**ROMBLON STATE UNIVERSITY**
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# BID BULLETIN

**Clarification No. 3**
Solicitation No.: RSU-2024-10-088

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| **TO** | : | All Prospective Bidders |
| **SUBJECT** | : | Change/Modification of Specifications in all attached/associated documents in the Philippine Bidding Documents (PBDs) and Technical Specifications |
| **DATE** | : | 04 November 2024 |

This Bid Bulletin is issued to inform all prospective bidders of the change/modification of Specifications in all attached/associated documents in the PBDs and Technical Specifications. Please take notice of these changes.

**Development of Smart Campus Data Security and Cyberattack Prevention Hub**
**(ABC: PhP750,000,000.00)**

**FROM**

| UNIT | ITEM DESCRIPTION | QTY |
|---|---|---|
| Lot | **1. Project Summary**<br><br>Beacon of higher education in the island of Romblon, Romblon State University (RSU) is committed to providing a safe and secure learning environment for its students, faculty, and staff. In today's digital age, where technology is indispensable, safeguarding sensitive information and systems has become paramount.<br><br>Guided by worldwide-accepted cybersecurity frameworks which include identification, protection, detection, response, and recovery, the Smart Campus Data Security and Cyberattack Prevention Hub project aims to transform the campus into a secure environment through advanced cybersecurity measures. By safeguarding data and preventing cyberattacks, the project enhances trust, operational efficiency, and compliance with regulatory standards in pursuit of the university mission and vision.<br><br>Moreover, we at RSU recognize the need to mitigate the social, economic, and environmental impacts of technology innovations. Adhering to these principles and holistic approach, the need for a modern and sustainable waste management system is proposed to be part of this project.<br><br>**2. Project Description:**<br><br>• **Purpose:** Enhance cybersecurity measures within the campus to safeguard sensitive and confidential data, intellectual property, and personal information of students, faculty, staff and other stakeholders as well as systems and networks. | 1 |

- **Key elements of the project:**

  - **Cyber Security Software's:** Recognizing the growing threat of cyberattacks, RSU is embarking on a transformative project to bolster its ICT infrastructure with state-of-the-art security measures. The Development of Smart Campus Data Security and Cyberattack Prevention Hub aims to create a fortified digital fortress that protects the university's valuable data, systems, and networks from malicious cyber threats.
  - **Artificial Intelligence**: Harnessing the power of artificial intelligence to drive innovation, enhance teaching and learning, and address local challenges. By integrating AI into our academic programs and research initiatives, we aim to equip our students and faculty with the skills needed to thrive in the digital age and contribute to the development of a smarter, more sustainable Romblon and beyond.
  - **Network Monitoring and Intrusion Detection Systems:** Implement advanced tools to monitor network traffic and detect anomalies or potential threats in real-time and prevent them from intruding the university's network infrastructure and systems.
  - **Endpoint Security:** Deploy robust endpoint protection solutions to secure devices (servers, computers, mobile devices) connected to the campus network.
  - **Data Encryption:** Implement strong encryption protocols to protect data both at rest and in transit.
  - **Access Control:** Strengthen access controls through multi-factor authentication (MFA) and role-based access policies.
  - **Incident Response Plan:** Develop a comprehensive plan to respond swiftly and effectively to any cyber threats or breaches.
  - **Security Awareness Training:** Conduct regular training sessions for staff and students to raise awareness about cybersecurity best practices. An online training and learning tool to educate and assess the awareness of all staff and students.
  - **Continuous Monitoring and Improvement:** Establish procedures for ongoing monitoring, assessment, and improvement of cybersecurity measures.
  - **Power Supplies**: To fully realize our innovation agenda and maximize the potential of artificial intelligence and security systems, Romblon State University requires a stable and substantial power supply to mitigate power interruptions or fluctuations to support the demands of advanced computing infrastructure.
  - **Waste Management System:** We recognize the critical role education plays in addressing pressing societal issues. As a cornerstone of the Philippine educational landscape, we are committed to driving innovation that yields tangible benefits for our community. One of the most pressing challenges facing the Philippines is the management of domestic waste. With a growing population and increasing consumption, the country is grappling with the mounting environmental impact of waste disposal. To contribute to a cleaner and more sustainable future, RSU is pioneering a solution through the implementation of a Pyrolysis Carbonization Machine. This innovative technology offers a promising approach to waste management by converting organic waste into valuable products such as charcoal and biocharcoal. By embracing this initiative, RSU aims to not only address the domestic waste problem but also to serve as a model for other educational institutions and communities across the Philippines. We believe that through research, development, and practical application, we can create a lasting impact on our ecosystem and inspire others to join the fight against waste. This project aligns with RSU's commitment to environmental stewardship, technological advancement, and community engagement.

- **Network Infrastructure**: A robust network infrastructure that serves as the backbone of a modern university, providing stable internet and local network connectivity which is very indispensable to all students, faculty, staff, and the institution as a whole.

## 3. General Scope of Works

### 3.1. Requirement Analysis

3.1.1. Cyber Security Software and Services that will mitigate hacking and unauthorized use of the systems and access to data.

3.1.1.1. AI-Driven Network Intrusion Detection and Response
3.1.1.2. Cloud-based cybersecurity and Distributed Denial of Service (DDoS) mitigation system
3.1.1.3. Anti-virus for all desktops, servers, laptops

3.1.2. Artificial Intelligence: Harnessing the power of artificial intelligence to drive innovation, enhance teaching and learning, and address local challenges. By integrating AI into our academic programs and research initiatives, we aim to equip our students with the skills needed to thrive in the digital age and contribute to the development of a smarter, more sustainable Romblon.

3.1.2.1. AI-driven Document Management System for Record Office
3.1.2.2. Augmented Reality Toolkit and Professional Services for training
3.1.2.3. AI Toolkit, AI Server and Professional Services for training

3.1.3. Power Supplies: To fully realize our innovation agenda and maximize the potential of artificial intelligence and security systems, Romblon State University requires a substantial increase in power supply to support the demands of advanced computing infrastructure.

3.1.3.1. Power Transformer, Solar Panel and Generator Set with complete Installation and Electrical works for RSU San Fernando Campus
3.1.3.2. Power Transformer, Solar Panel and Generator Set with complete Installation and Electrical works for RSU Romblon Campus
3.1.3.3. Power Transformer, Solar Panel and Generator Set with complete Installation and Electrical works for RSU Calatrava Campus
3.1.3.4. Solar Power Grid for RSU Main Campus with complete Installation and Electrical works

3.1.4. Waste Management: To contribute to a cleaner and more sustainable future, RSU is pioneering a solution through the implementation of a Pyrolysis Carbonization Machine. This innovative technology offers a promising approach to waste management by converting organic waste into valuable products such as charcoal and biocharcoal.

3.1.4.1. Carbonization Machine
3.1.4.2. Crushing machine
3.1.4.3. Hopper and Mixer
3.1.4.4. Waste Management System which includes monitoring

and scheduling
3.1.4.5. Garbage Collection Truck
3.1.4.6. Industrial-grade garbage bins

3.1.5. Network Infrastructure: Installation, configuration, and training of additional equipment that will provide both physical and network security for assets inside the Smart Campus.

3.1.5.1. Access points, IDFs, POE switches
3.1.5.2. Door access control for Data Center
3.1.5.3. Door access control for E-classroom
3.1.5.4. Door access control for E-laboratory
3.1.5.5. Door access control for Mobile Application Development Laboratory
3.1.5.6. Door access control for Animation Laboratory

3.1.6. E-Classrooms: Conversion of traditional classrooms to be converted into modern and interactive smart classrooms.

3.1.6.1. Interactive classroom for distance learning (internet connectivity equipment, video cameras, speakers, microphones, projectors, TVs, PA system)

**3.2. Gate Access Turnstile with Student Info Kiosk/Biometric Machine with Smartcard:** IC Cards, Security Barrier, Ingress-Egress System: Provision and installation of Smart Cards embedded with microchips that can store and process data for access control and identification of the university personnel and students. This includes security barrier that manages physical access to secure areas. It also includes a system that manages the flow of people in and out of a location.

**3.3. Miscellaneous:** Network printers for all offices of the university to be shared across multiple users or devices within a network. The printers should be able to connect to the network via Ethernet, Wi-Fi, or Bluetooth, allowing any authorized devices on the network to send print jobs which will contribute to data protection since printing will be centralized in every unit.

**3.4. Detailed Business User Requirements, Technical Design Requirements, Implementation Plan, and System Manuals**

3.4.1. A comprehensive business user requirement, technical design requirements, implementation plan and system manuals. The implementation plan will show the details of the project's timeline, milestones, deliverables, and resources required for the successful execution.

***3.5.*** **Infrastructure Setup**

3.5.1. The project team will install and set up the necessary digital infrastructure required for the project, including servers, routers, switches, and related equipment.

***3.6.*** **Software Implementation**

3.6.1. Based on the business user requirements and technical design requirements, installation, customization, and testing of all software and applications shall be performed to ensure full integration of all systems that form part of this project.

***3.7.* Testing and Quality Assurance**

3.7.1. The project team will perform individual component testing, and system integration testing for all components to ensure that they meet the specified requirements and are free from defects and errors.

3.7.2. Test scripts and user acceptance testing (UAT) documents should be provided for a smoother handover to end users.

***3.8.* Training**

3.8.1. Facilitate the delivery of knowledge transfer through technical orientation and training sessions.

**4. Platform, Application and Technical Specifications**

**4.1. Cyber Security Software and Services**

4.1.1. Supply and delivery of 1 lot of AI-Driven Network Intrusion Detection and Response

4.1.1.1. All-in-one-appliance endpoint and AI threat detection technology with centralized platform for endpoint protection, real-time threat detection, and incident response.

4.1.1.2. Protection from but not limited to malware, ransomware, spyware, cryptojacking, remote access trojan, social engineering attacks like phishing and others.

4.1.1.3. Web application protection from SQL injection, remote code execution, cross-site scripting, and man-in-the middle attacks.

4.1.1.4. Installation, configuration, and training

4.1.2. Supply, delivery and installation of 1 lot of Cloud-based cybersecurity and Distributed Denial of Service (DDoS) mitigation system covering all URLs of RSU website and applications.

4.1.2.1. Content Delivery Network (CDN): Global Network: has a vast network of data centers spread across numerous countries. This network helps to deliver content quickly by caching and serving it from locations close to end users. Caching: caches static content (images, scripts, stylesheets) at the edge of its network to reduce load times and server strain. Dynamic Content Optimization: It uses techniques such as Argo Smart Routing to optimize the delivery of dynamic content by finding the fastest route across the internet.

4.1.2.2. DDoS Protection: Mitigation: offers DDoS protection for both network and application layers. This includes protection against large-scale attacks that could overwhelm a website. Rate Limiting: Limits the number of requests from a single IP address to prevent abuse and mitigate certain types of attacks.

4.1.2.3. Web Application Firewall (WAF): Rule Sets: WAF provides pre-configured rulesets and allows custom rules to protect against common threats like SQL injection, cross-site scripting (XSS), and other OWASP Top 10 vulnerabilities. Bot Management: Identifies and mitigates malicious bot traffic while allowing legitimate bots to

access the site.

4.1.2.4. DNS Services: DNS Resolution: provides fast and secure DNS resolution with a global network of DNS servers. It supports DNSSEC (Domain Name System Security Extensions) to prevent DNS spoofing. Anycast Network: Uses Anycast technology to route DNS queries to the nearest server in the network.

4.1.2.5. SSL/TLS Encryption: SSL/TLS Certificates: provides free and paid SSL/TLS certificates to encrypt traffic between users and the website. Automatic HTTPS Rewrites: Ensures that all traffic is redirected to HTTPS to enhance security.

4.1.2.6. Load Balancing: Global Load Balancing: Distributes traffic across multiple servers or data centers to ensure high availability and reliability. Health Checks: Monitors the health of backend servers and routes traffic away from unhealthy or overloaded servers.

4.1.2.7. Performance Optimization: Image Optimization: Features like Polish and Mirage improve image loading times by compressing and adjusting images based on the device and network conditions. Rocket Loader: Optimizes JavaScript loading to improve page load speeds.

4.1.2.8. Workers and Edge Computing: A serverless computing platform that allows developers to run JavaScript code at the edge of a network, enabling custom functionality and application logic to be executed closer to users.

4.1.2.9. Analytics and Monitoring: Traffic Analytics: Provides detailed insights into traffic patterns, threats, and performance metrics. Real-time Monitoring: Offers real-time data on site performance and security threats.

4.1.2.10. API and Integration: REST API: provides a comprehensive REST API for integrating and automating various services, including DNS management, firewall rules, and more. Third-Party Integrations: Supports integrations with various third-party services and platforms.

4.1.2.11. Security Features: Rate Limiting: Helps to mitigate brute force attacks by limiting the number of requests from a single IP address. Access Control: Access allows secure access to internal applications and resources.

4.1.3. Supply and delivery of 500 licenses of Anti-virus for all desktops, servers, laptops

4.1.3.1. Latest anti-virus software with proven good track-record to detect, prevent, and clean infected equipment.

4.1.3.2. The detection and prevention do not limit to local infection protection but also protection from cyberattacks and ransomwares.

4.1.3.3. Protection from cryptojacking, spyware, remote access trojan and social engineering attacks.

4.1.3.4. Installation, training, local support for the licenses

4.1.3.5. 2 years subscription

**4.2. Artificial Intelligence**

4.2.1. Supply, delivery and installation of 1 lot of AI-Driven Document Management System for records.

4.2.1.1. On-premise document management system which can be accessed anytime, and anywhere within RSUs secured

network.

4.2.1.2. Access content from your desktop, tablet or phone via a responsive web user interface.

4.2.1.3. User-friendly and bespoke capability; with drag and drop content for faster upload and distribution and customize branding for a bespoke touch.

4.2.1.4. Enterprise-level administration and security

4.2.1.5. Content is secured with audit trail, permission/access rights, encryption, and lifecycle management.

4.2.1.6. Customizable workflow management. Intelligent routing processes and customizable automated workflows

4.2.1.7. Metadata tagging for faster document searching and indexing

4.2.1.8. Comprehensive data access compliance

4.2.1.9. Unrestricted document types and sizes with full featured OCR and document lifecycle management

4.2.2. Supply and delivery and installation Augmented Reality (AR) Toolkit

As a complementary technology to artificial intelligence, AR transforms the user experience into a rich and immersive experience. RSU aims to become a center of excellence in innovation by nurturing talented students to hone their skills and capability building by using AR and AI technologies.

4.2.2.1. Supply, delivery and installation of 1 lot of AR software and related licenses to be used in creating AR contents and programs

4.2.2.2. Supply, delivery and installation of AR software development kit (SDK) offering cross-platform APIs to build new immersive experiences on Android, iOS, and Web.

4.2.2.3. Provide fundamental tools to help build AR experiences such as:

4.2.2.3.1. Motion tracking, which shows positions relative to the world

4.2.2.3.2. Anchors, which ensures tracking of an object's position over time

4.2.2.3.3. Environmental understanding, which detects the size and location of all types of surfaces

4.2.2.3.4. Depth understanding, which measures the distance between surfaces from a given point

4.2.2.3.5. Light estimation, which provides information about the average intensity and color correction of the environment

4.2.2.4. Supply of AR hardware

4.2.2.4.1. Ninety (90) AR headsets with the following minimum specifications:

- Display: see-through holographic lenses (waveguides), 2K resolution with 3:2 light engines, eye-based rendering, display optimization for 3D eye position
- Sensors: head tracking, eye tracking, depth, accelerometer, gyroscope, magnetometer, camera
- Audio: microphone array, speakers

- Tracking: hand-tracking, eye-tracking, voice command

4.2.2.4.2. Ninety (90) Android tablets with the following minimum specifications

- CPU: 3.4 GHz
- Display: 14.6 inches
- Pen support: Pen, gesture / remote control
- Memory: 16 GB RAM, 1TB
- Camera: 13.0 MP + 8.0 MP / UHD 4K
- Form factor: Tablet
- Sensors: Accelerometer, Fingerprint, Gyro Sensor, Geomagnetic Sensor, Hall Sensor, Light Sensor

4.2.2.5. Provide professional services for AR training to students and faculty

4.2.2.5.1. Face to face and hands-on training
4.2.2.5.2. Provide syllabus and training materials
4.2.2.5.3. Develop an actual working AR application
4.2.2.5.4. Conversion of 3 classrooms into AR Laboratory that includes the following:

4.2.2.5.4.1. Lighting works
4.2.2.5.4.2. Wall finishing
4.2.2.5.4.3. Ceiling works
4.2.2.5.4.4. 2 Units 2.5 HP Air Conditioner Split Type
4.2.2.5.4.5. Electrical works
4.2.2.5.4.6. 2 units of Dome Camera, 4MP or higher MP
4.2.2.5.4.7. Supply of Access Point for Wi-Fi access
4.2.2.5.4.8. Provision of furnishing

4.2.3. Artificial Intelligence (AI) Toolkit

4.2.3.1. Supply, delivery and installation of 1 lot of AI software toolkit

4.2.3.1.1. Software extension that simplifies generative AI app development by bringing together cutting-edge AI development tools and models
4.2.3.1.2. Software extension that simplifies generative AI app development by bringing together cutting-edge AI development tools and models
4.2.3.1.3. Download and run AI models locally. The AI Toolkit provides access to highly optimized models
4.2.3.1.4. Test models in an intuitive playground or in your application with a REST API.
4.2.3.1.5. Fine-tune your AI model - locally or in the cloud (on a virtual machine) - to create new skills, improve reliability of responses, set the tone and format of the response.
4.2.3.1.6. The AI Toolkit provides a guided walkthrough to fine-tune popular small-language models (SLMs) - like Phi-3 and Mistral.
4.2.3.1.7. Deploy your AI feature either to the cloud or with

an application that runs on a device.

4.2.3.2. Supply, delivery and installation of 10 Desktops for AI development with the following minimum specifications:

- 24 cores, 32 threads, and up to 5.6 GHz Boost clock speed
- GPU with tensor flow cores, 16GB RAM
- 2TB SSD
- 32 GB DDR5 RAM
- 40-inch-wide monitor, IPS panel, max.120Hz, native resolution: 5120 x 2160
- Optical mouse and keyboard set

4.2.3.3. Supply, delivery and installation of 3 AI Servers with the following minimum specifications:

- GPU Architecture: L40S Ada Lovelace
- FP32: 91.6 TFLOPS
- RT Core: 212 TFLOPS
- TF32 Tensor Core: 366 TFLOPS
- FP16/BF16 Tensor Core: 733 TFLOPS
- FP8 Tensor Core: 1,466 TFLOPS
- INT8 Tensor Core: 1,466 TOPS
- GPU Memory: 48 GB GDDR6
- GPU Memory Bandwidth: 864 GB/s
- L2 Cache: 96 MB
- Media Engines: 3 NVENC (+AV1) 3 NVDEC 4 NVJPEG
- Power: Up to 350 W
- Operating System: Ubuntu Linux

4.2.3.4. Provide professional services for AR training to students and faculty

- Face to face and hands-on training
- Provide syllabus and training materials
- Develop an actual working AR application

4.2.3.5. Conversion of 3 classrooms into AR Laboratory that includes the following:

4.2.3.5.1. Lighting works
4.2.3.5.2. Wall finishing
4.2.3.5.3. Ceiling works
4.2.3.5.4. 2 Units 2.5 HP Air Conditioner Split Type
4.2.3.5.5. Electrical works
4.2.3.5.6. 2 units of Dome Camera, 4MP or higher MP
4.2.3.5.7. Supply of Access Point for Wi-Fi access
4.2.3.5.8. Provision of furnishing

4.2.4. Supply, delivery and installation of 1 lot of Dormitory Management System

4.2.4.1. Custom web-based dormitory management system with good UI/UX design
4.2.4.2. Centralized customer records management system
4.2.4.3. Reservation and scheduling
4.2.4.4. Inventory management for the dormitory equipment and consumables

4.2.4.5. Billing and payment management
4.2.4.6. Printing of statement-of-account (SOA), with digital SOA in PDF format
4.2.4.7. Staff scheduling
4.2.4.8. Role-based access user management
4.2.4.9. User training

**4.3. Power Supplies**

Supply, delivery and installation of Power Supplies in 4 sites. Shall perform powerhouse works to ensure power is generated safely and relayed from power stations and substations. Electrical Works for connecting electricity supply wiring to electrical equipment.

4.3.1. Site 1: RSU Romblon Campus

4.3.1.1. Fully furnished power house building
4.3.1.2. 300kVA, 7.6kV / 230V, 60Hz Transformer with complete accessories and Pole mounting
4.3.1.3. 400kVA, 230V, 60Hz single phase Outdoor Type Diesel Generator
4.3.1.4. Single Phase Main Distribution Panel
4.3.1.5. Single Phase ECB (2 Assembly)
4.3.1.6. Single Phase GCB (1 Assembly)
4.3.1.7. Automatic Transfer Switch
4.3.1.8. 7.6kV Transmission Line from Local Power Distributor with Complete metering System
4.3.1.9. Complete Wiring and Accessories (MDP to LOAD excluded)
4.3.1.10. Underground Service Entrance
4.3.1.11. Electrical Permit and Permanent Electrical Connection Processing including fees
4.3.1.12. 50kWp, single phase, 60Hz Grid-Tied Solar System with rapid shutdown and export limiter (including hauling, installation, wiring, warranty, training and testing and commissioning and complete accessories)

4.3.2. Site 2: RSU Calatrava Campus

4.3.2.1. Fully furnished power house building
4.3.2.2. 300kVA, 7.6kV / 230V, 60Hz Transformer with complete accessories and Pole mounting
4.3.2.3. 400kVA, 230V, 60Hz single phase Outdoor Type Diesel Generator
4.3.2.4. Single Phase Main Distribution Panel
4.3.2.5. Single Phase ECB (2 Assembly)
4.3.2.6. Single Phase GCB (1 Assembly)
4.3.2.7. Automatic Transfer Switch
4.3.2.8. 7.6kV Transmission Line from Local Power Distributor with Complete metering System
4.3.2.9. Complete Wiring and Accessories (MDP to LOAD excluded)
4.3.2.10. Underground Service Entrance
4.3.2.11. Electrical Permit and Permanent Electrical Connection Processing including fees
4.3.2.12. 50kWp, single phase, 60Hz Grid-Tied Solar System with rapid shutdown and export limiter (including hauling, installation, wiring, warranty, training and testing and commissioning and complete accessories)

4.3.3. Site 3: RSU San Fernando Campus

4.3.3.1. Fully furnished power house building
4.3.3.2. 300kVA, 7.6kV / 230V, 60Hz Transformer with complete accessories and Pole mounting
4.3.3.3. 400kVA, 230V, 60Hz single phase Outdoor Type Diesel Generator
4.3.3.4. Single Phase Main Distribution Panel
4.3.3.5. Single Phase ECB (2 Assembly)
4.3.3.6. Single Phase GCB (1 Assembly)
4.3.3.7. Automatic Transfer Switch
4.3.3.8. 7.6kV Transmission Line from Local Power Distributor with Complete metering System
4.3.3.9. Complete Wiring and Accessories (MDP to LOAD excluded)
4.3.3.10. Underground Service Entrance
4.3.3.11. Electrical Permit and Permanent Electrical Connection Processing including fees
4.3.3.12. 50kWp, single phase, 60Hz Grid-Tied Solar System with rapid shutdown and export limiter (including hauling, installation, wiring, warranty, training and testing and commissioning, and complete accessories)

4.3.4. Site 4: RSU Main Campus Data Center

4.3.4.1. 50kWp, 3 phase, 60Hz Grid-Tied Solar System with battery, rapid shutdown and export limiter (including hauling, installation, wiring, warranty, training and testing and commissioning and complete accessories)

4.3.5. Cloud based SCADA monitor server for power monitoring of solar inverters

**4.4. Network Infrastructure**

4.4.1. Electromagnetic lock and door access system

4.4.1.1. Electromagnetic locks and access control with smart card and face recognition authentication
4.4.1.2. Centralized control and configuration; centrally control and monitor inside the data center's command center
4.4.1.3. Intrusion alarm
4.4.1.4. Emergency exit button
4.4.1.5. Supply and installation of the electromagnetic door access for the following buildings and classrooms:

4.4.1.5.1. 1 Data Center
4.4.1.5.2. 26 E-classrooms
4.4.1.5.3. 4 E-laboratories
4.4.1.5.4. 2 Mobile application development laboratories
4.4.1.5.5. 1 Animation laboratories

4.4.1.6. Supply, delivery and installation of enough number of network components/appliance for the laboratories and buildings not connected with FOC

4.4.1.6.1. 48 port Access Distribution Switch
4.4.1.6.2. 48 port Access Access Switch POE+
4.4.1.6.3. 24 port Access Access Switch POE+
4.4.1.6.4. 12 Port Access Switch POE+

4.4.1.6.5. SFP+ SR Transceivers
4.4.1.6.6. SFP+ LR Transceivers

**4.5. E-Classrooms**

Supply, delivery and installation of 15 e-classrooms. Conversion of traditional classrooms to a digitally enhanced facility that will allow learners to access course contents online, deliver lectures remotely and host productivity tools among others. The list below are the components to be spread across the e-Classrooms:

4.5.1. Interactive Flat Panel
4.5.2. Intelligent Collaboration Device (86 inches infrared screen)
4.5.3. Wall mount bracket
4.5.4. OPS (i7-8700 16G DDR4, 256G SSD 4K60 Windows 10 SAC)
4.5.5. Student and Teachers Camera (Tracking camera) Focus: 2.8 +-0.5mm
4.5.6. Digital Board 86 inches

4.5.6.1. Board materials: Greenboard (3layers, cold steel surface with nano paint, anti glare ≥0.3mm middle high-density poly-foam ≥13mm,back galvanized steel sheet ≥0.2mm
4.5.6.2. Response Object: Finger, pen, chalk, any opaque object
4.5.6.3. Touch Resolution: 32768*32768/4096*4096
4.5.6.4. Inter activity: Digital Board and IFPD support work separately, also support interactive work, the digital board writing can be displayed on the IFPD, and other interactive operations

4.5.7. 1 DSP, 6 Ceiling Microphone and 2 Speaker
4.5.8. 55 inches LED monitor for Teacher
4.5.9. Local warranty and support
4.5.10. Installation and user training
4.5.11. Each e-Classroom should have the following scope of auxiliary works and services:

4.5.11.1. Lighting works
4.5.11.2. Wall finishing
4.5.11.3. Ceiling works
4.5.11.4. 2 Units 2.5 HP Air Conditioner Split Type
4.5.11.5. Electrical works
4.5.11.6. 2 units of Dome Camera, 4MP or higher MP
4.5.11.7. Supply of Access Point for Wi-Fi access
4.5.11.8. Provision of furnishing

**4.6. Supply and delivery of 1 set of Gate Access Turnstile with Student Info Kiosk/Biometric Machine with Smartcard:** IC Cards, Security Barrier, Ingress-Egress System. Provide an end-to-end solution, equipment, and services that will allow RSU to implement an integrated and secured ingress and egress system The solution shall be composed of the following:

4.6.1. Supply, delivery and installation of equipment, related hardware, accessories, and software subsystems.
4.6.2. Custom software to centrally-manage the ingress and egress
4.6.3. Project implementation, testing and training
4.6.4. Local support and maintenance
4.6.5. Supply of smart cards, card printers, and consumables
4.6.6. Tapping stations with integrated controller

4.6.7. UHF card readers with poles and installation
4.6.8. Electric boom barriers
4.6.9. Min. 43-inch TV display with installation brackets
4.6.10. Electrical and civil works, data network connectivity to data center, and other related works to complete the solution
4.6.11. Desktop set with contactless card reader with system for smart card management

**4.7. Miscellaneous:**

**4.7.1. Network printers**

4.7.1.1. Multifunction network printers with the following minimum specifications:

4.7.1.1.1. Supply and delivery of 30 units of multifunction network printer
4.7.1.1.2. Speed: 30 ppm color or monochrome
4.7.1.1.3. Functions: Copier, printer, scanner
4.7.1.1.4. Network printer & network scanner
4.7.1.1.5. Print resolution: 1200x2400 dpi
4.7.1.1.6. Scan resolution: 600 x 600 dpi
4.7.1.1.7. Wireless LAN support
4.7.1.1.8. Two-sided scanning
4.7.1.1.9. Built-in touchscreen control panel
4.7.1.1.10. Paper size: Min.A5, Max. A3

4.7.1.2. Supply of printer consumables

4.7.1.2.1. 600 pieces of color toner cartridges

4.7.1.3. Local warranty and support
4.7.1.4. Installation and user training

**4.7.2. Internet Access**

Shall provide 1 Gbps direct Internet Access (DIA) to the Data Center for 3 years.

**4.7.3. Waste Management**

4.7.3.1. Carbonization Machine
4.7.3.2. Crushing machine
4.7.3.3. Hopper & Mixer

**5. Professional Services**

**5.1. Project Management**

Commitment to ensure that information and communication technology projects are completed successfully. This involves overseeing the project team, creating project plans, tracking progress, identifying and managing risks, and communicating with stakeholders.

5.1.1. Develop a clear understanding of the project goals and objectives and ensure that all project team members have a shared understanding of these goals.
5.1.2. Create a comprehensive business user requirements and technical design requirements document.

5.1.3. Create a detailed project plan that includes timelines, milestones, and deliverables.
5.1.4. Assign roles and responsibilities to the project team members and ensure that everyone understands their roles.
5.1.5. Monitor project progress regularly and adjust the project plan as necessary.
5.1.6. Identify potential risks and develop contingency plans to mitigate these risks.
5.1.7. Communicate regularly with stakeholders, including sponsors, customers, and team members, to ensure that everyone is aware of project progress and any issues that arise.
5.1.8. Ensure that project documentation is accurate and up to date, including project plans, progress reports, and risk assessments.
5.1.9. Foster a positive team environment by encouraging collaboration, providing support, and recognizing team members' contributions.
5.1.10. Continuously evaluate project performance and identify opportunities for improvement.

**5.2. System and Hardware Installation**

5.2.1. Provision of essential services for installation of devices, software and systems supplied for this project.

**5.3. Operating System (OS) Hardening**

The OS hardening service shall include the patching and application of advanced system security procedures to secure the server's OS. The OS hardening procedures must include the following, at a minimum:

5.3.1. If available, install service packs, firmware and/or patches to keep the OS up to date
5.3.2. Perform secure configuration by deleting unnecessary programs and/or drivers, apply restrictions to the network, files and applications, assign groups and set the policies and use templates to manage and enforce security configurations
5.3.3. Install End-Point Protection
5.3.4. Perform DDoS attack protection and Vulnerability Assessment and Penetration Testing (VAPT)

**5.4. Support Services**

5.4.1. The winning bidder must ensure that appropriate support services are in place within the active warranty period for all supplied devices and software.
5.4.2. The winning bidder must provide at least 2 staff during the implementation and warranty coverage of the project.

**5.5. Knowledge Transfers**

5.5.1. Provide training for all users and ICT Support for RSU.

Document handover:

5.5.1.1. Network Diagram
5.5.1.2. System Diagram
5.5.1.3. System Credentials
5.5.1.4. Network Topology and IP VLan

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| | 5.5.1.5. Application and system documentation<br>5.5.1.6. Business User Requirements<br>5.5.1.7. Technical Design Requirements<br>5.5.1.8. Test Scripts and UAT Documents<br>5.5.1.9. User Manuals<br>5.5.1.10. Method of Procedure (MoP) Documents<br><br>5.5.2. Prior to the project handover, the winning bidder must conduct a system walk-through with university nominated personnel. The intent primarily is to give orientations on the existing systems, supplied equipment/devices, completed installations, equipment type, functionalities, basic operations & maintenance, and how these are integrated holistically. | |
| **TOTAL** | | **1** |

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| UNIT | ITEM DESCRIPTION | QTY |
|---|---|---|
| | **1. Project Summary**<br><br>Beacon of higher education in the island of Romblon, Romblon State University (RSU) is committed to providing a safe and secure learning environment for its students, faculty, and staff. In today's digital age, where technology is indispensable, safeguarding sensitive information and systems has become paramount.<br><br>Guided by worldwide-accepted cybersecurity frameworks which include identification, protection, detection, response, and recovery, the Smart Campus Data Security and Cyberattack Prevention Hub project aims to transform the campus into a secure environment through advanced cybersecurity measures. By safeguarding data and preventing cyberattacks, the project enhances trust, operational efficiency, and compliance with regulatory standards in pursuit of the university mission and vision.<br><br>~~Moreover, we at RSU recognize the need to mitigate the social, economic, and environmental impacts of technology innovations. Adhering to these principles and holistic approach, the need for a modern and sustainable waste management system is proposed to be part of this project.~~<br><br>**2. Project Description:**<br><br>• **Purpose:** Enhance cybersecurity measures within the campus to safeguard sensitive and confidential data, intellectual property, and personal information of students, faculty, staff and other stakeholders as well as systems and networks.<br><br>• **Key elements of the project:**<br><br>o **Cyber Security ~~Software's~~ System:** Recognizing the growing threat of cyberattacks, RSU is embarking on a transformative project to bolster its ICT infrastructure with state-of-the-art security measures. The Development of Smart Campus Data Security and Cyberattack Prevention Hub aims to create a fortified digital fortress that protects the university's valuable data, systems, and networks from malicious cyber threats.<br>o **Artificial Intelligence**: Harnessing the power of artificial intelligence to drive innovation, enhance teaching and learning, and address local challenges. By integrating AI into our academic programs and research initiatives, we aim to equip our students and faculty with the skills needed to thrive in the digital age and contribute to the development of a smarter, more sustainable Romblon and beyond.<br>o **Network Monitoring and Intrusion Detection Systems:** Implement advanced tools to monitor network traffic and detect anomalies or potential threats in real-time and prevent them from intruding the university's network infrastructure and systems.<br>o **Endpoint Security:** Deploy robust endpoint protection solutions to secure devices (servers, computers, mobile devices) connected to the campus network.<br>o **Data Encryption:** Implement strong encryption protocols to protect data both at rest and in transit.<br>o **Access Control:** Strengthen access controls through multi-factor authentication (MFA) and role-based access policies. | |

- **Incident Response Plan:** Develop a comprehensive plan to respond swiftly and effectively to any cyber threats or breaches.
- **Security Awareness Training:** Conduct regular training sessions for staff and students to raise awareness about cybersecurity best practices. An online training and learning tool to educate and assess the awareness of all staff and students.
- **Continuous Monitoring and Improvement:** Establish procedures for ongoing monitoring, assessment, and improvement of cybersecurity measures.
- **Power Supplies**: To fully realize our innovation agenda and maximize the potential of artificial intelligence and security systems, Romblon State University requires a stable and substantial power supply to mitigate power interruptions or fluctuations to support the demands of advanced computing infrastructure.
- ~~**Waste Management System:** We recognize the critical role education plays in addressing pressing societal issues. As a cornerstone of the Philippine educational landscape, we are committed to driving innovation that yields tangible benefits for our community. One of the most pressing challenges facing the Philippines is the management of domestic waste. With a growing population and increasing consumption, the country is grappling with the mounting environmental impact of waste disposal. To contribute to a cleaner and more sustainable future, RSU is pioneering a solution through the implementation of a Pyrolysis Carbonization Machine. This innovative technology offers a promising approach to waste management by converting organic waste into valuable products such as charcoal and biocharcoal. By embracing this initiative, RSU aims to not only address the domestic waste problem but also to serve as a model for other educational institutions and communities across the Philippines. We believe that through research, development, and practical application, we can create a lasting impact on our ecosystem and inspire others to join the fight against waste. This project aligns with RSU's commitment to environmental stewardship, technological advancement, and community engagement.~~
- **Network Infrastructure**: A robust network infrastructure that serves as the backbone of a modern university, providing stable internet and local network connectivity which is very indispensable to all students, faculty, staff, and the institution as a whole.

## 3. General Scope of Works

### 3.1. Requirement Analysis

3.1.1. Cyber Security Software and Services that will mitigate hacking and unauthorized use of the systems and access to data.

3.1.1.1. AI-Driven Network Intrusion Detection and Response
3.1.1.2. Cloud-based cybersecurity and Distributed Denial of Service (DDoS) mitigation system
3.1.1.3. Anti-virus for all desktops, servers, laptops

3.1.2. Artificial Intelligence: Harnessing the power of artificial intelligence to drive innovation, enhance teaching and learning, and address local challenges. By integrating AI into our academic programs and research initiatives, we aim to equip our students with the skills needed to thrive in the digital age and contribute to the development of a smarter, more sustainable Romblon.

3.1.2.1. AI-driven Document Management System for Record Office

3.1.2.2. Augmented Reality Toolkit and Professional Services for training
3.1.2.3. AI Toolkit, AI Server and Professional Services for training

3.1.3. Power Supplies: To fully realize our innovation agenda and maximize the potential of artificial intelligence and security systems, Romblon State University requires a substantial increase in power supply to support the demands of advanced computing infrastructure.

3.1.3.1. Power Transformer, Solar Panel and Generator Set with complete Installation and Electrical works for RSU San Fernando Campus
3.1.3.2. Power Transformer, Solar Panel and Generator Set with complete Installation and Electrical works for RSU Romblon Campus
3.1.3.3. Power Transformer, Solar Panel and Generator Set with complete Installation and Electrical works for RSU Calatrava Campus
3.1.3.4. Solar Power Grid for RSU Main Campus with complete Installation and Electrical works

~~3.1.4. Waste Management: To contribute to a cleaner and more sustainable future, RSU is pioneering a solution through the implementation of a Pyrolysis Carbonization Machine. This innovative technology offers a promising approach to waste management by converting organic waste into valuable products such as charcoal and biocharcoal.~~

~~3.1.4.1. Carbonization Machine~~
~~3.1.4.2. Crushing machine~~
~~3.1.4.3. Hopper and Mixer~~
~~3.1.4.4. Waste Management System which includes monitoring and scheduling~~
~~3.1.4.5. Garbage Collection Truck~~
~~3.1.4.6. Industrial grade garbage bins~~

3.1.5. Network Infrastructure: Installation, configuration, and training of additional equipment that will provide both physical and network security for assets inside the Smart Campus.

3.1.5.1. Access points, IDFs, POE switches
3.1.5.2. Door access control for Data Center
3.1.5.3. Door access control for E-classroom
3.1.5.4. Door access control for E-laboratory
3.1.5.5. Door access control for Mobile Application Development Laboratory
3.1.5.6. Door access control for Animation Laboratory

3.1.6. E-Classrooms: Conversion of traditional classrooms to be converted into modern and interactive smart classrooms.

3.1.6.1. Interactive classroom for distance learning (internet connectivity equipment, video cameras, speakers, microphones, projectors, TVs, PA system)

**3.2. Gate Access Turnstile with Student Info Kiosk/Biometric Machine with Smartcard:** IC Cards, Security Barrier, Ingress-Egress System: Provision and installation of Smart Cards embedded with microchips that can store and process data for access control and identification of the university personnel and students. This includes security barrier

that manages physical access to secure areas. It also includes a system that manages the flow of people in and out of a location.

**3.3. Miscellaneous:** Network printers for all offices of the university to be shared across multiple users or devices within a network. The printers should be able to connect to the network via Ethernet, Wi-Fi, or Bluetooth, allowing any authorized devices on the network to send print jobs which will contribute to data protection since printing will be centralized in every unit.

**3.4. Detailed Business User Requirements, Technical Design Requirements, Implementation Plan, and System Manuals**

3.4.1. A comprehensive business user requirement, technical design requirements, implementation plan and system manuals. The implementation plan will show the details of the project's timeline, milestones, deliverables, and resources required for the successful execution.

***3.5.* Infrastructure Setup**

3.5.1. The project team will install and set up the necessary digital infrastructure required for the project, including servers, routers, switches, and related equipment.

***3.6.* Software Implementation**

3.6.1. Based on the business user requirements and technical design requirements, installation, customization, and testing of all software and applications shall be performed to ensure full integration of all systems that form part of this project.

***3.7.* Testing and Quality Assurance**

3.7.1. The project team will perform individual component testing, and system integration testing for all components to ensure that they meet the specified requirements and are free from defects and errors.
3.7.2. Test scripts and user acceptance testing (UAT) documents should be provided for a smoother handover to end users.

***3.8.* Training**

3.8.1. Facilitate the delivery of knowledge transfer through technical orientation and training sessions.

**4. Platform, Application and Technical Specifications**

**4.1. Cyber Security Software and Services**

4.1.1. Supply and delivery of 1 lot of AI-Driven Network Intrusion Detection and Response

4.1.1.1. All-in-one-appliance endpoint and AI threat detection technology with centralized platform for endpoint protection, real-time threat detection, and incident response.
4.1.1.2. Protection from but not limited to malware, ransomware, spyware, cryptojacking, remote access trojan, social engineering attacks like phishing and others.

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| | 4.1.1.3. Web application protection from SQL injection, remote code execution, cross-site scripting, and man-in-the middle attacks.<br>4.1.1.4. Installation, configuration, and training<br><br>4.1.2. Supply, delivery and installation of 1 lot of Cloud-based cybersecurity and Distributed Denial of Service (DDoS) mitigation system covering all URLs of RSU website and applications.<br><br>4.1.2.1. Content Delivery Network (CDN): Global Network: has a vast network of data centers spread across numerous countries. This network helps to deliver content quickly by caching and serving it from locations close to end users. Caching: caches static content (images, scripts, stylesheets) at the edge of its network to reduce load times and server strain. Dynamic Content Optimization: It uses techniques such as Argo Smart Routing to optimize the delivery of dynamic content by finding the fastest route across the internet.<br>4.1.2.2. DDoS Protection: Mitigation: offers DDoS protection for both network and application layers. This includes protection against large-scale attacks that could overwhelm a website. Rate Limiting: Limits the number of requests from a single IP address to prevent abuse and mitigate certain types of attacks.<br>4.1.2.3. Web Application Firewall (WAF): Rule Sets: WAF provides pre-configured rulesets and allows custom rules to protect against common threats like SQL injection, cross-site scripting (XSS), and other OWASP Top 10 vulnerabilities. Bot Management: Identifies and mitigates malicious bot traffic while allowing legitimate bots to access the site.<br>4.1.2.4. DNS Services: DNS Resolution: provides fast and secure DNS resolution with a global network of DNS servers. It supports DNSSEC (Domain Name System Security Extensions) to prevent DNS spoofing. Anycast Network: Uses Anycast technology to route DNS queries to the nearest server in the network.<br>4.1.2.5. SSL/TLS Encryption: SSL/TLS Certificates: provides free and paid SSL/TLS certificates to encrypt traffic between users and the website. Automatic HTTPS Rewrites: Ensures that all traffic is redirected to HTTPS to enhance security.<br>4.1.2.6. Load Balancing: Global Load Balancing: Distributes traffic across multiple servers or data centers to ensure high availability and reliability. Health Checks: Monitors the health of backend servers and routes traffic away from unhealthy or overloaded servers.<br>4.1.2.7. Performance Optimization: Image Optimization: Features like Polish and Mirage improve image loading times by compressing and adjusting images based on the device and network conditions. Rocket Loader: Optimizes JavaScript loading to improve page load speeds.<br>4.1.2.8. Workers and Edge Computing: A serverless computing platform that allows developers to run JavaScript code at the edge of a network, enabling custom functionality and application logic to be executed closer to users.<br>4.1.2.9. Analytics and Monitoring: Traffic Analytics: Provides detailed insights into traffic patterns, threats, and performance metrics. Real-time Monitoring: Offers real-time data on site performance and security threats. | |

4.1.2.10. API and Integration: REST API: provides a comprehensive REST API for integrating and automating various services, including DNS management, firewall rules, and more. Third-Party Integrations: Supports integrations with various third-party services and platforms.

4.1.2.11. Security Features: Rate Limiting: Helps to mitigate brute force attacks by limiting the number of requests from a single IP address. Access Control: Access allows secure access to internal applications and resources.

4.1.3. Supply and delivery of 500 licenses of Anti-virus for all desktops, servers, laptops with the following operating systems Windows, Open source, and Android, as applicable:

4.1.3.1. Latest anti-virus software with proven good track-record to detect, prevent, and clean infected equipment.

4.1.3.2. The detection and prevention do not limit to local infection protection but also protection from cyberattacks and ransomwares.

4.1.3.3. Protection from cryptojacking, spyware, remote access trojan and social engineering attacks.

4.1.3.4. Installation, training, local support for the licenses

4.1.3.5. 2 years subscription

**4.2. Artificial Intelligence**

4.2.1. Supply, delivery and installation of 1 lot of AI-Driven Document Management System for records.

4.2.1.1. On-premise document management system which can be accessed anytime, and anywhere within RSUs secured network.

4.2.1.2. Access content from your desktop, tablet or phone via a responsive web user interface.

4.2.1.3. User-friendly and bespoke capability; with drag and drop content for faster upload and distribution and customize branding for a bespoke touch.

4.2.1.4. Enterprise-level administration and security

4.2.1.5. Content is secured with audit trail, permission/access rights, encryption, and lifecycle management.

4.2.1.6. Customizable workflow management. Intelligent routing processes and customizable automated workflows

4.2.1.7. Metadata tagging for faster document searching and indexing

4.2.1.8. Comprehensive data access compliance

4.2.1.9. Unrestricted document types and sizes with full featured OCR and document lifecycle management

4.2.2. Supply and delivery and installation Augmented Reality (AR) Toolkit

As a complementary technology to artificial intelligence, AR transforms the user experience into a rich and immersive experience. RSU aims to become a center of excellence in innovation by nurturing talented students to hone their skills and capability building by using AR and AI technologies.

4.2.2.1. Supply, delivery and installation of 1 lot of AR software and related licenses to be used in creating AR contents and programs

4.2.2.2. Supply, delivery and installation of AR software

development kit (SDK) offering cross-platform APIs to build new immersive experiences on Android, iOS, and Web.

4.2.2.3. Provide fundamental tools to help build AR experiences such as:

4.2.2.3.1. Motion tracking, which shows positions relative to the world
4.2.2.3.2. Anchors, which ensures tracking of an object's position over time
4.2.2.3.3. Environmental understanding, which detects the size and location of all types of surfaces
4.2.2.3.4. Depth understanding, which measures the distance between surfaces from a given point
4.2.2.3.5. Light estimation, which provides information about the average intensity and color correction of the environment

4.2.2.4. Supply of AR hardware

4.2.2.4.1. Ninety (90) AR headsets with the following minimum specifications:

- ~~Display: see-through holographic lenses (waveguides), 2K resolution with 3:2 light engines, eye-based rendering, display optimization for 3D eye position~~
- ~~Sensors: head tracking, eye tracking, depth, accelerometer, gyroscope, magnetometer, camera~~
- ~~Audio: microphone array, speakers~~
- ~~Tracking: hand-tracking, eye-tracking, voice command~~
- Storage: at least 128GB
- DRAM: at least 8GB
- Headset Weight: 515 grams or lighter
- Display Resolution: at least 2064 x 2208 pixels per eye
- Refresh rate: 72Hz,90Hz, 120Hz
- Field of View: 110 degrees' horizontal and 96 degrees' vertical
- Battery Life: up to 2.2 hours of usage on average

4.2.2.4.2. Ninety (90) Android tablets with the following minimum specifications

- CPU: 3.4 GHz
- Display: 14.6 inches
- Pen support: Pen, gesture / remote control
- Memory: 16 GB RAM, 1TB
- Camera: 13.0 MP + 8.0 MP / UHD 4K
- Form factor: Tablet
- Sensors: Accelerometer, Fingerprint, Gyro Sensor, Geomagnetic Sensor, Hall Sensor, Light Sensor

4.2.2.5. Provide professional services for AR training to students and faculty

4.2.2.5.1. Face to face and hands-on training

4.2.2.5.2. Provide syllabus and training materials
4.2.2.5.3. Develop an actual working AR application
4.2.2.5.4. Conversion of 3 classrooms into AR Laboratory that includes the following:

4.2.2.5.4.1. Lighting works
4.2.2.5.4.2. Wall finishing
4.2.2.5.4.3. Ceiling works
4.2.2.5.4.4. 2 Units 2.5 HP Inverter Air Conditioner Split Type
4.2.2.5.4.5. Electrical works
4.2.2.5.4.6. 2 units of Dome Camera, 4MP or higher MP
4.2.2.5.4.7. Supply of Access Point for Wi-Fi access
4.2.2.5.4.8. Provision of furnishing for each of the 3 laboratories:

4.2.2.5.4.8.1. 30 computer tables and chairs for students
4.2.2.5.4.8.2. 1 table and Ergonomic chair for teacher

4.2.3. Artificial Intelligence (AI) Toolkit

4.2.3.1. Supply, delivery and installation of 1 lot of AI software toolkit

4.2.3.1.1. Software extension that simplifies generative AI app development by bringing together cutting-edge AI development tools and models
~~4.2.3.1.2. Software extension that simplifies generative AI app development by bringing together cutting edge AI development tools and models~~
4.2.3.1.3. Download and run AI models locally. The AI Toolkit provides access to highly optimized models
4.2.3.1.4. Test models in an intuitive playground or in your ~~application with a REST API.~~ application with APIs.
4.2.3.1.5. Fine-tune your AI model - locally or in the cloud (on a virtual machine) - to create new skills, improve reliability of responses, set the tone and format of the response.
4.2.3.1.6. The AI Toolkit provides a guided walkthrough to fine-tune popular small-language models (SLMs) - like Phi-3 and Mistral.
4.2.3.1.7. Deploy your AI feature either to the cloud or with an application that runs on a device.

4.2.3.2. Supply, delivery and installation of 10 Desktops for AI development with the following minimum specifications:

- 24 cores, 32 threads, and up to 5.6 GHz Boost clock speed
- GPU with tensor flow cores, 16GB RAM
- 2TB SSD
- 32 GB DDR5 RAM
- 40-inch-wide monitor, IPS panel, max.120Hz, native resolution: 5120 x 2160
- Optical mouse and keyboard set

4.2.3.3. Supply, delivery and installation of ~~3~~ (two) 2 sets of AI

Servers with the following minimum specifications:

- Processor: 5th Intel® Xeon® Processor Scalable Family (Up to 350W) equivalent or higher
- Number of processor sockets: 2 x sockets
- Memory Size: 256GB RDIMM 3DS
- Total Slots: 32 (8 channel per CPU, 16 DIMM per CPU)
- Capacity: Maximum up to 4TB per CPU socket
- Memory Type: 5th: DDR5 4400 RDIMM/ 3DS RDIMM (2DPC)
- Memory Size: 256GB RDIMM 3DS
- Usable Storage: 4TB
- RAID requirement: RAID 10
- Type of disks: SSD
- Network connection Interface type: SFP+
- Network connection Interface speed: 1G
- Form-factor: 4U or smaller
- Power Supply: 2+2 Redundant
- GPU Architecture: L40S Ada Lovelace
- FP32: 91.6 TFLOPS
- RT Core: 212 TFLOPS
- TF32 Tensor Core: 366 TFLOPS
- FP16/BF16 Tensor Core: 733 TFLOPS
- FP8 Tensor Core: 1,466 TFLOPS
- INT8 Tensor Core: 1,466 TOPS
- GPU Memory: 48 GB GDDR6
- GPU Memory Bandwidth: 864 GB/s
- L2 Cache: 96 MB
- Media Engines: 3 NVENC (+AV1) 3 NVDEC 4 NVJPEG
- Power: Up to 350 W
- Operating System: Ubuntu Linux

4.2.3.4. Provide professional services for AI ~~AR~~ training to students and faculty

- Face to face and hands-on training
- Provide syllabus and training materials
- Develop an actual working AI ~~AR~~ application

4.2.3.5. Conversion of ~~3~~ 1 classroom~~s~~ into AI ~~AR~~ Laboratory that includes the following:

4.2.3.5.1. Lighting works
4.2.3.5.2. Wall finishing
4.2.3.5.3. Ceiling works
4.2.3.5.4. 2 Units 2.5 HP Inverter Air Conditioner Split Type
4.2.3.5.5. Electrical works
4.2.3.5.6. 2 units of Dome Camera, 4MP or higher MP
4.2.3.5.7. Supply of Access Point for Wi-Fi access
4.2.3.5.8. Provision of furnishing
4.2.3.5.8.1. Ten (10) computer tables and 20 chairs for students
4.2.3.5.8.2. One (1) table and Ergonomic chair for teacher

4.2.4. Supply, delivery and installation of 1 lot of Dormitory Management System

4.2.4.1. Custom web-based dormitory management system with good UI/UX design
4.2.4.2. Centralized customer records management system
4.2.4.3. Reservation and scheduling
4.2.4.4. Inventory management for the dormitory equipment and consumables
4.2.4.5. Billing and payment management
4.2.4.6. Printing of statement-of-account (SOA), with digital SOA in PDF format
4.2.4.7. Staff scheduling
4.2.4.8. Role-based access user management
4.2.4.9. User training

**4.3. Power Supplies**

Supply, delivery and installation of Power Supplies in 4 sites. Shall perform powerhouse works to ensure power is generated safely and relayed from power stations and substations. Electrical Works for connecting electricity supply wiring to electrical equipment.

4.3.1. Site 1: RSU Romblon Campus

4.3.1.1. Fully furnished power house building
4.3.1.2. 300kVA, 7.6kV / 230V, 60Hz Transformer (wye configuration) with complete accessories (LBS, LA, CT, PT, FC, etc.), ~~and~~ private Pole mounting and complete metering system
4.3.1.3. 400kVA, 230V, 60Hz ~~single~~ three phase Outdoor Type Diesel Generator (high-quality)
4.3.1.4. ~~Single Phase Main Distribution Panel~~ Three Phase Main Distribution Panel; Mains: 400AT 3P MCCB, Branches: 1-250AT 3P MCCB, 1-200AT 3P MCCB, 1-150AT 3P MCCB, 1-100AT 3P MCCB,1-50AT 3P MCCB and 1-30AT 3P MCCB
4.3.1.5. ~~Single Phase ECB (2 Assembly)~~ Three Phase 400AT ECB NEMA 3R (2 Assembly)
4.3.1.6. ~~Single Phase GCB (1 Assembly)~~ Three Phase 400AT GCB NEMA 3R (1 Assembly)
4.3.1.7. ~~Automatic Transfer Switch~~ Three Phase 400AT/400AT Automatic Transfer Switch NEMA 3R (1 Assembly)
4.3.1.8. ~~7.6kV Transmission Line from Local Power Distributor with Complete metering System~~ 13.2kV Three Phase transmission line (includes: poles and accessories, cables and protection) and will tap to the nearest local power distribution line
4.3.1.9. Complete Wiring, conduits and Accessories (MDP to LOAD excluded)
4.3.1.10. Underground Service Entrance
4.3.1.11. Electrical Permit and Permanent Electrical Connection Processing including fees
4.3.1.12. 50kWp, single phase, 60Hz Grid-Tied Solar System with rapid shutdown and export limiter (including hauling, installation, wiring, warranty, training and testing and commissioning and complete accessories)
4.3.1.13. Grounding system including grounding terminals and grounding test pit.

4.3.2. Site 2: RSU Calatrava Campus

4.3.2.1. Fully furnished power house building

4.3.2.2. 300kVA, 7.6kV / 230V, 60Hz Transformer (wye configuration) with complete accessories (LBS, LA, CT, PT, FC, etc.), ~~and~~ private Pole mounting and complete metering system

4.3.2.3. 400kVA, 230V, 60Hz ~~single~~ three phase Outdoor Type Diesel Generator (high quality)

4.3.2.4. ~~Single Phase Main Distribution Panel~~ Three Phase Main Distribution Panel; Mains: 400AT 3P MCCB, Branches: 1-250AT 3P MCCB, 1-200AT 3P MCCB, 1-150AT 3P MCCB, 1-100AT 3P MCCB,1-50AT 3P MCCB and 1-30AT 3P MCCB

4.3.2.5. ~~Single Phase ECB (2 Assembly)~~ Three Phase 400AT ECB NEMA 3R (2 Assembly)

4.3.2.6. ~~Single Phase GCB (1 Assembly)~~ Three Phase 400AT GCB NEMA 3R (1 Assembly)

4.3.2.7. ~~Automatic Transfer Switch~~ Three Phase 400AT/400AT Automatic Transfer Switch NEMA 3R (1 Assembly)

4.3.2.8. ~~7.6kV Transmission Line from Local Power Distributor with Complete metering System~~ 13.2kV Three Phase transmission line (includes: poles and accessories, cables and protection) and will tap to the nearest local power distribution line

4.3.2.9. Complete Wiring, conduits and Accessories (MDP to LOAD excluded)

4.3.2.10. Underground Service Entrance

4.3.2.11. Electrical Permit and Permanent Electrical Connection Processing including fees

4.3.2.12. 50kWp, single phase, 60Hz Grid-Tied Solar System with rapid shutdown and export limiter (including hauling, installation, wiring, warranty, training and testing and commissioning and complete accessories)

4.3.2.13. Grounding system including grounding terminals and grounding test pit.

4.3.3. Site 3: RSU San Fernando Campus

4.3.3.1. Fully furnished power house building

4.3.3.2. 300kVA, 7.6kV / 230V, 60Hz Transformer (wye configuration) with complete accessories (LBS, LA, CT, PT, FC, etc.), ~~and~~ private Pole mounting and complete metering system

4.3.3.3. 400kVA, 230V, 60Hz ~~single~~ three phase Outdoor Type Diesel Generator (high quality)

4.3.3.4. ~~Single Phase Main Distribution Panel~~ Three Phase Main Distribution Panel; Mains: 400AT 3P MCCB, Branches: 1-250AT 3P MCCB, 1-200AT 3P MCCB, 1-150AT 3P MCCB, 1-100AT 3P MCCB,1-50AT 3P MCCB and 1-30AT 3P MCCB

4.3.3.5. ~~Single Phase ECB (2 Assembly)~~ Three Phase 400AT ECB NEMA 3R (2 Assembly)

4.3.3.6. ~~Single Phase GCB (1 Assembly)~~ Three Phase 400AT GCB NEMA 3R (1 Assembly)

4.3.3.7. ~~Automatic Transfer Switch~~ Three Phase 400AT/400AT Automatic Transfer Switch NEMA 3R (1 Assembly)

4.3.3.8. ~~7.6kV Transmission Line from Local Power Distributor with Complete metering System~~ 13.2kV Three Phase transmission line (includes: poles and accessories, cables and protection) and will tap to the nearest local power distribution line

4.3.3.9. Complete Wiring, conduits and Accessories (MDP to LOAD excluded)

4.3.3.10. Underground Service Entrance

4.3.3.11. Electrical Permit and Permanent Electrical Connection Processing including fees

4.3.3.12. 50kWp, single phase, 60Hz Grid-Tied Solar System with rapid shutdown and export limiter (including hauling, installation, wiring, warranty, training and testing and commissioning, and complete accessories)

4.3.3.13. Grounding system including grounding terminals and grounding test pit.

4.3.4. Site 4: RSU Main Campus Data Center

4.3.4.1. 50kWp, 3 phase, 60Hz Grid-Tied Solar System with battery, rapid shutdown and export limiter (including hauling, installation, wiring, warranty, training and testing and commissioning and complete accessories)

4.3.5. Cloud based SCADA monitor server in the Main-Campus for power monitoring of solar inverters of the 4 sites

4.3.5.1. Security measure to protect the system from cyber threats

**4.4. Network Infrastructure**

4.4.1. Electromagnetic lock and door access system

4.4.1.1. Electromagnetic locks and access control with smart card and face recognition authentication

4.4.1.2. Centralized control and configuration; centrally control and monitor inside the data center's command center

4.4.1.3. Intrusion alarm

4.4.1.4. Emergency exit button

4.4.1.5. Supply and installation of the electromagnetic door access for the following buildings and classrooms:

4.4.1.5.1. 1 Data Center

4.4.1.5.2. 26 E-classrooms

4.4.1.5.3. 4 E-laboratories

4.4.1.5.4. 2 Mobile application development laboratories

4.4.1.5.5. 1 Animation laboratories

4.4.1.6. Supply, delivery and installation of enough number of network components/appliance for the laboratories and buildings not connected with FOC

4.4.1.6.1. Eight (8) units 48 port Access Distribution Switch

4.4.1.6.2. Twenty (20) units 48 port ~~Access~~ Access Switch POE+

4.4.1.6.3. Twenty (20) units 24 port ~~Access~~ Access Switch POE+

4.4.1.6.4. Twelve (12) units 12 Port Access Switch POE+
4.4.1.6.5. One Hundred Sixty (160) units SFP+ SR Transceivers
4.4.1.6.6. Thirty-Two (32) units SFP+ LR Transceivers

**4.5. E-Classrooms**

Supply, delivery and installation of 15 e-classrooms. Conversion of traditional classrooms to a digitally enhanced facility that will allow learners to access course contents online, deliver lectures remotely and host productivity tools among others. The list below are the components to be spread across the e-Classrooms:

4.5.1. Interactive Flat Panel
4.5.2. Intelligent Collaboration Device (86 inches infrared screen)
4.5.3. Wall mount bracket
4.5.4. OPS (i7-8700 16G DDR4, 256G SSD 4K60 Windows 10 SAC)
4.5.5. Student and Teachers Camera (Tracking camera) Focus: 2.8 +-0.5mm
4.5.6. Digital Board 86 inches

4.5.6.1. Board materials: Greenboard (3layers, cold steel surface with nano paint, anti glare ≥0.3mm middle high-density poly-foam ≥13mm,back galvanized steel sheet ≥0.2mm
4.5.6.2. Response Object: Finger, pen, chalk, any opaque object
4.5.6.3. Touch Resolution: 32768*32768/4096*4096
4.5.6.4. Inter activity: Digital Board and IFPD support work separately, also support interactive work, the digital board writing can be displayed on the IFPD, and other interactive operations

4.5.7. 1 DSP, 6 Ceiling Microphone and 2 Speakers
4.5.8. 55 inches LED monitor for Teacher
4.5.9. Local warranty and support
4.5.10. Installation and user training
4.5.11. Each e-Classroom should have the following scope of auxiliary works and services:

4.5.11.1. Lighting works
4.5.11.2. Wall finishing
4.5.11.3. Ceiling works
4.5.11.4. 2 Units 2.5 HP Inverter Air Conditioner Split Type
4.5.11.5. Electrical works
4.5.11.6. 2 units of Dome Camera, 4MP or higher MP
4.5.11.7. Supply of Access Point for Wi-Fi access
4.5.11.8. Provision of furnishing for each of the 15 e-Classrooms

4.5.11.8.1. Twenty (20) tables and 40 chairs for students
4.5.11.8.2. One (1) table and One (1) ergonomic chair for teacher

**4.6. Supply and delivery of 1 set of Gate Access Turnstile with Student Info Kiosk/Biometric Machine with Smartcard:** IC Cards, Security Barrier, Ingress-Egress System. Provide an end-to-end solution, equipment, and services that will allow RSU to implement an integrated and secured ingress and egress system The solution shall be composed of the following:

4.6.1. Supply, delivery and installation of equipment, related hardware, accessories, and software subsystems.

4.6.2. Custom software to centrally-manage the ingress and egress
4.6.3. Project implementation, testing and training
4.6.4. Local support and maintenance
4.6.5. Supply of smart cards, card printers, and consumables
4.6.6. Tapping stations with integrated controller
4.6.7. UHF card readers with poles and installation
4.6.8. Electric boom barriers
4.6.9. Min. 43-inch TV display with installation brackets
4.6.10. Electrical and civil works, data network connectivity to data center, and other related works to complete the solution
4.6.11. Desktop set with contactless card reader with system for smart card management

**4.7. Miscellaneous:**

**4.7.1. Network printers**

4.7.1.1. Multifunction network printers with the following minimum specifications:

4.7.1.1.1. Supply and delivery of 30 units of multifunction network printer
4.7.1.1.2. Speed: 30 ppm color or monochrome
4.7.1.1.3. Functions: Copier, printer, scanner
4.7.1.1.4. Network printer & network scanner
4.7.1.1.5. Print resolution: 1200x2400 dpi
4.7.1.1.6. Scan resolution: 600 x 600 dpi
4.7.1.1.7. Wireless LAN support
4.7.1.1.8. Two-sided scanning
4.7.1.1.9. Built-in touchscreen control panel
4.7.1.1.10. Paper size: Min.A5, Max. A3

4.7.1.2. Supply of printer consumables

4.7.1.2.1. 600 pieces of color toner cartridges

4.7.1.3. Local warranty and support
4.7.1.4. Installation and user training

**4.7.2. Internet Access**

Shall provide 1 Gbps direct Internet Access (DIA) to the Data Center for 3 years.

~~**4.7.3. Waste Management**~~

~~4.7.3.1. Carbonization Machine~~
~~4.7.3.2. Crushing machine~~
~~4.7.3.3. Hopper & Mixer~~

**5. Professional Services**

**5.1. Project Management**

Commitment to ensure that information and communication technology projects are completed successfully. This involves overseeing the project team, creating project plans, tracking progress, identifying and managing risks, and communicating with stakeholders.

5.1.1. Develop a clear understanding of the project goals and objectives and ensure that all project team members have a shared understanding of these goals.
5.1.2. Create a comprehensive business user requirements and technical design requirements document.
5.1.3. Create a detailed project plan that includes timelines, milestones, and deliverables.
5.1.4. Assign roles and responsibilities to the project team members and ensure that everyone understands their roles.
5.1.5. Monitor project progress regularly and adjust the project plan as necessary.
5.1.6. Identify potential risks and develop contingency plans to mitigate these risks.
5.1.7. Communicate regularly with stakeholders, including sponsors, customers, and team members, to ensure that everyone is aware of project progress and any issues that arise.
5.1.8. Ensure that project documentation is accurate and up to date, including project plans, progress reports, and risk assessments.
5.1.9. Foster a positive team environment by encouraging collaboration, providing support, and recognizing team members' contributions.
5.1.10. Continuously evaluate project performance and identify opportunities for improvement.

**5.2. System and Hardware Installation**

5.2.1. Provision of essential services for installation of devices, software and systems supplied for this project.

**5.3. Operating System (OS) Hardening**

The OS hardening service shall include the patching and application of advanced system security procedures to secure the server's OS. The OS hardening procedures must include the following, at a minimum:

5.3.1. If available, install service packs, firmware and/or patches to keep the OS up to date
5.3.2. Perform secure configuration by deleting unnecessary programs and/or drivers, apply restrictions to the network, files and applications, assign groups and set the policies and use templates to manage and enforce security configurations
5.3.3. Install End-Point Protection
5.3.4. Perform DDoS attack protection and Vulnerability Assessment and Penetration Testing (VAPT)

**5.4. Support Services**

5.4.1. The winning bidder must ensure that appropriate support services are in place within the active warranty period for all supplied devices and software.
5.4.2. The winning bidder must provide at least 2 staff during the implementation and warranty coverage of the project.

**5.5. Knowledge Transfers**

5.5.1. Provide training for all users and ICT Support for RSU.

Document handover:

5.5.1.1. Network Diagram

| | | |
|---|---|---|
| | 5.5.1.2. System Diagram<br>5.5.1.3. System Credentials<br>5.5.1.4. Network Topology and IP VLan<br>5.5.1.5. Application and system documentation<br>5.5.1.6. Business User Requirements<br>5.5.1.7. Technical Design Requirements<br>5.5.1.8. Test Scripts and UAT Documents<br>5.5.1.9. User Manuals<br>5.5.1.10. Method of Procedure (MoP) Documents<br><br>5.5.2. Prior to the project handover, the winning bidder must conduct a system walk-through with university nominated personnel. The intent primarily is to give orientations on the existing systems, supplied equipment/devices, completed installations, equipment type, functionalities, basic operations & maintenance, and how these are integrated holistically. | |
| | **TOTAL** | **1** |

Please be advised that this bid bulletin is issued to amend the Technical Specifications in all attached/associated documents. This shall be an integral part of the Bid Documents.

For information and guidance of all concerned.

**ATTY. GLENN NIÑO M. SARTILLO**
BAC Chairperson