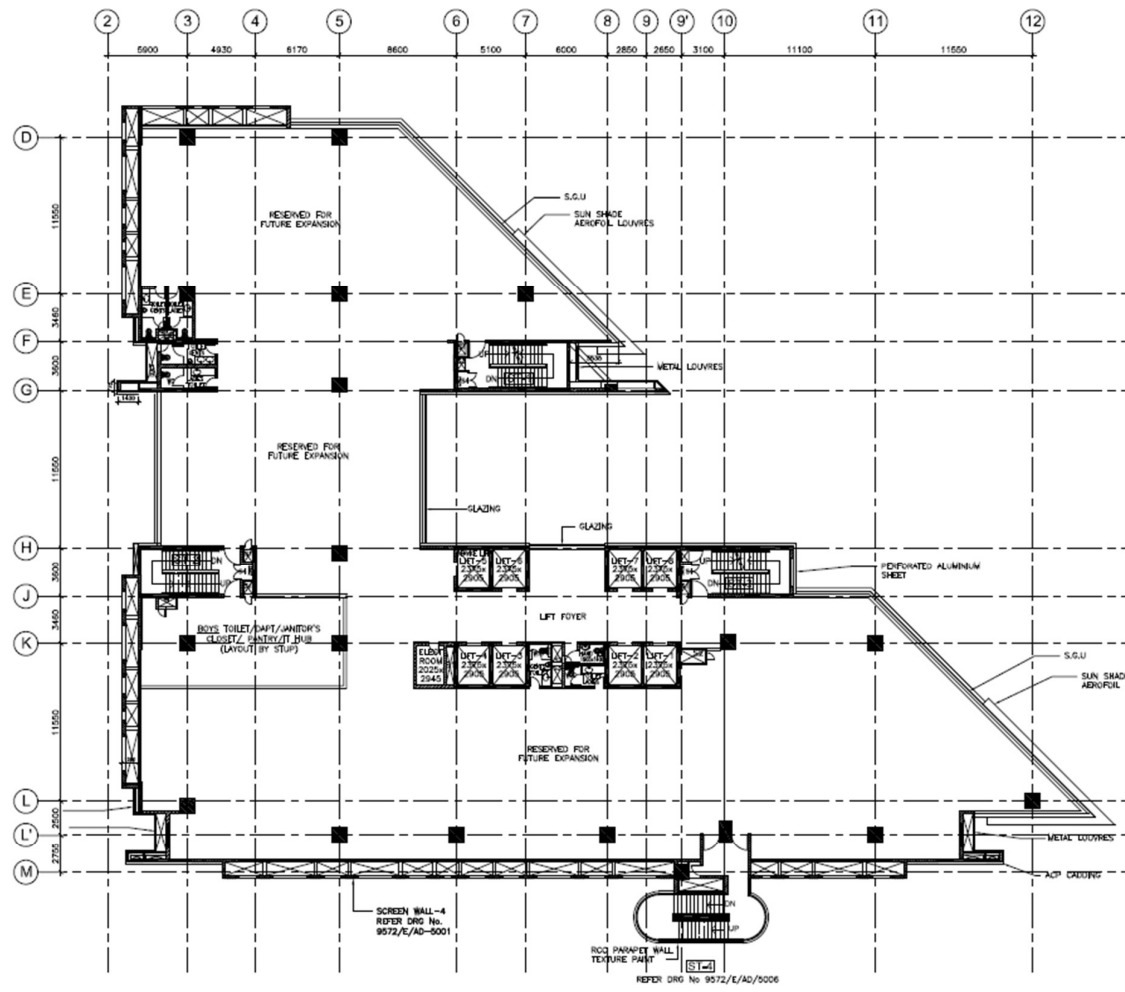
Sl#	Lab	Technology	Description	Quantity
22)	Cyber Security	Cyber Security Process Simulation - WATER SUPPLY AND DISTRIBUTION SYSTEM	PANEL Enclosure: 760H*760W*300D, CRCA- 1.6mm thickness, Door thickness-2mm, cable gland thickness-3mm, RAL 7035, IP54	1
			Main isolater switch Isolator Switch, 3P, 25A	1
			Indication Lamp, Red, 230V AC	1
			Indication Lamp, Yellow, 230V AC	1
			Indication Lamp, Blue, 230V AC	1
			SIMATIC S7-1200, CPU 1214C, COMPACT CPU, DC/DC/DC, ONBOARD I/O: 14 DI 24V DC; 10 DO 24 V DC; 2 AI 0 - 10V DC, POWER SUPPLY: DC 20.4 - 28.8 V DC	1
			SIMATIC S7-1200, DIGITAL I/O SM 1223, 16DI / 16DO, 16DI DC 24 V, SINK/SOURCE, 16DO, TRANSISTOR 0.5A	1
			COMMUNICATION MODULE CM 1241, RS422/485, 9 PIN SUB D (FEMALE) SUPPORTS MESSAGE BASED FREEPORT	1
			Digital input SB 1221, 4 DI, 24 V DC 200 kHz, Sourcing input	1
			7" HMI eSMART07M, a powerful basic HMI with ARM Cortex CPU, resistive touch panel	1
			0.75KW VFD FEEDER Feeder	2
			VFD 0.75 Kw	2
			MCB 3P, 6A, C-Curve, 10KA	2
			VAF+ PF + Power & Energy Meter, Class accuracy 1.0, 01 RS485 port	2
MPCB, 3P, 1.6-2.4A	2			
ON Indication Lamp, Green, 230V AC	2			

Sl#	Lab	Technology	Description	Quantity
			OFF Indication Lamp, Red, 230V AC	2
			TRIP Indication Lamp, Amber, 230V AC	2
			Cooling fan 4" 220V AC	2
			4" Filter	2
			1.1 Kw DOL FEEDER Feeder	1
			MCB 3P, 6A, C-Curve, 10KA	1
			VAF+ PF + Power & Energy Meter, Class accuracy1.0, 01 RS485 port	1
			MPCB, 3P, 2-3.2A	1
			Power Contactor, 9A, 3P, 230V AC with 1NO	1
			Contactor NO Blocks	2
			Contactor NC Blocks	2
			ON Indication Lamp, Green, 230V AC	2
			OFF Indication Lamp, Red, 230V AC	2
			TRIP Indication Lamp, Amber, 230V AC	2
23)	Cyber Security	Cyber Security Process Simulation - Hot Air Owen	Process Simulation - Hot Air Owen	1
			Heating elements - SS304 Outer tube with heating element KANTHAL A1 & Magnesium oxide filled heaters	1
			circulation of hot air fan of high capacity centrifugal fans are arranging in the both the sides wall of the oven	2
			Thyristor Controller	1



SI#	Lab	Technology	Description	Quantity
			Temp Controller	1
			8ch Temp data logger, touch screen type	1
			Push buttons & Lamps	1
			Switch gear	1
24)	Cyber Security	Cyber Security PLC Next Technology Starter Kit	Controller - AXC F2152 - 2404267	10
			Module Carrier - AXL F BP SE4 - 1088135	10
			Analog Module - AXL - SE AI4 U 0-10 - 1088105	10
			Digital module - AXL SE DI16/1 - 1088127	10
			Digital module - AXL DO16/1 - 1088129	10
			Patch Cable - FL CAT5 Patch 1,0 - 2832276	10
			Cover - AXL SE SC - 1167159	10
25)	Cloud Computing	Cloud Computing	On-line courses (to be defined)	25

Note: Respective technology partner/s to verify the specifications of BOM (in-line with their solution requirement). Any component not mentioned in BOM are not part of SI-cum-IA scope.



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