


SARDAR PATEL TECHNOLOGY BUSINESS INCUBATOR

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TENDER NOTICE

Sardar Patel Technology Business Incubator (SP-TBI) is an incubation centre founded in 2015 as an initiative of Bharatiya Vidya Bhavan's, Sardar Patel Institute of Technology and is affiliated with the Department of Science and Technology, Government of India with the objective to cultivate entrepreneurship, promote innovation and support daring entrepreneurs.

SP-TBI in association with **SIDBI Venture Capital Limited** is setting up an IoT Lab for entrepreneurs using IoT as one of the technologies to support, harness or grow their businesses. We are in need of following equipment to setup IOT Lab. SP-TBI supports technology start-ups from IoT, Embedded System, AI & ML, AR & VR, Health Care, eCommerce, FinTech, EdTech etc.

SP-TBI invites tenders from reputed agencies for setting up **SP-TBI & SIDBI Venture IoT Lab**. The list of equipment is given in annexure below. Interested agencies can submit tender on or before August 20, 2021 by email to managertbi@spit.ac.in

Chairperson,

SP-TBI, Andheri West

Components of the “Internet of Things (IoT)” Lab:

The Internet of Things (IoT) lab equipment are divided into five segments: Components of the “Internet of Things (IoT)” Lab:

The Internet of Things (IoT) lab equipment are divided into five segments:

- A) Sensors and Actuators
- B) Development Boards
- C) Wireless Modules
- D) Test and Measurements Equipment (Electronics)
- E) Application Module

A) IoT Hardware - Sensors and Actuators:

Sensors: An electronic sensor detects and measures a physical phenomenon, such as temperature, pressure, force, or acceleration, and provides a corresponding output, usually in the form of an electronic signal. The basic list of necessary sensors is given below. The list and quantities can be changed based on availability of funds.

S.No.	Components: Industry Grade Sensors	Quantity
1	Digital Temperature and Humidity Sensor DHT 22	10
2	BMP 280 - Atmospheric Pressure Sensor	10
3	Soil Moisture Sensor	10
4	LM 35 Temperature Sensor	10
5	Ultrasonic Sensor HC SR-04	10
6	Light Dependent Resistor (LDR)	10
7	PIR Motion Sensor	10
8	TSOP IR Transmitter and Receiver	10
9	IR Transmitter and Receiver	10
10	Microphone (Sound Sensor)	10
11	Joystick Sensor	10
12	Accelerometer and Gyroscope GY521 MPU 6050	10
13	Limit Switches	10
14	Reed Switch	10
15	Rotary Encoder	10
16	Vibration Sensor	10
17	Capacitive Touch Sensor	10
18	Transistor Module	10
19	LDR	10
20	Push Button	10
21	RC 522 RFID Readers	10
22	Water Vapour sensor	10
23	Tilt Sensor	10

Actuators: Actuators convert an electrical signal to the corresponding physical quantity such as movement, force, sound, display etc. The actuator is a part of any machine which is responsible for mechanical rotation or controlling. The basic list of necessary actuators is given below. The list and quantities can be changed based on availability of funds.

S.No.	Components: Actuators	Quantity
1	I2C OLED Display	10
2	Backlight LED	10
3	4 Channel Relay	10
4	RGB LED (9W)	10
5	Solid State Relays (25 A)	10
6	Arduino Speaker	10
7	RPi Touch Display 3.5'	10
8	E-Ink Display 2.7'	10
9	Buzzer module	10
10	9W LED	10
11	12V DC Geared Motor 550RPM	10
12	LCD Display 16*2	10
13	Coin Vibration Motor (Speed: 9000 RPM, 5Volt)	10
14	Solenoid Valve 230V AC	10
15	Small DC Motor (3Lightweight, High Torque, low RPM 5k+)	10
16	7 Segment Display	10
17	Stepper Motor 5V with Driver (Torque: 4.2 Kg Current 1.2 A)	10
18	Micro Servo Motor 9g (1.6 KG)	10
19	Buzzer module (Freq. 2.5K Hz, 3.3-5V)	10
20	Small BLDC motors (5V-12 V up to 150 W)	4
21	BLDC motors controllers (48 V DC 350w Single phase)	4
22	Single chip DC-DC converters (300 W 20 A 0.8 – 28 V)	4
23	MOSFETS of various ratings	4
24	MOSFET drivers (500 V)	4
25	Programmable DC Power Supply (10 A 50 Hz 4-6 Channels 0-30 V)	2
26	DSOs (Bw: 50-200 MHz 2-4 Analog 16 digital channels)	2

B) IoT Hardware - Development Boards

The development boards are off the shelf boards that can be programmed with a development platform. It enables quick-and-easy product prototyping. It can interact with real-world sensors, control motors, display information, and perform near-instantaneous calculations. It enables anyone to create unique projects. The basic list of necessary development boards is given below. The list and quantities can be changed based on availability of funds.

S.No.	Components: Development Boards	Quantity
1	Arduino Uno	5
2	Arduino Mega	5
3	ESP 8266 WiFi Development Board	5
4	ESP32 WiFi+BLE Development Board	5
5	Raspberry Pi Zero W (Mini Computer)	5
6	Raspberry Pi 3B+ (Mini Computer)	5
7	MSP 430 Launch Pad board	5
8	STM32F4 Nucleo Board	5
9	ARM Development Board	5
10	PIC Development Board	5
11	Nvidia Jetson Mini (Mini Computer)	5
12	Esplora Arduino Development Board	5
13	Arduino MKR WiFi Development Board	5
14	Arduino Nano Development Board	5

C) IoT Hardware - Wireless Modules:

A Wireless module (radio frequency module) is usually a small electronic device used to transmit and/or receive radio signals between two devices. In an IoT system, it is often desirable to communicate with another device wirelessly. The basic list of necessary WirelessModules is given below. The list and quantities can be changed based on availability of funds.

S.No.	Components: Wireless Modules	Quantity
1	ZigBee XBee S2C Pro with Development Board	10
2	LoraWAN Module SX1278 with Development Board	10
3	Bluetooth Module HC – 05	10
4	Bluetooth Low Energy Module HM - 10 BLE4.0	10
5	NRF 2.4Ghz Module	10
6	GSM 2G/GPRS Module	10
7	NFC Reader and Modules	10
8	RFID Reader and Modules	10
9	GPS Module (3-5V Data transfer rate: 9600 bps Update rate: 10Hz)	10
10	Z Wave RF Modules	10
11	RF transmitter and receiver (433 MHZ)	10
12	HC - 12 Long Range RF Module	10

D) IoT Lab - Design, Test and Measurement Equipment:

Test and measurement equipment underpins the product design process, enabling engineers to verify their design is working in the way they want. These are also essential to find out where the problems are. The basic list of necessary Test and Measurement Equipment is given below. The list and quantities can be changed based on availability of funds.

S.No.	Components: Test and Measurement Equipment	Quantity
1	Bench Top Multimeter (DC Range: 300mV to 1000 V AC range: 200mV to 750V)	2
2	Fluke 101 Multimeter (600mV to 600V)	2
3	Dual Supply RPS (0 - 30V)	2
4	Soldering Station	2
5	Hot Glue Gun	2
6	Signal Generator (2 channels up to 240 Mhz)	2
7	Electronics Load (1 KW)	1 Set
8	Sensor Testing Kit	2

E) IoT Lab – Design: Application Module

Application module consists of application specific hardware can be deployed at the site & used directly.

Sr No	Components: Application Module	Quantity
1	Surveillance System with IP Module: 12 V Power Supply, PC, Camera Sensors, 850 GIRI AMC -4 Zone	2
2	Home Automation System with Controller with IP Module: 12 V Power Supply, Sensors PC 850 GIRI AMC - 12 Zone	2
3	Patient Monitoring Systems with IP Module: 12 V Power Supply, Sensors PC 850 GIRI AMC - 8 Zone	2
4	Compact PC {intel fanless I5 CPU, 8 GB, 240 GB SSD}	10
5	Sports Test Beds	2
6	Agriculture Test Beds based on hydroponics	2
7	Fit Bands Systems	2
8	LEGO based Controller	1

Terms and Conditions:

- Must have Supplied similar kind of equipment at least 2 places in last 3 years at institutions or corporates.
- Must have had a minimum of 50 lacs of revenue since April 2019.
- The bidder must be from Mumbai or nearby region.