

# **PHILIPPINE BIDDING DOCUMENTS**

(As Harmonized with Development Partners)

**PROCUREMENT OF SMART CAMPUS ENHANCEMENT PROGRAM OF  
EASTERN VISAYAS STATE UNIVERSITY (EVSU)**  
(Project Identification No. IB-2023-09-12)



**EASTERN VISAYAS STATE UNIVERSITY**

**Sixth Edition  
July 2020**

# Preface

These Philippine Bidding Documents (PBDs) for the procurement of Goods through Competitive Bidding have been prepared by the Government of the Philippines for use by any branch, constitutional commission or office, agency, department, bureau, office, or instrumentality of the Government of the Philippines, National Government Agencies, including Government-Owned and/or Controlled Corporations, Government Financing Institutions, State Universities and Colleges, and Local Government Unit. The procedures and practices presented in this document have been developed through broad experience, and are for mandatory use in projects that are financed in whole or in part by the Government of the Philippines or any foreign government/foreign or international financing institution in accordance with the provisions of the 2016 revised Implementing Rules and Regulations of Republic Act No. 9184.

The Bidding Documents shall clearly and adequately define, among others: (i) the objectives, scope, and expected outputs and/or results of the proposed contract or Framework Agreement, as the case may be; (ii) the eligibility requirements of Bidders; (iii) the expected contract or Framework Agreement duration, the estimated quantity in the case of procurement of goods, delivery schedule and/or time frame; and (iv) the obligations, duties, and/or functions of the winning bidder.

Care should be taken to check the relevance of the provisions of the PBDs against the requirements of the specific Goods to be procured. If duplication of a subject is inevitable in other sections of the document prepared by the Procuring Entity, care must be exercised to avoid contradictions between clauses dealing with the same matter.

Moreover, each section is prepared with notes intended only as information for the Procuring Entity or the person drafting the Bidding Documents. They shall not be included in the final documents. The following general directions should be observed when using the documents:

- a. All the documents listed in the Table of Contents are normally required for the procurement of Goods. However, they should be adapted as necessary to the circumstances of the particular Procurement Project.
- b. Specific details, such as the “*name of the Procuring Entity*” and “*address for bid submission*,” should be furnished in the Instructions to Bidders, Bid Data Sheet, and Special Conditions of Contract. The final documents should contain neither blank spaces nor options.
- c. This Preface and the footnotes or notes in italics included in the Invitation to Bid, Bid Data Sheet, General Conditions of Contract, Special Conditions of Contract, Schedule of Requirements, and Specifications are not part of the text of the final document, although they contain instructions that the Procuring Entity should strictly follow.
- d. The cover should be modified as required to identify the Bidding Documents as to the Procurement Project, Project Identification Number, and Procuring Entity, in addition to the date of issue.
- e. Modifications for specific Procurement Project details should be provided in the Special Conditions of Contract as amendments to the Conditions of Contract. For easy completion, whenever reference has to be made to specific clauses in the Bid Data Sheet or Special Conditions of Contract, these terms shall be printed in bold typeface on Sections I (Instructions to Bidders) and III (General Conditions of Contract), respectively.
- f. For guidelines on the use of Bidding Forms and the procurement of Foreign-Assisted Projects, these will be covered by a separate issuance of the Government Procurement Policy Board.

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# *Glossary of Acronyms, Terms, and Abbreviations*

**ABC** – Approved Budget for the Contract.

**BAC** – Bids and Awards Committee.

**Bid** – A signed offer or proposal to undertake a contract submitted by a bidder in response to and in consonance with the requirements of the bidding documents. Also referred to as *Proposal* and *Tender*. (2016 revised IRR, Section 5[c])

**Bidder** – Refers to a contractor, manufacturer, supplier, distributor and/or consultant who submits a bid in response to the requirements of the Bidding Documents. (2016 revised IRR, Section 5[d])

**Bidding Documents** – The documents issued by the Procuring Entity as the bases for bids, furnishing all information necessary for a prospective bidder to prepare a bid for the Goods, Infrastructure Projects, and/or Consulting Services required by the Procuring Entity. (2016 revised IRR, Section 5[e])

**BIR** – Bureau of Internal Revenue.

**BSP** – Bangko Sentral ng Pilipinas.

**Consulting Services** – Refer to services for Infrastructure Projects and other types of projects or activities of the GOP requiring adequate external technical and professional expertise that are beyond the capability and/or capacity of the GOP to undertake such as, but not limited to: (i) advisory and review services; (ii) pre-investment or feasibility studies; (iii) design; (iv) construction supervision; (v) management and related services; and (vi) other technical services or special studies. (2016 revised IRR, Section 5[i])

**CDA** - Cooperative Development Authority.

**Contract** – Refers to the agreement entered into between the Procuring Entity and the Supplier or Manufacturer or Distributor or Service Provider for procurement of Goods and Services; Contractor for Procurement of Infrastructure Projects; or Consultant or Consulting Firm for Procurement of Consulting Services; as the case may be, as recorded in the Contract Form signed by the parties, including all attachments and appendices thereto and all documents incorporated by reference therein.

**CIF** – Cost Insurance and Freight.

**CIP** – Carriage and Insurance Paid.

**CPI** – Consumer Price Index.

**DDP** – Refers to the quoted price of the Goods, which means “delivered duty paid.”

**DTI** – Department of Trade and Industry.

**EXW** – Ex works.

**FCA** – “Free Carrier” shipping point.

**FOB** – “Free on Board” shipping point.

**Foreign-funded Procurement or Foreign-Assisted Project**– Refers to procurement whose funding source is from a foreign government, foreign or international financing institution as specified in the Treaty or International or Executive Agreement. (2016 revised IRR, Section 5[b]).

**Framework Agreement** – Refers to a written agreement between a procuring entity and a supplier or service provider that identifies the terms and conditions, under which specific purchases, otherwise known as “Call-Offs,” are made for the duration of the agreement. It is in the nature of an option contract between the procuring entity and the bidder(s) granting the procuring entity the option to either place an order for any of the goods or services identified in the Framework Agreement List or not buy at all, within a minimum period of one (1) year to a maximum period of three (3) years. (GPPB Resolution No. 27-2019)

**GFI** – Government Financial Institution.

**GOCC** – Government-owned and/or –controlled corporation.

**Goods** – Refer to all items, supplies, materials and general support services, except Consulting Services and Infrastructure Projects, which may be needed in the transaction of public businesses or in the pursuit of any government undertaking, project or activity, whether in the nature of equipment, furniture, stationery, materials for construction, or personal property of any kind, including non-personal or contractual services such as the repair and maintenance of equipment and furniture, as well as trucking, hauling, janitorial, security, and related or analogous services, as well as procurement of materials and supplies provided by the Procuring Entity for such services. The term “related” or “analogous services” shall include, but is not limited to, lease or purchase of office space, media advertisements, health maintenance services, and other services essential to the operation of the Procuring Entity. (2016 revised IRR, Section 5[r])

**GOP** – Government of the Philippines.

**GPPB** – Government Procurement Policy Board.

**INCOTERMS** – International Commercial Terms.

**Infrastructure Projects** – Include the construction, improvement, rehabilitation, demolition, repair, restoration or maintenance of roads and bridges, railways, airports, seaports, communication facilities, civil works components of information technology projects, irrigation, flood control and drainage, water supply, sanitation, sewerage and solid waste management systems, shore protection, energy/power and electrification facilities, national buildings, school buildings, hospital buildings, and other related construction projects of the government. Also referred to as *civil works or works*. (2016 revised IRR, Section 5[u])

**LGUs** – Local Government Units.

**NFCC** – Net Financial Contracting Capacity.

**NGA** – National Government Agency.

**PhilGEPS** - Philippine Government Electronic Procurement System.

**Procurement Project** – refers to a specific or identified procurement covering goods, infrastructure project or consulting services. A Procurement Project shall be described, detailed, and scheduled in the Project Procurement Management Plan prepared by the agency which shall be consolidated in the procuring entity's Annual Procurement Plan. (GPPB Circular No. 06-2019 dated 17 July 2019)

**PSA** – Philippine Statistics Authority.

**SEC** – Securities and Exchange Commission.

**SLCC** – Single Largest Completed Contract.

**Supplier** – refers to a citizen, or any corporate body or commercial company duly organized and registered under the laws where it is established, habitually established in business and engaged in the manufacture or sale of the merchandise or performance of the general services covered by his bid. (Item 3.8 of GPPB Resolution No. 13-2019, dated 23 May 2019). Supplier as used in these Bidding Documents may likewise refer to a distributor, manufacturer, contractor, or consultant.

**UN** – United Nations.

# ***Section I. Invitation to Bid***



## BIDS AND AWARDS COMMITTEE INVITATION TO BID

### PROCUREMENT OF SMART CAMPUS ENHANCEMENT PROGRAM OF EASTERN VISAYAS STATE UNIVERSITY (EVSU)

1. The *Eastern Visayas State University*, through the *GENERAL APPROPRIATIONS ACT (GAA) OF 2023*, intends to apply the sum of *One Billion Five Hundred Million Pesos (Php1,500,000,000.00)* being the ABC to payments under the contract for *IB-2023-09-12 Procurement of Smart Campus Enhancement Program of Eastern Visayas State University (EVSU)*. Bids received in excess of the ABC shall be automatically rejected at bid opening.
2. The *Eastern Visayas State University* now invites bids for the above Procurement Project. Delivery of the Goods is required by EVSU-Main Campus within **420 calendar days**. Bidders should have completed, within **five (5) years** from the date of submission and receipt of bids, a contract similar to the Project. The description of an eligible bidder is contained in the Bidding Documents, particularly, in Section II (Instructions to Bidders).
3. Bidding will be conducted through open competitive bidding procedures using a non-discretionary “*pass/fail*” criterion as specified in the 2016 revised Implementing Rules and Regulations (IRR) of Republic Act (RA) No. 9184.

Bidding is restricted to Filipino citizens/sole proprietorships, partnerships, or organizations with at least sixty percent (60%) interest or outstanding capital stock belonging to citizens of the Philippines.

4. Prospective Bidders may obtain further information from *Eastern Visayas State University* and inspect the Bidding Documents at the address given below *during office hours from 9:00 A.M. to 5:00 P.M, Monday to Friday*.
5. A complete set of Bidding Documents may be acquired by interested Bidders **October 5, 2023 – October 27, 2023 (except on Saturdays, Sundays & Holidays)** from the given address below and upon payment of the applicable fee for the Bidding Documents, pursuant to the latest Guidelines issued by the GPPB, in the amount of *Seventy-Five Thousand Pesos (Php75,000.00)*. The Procuring Entity shall allow the bidder to present its proof of payment for the fees in person or through e-mail at [evsu.bacsecretariat@evsu.edu.ph](mailto:evsu.bacsecretariat@evsu.edu.ph).

Prospective bidders who intend to purchase the bidding documents may opt for the following mode of payment:

- a. EVSU Cashiering (transaction hours: 8:00AM-3:30PM)
- b. Payment thru bank:

Account name: **EVSU Tacloban Campus**  
Bank: **Development Bank of The Philippines (DBP)**  
Account number: **000-00090-775-3**



Bidding Documents may also be downloaded free of charge from the website of the Philippine Government Electronic Procurement System (PhilGEPS) ([www.philgeps.gov.ph](http://www.philgeps.gov.ph)) and the Eastern Visayas State University website (<https://www.evsu.edu.ph>) provided that Bidders shall pay the nonrefundable fee for the bidding documents not later than the submission of their bids.

6. The *Eastern Visayas State University* will hold a *Pre-Bid Conference through a hybrid platform on **October 13, 2023, 1:00 P.M. at the Studio Room, Ground Fl., OPRDExS Building, Eastern Visayas State University, Tacloban City & through video conferencing via Zoom*** which shall be open to prospective bidders.
7. Bids must be duly received by the BAC Secretariat on or before:
  - a. **Online or Electronic submission of bids.** Bidders may submit their electronic bids through email at [evsu.bacsecretariat@evsu.edu.ph](mailto:evsu.bacsecretariat@evsu.edu.ph) on or before **October 27, 2023, 10:00 A.M.** (*Further instructions on the submission and receipt of electronic bids will be posted through a bid bulletin*); and,
  - b. **Manual submission of bids.** Bidders who submit their bids electronically must submit a **hard copy of the bids** as this shall be the basis for the evaluation and assessment during the Post-Qualification on or before **November 6, 2023, 1:00 P.M.** at the address indicated below.

Late bids shall not be accepted.

8. All Bids must be accompanied by a bid security in any of the acceptable forms and in the amount stated in **ITB** Clause 14.
9. Bid opening shall be through a hybrid platform at the *Studio Room, Ground Fl., OPRDExS Building, Eastern Visayas State University, Tacloban City & through video conferencing via Zoom & through video conferencing via Zoom* on **October 27, 2023, 1:00 P.M.** Bids will be opened in the presence of the bidders' representatives who choose to attend the activity.
10. The *Eastern Visayas State University* reserves the right to reject any and all bids, declare a failure of bidding, or not award the contract at any time prior to contract award in accordance with Sections 35.6 and 41 of the 2016 revised IRR of RA No. 9184, without thereby incurring any liability to the affected bidder or bidders.
11. For further information, please refer to:

**THE SECRETARIAT**

Bids and Awards Committee  
Eastern Visayas State University  
Arch. Lino R. Gonzaga Avenue,  
Tacloban City, Philippines 6500  
Telephone No. 0953-355-7046 Tm  
Email: [evsu.bacsecretariat@evsu.edu.ph](mailto:evsu.bacsecretariat@evsu.edu.ph)

(SGD.)

**BENEDICTO T. MILITANTE, JR., Ph.D., J.D.**  
*Vice President for Administration & Finance*  
*Chairperson, Bids and Awards Committee*

*Section II. Instructions to Bidders*

## 1. Scope of Bid

The Procuring Entity, Eastern Visayas State University wishes to receive Bids for the *Procurement of Smart Campus Enhancement Program of Eastern Visayas State University* with identification number *IB-2023-09-12*.

The Procurement Project (referred to herein as “Project”) is composed of *One (1) Lot*, the details of which are described in Section VII (Technical Specifications).

## 2. Funding Information

2.1. The GOP through the source of funding as indicated below for 2023 in the amount of *One Billion Five Hundred Million Pesos (Php1,500,000,000.00)*.

2.2. The source of funding is:

*The General Appropriations Act of 2023.*

## 3. Bidding Requirements

The Bidding for the Project shall be governed by all the provisions of RA No. 9184 and its 2016 revised IRR, including its Generic Procurement Manuals and associated policies, rules and regulations as the primary source thereof, while the herein clauses shall serve as the secondary source thereof.

Any amendments made to the IRR and other GPPB issuances shall be applicable only to the ongoing posting, advertisement, or **IB** by the BAC through the issuance of a supplemental or bid bulletin.

The Bidder, by the act of submitting its Bid, shall be deemed to have verified and accepted the general requirements of this Project, including other factors that may affect the cost, duration and execution or implementation of the contract, project, or work and examine all instructions, forms, terms, and project requirements in the Bidding Documents.

## 4. Corrupt, Fraudulent, Collusive, and Coercive Practices

The Procuring Entity, as well as the Bidders and Suppliers, shall observe the highest standard of ethics during the procurement and execution of the contract. They or through an agent shall not engage in corrupt, fraudulent, collusive, coercive, and obstructive practices defined under Annex “I” of the 2016 revised IRR of RA No. 9184 or other integrity violations in competing for the Project.

## 5. Eligible Bidders

5.1. Only Bids of Bidders found to be legally, technically, and financially capable will be evaluated.

- 5.2. Pursuant to Section 23.4.1.3 of the 2016 revised IRR of RA No.9184, the Bidder shall have an SLCC that is at least one (1) contract similar to the Project the value of which, adjusted to current prices using the PSA's CPI, must be at least equivalent to at least fifty percent (50%) of the ABC.
- 5.3. The Bidders shall comply with the eligibility criteria under Section 23.4.1 of the 2016 IRR of RA No. 9184.

## 6. Origin of Goods

There is no restriction on the origin of goods other than those prohibited by a decision of the UN Security Council taken under Chapter VII of the Charter of the UN, subject to Domestic Preference requirements under **ITB** Clause 18.

## 7. Subcontracts

- 7.1 The Bidder may subcontract portions of the Project to the extent allowed by the Procuring Entity as stated herein, but in no case more than twenty percent (20%) of the Project.

The Procuring Entity has prescribed that Subcontracting is allowed. The portions of Project and the maximum percentage allowed to be subcontracted are indicated in the BDS, which shall not exceed twenty percent (20%) of the contracted Goods.

- 7.2 The Bidder must submit together with its Bid the documentary requirements of the subcontractor(s) complying with the eligibility criteria stated in ITB Clause 5 in accordance with Section 23.4 of the 2016 revised IRR of RA No. 9184 pursuant to Section 23.1 thereof.
- 7.3 The Supplier may identify its subcontractor during the contract implementation stage. Subcontractors identified during the bidding may be changed during the implementation of this Contract. Subcontractors must submit the documentary requirements under Section 23.1 of the 2016 revised IRR of RA No. 9184 and comply with the eligibility criteria specified in ITB Clause 5 to the implementing or end-user unit.
- 7.4 Subcontracting of any portion of the Project does not relieve the Supplier of any liability or obligation under the Contract. The Supplier will be responsible for the acts, defaults, and negligence of any subcontractor, its agents, servants, or workmen as fully as if these were the Supplier's own acts, defaults, or negligence, or those of its agents, servants, or workmen.

## 8. Pre-Bid Conference

The Procuring Entity will hold a pre-bid conference for this Project on the specified date and time at the *Studio Room, Ground Fl., OPRDExS Building, Eastern Visayas State University, Tacloban City & through video conferencing via Zoom* as indicated in paragraph 6 of the **IB**.

## **9. Clarification and Amendment of Bidding Documents**

Prospective bidders may request for clarification on and/or interpretation of any part of the Bidding Documents. Such requests must be in writing and received by the Procuring Entity, either at its given address or through electronic mail indicated in the **IB**, at least ten (10) calendar days before the deadline set for the submission and receipt of Bids.

## **10. Documents comprising the Bid: Eligibility and Technical Components**

- 10.1. The first envelope shall contain the eligibility and technical documents of the Bid as specified in **Section VIII (Checklist of Technical and Financial Documents)**.
- 10.2. The Bidder's SLCC as indicated in **ITB** Clause 5.3 should have been completed within two (2) years prior to the deadline for the submission and receipt of bids.
- 10.3. If the eligibility requirements or statements, the bids, and all other documents for submission to the BAC are in foreign language other than English, it must be accompanied by a translation in English, which shall be authenticated by the appropriate Philippine foreign service establishment, post, or the equivalent office having jurisdiction over the foreign bidder's affairs in the Philippines. Similar to the required authentication above, for Contracting Parties to the Apostille Convention, only the translated documents shall be authenticated through an apostille pursuant to GPPB Resolution No. 13-2019 dated 23 May 2019. The English translation shall govern, for purposes of interpretation of the bid.

## **11. Documents comprising the Bid: Financial Component**

- 11.1. The second bid envelope shall contain the financial documents for the Bid as specified in **Section VIII (Checklist of Technical and Financial Documents)**.
- 11.2. If the Bidder claims preference as a Domestic Bidder or Domestic Entity, a certification issued by DTI shall be provided by the Bidder in accordance with Section 43.1.3 of the 2016 revised IRR of RA No. 9184.
- 11.3. Any bid exceeding the ABC indicated in paragraph 1 of the **IB** shall not be accepted.

## **12. Bid Prices**

- 12.1. Prices indicated on the Price Schedule shall be entered separately in the following manner:
  - a. For Goods offered from within the Procuring Entity's country:
    - i. The price of the Goods quoted EXW (ex-works, ex-factory, ex-warehouse, ex-showroom, or off-the-shelf, as applicable);

- ii. The cost of all customs duties and sales and other taxes already paid or payable;
  - iii. The cost of transportation, insurance, and other costs incidental to delivery of the Goods to their final destination; and
  - iv. The price of other (incidental) services, if any, listed in e.
- b. For Goods offered from abroad:
- i. Unless otherwise stated in the **BDS**, the price of the Goods shall be quoted delivered duty paid (DDP) with the place of destination in the Philippines as specified in the **BDS**. In quoting the price, the Bidder shall be free to use transportation through carriers registered in any eligible country. Similarly, the Bidder may obtain insurance services from any eligible source country.
  - ii. The price of other (incidental) services, if any, as listed in **Section VII (Technical Specifications)**

### **13. Bid and Payment Currencies**

- 13.1. For Goods that the Bidder will supply from outside the Philippines, the bid prices may be quoted in the local currency or tradeable currency accepted by the BSP at the discretion of the Bidder. However, for purposes of bid evaluation, Bids denominated in foreign currencies, shall be converted to Philippine currency based on the exchange rate as published in the BSP reference rate bulletin on the day of the bid opening.
- 13.2. Payment of the contract price shall be made in *Philippine Pesos*.

### **14. Bid Security**

- 14.1. The Bidder shall submit a Bid Securing Declaration<sup>1</sup> or any form of Bid Security in the amount indicated in the **BDS**, which shall be not less than the percentage of the ABC in accordance with the schedule in the **BDS**.
- 14.2. The Bid and bid security shall be valid until 120 calendar days from the date of opening of bids. Any Bid not accompanied by an acceptable bid security shall be rejected by the Procuring Entity as non-responsive.

### **15. Sealing and Marking of Bids**

Each Bidder shall submit the original and the number of copies of the first and second components of its Bid as indicated in the BDS.

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<sup>1</sup> In the case of Framework Agreement, the undertaking shall refer to entering into contract with the Procuring Entity and furnishing of the performance security or the performance securing declaration within ten (10) calendar days from receipt of Notice to Execute Framework Agreement.

The Procuring Entity may request *four (4) sets (1 original and 3 authenticated photocopies) hard copies* of the Bid. However, failure of the Bidders to comply with the said request shall not be a ground for disqualification.

If the Procuring Entity allows the submission of bids through online submission or any other electronic means, the Bidder shall submit an electronic copy of its Bid, which must be digitally signed. An electronic copy that cannot be opened or is corrupted shall be considered non-responsive and, thus, automatically disqualified.

## **16. Deadline for Submission of Bids**

The Bidders shall submit on the specified date and time at its physical address or through online submission as indicated in paragraph 7 of the **IB**.

## **17. Opening and Preliminary Examination of Bids**

17.1. The BAC shall open the Bids in public at the time, on the date, and at the place specified in paragraph 9 of the **IB**. The Bidders' representatives who are present shall sign a register evidencing their attendance. In case videoconferencing, webcasting or other similar technologies will be used, attendance of participants shall likewise be recorded by the BAC Secretariat.

In case the Bids cannot be opened as scheduled due to justifiable reasons, the rescheduling requirements under Section 29 of the 2016 revised IRR of RA No. 9184 shall prevail.

17.2. The preliminary examination of bids shall be governed by Section 30 of the 2016 revised IRR of RA No. 9184.

## **18. Domestic Preference**

The Procuring Entity will grant a margin of preference for the purpose of comparison of Bids in accordance with Section 43.1.2 of the 2016 revised IRR of RA No. 9184.

## **19. Detailed Evaluation and Comparison of Bids**

19.1. The Procuring BAC shall immediately conduct a detailed evaluation of all Bids rated "*passed*," using non-discretionary pass/fail criteria. The BAC shall consider the conditions in the evaluation of Bids under Section 32.2 of the 2016 revised IRR of RA No. 9184.

19.2. If the Project allows partial bids, bidders may submit a proposal on any of the lots or items, and evaluation will be undertaken on a per lot or item basis, as the case maybe. In this case, the Bid Security as required by **ITB** Clause 15 shall be submitted for each lot or item separately.

19.3. The descriptions of the lots or items shall be indicated in **Section VII (Technical Specifications)**, although the ABCs of these lots or items are indicated in the **BDS** for purposes of the NFCC computation pursuant to Section 23.4.2.6 of the

2016 revised IRR of RA No. 9184. The NFCC must be sufficient for the total of the ABCs for all the lots or items participated in by the prospective Bidder.

- 19.4. The Project shall be awarded as *one (1) contract*.
- 19.5. Except for bidders submitting a committed Line of Credit from a Universal or Commercial Bank in lieu of its NFCC computation, all Bids must include the NFCC computation pursuant to Section 23.4.1.4 of the 2016 revised IRR of RA No. 9184, which must be sufficient for the total of the ABCs for all the lots or items participated in by the prospective Bidder. For bidders submitting the committed Line of Credit, it must be at least equal to ten percent (10%) of the ABCs for all the lots or items participated in by the prospective Bidder.

## **20. Post-Qualification**

Within a non-extendible period of five (5) calendar days from receipt by the Bidder of the notice from the BAC that it submitted the Lowest Calculated Bid, the Bidder shall submit its latest income and business tax returns filed and paid through the BIR Electronic Filing and Payment System (eFPS) and other appropriate licenses and permits required by law and stated in the **BDS**.

## **21. Signing of the Contract**

The documents required in Section 37.2 of the 2016 revised IRR of RA No. 9184 shall form part of the Contract. Additional Contract documents are indicated in the **BDS**.



## ***Section III. Bid Data Sheet***

# Bid Data Sheet

ITB Clause	
5.3	<p>For this purpose, contracts similar to the Project shall be:</p> <ol style="list-style-type: none"> <li>a. <b>Information Communication and Technology Projects</b></li> <li>b. Completed within <b>five (5) years</b> prior to the deadline for the submission and receipt of bids.</li> <li>c. The Single Largest Completed Contract shall be equivalent to at least 50% of the Approved Budget of Contract (ABC).</li> </ol>
7.2	<p>The bidder shall include in its bid submission, the legal documents of its nominated subcontractor, as follows:</p> <ol style="list-style-type: none"> <li>a. Valid SEC, DTI or CDA Registration, whichever is applicable;</li> <li>b. Valid Mayor's/Business Permit issued by the city or municipality where the principal place of business of the nominated subcontractor is located;</li> <li>c. Tax Clearance Certificate;</li> <li>d. If applicable, a valid PCAB License.</li> </ol>
14.1	<p>The bid security shall be in the form of a Bid Securing Declaration, or any of the following forms and amounts:</p> <ol style="list-style-type: none"> <li>a. The amount of not less than <b>two percent (2%)</b> of the ABC or <b>Php30,000,000.00</b>, if bid security is in cash, cashier's/manager's check, bank draft/guarantee or irrevocable letter of credit; or</li> <li>b. The amount of not less than <b>five percent (5%)</b> of the ABC or <b>Php75,000,000.00</b>, if bid security is in Surety Bond.</li> </ol>
15	<p>Each Bidder shall submit one (1) original and four (4) readable authenticated copies of the first and second components of its bid. Documents to be submitted shall be properly tabbed and labeled according to the title of the document attached.</p> <p>For details in the preparation of sealed bids, please refer to the diagram below:</p> <p>Figure 1. Sealing of Bids (Illustration of bids with 1 original and 4 copies, each box in the diagram represents a sealed envelope)</p> <div style="text-align: center;"> </div> <p>All envelopes shall:</p> <ul style="list-style-type: none"> <li>● be addressed to the Procuring Entity's BAC;</li> </ul>

- bear the name and address of the Bidder in capital letters;
- contain the name of the contract to be bid in capital letters;
- bear the specific identification of this bidding process indicated in the ITB Clause 1; and bear a warning “DO NOT OPEN BEFORE...” the date and time for the opening of bids, as specified in the IB.

TO	:	<b>THE BIDS AND AWARDS COMMITTEE</b>
		<b>EASTERN VISAYAS STATE UNIVERSITY</b>
FROM	:	_____
		<i>(Name of Bidder in Capital Letters)</i>
ADDRESS	:	_____
		<i>(Address of Bidder in Capital Letters)</i>
BID REF. NO.	:	_____
<i>(In Capital Letters, Indicate the Phrase):</i>		
<b>“DO NOT OPEN BEFORE: _____”</b>		

19.3	<i>No further instructions.</i>
19.5	The Net Financial Contracting Capacity (NFCC), which must be at least equal to the ABC to be bid, is calculated as follows:  NFCC = [(Current assets minus current liabilities) (15)] minus the value of all outstanding or uncompleted portions of the projects under ongoing contracts, including awarded contracts yet to be started, coinciding with the contract to be bid.
20.2	<i>Not applicable</i>
21.2	<i>Not applicable</i>

*Section IV. General Conditions of Contract*

## 1. **Scope of Contract**

This Contract shall include all such items, although not specifically mentioned, that can be reasonably inferred as being required for its completion as if such items were expressly mentioned herein. All the provisions of RA No. 9184 and its 2016 revised IRR, including the Generic Procurement Manual, and associated issuances, constitute the primary source for the terms and conditions of the Contract, and thus, applicable in contract implementation. Herein clauses shall serve as the secondary source for the terms and conditions of the Contract.

This is without prejudice to Sections 74.1 and 74.2 of the 2016 revised IRR of RA No. 9184 allowing the GPPB to amend the IRR, which shall be applied to all procurement activities, the advertisement, posting, or invitation of which were issued after the effectivity of the said amendment.

Additional requirements for the completion of this Contract shall be provided in the **Special Conditions of Contract (SCC)**.

## 2. **Advance Payment and Terms of Payment**

2.1. Advance payment of the contract amount is provided under Annex “D” of the revised 2016 IRR of RA No. 9184.

2.2. The Procuring Entity is allowed to determine the terms of payment on the partial or staggered delivery of the Goods procured, provided such partial payment shall correspond to the value of the goods delivered and accepted in accordance with prevailing accounting and auditing rules and regulations. The terms of payment are indicated in the **SCC**.

## 3. **Performance Security**

Within ten (10) calendar days from receipt of the Notice of Award by the Bidder from the Procuring Entity but in no case later than prior to the signing of the Contract by both parties, the successful Bidder shall furnish the performance security in any of the forms prescribed in Section 39 of the 2016 revised IRR of RA No. 9184.

## 4. **Inspection and Tests**

The Procuring Entity or its representative shall have the right to inspect and/or to test the Goods to confirm their conformity to the Project. In addition to tests in the **SCC**, **Section IV (Technical Specifications)** shall specify what inspections and/or tests the Procuring Entity requires, and where they are to be conducted. The Procuring Entity shall notify the Supplier in writing, in a timely manner, of the identity of any representatives retained for these purposes.

All reasonable facilities and assistance for the inspection and testing of Goods, including access to drawings and production data, shall be provided by the Supplier to the authorized inspectors at no charge to the Procuring Entity.

## **5. Warranty**

- 5.1 In order to assure that manufacturing defects shall be corrected by the Supplier, a warranty shall be required from the Supplier as provided under Section 62.1 of the 2016 revised IRR of RA No. 9184.
- 5.2 The Procuring Entity shall promptly notify the Supplier in writing of any claims arising under this warranty. Upon receipt of such notice, the Supplier shall, repair or replace the defective Goods or parts thereof without cost to the Procuring Entity, pursuant to the Generic Procurement Manual.

## **6. Liability of the Supplier**

The Supplier's liability under this Contract shall be as provided by the laws of the Republic of the Philippines.

If the Supplier is a joint venture, all partners to the joint venture shall be jointly and severally liable to the Procuring Entity.

## *Section V. Special Conditions of Contract*

# Special Conditions of Contract

GCC Clause						
1	<p><b>Delivery and Documents –</b></p> <p>For purposes of the Contract, “EXW,” “FOB,” “FCA,” “CIF,” “CIP,” “DDP” and other trade terms used to describe the obligations of the parties shall have the meanings assigned to them by the current edition of INCOTERMS published by the International Chamber of Commerce, Paris. The Delivery terms of this Contract shall be as follows:</p> <p><i>[For Goods supplied from abroad, state:]</i> “The delivery terms applicable to the Contract are DDP delivered at <b>Eastern Visayas State University, Arch. Lino R. Gonzaga Avenue, Tacloban City, Philippines 6500</b>. In accordance with INCOTERMS.”</p> <p><i>[For Goods supplied from within the Philippines, state:]</i> “The delivery terms applicable to this Contract are delivered at <b>Eastern Visayas State University, Arch. Lino R. Gonzaga Avenue, Tacloban City, Philippines 6500</b>. Risk and title will pass from the Supplier to the Procuring Entity upon receipt and final acceptance of the Goods at their final destination.”</p> <p>Delivery of the Goods shall be made by the Supplier in accordance with the terms specified in Section VI (Schedule of Requirements).</p> <p>For purposes of this Clause the Procuring Entity’s Representative of the Project is:</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; width: 60%;"> <thead> <tr> <th style="background-color: #c6e0b4; text-align: center;">END USER</th> <th style="background-color: #c6e0b4; text-align: center;">PR. NO.</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;"> <b>DANILO B. PULMA, DM</b>  <i>Vice President for Internationalization and External Affairs</i> </td> <td rowspan="2" style="text-align: center; vertical-align: middle;"> <b>PR No. 10-0697-23 ICT</b> </td> </tr> <tr> <td style="padding: 5px;"> <b>PROF. JUDE ALLAN A. URMENETA</b>  <i>Director, ICT</i> </td> </tr> </tbody> </table> <p><b>Incidental Services –</b></p> <p>The Supplier is required to provide all of the following services, including additional services, if any, specified in Section VI. Schedule of Requirements:</p> <ul style="list-style-type: none"> <li>performance or supervision of on-site assembly and/or start-up of the supplied Goods;</li> <li>furnishing of tools required for assembly and/or maintenance of the supplied Goods;</li> <li>furnishing of a detailed operations and maintenance manual for each appropriate unit of the supplied Goods;</li> <li>performance or supervision or maintenance and/or repair of the supplied Goods, for a period of time agreed by the parties, provided that this service shall not relieve the Supplier of any warranty obligations under this Contract; and;</li> <li>training of the Procuring Entity’s personnel, at the Supplier’s plant and/or on-site, in assembly, start-up, operation, maintenance, and/or repair of the supplied Goods.</li> </ul>	END USER	PR. NO.	<b>DANILO B. PULMA, DM</b> <i>Vice President for Internationalization and External Affairs</i>	<b>PR No. 10-0697-23 ICT</b>	<b>PROF. JUDE ALLAN A. URMENETA</b> <i>Director, ICT</i>
END USER	PR. NO.					
<b>DANILO B. PULMA, DM</b> <i>Vice President for Internationalization and External Affairs</i>	<b>PR No. 10-0697-23 ICT</b>					
<b>PROF. JUDE ALLAN A. URMENETA</b> <i>Director, ICT</i>						



**Spare Parts –**

The Supplier is required to provide all of the following materials, notifications, and information pertaining to spare parts manufactured or distributed by the Supplier:

such spare parts as the Procuring Entity may elect to purchase from the Supplier, provided that this election shall not relieve the Supplier of any warranty obligations under this Contract; and

in the event of termination of production of the spare parts:

advance notification to the Procuring Entity of the pending termination, in sufficient time to permit the Procuring Entity to procure needed requirements; and

following such termination, furnishing at no cost to the Procuring Entity, the blueprints, drawings, and specifications of the spare parts, if requested.

The spare parts and other components required are listed in **Section VI (Schedule of Requirements)** and the cost thereof are included in the contract price.

The Supplier shall carry sufficient inventories to assure ex-stock supply of consumable spare parts or components for the Goods for a period of three years.

Spare parts or components shall be supplied as promptly as possible, but in any case, within three months of placing the order.

**Packaging –**

The Supplier shall provide such packaging of the Goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in this Contract. The packaging shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit, and open storage. Packaging case size and weights shall take into consideration, where appropriate, the remoteness of the Goods' final destination and the absence of heavy handling facilities at all points in transit.

The packaging, marking, and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the Contract, including additional requirements, if any, specified below, and in any subsequent instructions ordered by the Procuring Entity.

The outer packaging must be clearly marked as follows:

Name of the Procuring Entity

Name of the Supplier

Contract Description

A packaging list identifying the contents and quantities of the package is to be placed on an accessible point of the outer packaging if practical. If not practical the packaging list is to be placed inside the outer packaging but outside the secondary packaging.

**Transportation –**

Where the Supplier is required under Contract to deliver the Goods CIF, CIP, or DDP, transport of the Goods to the port of destination or such other named place of destination in the Philippines, as shall be specified in this Contract, shall be arranged and paid for by the Supplier, and the cost thereof shall be included in the Contract Price.

Where the Supplier is required under this Contract to transport the Goods to a specified place of destination within the Philippines, defined as the Project Site, transport to such place of destination in the Philippines, including insurance and storage, as shall be specified in this Contract, shall be arranged by the Supplier, and related costs shall be included in the contract price.

Where the Supplier is required under Contract to deliver the Goods CIF, CIP or DDP, Goods are to be transported on carriers of Philippine registry. In the event that no carrier of Philippine registry is available, Goods may be shipped by a carrier which is not of Philippine registry provided that the Supplier obtains and presents to the Procuring Entity certification to this effect from the nearest Philippine consulate to the port of dispatch. In the event that carriers of Philippine registry are available but their schedule delays the Supplier in its performance of this Contract the period from when the Goods were first ready for shipment and the actual date of shipment the period of delay will be considered force majeure.

The Procuring Entity accepts no liability for the damage of Goods during transit other than those prescribed by INCOTERMS for DDP deliveries. In the case of Goods supplied from within the Philippines or supplied by domestic Suppliers risk and title will not be deemed to have passed to the Procuring Entity until their receipt and final acceptance at the final destination.

**Intellectual Property Rights –**

The Supplier shall indemnify the Procuring Entity against all third-party claims of infringement of patent, trademark, or industrial design rights arising from use of the Goods or any part thereof.

2

In accordance with Section 39 of the 2016 Revised IRR of RA 9184, and to guarantee the faithful performance by the winning bidder of its obligations under the contract, it shall post a performance security within a maximum period of ten (10) calendar days from the receipt of the Notice of Award from the Procuring Entity and in no case later than the signing of the contract.

The Performance Security shall be denominated in Philippine Pesos and posted in favor of the Procuring Entity in an amount not less than the percentage of the total contract price in accordance with the following schedule:

<b>Form of Performance Security</b>	<b>Amount of Performance Security (Not less than the Percentage of the Total Contract Price)</b>
-------------------------------------	--

	<p>a) Cash or cashier's/manager's check issued by a Universal or Commercial Bank.</p> <p><i>For biddings conducted by the LGUs, the Cashier's/Manager's Check may be issued by other banks certified by the BSP as authorized to issue such financial instrument.</i></p>	<p>Five percent (5%)</p>
<p>b) Bank draft/guarantee or irrevocable letter of credit issued by a Universal or Commercial Bank: Provided, however, that it shall be confirmed or authenticated by a Universal or Commercial Bank, if issued by a foreign bank.</p> <p><i>For biddings conducted by the LGUs, the Bank Draft/ Guarantee or Irrevocable Letter of Credit may be issued by other banks certified by the BSP as authorized to issue such financial instrument.</i></p>		
<p>c) Surety bond callable upon demand issued by a surety or insurance company duly certified by the Insurance Commission as authorized to issue such security.</p>	<p>Thirty percent (30%)</p>	
<p>Failure of the successful Bidder to comply with the above-mentioned requirement shall constitute sufficient ground for the annulment of the award and forfeiture of the bid security, as applicable, in which event the Procuring Entity shall have a fresh period to initiate and complete the post qualification of the second Lowest Calculated Bid. The procedure shall be repeated until the LCRB is identified and selected for recommendation of contract award. However, if no Bidder passed post-qualification, the BAC shall declare the bidding a failure and conduct a re-bidding with re-advertisement, if necessary.</p>		
<p>3</p>	<p><b>Warranty Retention:</b></p> <p>The obligations of the warranty shall be covered by either retention money in an amount equivalent to one percent (1%) of each payment, or special bank guarantee equivalent to one percent (1%) of the total contract price, or surety callable on demand equivalent to 10% of the total contract price. The said amounts shall only be released after the lapse of the warranty period.</p> <p><b>Deadline for approval of Detailed Engineering and Design, Project Plan and Systems Architecture and Design –</b></p> <p>The deadline for approved plan design must occur before the delivery start date and any adjustments on such design/specifications shall not be permissible after Thirty (30)</p>	

calendar days following the start date. There shall only be two (2) allowable revisions and/or adjustments thereto, provided, that it is within the fifteen-day period. Any delay resulting from any change of the design/specifications of the PE shall be treated as PE's delay.

**Material Adverse Government Action –**

"Material Adverse Government Action" means any action or inaction of any Governmental Authority, national or local, which has a material adverse effect on any of the rights and privileges of, or on the performance or exercise thereof by the Winning Bidder or any of its subcontractors as may be allowed by law, or which has a material adverse effect on a Milestone or the ability of the Winning Bidder or its subcontractors as may be allowed by law, to comply with its contractual obligations in connection with the Project.

The Winning Bidder shall not be imposed Liquidated Damages due to a MAGA Event. Further, MAGA Event may be considered for the purpose of suspending or extending implementation period. The PE shall assist the Winning Bidder in securing all necessary permits from other Governmental Authority or Entity, whether national or local.

## *Section VI. Schedule of Requirements*

The delivery schedule for the *Procurement of Smart Campus Project Eastern Visayas State University (EVSU)*.

ITEM NO.	DESCRIPTION	QTY	DELIVERED DAYS/WEEKS/MONTHS
1	Innovation Hub Building Development (including equipment requirements)  2.1 Metals Engineering Innovation Center Laboratory,  2.2 Fabrication Laboratory (FabLab)  2.3 Data Center  2.4 Command and Control Center  2.5 Training/Innovation Room  2.6 Lounge, Toilets, generator room and Other Detached Facilities	1 Lot	within 420 Calendar days
2	Smart Campus Integrated Modules	1 Lot	within 420 Calendar days
3	Smart Security and Surveillance System	1 Lot	within 420 Calendar days
4	Building Management System	1 Lot	within 420 Calendar days
5	Inter-Building Network Connectivity		
6	In-Building Structured Cabling	1 Lot	within 420 Calendar days
7	Smart Classroom	1 Lot	within 420 Calendar days
8	E-Library Set Up	1 Lot	within 420 Calendar days
9	Interactive E-Laboratories	1 Lot	within 420 Calendar days
10	Data Center Network Switches and Security	1 Lot	within 420 Calendar days

11	Network Security System	1 Lot	within 420 Calendar days
12	Campus Network	1 Lot	within 420 Calendar days
13	Data Center Compute Nodes	1 Lot	within 420 Calendar days
14	Data Center Block and File Storage System	1 Lot	within 420 Calendar days
15	Data Center Back-Up System	1 Lot	within 420 Calendar days
16	University Information System (UIS)	1 Lot	within 420 Calendar days
17	Learning Management System (LMS)	1 Lot	within 420 Calendar days
18	Unified Database Platform	1 Lot	within 420 Calendar days
19	Executive Information System (EIS)	1 Lot	within 420 Calendar days
20	University Mobile Application for Students and Faculty	1 Lot	within 420 Calendar days
21	University Command and Control Center (UC3)	1 Lot	within 420 Calendar days
22	Supply and Installation of Video Wall Display	1 Lot	within 420 Calendar days
23	Electrical Works and Power Backup System	1 Lot	within 420 Calendar days
24	Professional Services	1 Lot	within 420 Calendar days
25	Warranty and Support Services	1 Lot	within 420 Calendar days
26	Testing and Commissioning 26.1 Campus Network Testing 26.2 LMS Testing 26.3 Smart Campus Solutions Testing	1 Lot	within 420 Calendar days

27	Knowledge Transfer, Training, and Capacity Building	1 Lot	within 420 Calendar days
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**I hereby commit to comply and deliver all the above requirements in accordance with the above stated schedule.**

\_\_\_\_\_  
(Name of Bidder/Company)

\_\_\_\_\_  
(Signature Over Printed Name of Authorized Representative)

\_\_\_\_\_  
(Designation)

\_\_\_\_\_  
(Date)

## *Section VII. Technical Specifications*





## **TERMS OF REFERENCE**

### **PROCUREMENT OF SMART CAMPUS ENHANCEMENT PROGRAM OF EASTERN VISAYAS STATE UNIVERSITY (EVSU)**

#### **1. Project Overview**

The Eastern Visayas State University hereinafter referred to as (“EVSU”) is initiating a program that intends to adopt and implement technology-based systems that will significantly improve the academe’s productivity, provide a safe and controlled campus environment, and subsequently convert to a technology-adaptive learning institution that can compete with other progressive countries.

Modernization of campus through a technology-led transformation is set to provide outstanding experiences and capabilities to foster innovation, academic excellence, and be at par with universities in progressing countries.

The goal is primarily to set up baseline Smart Campus infrastructure and systems to create a successful and sustainable digital campus with environmentally friendly practices that begin with an accurate and reliable understanding of campus activity and resources, provide tools that will enhance the learning experiences of its students, and provide the infrastructure that will allow secured data sharing across the Campus Community.

This modernization initiative will address several challenges such as, including but not limited to:

- 1.1. Policy-based management of all the components and resources available on the campus
- 1.2. Efficient and sustainable consumption of utility resources such as power, water, internet, and the like.

- 1.3. Platform to secure, manage, monitor, and integrate data for purposes of analysis, reporting, alerts, and integrations with current or future systems.
- 1.4. Technology Facility operations that will provide centralized monitoring of all systems and platforms with advanced features that will automate critical functions.
- 1.5. Digitize student and employee information, provide productivity applications, and campus operational systems easily accessible through mobile devices on and off campus premises.

## 2. General Scope of Works

To give a high-level understanding of the various works and services inclusive in this project, outlined below are service coverage and deliverables that are expected to be delivered by the winning bidder. Note that these are high-level in nature and detailed specifications and requirements are provided in Section 3 and thereafter:

### 2.1. Innovation Hub Building Development

Design and Build of a three-story building with a roof deck housing state-of-the-art facility. This new building shall be the main Innovation Hub of the University. At a minimum, it should be composed of a Metals Engineering Innovation Center (equipment to be provided by the DOST) Laboratory, Fabrication Laboratory (FabLab), Data Center, Command and Control Center, Training/Innovation Room, Access Points for WIFI connection, standby Diesel Generator Set (Silent Type), Fire Protection/Alarm System, Air Handling Unit, PWD Accessibility, Gender Sensitivity Program, Lab rooms should have two doors for safety in case of fire, earthquake etc., Office and Comfort Room as well as a lounge area on the select floor and water tank at the roof deck.

#### 2.1.1. Ground Floor

- 2.1.1.1. The floor area of the MEIC Laboratory must be not less than 10m x 30 or 330 sqm. to accommodate the office, store room, hauling, and positioning of the following equipment (Note: equipment to be provided by DOST):

- 2.1.1.1.1. CNC Plasma Cutter (1.5x3.0m)
- 2.1.1.1.2. Hydraulic Shearing Machine (3.5x1.5m)
- 2.1.1.1.3. Hydraulic Press Brake (2.5x1.5m)
- 2.1.1.1.4. Hydraulic Roller (3.5x1.4m)
- 2.1.1.1.5. 3D Printer (2.6x2.5m)

#### 2.1.1.2. Electrical Room

- 2.1.1.2.1. Building backup power
- 2.1.1.2.2. Generator Switchboard
- 2.1.1.2.3. Switchgear
- 2.1.1.2.4. Main Distribution Panel

#### 2.1.1.3. Lobby / Reception Area

#### 2.1.1.4. Lounge / Common Area

#### 2.1.2. Second (2<sup>nd</sup>) Floor

- 2.1.2.1. Data Center with Hyperconverged Infrastructure (HCI)

This Data Center is to be built on the 2nd floor of the building. The winning bidder shall be responsible for the design development, physical fit-out works, supply of essential equipment, testing, and commissioning of the ff:

- 2.1.2.1.1. Server racks
- 2.1.2.1.2. HCI Servers and Storage
- 2.1.2.1.3. Core system applications
- 2.1.2.1.4. Network Switches
- 2.1.2.1.5. Software-Defined Wide Area Network (SDWAN)
- 2.1.2.1.6. Network Security
- 2.1.2.1.7. Access Points (AP) Controllers
- 2.1.2.1.8. Power Over Ethernet (PoE) Switches
- 2.1.2.1.9. Uninterruptible Power Supply (UPS)
- 2.1.2.1.10. Precision Cooling System
- 2.1.2.1.11. Cold Aisle Containment Set up
- 2.1.2.1.12. Fire Suppression System
- 2.1.2.1.13. Leak Detection System
- 2.1.2.1.14. Door Access System
- 2.1.2.1.15. Acoustic Ceiling Installation with troffer lights
- 2.1.2.1.16. Anti-Static Floor Tile
- 2.1.2.1.17. Server Room Remote Monitoring System
- 2.1.2.1.18. CCTV System

#### 2.1.2.2. Command and Control Center

The EVSU Command and Control Center is to be built beside the Data Center. The area will be used in security monitoring, network connectivity monitoring, BMS system, and Data Center facility monitoring, among others. Administrator tasks for the DC shall also be done within. The winning bidder shall be responsible for the physical fit-out works, supply of essential equipment, testing, and commissioning of the ff:

- 2.1.2.2.1. Desktop Computers for workstations
- 2.1.2.2.2. Video display for monitoring/ LED wall-mounted monitors
- 2.1.2.2.3. Building Management System (BMS)
- 2.1.2.2.4. Network Security Monitoring
- 2.1.2.2.5. Dedicated Uninterruptible Power Supply (UPS)
- 2.1.2.2.6. Cooling
- 2.1.2.2.7. Furnishing

#### 2.1.2.3. ICT Office (room)

#### 2.1.2.4. ICT Staff Open Workspace

#### 2.1.2.5. Meeting Room 1

### 2.1.3. Third (3<sup>rd</sup>) Floor

#### 2.1.3.1. Fabrication Laboratory

The winning bidder shall be responsible for the physical fit-out works, supply of essential equipment, testing, and commissioning of the ff:

- 2.1.3.1.1. Digital Design Software
- 2.1.3.1.2. i7 Desktop Computers
- 2.1.3.1.3. 3D Scanners
- 2.1.3.1.4. 3D Printers
- 2.1.3.1.5. Laser Cutter
- 2.1.3.1.6. Laser Engraver
- 2.1.3.1.7. Small Milling Machine
- 2.1.3.1.8. Electronics Work Bench
- 2.1.3.1.9. Big Milling Machine ShopBot CSE router

- 2.1.3.1.10. Sewing Embroidery Machine
- 2.1.3.1.11. Cooling

2.1.3.2. Meeting Room 2

2.1.3.3. Training/Innovation Room

The winning bidder shall be responsible for the physical fit-out works, supply of essential equipment, testing, and commissioning of the ff:

- 2.1.3.3.1. i7 Desktop Computers
- 2.1.3.3.2. All-in One 85” Interactive Collaboration Board with Digital Board installed on both sides and Audio System
- 2.1.3.3.3. 10X Optical Zoom Video Conferencing Kit Camera
- 2.1.3.3.4. Network Nodes
- 2.1.3.3.5. Tables and Chairs
- 2.1.3.3.6. Video Conferencing Speakerphone with Built-in 2 Microphones Array with Voice Pick-up Range up to 5 meters
- 2.1.3.3.7. Cooling

2.1.3.4. ICT Office (room)

2.1.3.5. Staff Open Workspace

2.1.3.6. Lounge Area

**2.1.4. Roof Deck**

- 2.1.4.1 Air Handling Unit (AHU)
- 2.1.4.2 1000-gallon Aluminum Water Tank

**2.2. Smart Campus Integrated Modules**

- 2.2.1. Global Dashboards for command and operations control for insight-driven campus resource management and operations
- 2.2.2. Data-rich views and dashboards to help in quick troubleshooting and decision making
- 2.2.3. Smart Security for Surveillance
- 2.2.4. Technology Infrastructure Management

**2.3. Smart Security and Surveillance System**

- 2.3.1. TCP/IP Cameras
- 2.3.2. Network Video Recorder (NVR)
- 2.3.3. Storage
- 2.3.4. Facial recognition at campus entry and exit points
- 2.3.5. Video Analytics and Video Management System

**2.4. Building Management System (BMS)**

- 2.4.1. Electro-Mechanical Monitoring and Control
- 2.4.2. Power Back-up monitoring and control

- 2.4.3. Power metering
- 2.4.4. Sensors
- 2.4.5. Structured Cabling (Data)
- 2.4.6. Flood monitoring

## **2.5. Inter-Building Network Connectivity**

Establish a fiber network connection from the current Network Switch room (EB 204) to the new Data Center located at the Innovation Hub Building and other Buildings that are not currently connected to the existing Network Switch room.

Facilitate subscription of 1Gbps Internet Exchange capacity from a reputable ISP (Internet Service provider).

## **2.6. In-Building Structured Cabling**

Provision of FOC and UTP cables, including cable ladder, cable trays, and/or conduits (whenever necessary) for the installation of network nodes within the set of buildings where network and user devices are to be linked to the campus network.

## **2.7. Smart Classrooms**

The winning bidder shall perform retrofitting works that will convert the existing regular classrooms to a SMART Classroom. This includes the subscription for 24 months Office productivity and collaboration tools.

- 2.7.1. Desktop Computer
- 2.7.2. All-in One 85” Interactive Collaboration Board with Digital Board installed on both sides and Audio System
- 2.7.3. Front and Rear Ultra 4k Tracking Camera (For students to have a real feel of remote attendance)
- 2.7.4. Network Nodes
- 2.7.5. Furnishing for Smart Classrooms and Fit-out
- 2.7.6. Retrofitting Works
- 2.7.7. Electrical Works
- 2.7.8. Structured Cabling Works
- 2.7.9. Access Point
- 2.7.10. Cooling
- 2.7.11. Electrical Works

## **2.8. eLibrary Set Up**

- 2.8.1. The winning bidder shall perform retrofitting works that will convert the existing old library to a technology-infused library. Detailed specifications and requirements are defined in Section 3 of this document.

## **2.9. Interactive eLaboratories**

- 2.9.1. Computer-Aided Designs (CAD) eLab for the COE and CAAD
  - 2.9.1.1. i7 Desktop Computers
  - 2.9.1.2. Furnishing
  - 2.9.1.3. Retrofitting works
  - 2.9.1.4. Electrical works
  - 2.9.1.5. Network nodes
  - 2.9.1.6. Structured Cabling Works
  - 2.9.1.7. Access Point

- 2.9.1.8. Cooling
- 2.9.1.9. CAD Software (BIM)
- 2.9.1.10. All-in One 86” Interactive Collaboration Board with Digital Board installed on both sides and Audio System and Tracking Front and Rear Cameras
- 2.9.1.11. Tileworks
- 2.9.1.12. 3D Printer

## 2.9.2 Multipurpose E-Laboratory

Set up multipurpose e-Laboratories in 2 nominated Colleges by EVSU (COT and CoBE). The inclusive scope of works is as follows:

- 2.9.2.1. i7 Desktop Computers
- 2.9.2.2. Furnishing
- 2.9.2.3. Retrofitting works
- 2.9.2.4. Electrical works
- 2.9.2.5. Network nodes
- 2.9.2.6. Structured Cabling Works
- 2.9.2.7. Access Point
- 2.9.2.8. Cooling
- 2.9.2.9. Various Productivity and Multimedia Software
- 2.9.2.10. All-in One Interactive Collaboration Board with Digital Board installed on both sides and Audio System and Tracking Front and Rear Cameras
- 2.9.2.11. Tileworks
- 2.9.2.12. All in One Printer

## 2.10. Data Center Network Switches & Security

- 2.10.1. Core Switch
- 2.10.2. SDWAN
- 2.10.3. Distribution Switch
- 2.10.4. Access Switch
- 2.10.5. Cabling works
- 2.10.6. Inter-rack cabling works

## 2.11. Network Security System

- 2.11.1. Next-Generation Firewall
- 2.11.2. Intrusion Detection System
- 2.11.3. Intrusion Prevention System
- 2.11.4. Web Application Firewall
- 2.11.5. Endpoint Detection and Response (EDR)
- 2.11.6. Security Incident and Events Management (SIEM)
- 2.11.7. Security Orchestration, Automation, and Response (SOAR)
- 2.11.8. Sandboxing

## 2.12. Campus Network

- 2.12.1. Structured cabling
- 2.12.2. Indoor Access Points
- 2.12.3. Outdoor Access Points
- 2.12.4. PoE Switches

## 2.13 Data Center Compute Nodes

Data center compute nodes serve several crucial purposes that are essential for the functioning of modern data centers and the services they provide. Data center compute nodes are the workhorses that enable data centers to offer a wide range of services, applications, and computing capabilities. They play a pivotal role in meeting the computational demands of modern businesses and organizations while providing flexibility, scalability, redundancy, and resource efficiency.

## 2.14 Data Center Block and File Storage System

Data center block and file storage systems are integral components of modern data center infrastructure, fulfilling essential roles in data management, application deployment, and overall system performance. Data center block and file storage systems play a pivotal role in managing, storing, and organizing data in modern data centers. They provide the scalability, performance, redundancy, and data management capabilities necessary to support diverse applications and workloads, ranging from traditional databases to cloud-native services and big data analytics. Their combination ensures that data center environments can efficiently store, retrieve, and protect data while meeting the dynamic demands of today's digital landscape.

- 2.14.1. Servers
- 2.14.2. Storage
- 2.14.3. SAN Switches
- 2.14.4. Inter-rack cabling works

## 2.15 Data Center Back-Up System

A robust and comprehensive data center backup system is essential to ensure data integrity, availability, and business continuity. The need for such a system arises from the potential risks and challenges that can impact data center operations. A data center backup system is not only a technical necessity but also a strategic asset for businesses. It safeguards against data loss, supports disaster recovery efforts, maintains business continuity, addresses cybersecurity threats, and enables regulatory compliance. A comprehensive backup system is a key component of a resilient and dependable data center infrastructure in the face of an increasingly complex and unpredictable digital landscape.

- 2.15.1. 42U Rack
- 2.15.2. Aggregation or Distribution Switch
- 2.15.3. Servers
- 2.15.4. Storage
- 2.15.5. Virtualization SW

## 2.16. University Information System

- 2.16.1. Database and Data Warehouse
- 2.16.2. University Information System / Student Information System
- 2.16.3. Human Resource Information System (HRIS)
  - 2.16.4.1. With Payroll Module
  - 2.16.4.2. With Daily Time Record (DTR) recording using Facial Recognition System
- 2.16.4. Accounting System
- 2.16.5. Smart Campus / University Portal Development
- 2.16.6. Database migration (from old database to new database)
- 2.16.7. Single sign – in for all the applications.

## 2.17. Learning Management System (LMS)

The proposed LMS must include perpetual licensing and must have the following modules and capabilities at a minimum:

- 2.17.1. Administration Module
- 2.17.2. Professor Module
- 2.17.3. Student Modules
- 2.17.4. Parents Module

## **2.18. Unified Database Platform**

The database platform must be 100% Open Source with Enterprise Support provided to prevent any proprietary lock-in.

The solution must be deployed in an active-active manner to ensure minimal disruption to services and can withstand the following failure scenarios depending on the deployment topology:

- 2.18.1. Virtual Machine Failure
- 2.18.2. Container/Kubernetes node Failure
- 2.18.3. Availability Zone Failure
- 2.18.4. Region Failure

It should be able to synchronize the data across multiple sites and support multiple advanced replication architectures.

## **2.19. Executive Information System**

Development and deployment of Executive Information System (EIS) of a specialized software solution designed to provide top-level executives and decision-makers with timely, relevant, and summarized information to support strategic decision-making. The need for an EIS arises from the unique requirements of high-level management and the complexities of modern business environments. Executive Information System addresses the unique needs of top-level management by providing real-time insights, summarizing key data, and supporting strategic decision-making. By offering a consolidated view of business performance and trends, EIS empowers executives to make informed decisions that steer the organization toward its goals while adapting to the complexities and challenges of the modern business landscape.

## **2.20. University Mobile Application for Students and Faculty**

Development and deployment of mobile applications that will serve as an extension of the Learning Management System designed for use of students through their mobile devices, allow remote access to available campus systems, and access online transaction services.

## **2.21 University Command and Control Center (UC3)**

Development and deployment of a University Command and Control Center (UC3) involves a strategic and comprehensive approach to ensure its effectiveness in managing various aspects of campus operations and emergencies. University Command and Control Center require close collaboration among various departments, a focus on technology integration, training, and a commitment to enhancing campus safety and efficiency.

## **2.22. Supply and Installation of Outdoor Video Wall Display**

Provision of multiple LED monitors tiled together to form a large video wall. This video wall will serve as digital public advertisements, notifications, and/or announcements that can be viewed from a farther distance.



## 2.23. Electrical Works and Power Backup System

The project shall cover the design and construction of the Smart Campus Enhancement Program Three (3) Storey Power House Building at EVSU Main Campus as one of the infrastructure parts of the ₱1,500,000,000.00. The general objective is to provide a steady power in times of interruption for the innovation center and other buildings addressing SDG 4 and SDG 9 by creating a conducive learning environment for students, teachers, and a vital resource for all relevant requirements by administrators. The Power House Building will house the Generator Room, Transformer Room, Switch Panel Board Room, and Offices. It will also serve as the main alternative power source during interruptions in the university. Specifically, the project seeks to provide a structurally safe and secure power source through its facilities. The project must take into account BP 344 or the Accessibility Law that caters to the needs of PWDs.

The winning bidder shall determine the placements or location of components and rating of components (i.e., generator room, switchboard room, office, transformer room, etc.) with the approval of the committee. Safety, maintenance and replacement works and standards must be considered in selecting the placements of different components.

The site shall be developed to accommodate the standard requirements of a modern state university that complies with the standards prescribed by the National Building Code of the Philippines, the relevant Accessibility Law, the inclusivity of the Gender and Development (GAD) Program, Post-COVID-19 design standards, and other referral codes for design standard of buildings. All mitigation interventions on site to address DRR-CCA concerns should be taken into consideration.

## 2.24. Professional Services

Provide the following services, at a minimum, to ensure successful project implementation, sustain its performance and address future requirements as part of the project's roadmap and masterplan:

- 2.24.1. Conceptual Design Development
- 2.24.2. Detailed Design Development
- 2.24.2. As-Built Plans Development
- 2.24.3. Project Management
- 2.24.4. System Configuration
- 2.24.5. Application development and customization
- 2.24.6. Vulnerability and Penetration Testing (VAPT)
- 2.24.7. Operating System Hardening
- 2.24.8. Testing and Commissioning
- 2.24.9. Knowledge Transfer and Training
- 2.24.10. Development of post-project documentations such as System Diagrams and Operations and Maintenance Manual
- 2.24.11. Technology and Technical Advisory Services

## 3. Technical Specifications and Requirements

### 3.1. Innovation Hub Building Development

#### A. GENERAL DESCRIPTION:

The project shall cover the design and construction of the Three (3)-Storey Innovation Hub Building with Roof Deck at EVSU Main Campus as one of the infrastructure parts of the ₱1,500,000,000.00. The general objective is to provide a training and innovation center addressing SDG 4 and SDG 9 by creating a conducive learning environment for students, teachers, and a vital resource for all relevant requirements by administrators. The Innovation Hub Building will house the Data Center, the Command Center, the Fabrication Lab and the Metals Engineering and Innovation Center. It will also serve as a command center for all IT related and “smart” campus interventions in the university.

Specifically, the project seeks to provide a structurally safe and secure environment and to upgrade the university's "innovativeness" through its facilities.

The project includes the provision of a sufficient parking area that takes into account BP 344 or the Accessibility Law that caters to the needs of PWD's.

## **B. PROJECT COMPONENTS:**

The minimum building components are as follows;

### **B.1 Ground Floor**

- 1.) Lobby
- 2.) Assembly Area
- 3.) Comfort Rooms (Male, All-Gender, and Female)
- 4.) PWD Comfort Rooms
- 5.) Storage Room
- 6.) Generator Room

### **B.2 Second Floor**

- 1.) Office
- 2.) Pantry
- 3.) Data Center
- 4.) Command Center
- 5.) Comfort Rooms (Male, All-Gender, and Female)
- 6.) PWD Comfort Rooms
- 7.) Stock Room
- 8.) Balcony

### **B.3 Third Floor**

- 1.) Office
- 2.) Lounge
- 3.) Pantry
- 4.) Comfort Rooms (Male, All-Gender, and Female)
- 5.) PWD Comfort Rooms
- 6.) Fabrication Area
- 7.) Training Area
- 8.) Balcony

### **B.4 Roof Deck**

- 1.) Hallway
- 2.) Comfort Rooms (Male, All-Gender, and Female)
- 3.) PWD Comfort Rooms
- 4.) Roof Deck Area

The site shall be developed to accommodate the standard requirements of a modern state university that complies with the standards prescribed by the National Building Code of the Philippines, the relevant Accessibility Law, the inclusivity of the Gender and Development (GAD) Program, Post-COVID-19 design standards, and other referral codes for design standard of buildings. All mitigation interventions on site to address DRR-CCA concerns should be taken into consideration. *(For the construction details of the Three (3)-Storey Innovation Hub Building, please refer to the Terms of Reference for the Infrastructure Component.)*

The space planning for this building has been defined already in Section 2.1 of this document. However, to provide clarity on the requirements and specifications of the 2 mission critical facilities, below are specific requirements that are to be complied with by the winning bidder (Note: No OSM):

### 3.1.1. Data Center Facility

The winning bidder shall be responsible for the right sizing, design, fit-out works, supply, and installation of MEPF (Mechanical Electrical Plumbing Fire protection) equipment testing, and commissioning of the new data center facility. There shall be no OSM (Owner Supplied Materials).

Listed below are the design parameters for design development considerations and other required services:

- 3.1.1.1. The winning bidder shall ensure sufficient structural/floor loading capacity appropriate for the deployment of various IT and Data Center support equipment.
- 3.1.1.2. Server room that can accommodate at least twenty (20) units of IT Racks with an approximate power load density of 5kW per rack. The winning bidder must re-calculate the final load density to ensure it is right-sized in accordance with what is required and must take into consideration the power requirements of all cooling equipment and other peripherals necessary for the operations of a resilient data center facility.
- 3.1.1.3. Electrical works required to power up the data center shall be the responsibility of the winning bidder.
- 3.1.1.4. Provide an N+1 Redundant Modular UPS with an individual Battery backup system.

The minimum specifications of the UPS are as follows:

- 3.1.1.5. 100kW capacity, 380/400/415V at 50/60Hz with Server Power Management with the ff. branch metering capabilities:
  - 3.1.1.5.1. Active power out (kW)
  - 3.1.1.5.2. Apparent power out (kVA)
  - 3.1.1.5.3. Phase to Phase current (A)
  - 3.1.1.5.4. Phase to Neutral (A)
  - 3.1.1.5.5. Load percentage (%)
  - 3.1.1.5.6. Power factor
  - 3.1.1.5.7. Electric energy (kWh)
  - 3.1.1.5.8. MCB state
  - 3.1.1.5.9. Current Ripple Coefficient
- 3.1.1.6. Inclusion of input, Maintenance Bypass, and Output breaker subassembly
- 3.1.1.7. Equipped with battery temperature sensor
- 3.1.1.8. The network interface card shall support SNMP v1, v2c, and MIB-II compatibility for integration into an ENP monitoring solution or a Network Management System
- 3.1.1.9. UPS Battery Back-Up Time of 30 minutes at Full Load
- 3.1.1.10. A fully rated bypass circuit shall be fitted on all single-module UPS systems to provide an alternative path for power flow from the alternate AC supply to the critical load to maintain the UPS when it is completely powered down
- 3.1.1.11. Able to interface with the BMS
- 3.1.1.12. Dual Power delivery path with N+N supply (load balanced)

3.1.1.13. The winning bidder must link the data center to the new Power Generator back-up system for the Innovation Hub Building. The power back up system should be able to provide at least 6 hours of power supply at full load.

3.1.1.14. Anti-Static Floor Tiles

3.1.1.15. Mechanical and Plumbing Works

3.1.1.15.1. N+1 In-Row Dx-Cooled Precision Air-Conditioning Units (PACU) configured in Autorotation (Duty Cycle). Minimum specifications per PACU are as follows:

- 3.1.1.15.1.1. 100kW nominal capacity, capable of handling up to 8500 CMH with a horizontal airflow pattern, rated at 8000 CMH. The rated net sensible cooling capacity of the unit is not less than 34.9 kW, based on the supply air condition of 22.8 °C (Dry Bulb), 53.8% Relative Humidity of 26.7% RH, and 35 °C ambient temperature
- 3.1.1.15.1.2. Direct Expansion (DX) Air Cooled, R-410A DC Brushless Compressor – single circuit with Electrode Humidifier. The capacity of the humidifier is 1.5 kg/h and the capacity for reheating is 6 kW
- 3.1.1.15.1.3. The condenser is designed with a fan speed controller and a set for R410A refrigerant usages, operating at -20C to 45C ambient temperature. The condenser frame is made up of a sturdy aluminum structure and the electrical control box has IP55 protection
- 3.1.1.15.1.4. 380/415v, 3-Phase, 60Hz+N
- 3.1.1.15.1.5. Equipped with the network management card
- 3.1.1.15.1.6. Equipped with Electronically Commutated (EC) fan
- 3.1.1.15.1.7. Equipped with condensate pump
- 3.1.1.15.1.8. Inclusive of temperature and cable sensors

3.1.1.16. Cold-Aisle Containment at the Server Room

- 3.1.1.16.1. The entire Data Center system architecture shall be a structured assembly of the following pre-engineered components inside a single housing with an easy site- installation process. Enclosure: Base Construction, Access Doors, Cable Trunking Passages, Roof Top Plate, Equipment: Server & Network Rack Cabinets, UPS Units, Power Distribution System, Precision Air Conditioning Units, and Control Panel
- 3.1.1.16.2. The enclosure shall have an access door of double lead sliding type, made of tough glass construction, and a frame housing from all four sides. The containment must have motorized sliding doors on both ends
- 3.1.1.16.3. The rooftop plate shall be enclosed in a frame structure that is pivoted at one side. The other side has a mechanism for the automatic opening of the roof which is operated by the controller
- 3.1.1.16.4. The provision of a self-organized and channelizing arrangement for power cabling and control cabling connections shall be done to the designated terminals from the power distribution cabinet

3.1.1.16.5. Must include a 15” Human-Machine Interface (HMI) management system for viewing the operations and the performance of the entire system

3.1.1.16.6. Equipped with Auxiliary Lighting, Lighting System, Sound and Alarm Lights, Remote Management System, Temperature and Humidity Sensor, Fingerprint Scanner with 12 Keys

#### 3.1.1.17. Data Racks

The supplied data racks must comply with the following specifications:

3.1.1.17.1. Rack Dimension 600mm(W) x 1200mm(D) x 2000mm(H)

3.1.1.17.2. The Racks shall have a perforated Single front door, perforated Split rear door, and split side panels (top & bottom)

3.1.1.17.3. The color should be RAL 7021

3.1.1.17.4. With a bottom brush panel for a 600mm wide cabinet

3.1.1.17.5. Capable of supporting multiple configurations which effectively combine cable management, power distribution, and environmental monitoring devices in a single rack enclosure.

3.1.1.17.6. Tool-less mounting of power shielding on the top panel

3.1.1.17.7. Tool-less mounting of data shielding partition top panel

3.1.1.17.8. Tool-less mounting of metal blanking panel

3.1.1.17.9. Rack PDUs must be Basic Standard, Vertical Mounted, 230V, IEC60309 2P + E, 32A, 250V, Splash proof IP44, 3m Power Cable, 20 x C13, 4 x C19, Locking Outlets

3.1.1.18. TCP/IP-Based Dual Authentication Door Access System

3.1.1.19. TCP/IP-Based CCTV System

3.1.1.20. FM200 Clean Agent Fire Suppression System

3.1.1.21. Environmental Monitoring System

3.1.1.22. Leak Detection System

3.1.1.23. Structured Cabling

3.1.1.24. Interface/Integration with Building Management System

### 3.1.2. **Command and Control Center Facility**

3.1.2.1. Technical working and monitoring area for System, Network, Security, and Applications Administrators/Operators

3.1.2.2. Provision of 4 x 55” wall-mounted LED Monitors

3.1.2.3. Supply of Desktop Computers for Network, Security, and Applications Performance Monitoring, compliant with the following minimum specifications:

- 3.1.2.3.1. Processor: Intel Core i7-12th Gen
- 3.1.2.3.2. Operating System: Windows 11 Pro
- 3.1.2.3.3. RAM: at least 16GB DDR4
- 3.1.2.3.4. Storage: at least 1TB SSD
- 3.1.2.3.5. Video Adapter: at least 4GB Discrete GPU
- 3.1.2.3.6. Display: at Least 24” monitor (1920 x 1080)
- 3.1.2.3.7. Network Interface: At least with Wi-Fi, Bluetooth and RJ45 port
- 3.1.2.3.8. Standard I/O Ports: USB 3.2 Gen 2 Type-A, USB 3.2 Gen 1 Type-A, USB 3.2 Gen 2 Type-C & HDMI port
- 3.1.2.3.9. Standard Keyboard and Mouse
  
- 3.1.2.4. Separate UPS configured as N+1 must be provided
- 3.1.2.5. Provision of all essential furnishings, (No OSM)
  
- 3.1.3. Supply delivery and installation of (30 units) Desktop Computers with 1 kVA UPS for the Fabrication Lab Training Room (Refer to 3.1.2.3 for the minimum Specifications):
  
- 3.1.4. Supply delivery and installation of (8 units) Access point with the following requirement and specifications:
  - 3.1.4.1. 802.11n version 2.0 (and related) capabilities
    - 3.1.4.1.1. 4x4 MIMO with four spatial streams
    - 3.1.4.1.2. 802.11n and 802.11a/g beamforming
    - 3.1.4.1.3. 20- and 40-MHz channels
    - 3.1.4.1.4. PHY data rates up to 890 Mbps (40 MHz with 5 GHz and 20 MHz with 2.4 GHz)
  
  - 3.1.4.2. 802.11ac
    - 3.1.4.2.1. 4x4 downlink MU-MIMO with four spatial streams
    - 3.1.4.2.2. MRC
    - 3.1.4.2.3. 802.11ac beamforming
    - 3.1.4.2.4. 20-, 40-, 80-, and 160-MHz channels
    - 3.1.4.2.5. PHY data rates up to 3.47 Gbps (160 MHz with 5 GHz)
  
  - 3.1.4.3. 802.11ax
    - 3.1.4.3.1. 4x4 downlink MU-MIMO with four spatial streams
    - 3.1.4.3.2. Uplink/downlink OFDMA
    - 3.1.4.3.3. TWT
    - 3.1.4.3.4. BSS coloring
    - 3.1.4.3.5. MRC
    - 3.1.4.3.6. 802.11ax beamforming
    - 3.1.4.3.7. 20-, 40-, 80-, and 160-MHz channels
  
    - 3.1.4.3.8. PHY data rates up to 5.38 Gbps (160 MHz with 5 GHz and 20 MHz with 2.4 GHz)
  
  - 3.1.4.4. System Memory
    - 3.1.4.4.1. 2048 MB DRAM
    - 3.1.4.4.2. 1024 MB flash

### 3.1.4.5. Ports

- 3.1.4.5.1. 1x 100, 1000, 2500 Multigigabit Ethernet (RJ-45) – IEEE 802.3bz
- 3.1.4.5.2. Auto-MDIX support
- 3.1.4.5.3. Management console port (RJ-45)
- 3.1.4.5.4. USB 2.0 @ 4.5W

### 3.1.4.6. Deployment

- 3.1.4.6.1. Compatible with Wireless LAN Controller C9800

## 3.1.5 Supply delivery and installation of five (5) units All-in One 85” Interactive Collaboration Board with Digital Board installed on both sides and Audio System and Front and Rear Tracking Cameras

### 3.1.5.1 All-in-One Collaboration Board

The All-in-one terminal should include:

- 3.1.5.1.1 Interactive Panel;
- 3.1.5.1.2 Video conference codec;
- 3.1.5.1.3 Built-in Speaker;
- 3.1.5.1.4 Built-in microphone;
- 3.1.5.1.5 Built-in camera.
- 3.1.5.1.6 OPS module
- System configuration:
  - 3.1.5.1.7 8-core CPU, 8 GB RAM, 64 GB Flash
  - 3.1.5.1.8 With an OPS module/computer with: i7-13th Gen, DDR4 16 GB, 512 GB SSD, Windows10 IOT Enterprise SAC Features
  - 3.1.5.1.9 Supports anti-glare
  - 3.1.5.1.10 Automatically adjusts screen brightness based on light sensing.
  - 3.1.5.1.11 Optical anti-blue light: protects eyes and doesn't change color.
  - 3.1.5.1.12 Screen response time: 8ms
  - 3.1.5.1.13 Touch accuracy:  $\pm 1$ mm
  - 3.1.5.1.14 Supports 20 touchpoints
  - 3.1.5.1.15 4K built-in camera
  - 3.1.5.1.16 A built-in privacy cover to physically close the camera
  - 3.1.5.1.17 Auto-framing: automatically adjusts the camera based on the location of the participants. The camera displays all participants in a panoramic view and ensures that the participants are displayed in the center.
  - 3.1.5.1.18 Speaker tracking, automatically switch to the close-up picture of speaker without manual intervention
  - 3.1.5.1.19 At least 6 built-in microphone arrays
  - 3.1.5.1.20 The microphone sound pickup radius at least 12 meters, and the sound pickup angle: 180°.
  - 3.1.5.1.21 Acoustic echo cancellation (AEC), automatic gain control (AGC), automatic noise reduction (ANR)
  - 3.1.5.1.22 Can add external microphone
  - 3.1.5.1.23 Two built-in speakers, frequency response range:100Hz-20KHz, total power not less than 40 W
  - 3.1.5.1.24 Video In: 1 x HDMI 2.0 (4K60)
  - 3.1.5.1.25 Video Out: 1 x HDMI 2.0 (4K60)
  - 3.1.5.1.26 Audio In: 1 x 3.5mm
  - 3.1.5.1.27 Audio Out: 1 x 3.5mm
  - 3.1.5.1.28 1 x Omni-directional microphone port, support the cascading of two microphones.
  - 3.1.5.1.29 3 x USB Type-A 3.0, support USB flash drive, mouse, keyboard, microphone, speaker, remote control and wireless dongle for projection.

- 3.1.5.1.30 1 x USB Type-C, support USB flash device, wireless dongle for projection.
- 3.1.5.1.31 1 x 10/100/1000M RJ45 port
- 3.1.5.1.32 Wi-Fi 5 and Wi-Fi 6, IEEE802.11a/b/g/n/ac/ax network protocol
- 3.1.5.1.33 Remote control that controls the volume, speaker on/off, microphone mute/unmute, camera open/close, previous/next page
- 3.1.5.1.34 Writing latency of no more than 16ms
- 3.1.5.1.35 The built-in whiteboard supports handwriting, drawing, erasing, marking, saving, zooming, and locking the whiteboard. The background color can be changed.
- 3.1.5.1.36 The whiteboard supports page turning. A maximum of 100 pages are supported
- 3.1.5.1.37 Selectable pen type: pencil, pen, and highlighter. Pen color: color palette.
- 3.1.5.1.38 Full-screen annotation: You can take a screenshot of any screen to enter the whiteboard annotation
- 3.1.5.1.39 The contents of the whiteboard can be saved locally and edited when you open it for the second time, saved in an external USB flash memory, sent to an email.
- 3.1.5.1.40 When writing on the electronic whiteboard, the hand-drawn graphics can be recognized as standard geometric figures, and the hand-written text can be recognized as standard printed text.
- 3.1.5.1.41 Wired projection through HDMI cable. Projection resolution support up to 1080p60fps and 4K30fps.
- 3.1.5.1.42 Wired projection through USB Type-C cable. Projection resolution support up to 1080p60fps and 4K30fps. When PC is projected to the device, the device can control the PC reversely without extra cables.
- 3.1.5.1.43 Wireless projection by entering the projection code on the mobile phone and PC. Projection resolution supports up to 1080p60fps and 4K15fps. When PC is projected to the device, the device can control the PC reversely.
- 3.1.5.1.44 Wi-Fi Direct projection. Users do not need to configure a Wi-Fi router or change the network of their mobile phones or PCs during screen projection. Projection resolution: up to 1080P60fps and 4K15fps. When PC is projected to the device, the device can control the PC reversely.
- 3.1.5.1.45 DLNA projection, during projection, user can use mobile phone to perform other tasks.
- 3.1.5.1.46 Allows users to use the same projection APP to project screens to OPS Windows.
- 3.1.5.1.47 Supports third-party video conference APP
- 3.1.5.1.48 The camera, microphone and speaker can be used for third-party video conference APP.
- 3.1.5.1.49 The camera auto-framing and voice tracking features can be used for third-party video conference APP
- 3.1.5.1.50 Android apps can be installed.
- 3.1.5.1.51 Support APP store dedicated to large screens device.
- 3.1.5.1.52 Supports APIs, third-party applications can perform registration, conference call, conference control, configuration query, and address book query based on the APIs.
- 3.1.5.1.53 Multi-window: The desktop can be divided into two windows that display two applications. User can change the size of the two windows by dragging the windows.
- 3.1.5.1.54 Supports BYOM, device hardware capabilities such as microphones, cameras, speakers, and touchscreen can be easily used as peripherals for 3rd party conferences on PC, by using Type-C cables, projection app, or wireless dongle
- 3.1.5.1.55 Welcome page without OPS module, the welcome page should contain text and pictures. The font of the text can be edited and the pictures can be customized.



- 3.1.5.1.56 Users can quickly customize applications on the home page. Common applications can be placed on the home page for quick search. At least six applications can be configured on the home page.
- 3.1.5.1.57 Supports dynamic wallpapers and static wallpapers. Wallpapers can be changed and imported.
- 3.1.5.1.58 Clone screen content to another screen via HDMI cable
- 3.1.5.1.59 Supports the OTA (over the air) technology.
- 3.1.5.1.60 Supports password complexity settings

### 3.1.5.2 Tracking Cameras

- 3.1.5.2.1 Ultra 4K camera
- 3.1.5.2.2 1/2.5", CMOS, Effective Pixel: 8.51M
- 3.1.5.2.3 8x digital zoom
- 3.1.5.2.4 H.265 compression
- 3.1.5.2.5 Built-in advanced image recognition and tracking algorithm; can easily realize fluent and continuous tracking.
- 3.1.5.2.6 Autofocus non-distortion lens, view angle 46° / 84° / 120° for options (120° don't support AF), a small lens with big view, supporting electronic PTZ
- 3.1.5.2.7 Ultra-high noise ratio of the new CMOS image sensor can effectively reduce the low noise in the case of image noise, while the application of 2D and 3D noise reduction algorithm, significantly reducing the image noise, even under low light conditions, still keep the picture clean and clear, the image signal to noise ratio up to 55dB or more
- 3.1.5.2.8 Supports PoE
- 3.1.5.2.9 Interleaving mode: achieve single camera and single SDI interface to simultaneously output panoramic and close-up signals.
- 3.1.5.2.10 Wall mount bracket of box camera

### 3.1.5.3 Digital Board

- 3.1.5.3.1 Integrated to the all-in-one conferencing board; installed on both sides
- 3.1.5.3.2 1114mm X 1157.1mm in dimension and green color
- 3.1.5.3.3 With an integrated document capture camera

### 3.1.5.4 Audio System

- 3.1.5.4.1 3 x condenser hanging microphones per classroom installed on the ceiling
- 3.1.5.4.2 Cardioid pattern
- 3.1.5.4.3 70 dB SNR
- 3.1.5.4.4 Central mixing console at the center classroom and a power amplifier
- 3.1.5.4.5 Mixing console: 16-channel mixing console, 16-line inputs, 1-knob compressor, rack-mountable
- 3.1.5.4.6 Power amplifier: 60 watts rated power, 2U rack mount, 4-16 ohms speaker output
- 3.1.5.4.7 Small mixer for the side classrooms: integrated USB, reverb, echo and delay function, 4 mic inputs
- 3.1.5.4.8 2 x 35 watts wall speakers per classroom
- 3.1.5.4.9 Supply and termination of audio cables
- 3.1.5.4.10 With HDMI splitter and cabling

### 3.1.6. Supply delivery and installation of three (3) units 3D Professional Scanner.

- 3.1.6.1 Capable of capturing the dimensions, measurements, and features of a real-world object, space, or human in seconds to construct an equivalent, digital 3D model.

### 3.1.7. Supply delivery and installation thirty (30 licenses) Office productivity software with latest perpetual version.

- 3.1.8. Supply delivery and installation two (2) units 3D Printer for Fabrication Lab with at least 1 yr. supply of accessories
  - 3.1.8.1 Automated resin fill system
  - 3.1.8.2 Build volume of  $14.5 \times 14.5 \times 18.5$  cm (WxDxH)
  - 3.1.8.3 Layer thickness of 25 – 300 microns
  - 3.1.8.4 XY resolution of at least 85 microns
  - 3.1.8.5 Equipped with at least 1 resin cartridge
  - 3.1.8.6 100 – 240VAC Power requirement
  - 3.1.8.7 Wireless connectivity to through WiFi 2.4GHz, 5GHz
  - 3.1.8.8 Wired connectivity through at USB 2.0
  - 3.1.8.9 Equipped with interactive touchscreen
  - 3.1.8.10 Equipped with various alerts such as touchscreen alerts, SMS/email alerts via dashboard, 2 LED status indicators and speaker for audio alerts
- 3.1.9. Supply delivery and installation four (4) units Printer with continuous ink (wifi ready and multifunction)
- 3.1.10. Supply delivery and installation four (4) units 10X Optical Zoom Video Conferencing Kit Camera and four (4) units Video Conferencing Speakerphone with Built-in 2 Microphones Array.

## 3.2. Smart Campus Integrated Modules

### 3.2.1. Security and Access Rights Management

This will automate the management and approval of the access rights of different users in a single web-based portal. It will eliminate the time and trouble involved in processing access rights manually and eradicates entry errors, which in turn will help to ensure compliance with regulations. Shall provide robust, global integrated access control, video surveillance and intrusion detection in a single view to protect staff, property, and optimize productivity. Note: No OSM.

#### 3.2.1.1. Web-Based Access Management Portal

The web-based interface gives organizations total situational awareness of their security system. The portal needs to have a customizable approval workflow and clearance code list (including specific business needs such as special access criteria) along with support for temporary and permanent access requests. Administrators should be able to easily check access rights, recent activity, and pending tasks. To meet compliance requirements, the module needs to maintain auditing data on approvals and access changes.

The main dashboard needs to allow approvers to view new, pending, and processed requests – and to grant area access accordingly. Meanwhile, they should be able to receive email notifications of any status changes and will receive email alerts for any new requests. It should be a single-user interface for multiple security and business functions.

Users should be able to have a self-service portal to request and review the status of their access rights requests. For example, the web-based portal should allow badge holders to request access changes easily. They can view their status and recent activities at any time. There should also have an easily searchable list of clearance codes.

### 3.2.1.2. Integration with Video Analytics and Video Management System

The seamless integration of video and access control solutions provides actionable intelligence that facilitates rapid decision-making with incidents and associated workflows configured in the system, allowing standard operating procedures to be monitored. Video management system controls multiple sources of video subsystems to collect, manage, and present video in a clear and concise manner. It also intelligently determines the capabilities of each subsystem across various sites, allowing video management of digital video devices through a unified configuration and viewer.

Video analytics has been a powerful tool to provide means for improved situational awareness, insights for increasing efficiency, and reducing the workload on security and management staff in turn increase returns from existing surveillance infrastructure.

### 3.2.1.3. Visitor Management

A visitor management system enables a quick and simple visitor registration process and can take place at a guard station, an optional self-registration kiosk, or an area to be designated by the administration. It boosts visitor security; enables the campus to have a complete and centralized record of all visitors. The system must have the following functional features (at a minimum):

- 3.2.1.3.1. Touchless check-in and host notification
- 3.2.1.3.2. Badge printing including visitor photo
- 3.2.1.3.3. QR code as an access credential
- 3.2.1.3.4. Real-time robust reporting and auditing capabilities
- 3.2.1.3.5. Send invitations to guests via email
- 3.2.1.3.6. Provision of one (1) unit Desktop Workstation (refer to 3.1.2.3 for the minimum specification) or a standing desk at the designated Reception Area.

### 3.2.1.4. Contactless Access Control

The access control solution should identify and allow secure and controlled access, and also help eliminate physical contact with frequently touched surfaces, using a wide variety of field-connected readers and other intelligent controllers.

The system must include the following:

- 3.2.1.4.1. Biometric readers
- 3.2.1.4.2. PIR sensors (monitor movement, light, and the temperature of rooms)
- 3.2.1.4.3. Touchless “Request to Exit” buttons

### 3.2.1.5. Contactless Proximity Cards/Credentials and Readers

The contactless proximity cards should utilize RFID technologies and provide a good contactless sensing range of at least 2.5" (6.35 cm). It should have the maximum size of a credit card.

### 3.2.1.6. Mobile Application Support

This application can help to improve productivity and efficiency, as it enables users to access the security management system from a mobile iOS or Android operating

system. This means quick and easy access to system information and managing alarms at any time of the day or night. It also enables administrators to manage credentials remotely. It can also be used to lock, unlock, and re- enable doors remotely.

The app should also have configurable filters that enable users to view any unused or expiring cards or to search for a specific badge holder or access card. Users can change access permissions for badge holders or cards; extend or change the validity of access cards; and scan badge holder barcodes to verify the user access details.

#### 3.2.1.7. Access Control System Scope

The solution shall consist of the following items:

- 3.2.1.7.1. Access Intelligent Controller
- 3.2.1.7.2. Biometric Card Reader
- 3.2.1.7.3. Door Contact
- 3.2.1.7.4. Electromagnetic Lock
- 3.2.1.7.5. Emergency Break glass
- 3.2.1.7.6. Request to Exit
- 3.2.1.7.7. Workstation with essential peripherals
- 3.2.1.7.8. Access Control Software

#### 3.2.2. Facial Recognition System

The Facial Recognition System shall function, among others, as the primary data capture device for the Daily Time Record of University Employees, which shall be integrated with the HRIS DTR Module. It will also function as an identification tracker of Students coming in and out of the campus. It will be deployed initially at the main entry and exit points of the campus.

At a minimum, the system must be equipped with the following:

- 3.2.2.1. Touch-less Access control reader equipped with facial recognition capable of four (4) factor authentication, such as:
  - 3.2.2.1.1. Face
  - 3.2.2.1.2. Finger
  - 3.2.2.1.3. Card
  - 3.2.2.1.4. Pin
- 3.2.2.2. Equipped with at least 21MP Camera and able to perform thermal screening that will manage student and personnel credentials, and isolate those with High Temperature to keep the campus premises safe and secure
- 3.2.2.3. Must be equipped with battery back-up
- 3.2.2.4. RFID Card Options must include, at a minimum, EM Prox, MiFARE, DESFire, HID Prox, iCLASS

#### 3.2.3. Video Analytics and Video Management System

A video management system collects video from cameras and other sources, stores that footage on a storage device, provides an interface to both view the live video and access recorded footage, and integrates with surveillance systems of different stakeholders thereby providing a holistic and integrated solution for the campus. The following capabilities are required (Note: No OSM):

- 3.2.3.1. Analyze Video/Camera Events

- 3.2.3.1.1. Video Signal Lost
- 3.2.3.1.2. Video Signal Restored
- 3.2.3.1.3. Camera Sabotage Features
- 3.2.3.2. Counting Events
  - 3.2.3.2.1. A person counted as entering
  - 3.2.3.2.2. A person counted as exiting
  - 3.2.3.2.3. Car entered carpark
  - 3.2.3.2.4. Car exited carpark
  - 3.2.3.2.5. Car counted in lane
- 3.2.3.3. Protect Areas of Interest
  - 3.2.3.3.1. Object left unattended
  - 3.2.3.3.2. Object removed
  - 3.2.3.3.3. Possible theft
  - 3.2.3.3.4. Loitering Detection
  - 3.2.3.3.5. Intrusion detection
- 3.2.3.4. Provision of five (5) Desktop Workstations to be deployed at the Command-and-Control Center, with minimum specifications as provided in 3.1.2.3.
- 3.2.4. Smart Campus Functional Architecture at the Command-and-Control Center
  - 3.2.4.1. Incident Management System

Through the web-based interface, the campus should gain total situational awareness of the security system. There should be customizable workflows that operators can follow when high- priority alarms are triggered. The system alarm should stay triggered until each of the steps has been completed.

This helps provide a complete and correct response to any incident that may occur. The security team can easily identify videos relating to an incident, add comments to the incident portal and use the audit table for later reports.

The system should allow rapid decision-making through the integration of video and access control. All incidents and their associated workflows should be configured in the system, allowing standard operating procedures to be intuitively monitored and easily managed. All incidents should be managed from the same place to allow easy access to all incident details. Capabilities of the system should include:

- 3.2.4.1.1. Detailed mapping of all zones
- 3.2.4.1.2. Auditing capabilities
- 3.2.4.1.3. Fully customizable workflows
- 3.2.4.1.4. Alarms that are customizable and attachable to the workflows
- 3.2.4.1.5. Dashboard reports for quick and easy access, enabling rapid decision making

The portal should present Key Performance Indicators (KPIs) into a single interface providing facility managers and operators with a holistic monitoring experience to gain actionable intelligence and help sustain compliance with new regulations. It should be able to integrate with the video manager and video walls. Safety Compliance Dashboard reports on data from video surveillance, analytics, and access management systems that detect mask compliance, social distancing, elevated body temperature incidents, building occupancy density, and Standard Operating Procedure (SOP) compliance.

3.2.5 Supply delivery and installation (1 lot) Application server with the following minimum requirement and specifications:

- 3.2.5.1. Processor: Dual processor with at least 2.3Ghz, 40C/80T, 11.2GT/s, 60M Cache, Turbo, HT (270W) DDR4-3200
- 3.2.5.2. Memory: 1TB RAM
- 3.2.5.3. Storage: 2x800GB SSD SAS ISE Mix Use 12Gbps (RAID1) and 2x 7.68TB SSD SAS ISE Read Intensive 12Gbps
- 3.2.5.4. Disk Controller: RAID 0, 1, 10, 5 or 50
- 3.2.5.5. Network ports: 2x Dual Ports 25GbE with optics and 1x Dual Ports 1GbE
- 3.2.5.6. Fiber Channel (FC Card): 2x DP FC32
- 3.2.5.7. Must have N+1 Fan redundancy
- 3.2.5.8. Must have Dual Redundant Power Supply
- 3.2.5.9. Operating System: Linux Enterprise (Licensed copy)
- 3.2.5.10. Warranty: Onsite services (36 months), Hard drive warranty (36 months)

3.2.6 Supply delivery and installation of Smart Campus Integrated Modules and at a minimum must consist of the following:

- 3.2.6.1 8 units Turnstile with RFID
- 3.2.6.2 Access Control Software
- 3.2.6.3 1 license Identity Management – Visitor Management for 1 kiosk license for 10 users
- 3.2.6.4 1 license Identity Management - Visitor Management for 1 standing kiosk
- 3.2.6.5 1 license Identity Management – Visitor Management for additional 100 users
- 3.2.6.6 Incident Management System
- 3.2.6.7 1 license Notifier Secondary Fire Interface
- 3.2.6.8 10 pcs Contactless Proximity Card
- 3.2.6.9 6 units PIR (Passive Infrared) Sensor
- 3.2.6.10 6 units Touchless Access Control Reader (face, finger, card, pin)
- 3.2.6.11 6 units Access Intelligent Controller
- 3.2.6.12 6 Door Contact
- 3.2.6.13 6 Electromagnetic Lock
- 3.2.6.14 6 Emergency Break glass
- 3.2.6.15 1-unit Proximity RFID card printer
- 3.2.6.16 5,000 pcs PVC blank cards for RFID card printing
- 3.2.6.17 3 units Uninterruptable Power Supply 1kva
- 3.2.6.18 1 lot Mobile Application Support
- 3.2.6.19 1 lot Installation Services
- 3.2.6.20 1 lot Configuration Services
- 3.2.6.21 1 lot Deployment and Implementation
- 3.2.6.22 Two (2) years warranty and support services

### 3.3. Smart Security and Surveillance System

3.3.1. TCP/IP-Based CCTV Cameras (Note: No OSM)

- 3.3.1.1. The camera should be IP Based; HDR 2.8-12mm Form Factor
- 3.3.1.2. Should support 12-24 VDC or 24 VAC
- 3.3.1.3. 4K Resolution and should support 1920 x 1080 Resolution
- 3.3.1.4. Should support 25/30/50/60 fps
- 3.3.1.5. Should support Night Vision for at least 100m
- 3.3.1.6. Should be at IP67 Ingress Protection
- 3.3.1.7. Facial Recognition
  - 3.3.1.7.1. The camera should be IP Based; on Flexi Dome HDR 10-

- 23mm Form Factor
- 3.3.1.7.2. Should support PoE (48VDC) or 24 VAC
- 3.3.1.7.3. Should support 1920 x 1080 Resolution
- 3.3.1.7.4. Should support 25/30/50/60 fps
- 3.3.1.7.5. Should be at IP66 Ingress Protection

3.3.1.8. CCTV System must consist of the following:

- 3.3.1.8.1. Twenty-One (21) 5MP Network WDR IR Outdoor Bullet Camera
- 3.3.1.8.2. Four (4) 5MP Network IR PTZ Outdoor Dome Camera
- 3.3.1.8.3. Twenty-three (23) 5MP Network WDR IR Outdoor Dome Camera
- 3.3.1.8.4. Six (6) 5MP Network WDR IR Outdoor Bullet Camera
- 3.3.1.8.5. Three (3) 8MP Network IR Bullet Camera, TDN, WDR
- 3.3.1.8.6. Network Video Recorded (NVR) (60 channels NVR)
- 3.3.1.8.7. Two (2) 12x8TB,80.0TB@RAID5 - 64 CHANNEL
- 3.3.1.8.8. CCTV software and analytics
- 3.3.1.8.9. Video retention policy of a minimum of 90 days

3.3.2. Public Address and Voice Alarm System

- 3.3.2.1. Should have distributed control device (DCS) is integrated with many functions and supports the connection via Ethernet.
- 3.3.2.2. Built-in 1G memory to store the audio such as digital voice messages and the alarm tone of the emergency broadcast integrated into the Fire Alarm System and Building Management.
- 3.3.2.3. Should have a Fault detection function for the broadcasting system that can automatically examine the host system, power amplifier, power source, and communication, and detect the open circuit, short circuit, and grounding fault to generate the fault alarm and log.
- 3.3.2.4. Should have a paging microphone that allows users to make paging and broadcast search notices by zone.
- 3.3.2.5. Should have a broadcasting system that has its own 1 PPT emergency microphone, which could be used to play emergency broadcasts and evacuate the crowds in specific zones.
- 3.3.2.6. Should have system standby amplifiers. When the main amplifier fails to function, the standby amplifier replaces it automatically. After the main amplifier recovers, the system will use it instead of the standby amplifier in an automatic way.

3.3.3 Supply delivery and installation of Smart Security and Surveillance System at a minimum must consist of the following:

- 3.3.1.1 2 units Server 12x8TB,80.0TB, RAID5 - 64 Channel
- 3.3.1.2 21 units 5MP Network WDR IR Outdoor Bullet Camera
- 3.3.1.3 4 units 5MP Network IR PTZ Outdoor Dome Camera
- 3.3.1.4 23 units 5MP Network WDR IR Outdoor Dome Camera
- 3.3.1.5 6 units 5MP Network WDR IR Outdoor Bullet Camera
- 3.3.1.6 3 units 8MP Network IR Bullet Camera, TDN, WDR
- 3.3.1.7 1-unit Network Video Recorded (NVR) with right-sized Storage
- 3.3.1.8 1 set Public Address and Voice Alarm System
- 3.3.1.9 1 Corporate Edition CCTV software and analytics
- 3.3.1.10 Video Retention policy for 90 days
- 3.3.1.11 3 License Plate Recognition Software
- 3.3.1.12 1 lot Installation Services
- 3.3.1.13 1 lot Programming and Configuration Services
- 3.3.1.14 1 lot Deployment and implementation services

3.3.1.15 Two (2) years warranty and support services

**3.4. Building Management System**

The BMS must be capable of integrating various equipment within a building such as power and cooling/HVAC systems, security cameras, elevators, chiller plants (if available), and other occupancy sensors for monitoring purposes through a single dashboard.

The smart building software then connects to and controls the same controllers using various protocols, or it may connect directly to the building equipment itself. Having all this data collected, processed, and analyzed helps with generating relevant dashboards and reports.

The smart building software has a comprehensive password security system that uses standard authentication and encryption techniques to enable access to be controlled. If required, an external LDAP connection can be used. The Cyber Security Dashboard provides a system wide view of security status with built in recommendations to improve security for the software and controllers connected to it. The audit trail contains a log of database changes, database storage and backup, global time functions, calendar, central scheduling, control, and energy management routines. Note: No OSM.

The system must have the following features, at a minimum:

- 3.4.1. HTML5 compliant web framework
- 3.4.2. Centralized system management
- 3.4.3. End users can easily customize dashboards
- 3.4.4. Utilize Tags, which are labels (metadata) that are applied to points to allow them to be identified or filtered by function and/or location.
- 3.4.5. Compare data between buildings
- 3.4.6. Advanced charting and visualization
- 3.4.7. Device templating
- 3.4.8. Data cleansing capabilities
- 3.4.9. Niagara Workbench
- 3.4.10. Access to the software will be subject to appropriate Role permissions
- 3.4.11. Password protection and security using standard authentication and encryption techniques
- 3.4.12. Export system data to external databases
- 3.4.13. Integrate Building Automation System (BAS) into other enterprise applications
- 3.4.14. Integrate with other applications, such as work order management, analytics, etc.
- 3.4.15. Provide a comprehensive, graphical engineering toolset for application development.
- 3.4.16. Robust built-in analytic capabilities
- 3.4.17. Analytics for HVAC control system fault detection and diagnostics
  - 3.4.17.1. Provide analytics, a versatile software tool that enables energy usage data from the Building Energy Management System (BEMS) to be collected and presented using a range of visualization and reporting methods.
  - 3.4.17.2. The output from the analysis shall be able to be visualized in charts, graphs, and dashboards and be used as inputs to standard Niagara logic.



- 3.4.17.3. When applied to historical and real-time data, the framework algorithms shall provide the following analysis features:
  - 3.4.17.3.1. Effective visualization of data using a range of graphical presentation tools
  - 3.4.17.3.2. Alerts: The result of an algorithm can be used to generate an alarm
  - 3.4.17.3.3. Automated control strategies: The result of an algorithm can be used to automatically adjust the control strategy
  - 3.4.17.3.4. Algorithm library: Includes an extensive library of algorithms for diagnosing system performance and making energy calculations, using mathematical, logic and filter components.
  - 3.4.17.3.5 Customizable library: Modify the included algorithms to build your own library.
  - 3.4.17.3.6 Public APIs: Create custom function blocks and integrate with third-party visualization packages
  
- 3.4.18. Flood Monitoring System
  - 3.4.18.1. The sensor head should emit an ultrasonic wave and receives the wave reflected back from the targeted locations.
  - 3.4.18.2. The system should be fully monitored and integrated with BMS.
  - 3.4.18.3. The system should have a panel with a visual indication of localized alarms placed in the Command-and-Control Center
  
- 3.4.19. The Building Management System (BMS) Scope must consist of the following, at a minimum:
  - 3.4.19.1. Lighting Controlling Devices
  - 3.4.19.2. Building Management System Software
  - 3.4.19.3. BMS Network Controller
  - 3.4.19.4. Direct Digital Controller
  - 3.4.19.5. Managed Switch 24 Port
  
- 3.4.20 Supply delivery and installation of Building Management System at a minimum must consist of the following:
  - 3.4.20.1 Supply delivery and installation of 2-unit Desktop Computers (please refer to 3.1.2.3 for the minimum specification:
  - 3.4.20.2 1 lot Building management sensors
  - 3.4.20.3 1 unit BMS Network Controller
  - 3.4.20.4 1 unit Managed Switch 24 Port
  - 3.4.20.5 1 lot Building Management System
  - 3.4.20.6 1 lot Flood Monitoring System
  - 3.4.20.7 2 units Lighting Controlling Devices
  - 3.4.20.8 3 units Direct Digital Controller
  - 3.4.20.9 5 units Uninterruptable Power Supply 1kva
  - 3.4.20.10 10 pax End-user's Training
  - 3.4.20.11 10 pax Administration Training
  - 3.4.20.12 1 lot Installation and Configuration
  - 3.4.20.13 1 lot Deployment and implementation services
  - 3.4.20.14 Two (2) years warranty and support services

### 3.5. Inter-building Fiber Connection

Establish a fiber network connection from the current Network Switch room (EB 204) to the new Data Center located at the 2<sup>nd</sup> Floor of the Innovation Hub. Existing buildings (EE and ME Lab Bldg., TechnoMart, Automotive Bldg., Marine Bldg., Innovation Hub, etc.) that are not yet connected to the existing Network Switch Rm located at EB 204 need also to be connected to the proposed Data Center at the 2nd Fl. of the Innovation Hub through a fiber cable (Note: No OSM).

3.5.1. Supply and installation of Fiber Optic Cable

3.5.2. Supply and installation of Fiber Termination Equipment

3.5.3. Supply and installation of Conduits /Manhole

3.5.4 Supply delivery and installation of Inter-building Fiber Connection must include the following:

3.5.4.1 Direct Internet Access

3.5.4.1.1 Facilitate and provide for a two-years subscription of 1Gbps Internet Exchange capacity from a reputable ISP (Internet Service provider) with an IP block of /28.

3.5.4.1.2 The winning bidder must initiate a service application (Service Subscription) and activation from an Internet Service Provider (ISP) that is capable of delivering internet service through a Fiber Optic Cable (FOC) Backbone. The University shall be the Subscription Account owner.

3.5.4.1.3 Service Subscription must be valid for twenty-four (24) months from the date of onsite activation. Onsite activation means the actual flow of bandwidth and access to internet service. Access to the internet for purposes of testing shall not be construed as activation.

3.5.4.2 1 lot Network Design, Layout, Excavation, structured cabling, and installation

### 3.6. In-Building Structured Cabling

3.6.1. The winning bidder shall furnish all labor, materials, tools, and equipment, and perform all operations necessary to complete the supply, delivery, installation, termination, testing, and commissioning of Structured Cabling Works (Note: No OSM)

3.6.2. Supply, delivery, and pulling of Category 6 UTP cables and Fiber Optic Cables. The winning bidder shall perform proximity measurements and bandwidth requirements assessment to validate the FOC to be supplied whether Single- Mode, Multi-Mode or a mix of both

3.6.3. Supply and installation of Inter-Rack cabling at the Data Center Facility

3.6.4. Supply, Installation, and termination of data cables necessary for the interfacing of devices with the BMS

3.6.5. Supply and Installation of IDFs, Cable Ladders, Cable trays, and fiber guides and perform harnessing with appropriate labeling

3.6.6 Supply delivery and installation of In-Building Structured Cabling at a minimum must include the following:

3.6.6.1 1 lot Network cabling assessment, design, layout and Architecture

3.6.6.2 1 lot Structured cabling and installation

3.6.6.3 Two (2) years warranty and support services

### 3.7. SMART Classroom Set Up

- 3.7.1. The winning bidder shall provide the necessary fit-out works that will convert traditional classrooms into a SMART Classroom and also provide the necessary electrical supply (service feeder and service equipment) and electrical wirings with circuit protection for all the identified classrooms to be converted into a SMART Classroom. The following scope of works, equipment, and devices shall be provided as part of the winning bidder's deliverables (Note: No OSM):
- 3.7.1.1. Fit-out Works (carpentry works, tileworks, painting works, electrical works, mechanical works, glassworks) for Eighteen (18) classrooms (Engg-4, IT-2, COED-3, CAAD-3, GS-2, COBE-2, CAS-2)
  - 3.7.1.2. i7 desktop computers for 40 students, and 1 for 1 lecturer per classroom (Note: Pls refer to 3.1.2.3 for the desktop detailed specification)
  - 3.7.1.3. All-in One 85" Interactive Collaboration Board with Digital Board installed on both sides and Audio System. (Note: Pls refer to 3.1.5 for the detailed specification)
  - 3.7.1.4. 5MP 10X Optical Zoom Video Conferencing Kit Tracking Camera (front and rear)
  - 3.7.1.5. Network Nodes and Access Point
  - 3.7.1.6. Furnishings (Tables and Chairs for 40 students and lecturer)
  - 3.7.1.7. Video Conferencing Speakerphone with Built-in 2 Microphones Array with Voice Pick-up Range up to 5 meters
  - 3.7.1.8. Cooling (2 units of 2-2.5 hp inverter air conditioning) and electrical works
- 3.7.2. Supply delivery and installation of SMART Classroom Set Up at a minimum, must include the following:
- 3.7.2.1. Supply delivery and installation of 738 units Desktop Computers (with minimum specifications as provided in 3.1.2.3).
  - 3.7.2.2. 18 units Access Points (pls refer to 3.1.4 for the minimum specification)
  - 3.7.2.3. 18 units, All-in One 85" Interactive Collaboration Board with Digital Board installed on both sides, Rear and Front Tracking Cameras and Audio System, complete with accessories (pls refer to 3.1.5 for the detailed specification)
  - 3.7.2.4. 36 units Inverter Airconditioning unit (2.5 hp)
  - 3.7.2.5. 738 units Uninterruptable Power Supply, 1kva
  - 3.7.2.6. 18 units All in one Printers ((WIFI ready and multifunction))
  - 3.7.2.7. 18 lots Structured Cabling
  - 3.7.1.8. Office productivity and collaboration tool subscription for 24 months for 22500 students/users
  - 3.7.1.9. Two (2) years warranty and support services

### 3.8. eLibrary Set Up

3.8.1. The EVSU's old library building will be converted into an e-library. The winning bidder shall be responsible for the physical fit-out works (retrofitting works), supply of essential equipment, tables, chairs, shelves, 3 yrs. subscriptions to e-journals for the use of the students coming from the different colleges, testing, and commissioning (Note: No OSM):

3.8.1.1. Supply and delivery of fifty (50) i7 Desktop Computers with minimum specifications as provided in 3.1.2.3.

3.8.1.2 1 lot Library System (Perpetual License)

3.8.1.2.1. The e-Library System runs on a unified, multi-cloud services platform.

3.8.1.2.2. Capable of storing and managing member data.

3.8.1.2.3. The system has a facility for issuing barcodes that contain the book's title, author, subject, and publication date.

3.8.1.2.4. Members can log-in, search for, choose, issue and return books on their own.

3.8.1.2.5. A dashboard for the librarians, also contains what books are out and returned.

3.8.1.2.6. It has a facility to allow library staff to manage the inventory of library resources.

3.8.1.2.7. The system should be open source, web-based application, and has an API to connect to a compatible Campus Management System.

3.8.1.2.8. The catalogue of books, journals, and library database are accessible online.

3.8.1.2.9. It is accessible through mobile app

3.8.1.2.10. Has a capability to complain or make reports.

3.8.1.2.11. It provides statistical reports and analysis of library usage and resources, including information such as the number of resources borrowed, the most popular resources, and the patron demographics and;

3.8.1.2.12. Analytics to show, but not limited to, frequently borrowed or delayed return books, users with good standing/bad standing, frequently not available, popular authors and topics.

3.8.1.2.13. Should supports opensource databases such as Postgres

3.8.1.3 Supply of Desktop furniture

3.8.1.4 Supply of Furnishing (table, chairs, shelves)

3.8.1.5 3 Years Subscriptions to at least seven (7) e-journals for the use of the students coming from the different colleges

3.8.1.6 2 units Kiosk

3.8.1.7 Provision of three (3) Isolation rooms that can accommodate at least 5 students. This room shall be used for student group works, student meetings, and other collaborative discussions. The room shall be made

- of a tempered glass wall, a single-leaf glass door, and with table, chairs, and SMART TV.
- 3.8.1.8 1 unit RFID Monitor
- 3.8.1.9 4 units Air-conditioning unit for large space
- 3.8.1.10 50 licenses Office productivity software with latest perpetual version
- 3.8.1.11 5 units Access point (pls refer to 3.1.4 for the minimum specification)
- 3.8.1.12 50 units Uninterruptable Power Supply 1kva
- 3.8.1.13 10 units Printer (WIFI ready and multifunction)
- 3.8.1.14 CCTV
- 3.8.1.15 1 lot Structured cabling
- 3.8.1.16 20 pax End-user's Training
- 3.8.1.17 10 pax Administration Training
- 3.8.1.18 Two (2) years warranty and support services

### 3.9. Inter-active eLaboratories

The winning bidder shall provide the necessary fit-out works to convert classrooms/laboratory rooms to an Inter-active Laboratory (eLab). The following scope of works, equipment, and devices shall be provided as part of the winning bidder's deliverables (Note: No OSM)

#### 3.9.1. CAD/Laboratory (1 lab for the CAAD and 1 for the COE)

- 3.9.1.1. i7 Desktops with 1 kVA UPS for 1 lecturer, and for 40 students (pls refer to 3.2.3.1 for the minimum specification) and Office productivity software with latest perpetual version
- 3.9.1.2. Furnishing
- 3.9.1.3. Retrofitting works
- 3.9.1.4. Electrical works
- 3.9.1.5. Network nodes
- 3.9.1.6. Structured Cabling Works
- 3.9.1.7. Access Point (2 units per lab, Note: pls refer to 3.1.4 for the minimum specification)
- 3.9.1.8. Cooling (3 units Air-conditioning unit 2.5 hp per laboratory)
- 3.9.1.9. CAD Software (preferably BIM, 1 lab for the CAAD and 1 for COE))
  - 3.9.1.9.1. Autodesk Fusion 360
  - 3.9.1.9.2. Autodesk BIM 360
  - 3.9.1.9.3. Autocad
  - 3.9.1.9.4. Sketchup
  - 3.9.1.9.5. 3DStudio Max
- 3.9.1.10. All-in One 85" Interactive Collaboration Board with Digital Board installed on both sides and Audio System (pls refer to 3.1.5 for the detailed specification)
- 3.9.1.11 5MP 10X Optical Zoom Video Conferencing Kit Tracking Camera (front and rear)
- 3.9.1.12. Tileworks
- 3.9.1.13. 2 units 3-D Printer, with 1 yr. supply of accessories (pls refer to 3.1.8. for the minimum specification)
- 3.9.1.14. 2 units All in one Printers (WIFI ready and multifunction)

#### 3.9.2. Multipurpose E-Laboratory

Set up multipurpose e-Laboratories in 2 nominated Colleges by EVSU (COT and CoBE). The inclusive scope of works is as follows:

- 3.9.2.1. i7 Desktops with 1 kVA UPS for 1 lecturer, for 40 students (pls refer to 3.2.3.1 for the minimum specification) and Office productivity software with latest perpetual version

- 3.9.2.2. Furnishing
- 3.9.2.3. Retrofitting works
- 3.9.2.4. Electrical works
- 3.9.2.5. Network nodes
- 3.9.2.6. Structured Cabling Works
- 3.9.2.7. Access Point (2 units per lab, Note: pls refer to 3.1.4 for the minimum specification)
- 3.9.2.8. Cooling (3 units Air-conditioning unit 2.5 hp per laboratory)
- 3.9.2.9. Various Productivity and Multimedia Software
- 3.9.2.10. All-in One 85“Interactive Collaboration Board with Digital Board installed on both sides and Audio System (pls refer to 3.1.5 for the specification)
- 3.9.2.11. 5MP 10X Optical Zoom Video Conferencing Kit Tracking Camera (front and rear)
- 3.9.2.12. 2 units All in one Printers ((WIFI ready and multifunction))
- 3.9.2.13. Two (2) years warranty and support services

### 3.10. Data Center Network Switches

- 3.10.1. 2units Spine Switch Specifications:
  - 3.10.1.1. 36 x 40/100-Gbps QSFP28 ports
  - 3.10.1.2. 4-core CPU
  - 3.10.1.3. 24 GB System memory
  - 3.10.1.4. 128GB SSD
  - 3.10.1.5. RoHS Compliance
  - 3.10.1.6. MTBF of 352,590 hours
  - 3.10.1.7. Redundant power supply (N+1)
  - 3.10.1.8. Redundant fan (4 fans)
  - 3.10.1.9. Comprehensive protocol support for Layer 3 (v4/v6) unicast and multicast routing protocol suites, including BGP, Open Shortest Path First (OSPF), Enhanced Interior Gateway Routing Protocol (EIGRP), Routing Information Protocol Version 2 (RIPv2), Protocol Independent Multicast Sparse Mode (PIM-SM), Source-Specific Multicast (SSM), and Multicast Source Discovery Protocol (MSDP)
  - 3.10.1.10. Quantity Requirement: Two (2)
- 3.10.2. 2 units Leaf Switch Specifications (Border/Service/Compute/IP Storage):
  - 3.10.2.1. 48 x 1/10/25-Gbps and 6 x 40/100-Gbps QSFP28 ports
  - 3.10.2.2. 6-core CPU
  - 3.10.2.3. 128 SSD
  - 3.10.2.4. 40MB System buffer
  - 3.10.2.5. RoHS compliance
  - 3.10.2.6. MTBF of 288,760 hours
  - 3.10.2.7. Redundant power supply (N+1)
  - 3.10.2.8. Redundant fan (4 fans)
  - 3.10.2.9. Must have support for standards-based VXLAN EVPN fabrics, inclusive of hierarchical multi-site support.
  - 3.10.2.10. Comprehensive protocol support for Layer 3 (v4/v6) unicast and multicast routing protocol suites, including BGP, Open Shortest Path First (OSPF), Enhanced Interior Gateway Routing Protocol (EIGRP), Routing Information Protocol Version 2 (RIPv2), Protocol Independent Multicast Sparse Mode (PIM-SM), Source-Specific Multicast (SSM), and Multicast Source Discovery Protocol (MSDP)

3.10.2.11. Quantity Requirement: Two (2)

3.10.3. 1 unit DMZ Switch Specifications:

- 3.10.3.1. 24 ports 10/100/1000
- 3.10.3.2. 4x 1/10G fixed uplinks
- 3.10.3.3. Switching Capacity: 56 Gbps
- 3.10.3.4. Switch capacity with stacking: 136 Gbps
- 3.10.3.5. Forwarding Rate: 41 Mpps
- 3.10.3.6. Forwarding rate with stacking: 101 Mpps
- 3.10.3.7. DRAM: 2G
- 3.10.3.8. Flash: 4G
- 3.10.3.9. IP unicast routing protocols (including static, Routing Information Protocol Version 1 [RIPv1], RIPv2, RIPv6, and Open Shortest Path First [OSPF], Routed Access)
- 3.10.3.10. Advanced IP unicast routing protocols (including Full [OSPF], Enhanced Interior Gateway Routing Protocol [EIGRP], and Intermediate System-to-Intermediate System Version 4 [IS-ISv4])
- 3.10.3.11 MTBF: 525,990 hrs.
- 3.10.3.12 Redundant PSU
- 3.10.3.13 SD-Access
- 3.10.3.14. Bluetooth ready
- 3.10.3.15. Perpetual licensing
- 3.10.3.16 Quantity Requirement: One (1)

3.10.4. Supply delivery and installation of Inter-active Data Center

Network Switches at a minimum must consist of the following:

- 3.10.4.1 2 units Spine Switch, 36p 40/100G Quad Small Form Factor Pluggable (QSFP) 28
- 3.10.4.2 4 units Data Center Switch Alternating Current 1100W Power Supply Unit - Port Side Exhaust
- 3.10.4.3 2 units Leaf Switch, 48p 1/10/25G, 6p 40/100G, Media Access Control Security (MACsec), SyncE
- 3.10.4.4 4 units Data Center Switch Alternating Current 1100W Power Supply Unit - Port Side Exhaust
- 3.10.4.5 2 units Additional memory of 16GB for the Data Center Switches
- 3.10.4.6 16 units 25 Gigabit Ethernet Small Form-Factor Pluggable (25GBASE-SR SFP) Module
- 3.10.4.7 1 unit DMZ Switch 24-port data only, 4 x 10G, Network Advantage
- 3.10.4.8 1 unit 125W AC Config 5 Power Supply - Secondary Power Supply
- 3.10.4.9 5 units 600W AC Config 5 Power Supply - Secondary Power Supply
- 3.10.4.10 4 units Network Switch Stacking Module
- 3.10.4.12 2 units Data Center Switch 24x25G Fiber Ports, modular uplink Switch
- 3.10.4.13 2 units 715W AC 80+ platinum Config 1 Power Supply
- 3.10.4.17 5 units Data Center Switch 24-port PoE+, 4 x 10G, Network Advantage
- 3.10.4.18 5 units Wi-Fi 6 Outdoor Access Point, External Antenna, - ROW Regulatory Domain
- 3.10.4.19 30 units Outdoor Access Access Point
- 3.10.4.20 2 units Wireless Controller Copper Uplink

- 3.10.4.21 2 units Wireless Controller
- 3.10.4.22 34 units 10GBASE-Legacy Reduced Small Form Factor Module, Enterprise-Class
- 3.10.4.23 2 licenses Solution Support 8X5XNBD Spine Switch, 36p 40/100G QSFP28
- 3.10.4.24 2 licenses solution Support 8X5XNBD Leaf Switch 48p 1/10/25G, 6p 40/100G,
- 3.10.4.25 Licenses, Software Subscription, and After Sales Warranty Services
- 3.10.4.26 10 pax Administration's Training
- 3.10.4.27 Data Center Switches Latest Operating System Software
- 3.10.4.28 Data Center Switch Fan, 35CFM, port side exhaust airflow with Electrically Erasable Programmable Read-only Memory (EEPROM)
- 3.10.4.29 Power Cord Jumper, C13-C14 Connectors, 2 Meter Length
- 3.10.4.30 40GBASE-SR4 QSFP Transceiver Module, MPO Conn, Enterprise-Class
- 3.10.4.31 3K/9K Fixed Accessory Kit, 1RU front and rear removal
- 3.10.4.32 NEBs AC 650W PSU - Port Side Exhaust
- 3.10.4.33 Network Plug-n-Play Connect for zero-touch device deployment
- 3.10.4.34 North America AC Type A Power Cable
- 3.10.4.35 50CM Type 4 Stacking Cable
- 3.10.4.36 715W AC 80+ platinum Config 1 Power Supply
- 3.10.4.37 Switch Stack Power Cable 30 cm
- 3.10.4.38 No SSD Card Selected
- 3.10.4.39 AC Power Cord, Type C5, US, Canada
- 3.10.4.40 Data Center Switch Network Module Blank Module
- 3.10.4.41 Blank Stack Module
- 3.10.4.42 Vertical pole/wall mounting kit for Access Points
- 3.10.4.43 2.4GHz 6dBi/ 5GHz 8dBi Dual Band Omni Antenna N Connector
- 3.10.4.44 802.11 AP Low Profile Mounting Bracket
- 3.10.4.45 Ceiling Grid Clip for Access Points & Cellular Gateways-Recessed
- 3.10.4.46 Wireless Controller Rack Mount Tray
- 3.10.4.47 Wireless Controller Power Supply
- 3.10.4.48 3.10.4. 1 lot Project Management Services
- 3.10.4.49 3.10.5. 1 lot Installation and Configuration
- 3.10.4.50 3.10.6. 1 lot Deployment and implementation services
- 3.10.4.51 3.10.7. Two (2) years warranty and support services

### 3.11. Network Security System

- 3.11.1. Supply and Installation of Next-Generation Firewall (NGFW) with built-in and full-featured Software-Defined Wide Area Network (SD-WAN) functionalities, compliant with the following minimum specifications (No OSM):
  - 3.11.1.1. High Availability Configuration
  - 3.11.1.2. Two (2) years support services
  - 3.11.1.3. The security firewall devices, and all of its components, shall be brand new, free from defects, and seamlessly compatible to run as an integrated system.
  - 3.11.1.4. The proposed security firewall devices must come from a manufacturer which has a similar or equivalent security firewall system deployed in the Philippines, either with at least three (3) government agencies or large enterprise organizations with at least 500 employees, within five (5) years.
  - 3.11.1.5. The firewall device is manufactured by an ISO 9001 or ISO 9002 certified company and is compliant for at least 5 years.
  - 3.11.1.6. All equipment and components should be brand new (not clone, imitation, or illegally assembled) and should be the latest product offering of the specific device manufacturer in the market.



- 3.11.1.7. The security firewall devices or any of its major components, shall not be an End-of-Life (EOL) model at the time of the bidding or for a period of 3 years or during the warranty period.
- 3.11.1.8. The model's spare parts and components should be available in the market for a period of three (3) years from the date of the contract.
- 3.11.1.9. All equipment must be rack mountable and inclusive of any necessary accessories.
- 3.11.1.10. The Proposed solution must be of 2 (two) sets of active-passive high availability Firewall Cluster with stateful session failover capability
- 3.11.1.11. The Proposed solution must achieve Hardware redundancy using only a single security license in both primary & secondary appliances.
- 3.11.1.12. The Proposed solution must include at least a minimum of 3 (three) years warranty including all services like GAV, IPS, Antispyware or antimalware, CFS, Application control, Geo-IP, BoT Protection, sandboxing (ATP), Patch & New software upgrade
- 3.11.1.13. NGFW Features and Functionalities (Applies to NGFW in all locations)
  - 3.11.1.13.1. Performs stream-based, bi-directional traffic analysis, without proxying or buffering, to uncover intrusion attempts and malware and to identify application traffic regardless of port.
  - 3.11.1.13.2. Scans for threats in both inbound and outbound traffic simultaneously to ensure that the network is not used to distribute malware and does not become a launch platform for attacks in case an infected machine is brought inside
  - 3.11.1.13.3. Must be capable of proxy-less and non- buffering inspection technology that provides ultra-low latency performance for DPI of millions of simultaneous network streams without introducing the file and stream size limitations and can be applied on common protocols as well as raw TCP streams.
  - 3.11.1.13.4. Must have a single-pass DPI architecture that simultaneously scans for malware, intrusions, and application identification, drastically reducing DPI latency and ensuring that all threat information is correlated in a single architecture.
  - 3.11.1.13.5. Must have multi-engine sandbox platform, which includes virtualized sandboxing, full system emulation, and hypervisor level analysis technology, executes suspicious code, and analyzes behavior, providing comprehensive visibility to malicious activity.
  - 3.11.1.13.6. Must have a technology that detects and blocks mass-market, zero-day threats and unknown malware that does not exhibit any malicious behavior or that hides its weaponry via encryption. The technology should be able to force malware to reveal its weaponry by unpacking its compressed code in memory (for less than 100 nanoseconds) in a secure sandbox environment.
  - 3.11.1.13.7. Must have a real-time deep memory inspection technology that can discover packed malware code that has been compressed to avoid detection. It will allow the malware to reveal itself by unpacking its compressed code in memory in a secure threat detection environment.
  - 3.11.1.13.8. Must have a technology (CPU level instruction detection granularity) that stops new forms of malware trying to exploit the Meltdown vulnerability and identifying new processor- based vulnerabilities.
  - 3.11.1.13.9. "Must be able to analyze documents dynamically using proprietary exploit detection technology along with static forms of

inspection. These combined techniques have the capability to detect many malicious document categories, including:

- 3.11.1.13.9.1. Dynamic Data Exchange (DDE) based exploits and malware inside Office files
- 3.11.1.13.9.2. Shellcode-based malicious Office and PDF files
- 3.11.1.13.9.3. Macro-based malicious Office documents
- 3.11.1.13.9.4. Malicious multi-layer PDF and Office documents
- 3.11.1.13.9.5. JavaScript-based exploits in PDF documents
- 3.11.1.13.9.6. Office and PDF-based malware utilizing dynamic proprietary exploit detection technology
- 3.11.1.13.9.7. “Phishing style” malicious PDF documents leading to both phishing and malware hosting websites
- 3.11.1.13.9.8. PDF documents containing “JavaScript infectors”
- 3.11.1.13.10. Must have unlimited Gateway Anti-Virus (AV) file size protection. Gateway AV engine without file size limitations.
- 3.11.1.13.11. Must have Cloud Anti-Virus (AV) feature to enhance Anti-Virus protection together with Gateway Anti-Virus.
- 3.11.1.13.12. Must be ICSA Labs Advance Threat Defense certified with 100% detection of unknown threats for 6 consecutive quarters from Q1 2021 to Q2 2022
- 3.11.1.13.13. Must be certified with ICSA labs Firewall, Anti-Virus, and Advanced Threat Defense certifications.
- 3.11.1.13.14. Must be NSS labs Recommended Firewall for 6 times or more.
- 3.11.1.13.15. Must be certified with NetSecOpen certification with CVE block rates 99% and above.
- 3.11.1.13.16. Must be capable to block suspicious files until a verdict is found or determined.
- 3.11.1.13.17. Identifies and blocks command and control traffic originating from bots on the local network to IPs and domains that are identified as propagating malware or are known CnC points.
- 3.11.1.13.18. Scans all inbound, outbound, and intra-zone traffic for viruses, Trojans, key loggers, and other malware in files of unlimited length and size across all ports and TCP streams.
- 3.11.1.13.19. Controls custom applications by creating signatures based on specific parameters or patterns unique to an application in its network communications. This helps gain further control over the network.
- 3.11.1.13.20. Granularly allocates and regulates available bandwidth for critical applications (or application categories) while inhibiting nonessential application traffic.
- 3.11.1.13.21. Enforce acceptable use policies and block access to HTTP/HTTPS websites containing information or images that are objectionable or unproductive
- 3.11.1.13.22. Blocks content using any combination of categories. Filtering can be scheduled by time of day, such as during school or business hours, and applied to individual users or groups.
- 3.11.1.13.23. URL ratings are cached locally on the firewall so that the response time for subsequent access to frequently visited sites is only a fraction of a second.

- 3.11.1.13.24. Authentication - The system must support LDAP (multiple domains), XAUTH/RADIUS, SSO, Novell, internal user database, Terminal Services, Citrix, and Common Access Card (CAC).
- 3.11.1.13.25. Superior threat prevention and performance - The system must be qualified as a next-generation firewall (NGFW) and Multi-core hardware architecture.
- 3.11.1.13.26. Network control and flexibility - The system must have a powerful operating system, Application Control Intelligence, Network Segmentations and VLAN's and Wireless Security
- 3.11.1.13.27. Robust Networking Capabilities - The system must have extensive switching and routing capabilities and supports high availability and WAN optimization.
- 3.11.1.13.28. WAN Load Balancing - The system must be capable of Load-balancing multiple WAN interfaces using Round Robin, Spillover, or Percentage methods. Policy-based routing. Creates routes based on protocol to direct traffic to a preferred WAN connection with the ability to fail back to a secondary WAN in the event of an outage.
- 3.11.1.13.29. Encrypted threat prevention - The system must be capable to decrypt and inspect TLS/SSL encrypted traffic on the fly, without proxying, for malware, intrusions, and data leakage, and applies application, URL, and content control policies in order to protect against threats hidden in encrypted traffic.
- 3.11.1.13.30. Intrusion Prevention - The system must be able to leverage signatures and other countermeasures to scan packet payloads for vulnerabilities and exploits, covering a broad spectrum of attacks and vulnerabilities. Protects the network against zero-day attacks with constant updates against the latest exploit methods and techniques that cover thousands of individual exploits.
- 3.11.1.13.31. DDoS/DoS attack protection - The system must be capable of SYN flood protection to provide a defense against DoS attacks using both Layer 3 SYN proxy and Layer 2 SYN blacklisting technologies. Additionally, it protects against DoS/DDoS through UDP/ICMP flood protection and connection rate limiting
- 3.11.1.13.32. Application Intelligence and Control - The system must be able to control applications, or individual applications against a continuously expanding database with thousands of application signatures, to increase network security and enhance network productivity.
- 3.11.1.13.33. Virtual Private Network - The system must be capable of both IPsec VPN for site-to-site connectivity and SSL VPN or IPsec client remote access. High-performance IPsec VPN allows the firewall to act as a VPN concentrator for thousands of other large sites, branch offices, or home offices. Utilizes clientless SSL VPN technology or an easy-to-manage IPsec client for easy access to email, files, computers, intranet sites, and applications from a variety of platforms.
- 3.11.1.13.34. IPv6 - The system must support IPv6
- 3.11.1.13.35. Real-Time Updates - The system must be supported by a 24x7 Global Operations researching security intelligence.
- 3.11.1.13.36. The system must have a complete suite of security services for next-generation firewalls that features Gateway Security, Content Filtering Service, Anti-Spam, 24x7 Support, multiple sandboxing technology, Real-time Deep Memory Inspection technology, and DNS Security.

- 3.11.1.13.37. MFA/OTP - The system must have the capability to integrate the Central Firewall Management system that supports 2-Factor Authentication via mail / MS / Google authenticator.
  - 3.11.1.13.38. REST API Support - The system must be capable to integrate the Central Firewall Management system which facilitates interoperability with 3rd-party management consoles to increase the efficiency in Security Management. The Central Firewall Management system must be able to support RESTful APIs that can automate firewall operations for any managed firewalls/devices like typical day-to-day tasks such as device group and tenant management, audit configurations, performing system health checks, and more.
  - 3.11.1.13.39. Enhanced Support - The system must include email and phone support for customers during local business hours.
  - 3.11.1.13.40. Firmware Upgrades - The system must include firmware upgrades during its warranty period.
  - 3.11.1.13.41. Comprehensive Support - The system must have Global Support that is available 8x5 or 24x7.
  - 3.11.1.13.42. Must be American or European Brand/Standard -The technology or brand must either be American or European for a more Global Standard compliance.
  - 3.11.1.13.43. Standards - TCP/IP, ICMP, HTTP, HTTPS, IPSec, ISAKMP/IKE, SNMP, DHCP, PPPoE, L2TP, PPTP, RADIUS, IEEE 802.3
- 3.11.1.14. SD-WAN Features and Functionalities (Applies to NGFW in all locations)
- 3.11.1.14.1. The system must incorporate multi-WAN transport, load balancing, dynamic path selection, advanced routing, and WAN acceleration that enables distributed enterprise organizations to build, operate and manage secure, high-performance networks across remote sites for the purpose of sharing data, applications, and services using readily available, low-cost public internet services.
    - 3.11.1.14.2. Analytics for end-to-end visibility and control
  - 3.11.1.14.3. Quality of Service (QoS) for the ability to recognize, map, modify, and generate the industry-standard 802.1p and Differentiated Services Code Points (DSCP) Class of Service (CoS) designators.
  - 3.11.1.14.4. With centralized security analytics, logging, and reporting.
  - 3.11.1.14.5. Real-time detection across all logs, Indicators of Compromise (IOC), and detection of advanced threats with deep drill-down capabilities, notification, and reports, predefined or customizable dashboard for single pane visibility
  - 3.11.1.14.6. Enhanced analytics that display bandwidth consumption, SLA metrics, jitter, packet loss, and latency, with real-time monitoring.
  - 3.11.1.14.7. Supports cloud-based network management to streamline SD-WAN provisioning and management.
  - 3.11.1.14.8. Centralized configuration, change management, dashboard, application policies, QoS, security policies, application-specific SLA, active probe configuration, RBAC, multi-tenant, firmware management, life cycle management (deployment, monitoring, maintenance, and upgrading) for all SD-WAN devices.
  - 3.11.1.14.9. Can provide security threat information such as malware signature, malware domain or URL, infected host, threat level, malware category, etc.
  - 3.11.1.14.10. Must be able to provide and monitor secure SD WAN from one console across the network

#### 3.11.1.14.11. Two (2) years support services

#### 3.11.2. Intrusion Prevention System (IPS)

3.11.2.1. Intrusion Prevention - The system must be able to leverage signatures and other countermeasures to scan packet payloads for vulnerabilities and exploits, covering a broad spectrum of attacks and vulnerabilities. Protects the network against zero-day attacks with constant updates against the latest exploit methods and techniques that cover thousands of individual exploits.

3.13.2.2. Two (2) years support services

#### 3.11.3. Web Application Firewall (WAF)

The WAF is intended to protect web-based applications by monitoring, filtering, and blocking malicious traffic. At a minimum, it should deliver the following functionalities:

3.11.3.1. Protects the web and mobile applications from malicious bots

3.11.3.2. Safeguard credentials and sensitive data from theft and abuse

3.11.3.3. Defense against sophisticated application denial-of-service (DoS)

3.11.3.4. Track malicious user attempts

3.11.3.5. Block malicious IP addresses

3.11.3.6. Two (2) years support services

#### 3.11.4. Endpoint Detection and Response (EDR)

The EDR shall secure the entry points of system servers and end-user devices. It shall act as the first line of defense in the university's multi-layered network security. The EDR to be supplied and installed must be able to perform the following, at a minimum:

3.11.4.1. Detect and block malware through deep learning artificial intelligence

3.11.4.2. Detect and block malicious encryption processes

3.11.4.3. Detect and block ransomware

3.11.4.4. Able to stop exploit techniques

3.11.4.5. Able to control and reduce the area and exposure of the attack surface, block malicious websites, and block potentially unwanted applications

3.11.4.6. Detect malicious traffic

3.11.4.7. Able to provide a safe browsing environment

3.11.4.8. Able to perform root cause analysis

3.11.4.9. Automatically removes malware

3.11.4.10. Three (3) Years Subscription

#### 3.11.5. Centralized Security Operation Center

The entirety of the Network, Compute, and Storage resources will be monitored from a centralized SOC. Configure SIEM, SOAR, Sandbox, NDR, Threat Intelligence, and associated tools to provide deep analysis and automation of repeated tasks. Essential APIs shall be required towards integration of various logs, devices for analysis and mitigation. Must come with one (1) year subscription and support services. The solution must be able to handle a minimum of 200GB daily volume of ingestion:

3.11.5.1. Security Information and Event Management (SIEM)

The solution must be a next-generation SIEM platform that reduces enterprise risks by identifying and remediating all attack activities early and precisely, as well as increasing security analyst productivity by leveraging an intelligent and automated SOC platform to deliver maximum cybersecurity protection, efficient

incident detection, and risk mitigation. The minimum specifications are as follows:

- 3.11.5.1.1. The solution must be able to collect amounts of data without limiting the number of devices to collect from.
- 3.11.5.1.2. The software solution must be scalable and capable to accommodate unlimited storage.
- 3.11.5.1.3. The solution design and data must be designed to allow quick access to terabytes of historical data. It should be able to provide very fast and distributed searching.
- 3.11.5.1.4. The solution must be able to put different data types into different logically separated data stores for optimal search performance or data segregation/RBAC purposes.
- 3.11.5.1.5. The solution must provide a view for raw data stored.
- 3.11.5.1.6. The solution must provide NO limit to the number of users in the system, searches, alerts, correlations, reports, and dashboards.
- 3.11.5.1.7. The solution should allow automatic compression of the ingested data.
- 3.11.5.1.8. The solution must be able to:
  - 3.11.5.1.8.1. Collect all types of logs and data from various sources i.e., syslog's, custom/in-house built applications, and database logs
  - 3.11.5.1.8.2. Consolidate all collected logs into a central repository.
  - 3.11.5.1.8.3. Perform logs aggregation and normalization.
  - 3.11.5.1.8.4. Perform log analysis base on searching and reporting.
  - 3.11.5.1.8.5. Analyze and correlate security event.
  - 3.11.5.1.8.6. Send alert to respective personnel regarding security issues based on correlated event
- 3.11.5.1.9. The solution must have integrated threats, incidents, and compliance management.
- 3.11.5.1.10. The solution must be a software-based solution that can be installed in virtualization environments.
- 3.11.5.1.11. The solution must include data collector that is able to send data (log/event) in real time and batch mode.
- 3.11.5.1.12. The proposed solution shall be able to support both agent and agentless-based log collection.
- 3.11.5.1.13. The bidder must provide a letter of support from the product owner.
- 3.11.5.1.14. The proposed solution must be able to do high availability without any additional cost. Please provide evidence and explanation.
- 3.11.5.1.15. The solution must be able for replication to maintain multiple, identical copies of ingested data for data availability, data fidelity, disaster tolerance, and improved search performance
- 3.11.5.1.16. The solution must be capable in performing Server and Network Infrastructure Monitoring out of the box.
- 3.11.5.1.17. The solution must be capable in performing Application Monitoring out of the box.
- 3.11.5.1.18. The solution must be able to mask (e.g., password, credit card number) the data before storing it.
- 3.11.5.1.19. The solution must be able to maintain the original timestamps for each event while handling timestamps from different time zones
- 3.11.5.1.20. The solution must provide functionalities to perform data masking during search time level
- 3.11.5.1.21. The solution must support Geo Location Public IP look up

- 3.11.5.1.22. The proposed solution does not require RDBMS storage to store data
- 3.11.5.1.23. The solution must automatically monitor for known bad events, and use sophisticated correlation via search, to find known risk patterns such as brute force attacks, data leakage, and even application-level fraud.
- 3.11.5.1.24. The solution must be able to detect compromised hosts associated with advanced threats and malware infections
- 3.11.5.1.25. The solution must be able to find activities and events associated with successful attacks and malware infections
- 3.11.5.1.26. The solution must be able to help security analysts conduct compromise and breach assessments.
- 3.11.5.1.27. Ability to monitor security events outside machine data (e.g., monitor security events/threats that have been posted in the Internet)
- 3.11.5.1.28. Support customized and in-house security logs and deliver on-the-fly correlation for the logs
- 3.11.5.1.29. The proposed solution shall provide advance correlation capabilities to detect security incidents such as:
  - 3.11.5.1.29.1. DDOS attacks
  - 3.11.5.1.29.2. Worm outbreak
  - 3.11.5.1.29.3. Port Scan
  - 3.11.5.1.29.4. SQL injection
  - 3.11.5.1.29.5. Brute Force attack
- 3.11.5.1.30. The solution must be able to scan assets for vulnerability
- 3.11.5.1.31. The solution must be able to correlate asset info with threat and vulnerability data
- 3.11.5.1.32. The solution must passively collect asset information and network flow information
- 3.11.5.1.33. The solution must issue an alert upon detection of blacklisted external IP
- 3.11.5.1.34. The solution must consolidate threats by normalization, reputation, knowledge, and payload of the triggering event
- 3.11.5.1.35. The solution must include a built-in alert manager for bad events generated
- 3.11.5.1.36. The solution must provide a full packet capture function for diagnostics
- 3.11.5.1.37. The solution must have file integrity monitoring
- 3.11.5.1.38. The solution must be fully customizable when creating warnings or alarms for high risks events
- 3.11.5.1.39. The solution provides network visibility from wire data that contains critical insights about payloads, session information, errors, DNS, etc.
- 3.11.5.1.40. The solution must provide ready-to-use apps, utilities, and add-ons in providing capabilities ranging from monitoring security and advanced threat management and more.
- 3.11.5.1.41. The proposed solution shall be able to capture the new event from source devices without reading through the entire data from the beginning.
- 3.11.5.1.42. The proposed solution shall be able to provide a search function that supports simple Boolean-style patterns search as well as complex regular expressions.
- 3.11.5.1.43. The proposed solution shall be able to allow the analyst to build queries using a combined search method. A single query may contain keywords, field-based conditions, and regular expressions.

- 3.11.5.1.44. The proposed solution must be able to perform sub search regarding the security on top of the current search
- 3.11.5.1.45. The solution must be able to monitor Unknown Threats
- 3.11.5.1.46. The solution must be capable to correlate and identify application performance issues due to security incidents (e.g. DDOS attacks, unauthorized access to the system that causes application performance issues.).
- 3.11.5.1.47. The solution can provide visual reporting that can convert the security issues to business risk/loss and impact.
- 3.11.5.1.48. The proposed solution must be able to correlate system metrics and events data with data from other technology tiers
- 3.11.5.1.49. The proposed solution must be able to find causal links between application performance issues and the underlying OS, hypervisor, storage, network, and server infrastructure
- 3.11.5.1.50. The solution must be able to discover capacity- constrained or idle systems
- 3.11.5.1.51. The proposed solution must be able to ingest all data (users, applications) and make them available for use—monitoring, alerting, investigation, ad hoc searching
- 3.11.5.1.52. The solution must have a customizable widget on the dashboard
- 3.11.5.1.53. The solution must be a Web Based GUI with HTTPS protocol only
- 3.11.5.1.54. The solution must have a wizard to add additional hosts or subnets
- 3.11.5.1.55. The solution must provide flexibility to integrate with third-party reporting tools and portals
- 3.11.5.1.56. The solution must use machine learning-based algorithms. Please provide some use cases and evidence that the app is using machine learning-based algorithms
- 3.11.5.1.57. The solution must provide pre-packaged Intelligence Dashboard for ISO 27001.
- 3.11.5.1.58. The solution must provide integration with an advanced security advisory module.
- 3.11.5.1.59. The solution must provide support data integration for Risk Analytic
- 3.11.5.1.60. The solution must provide support for Risk and Cyber Threat Advisory Alert
- 3.11.5.1.61. The solution must provide Managed Services for the App with an ongoing unlimited dashboard and correlation query update
- 3.11.5.1.62. The solution must provide a pre-packaged Intelligence Module for a database system, like Informix, MYSQL, MySQL, DB2, Oracle
- 3.11.5.1.63. The solution must provide a pre-packaged Intelligence Module, Dashboard, and Report for Windows
- 3.13.5.1.64. The solution must be configured to deploy the existing University’s SAN storage environment.
- 3.11.5.1.65. The solution must come with the integration with at least five open-source threat intelligence.
- 3.11.5.1.66. The solution must have a primary management console consisting of an indexer and a dashboard
- 3.11.5.1.67. The solution must have an Intelligent business analysis module
- 3.11.5.1.68. The solution must have a risk and compliance advisory module

### 3.11.6. Security Orchestration, Automation, and Response (SOAR)

The SOAR solution must be able to effectively and quickly allow Security teams to respond to cyber threats using pre-defined playbooks and pre- built integrations to security, IT, and productivity products ensuring identified cyberthreat are mitigated appropriately and consistently. The SOAR solution must comply with the following minimum specifications:



- 3.11.6.1. The Solution should be able to integrate various technologies including SIEM, email security, case management, Firewall, Threat Intelligence Feeds, and Active Directory.
- 3.11.6.2. The solution must automatically trigger playbooks with predefined workflows that to perform a variety of instructions that could include executing scripts or integrating with other tools in the environment.
- 3.11.6.3. The solution must have the ability to threat hunt and automate the threat hunt and apply to SOAR
- 3.11.6.4. The Solution must have a built-in case management or can integrate to 3rd party case management
- 3.11.6.5. The solution must have the option to create user-defined playbooks with customized workflows
- 3.11.6.6. The Solution must have already prebuilt templates for general reporting and compliance reports

### 3.11.7. Sandboxing

The Sandbox solution is designed to assist the security team in detecting malicious files, such as polymorphic and disguised threats designed for undetectable targeted attacks, and to provide continuous maximum protection performance against rapidly evolving advanced threats. It should meet the following minimum requirements:

- 3.11.7.1. The solution must provide total protection from APT attack via network, and web.
- 3.11.7.2. The solution should provide on-premise Signatureless Detection Capability.
- 3.11.7.3. The solution must support Event notification in XML, JSON or TEXT formats.
- 3.11.7.4. The solution must be able to support SNMP.
- 3.11.7.5. The solution shall be able to address all Alert Types Tied to phases of the Infection Life Cycle.
- 3.11.7.6. The solution must be able to categories Incident Severity attached to Alerts.
- 3.11.7.7. The solution should support Inline blocking mode (not TCP Reset).
- 3.11.7.8. The solution should support integration with Forensic Tools.
- 3.11.7.9. The solution must be able to support the network interface speed 1Gbps, 10Gbps.
- 3.11.7.10. The solution should have the ability to report when DATA THEFT occurs.
- 3.11.7.11. The solution should support the ability to link to Threat Intelligence in Alert.
- 3.11.7.12. The solution should be able to detect threats targeting various Operating Systems.
- 3.11.7.13. The solution should be able to identify threats in any file type. The bidder must list down the file type supported.
- 3.11.7.14. The solution must support Intelligent Platform Management Interface (IPMI) Support.
- 3.11.7.15. The solution must support Authentication Authorization Accounting (AAA).
- 3.11.7.16. The solution must be able to provide Event Correlation across multiple Appliance types.
- 3.11.7.17. The solution should have consolidated security content downloads for managed appliances.
- 3.11.7.18. The solution must provide threat intel updates
- 3.11.7.19. The solution must support community-based intel sharing.
- 3.11.7.20. The solution must provide attribution of alerts to known threat actors.
- 3.11.7.21. The solution must provide description of the malware family.
- 3.11.7.22. The solution must have the ability to perform vulnerability and kill chain / weakest link Analysis.
- 3.11.7.23. The solution should provide In-depth analysis and reporting on threat actor trends.
- 3.11.7.24. The solution should provide on-demand analysis of IPs and Domains.

- 3.11.7.25. The proposed solution must integrate with the SIEM security solution via the security intelligence adapter and application.
- 3.11.7.26. An update of sandboxing can be done online without manual intervention. Sandboxing is to be built, maintained, and delivered by the product bidder/vendor.
- 3.11.7.27. Sandboxing based on Full system emulation must be able to detect multi-stage attacks where the exploit which split into multiple objects
- 3.11.7.28. Sandbox must use full-system emulation to analyze objects to prevent evasion techniques by means use of Environment Fingerprinting, Network Fingerprinting algorithms, and identification of time-based actions;
- 3.11.7.29. The analysis engine must be able to reveal evasion techniques used by the malware such as stalling loops and environmental checks;
- 3.11.7.30. It must be possible to install the sensor on a Virtual Component
- 3.11.7.31. It must be possible to install all the components of the architecture on standard servers (certified by the vendor) and not on dedicated appliances. The bidder/vendor must provide full support to the platform.
- 3.11.7.32. In order to ensure a granular analysis of the samples, identifying unknown/0-Day attacks, the analysis engine must be able to reproduce the malware execution on a machine emulator reproducing a virtual hardware, including an emulated CPU. The emulated CPU must perform processor- level code emulation, i.e., it must run directly the malicious code, which, hence, must not be executed on the hardware CPU (i.e., the host CPU of the emulated system).

#### 3.11.8. Threat Intelligence

Threat intelligence feeds are an important component of security infrastructure because they provide information on attacks such as zero- day attacks, malware, botnets, and other security threats, which helps identify and prevent security breaches. This solution integrates with SIEM to provide a better understanding of emerging cybersecurity threats such as zero-day threats, advanced persistent threats, and exploits. It must meet the following minimum requirements:

- 3.11.8.1. The solution must come with the integration with at least five open-source threat intelligence.
- 3.11.8.2. The solution should support the ability to link to the Threat Intelligence in Alert.
- 3.11.8.3. The solution must provide threat intel updates from bidder platforms.
- 3.11.8.4. The solution must continuously collect, aggregate, prioritizes, and distribute feeds in near real-time to SIEM and UEBA for data enrichment and enhance threat detection

#### 3.11.9. Network Detection and Response (NDR)

The NDR solution is designed to provide full visibility of all network behaviors (network devices, endpoints, applications, and users) with advanced auto-correlation capabilities to detect threats and provide a more efficient and accurate view of alerts. The NDR solution can also respond to identified threats automatically, such as sending commands to FW or EDR, or manually, such as threat hunting or incident investigation. It must meet the following minimum specifications:

- 3.11.9.1. Architecture has to be very extensive in network traffic analysis module using both Supervised and Unsupervised learning
- 3.11.9.2. Provides tracking of the interaction between devices, services, and applications that are running on your network in real-time and historically.
- 3.11.9.3. The solution must be capable to do comprehensive network traffic analysis which includes:
  - 3.11.9.3.1 Network performance statistics

3.11.9.3.2 Server performance statistics

3.11.9.3.3. Application detection and performance monitoring:

3.11.9.3.3.1. Top sources & Top destinations

3.11.9.3.3.2. Asset application performance

3.11.9.3.3.3. Application processing time

3.11.9.3.3.4. Network interactions with asset

3.11.9.3.3.5. HTTP statistics

3.11.9.3.3.6. DNS statistics

3.11.9.3.4. Asset Discovery and Statistics

3.11.9.3.4.1. IP address

3.11.9.3.4.2. Device Manufacturer

3.11.9.3.4.3. Application Services

3.11.9.3.4.4. Time discovered and last seen

3.11.9.3.4.5. Asset tag(s) and description

3.11.9.3.5. Server certificate visibility

3.11.9.3.6. The solution must integrate to various technologies including SIEM, SOAR, Firewall, Sandbox, and Active Directory for response

3.11.10. User and Endpoint Behavior and Analytics (UEBA)

The UEBA solution is designed for discovering new assets automatically and constantly, profiling users, and identifying their behavior and risk. It must meet the following minimum specifications:

- 3.11.10.1. The solution must come with user behavior analytics that collect user information from Active Directory
- 3.11.10.2. The solution must come with entity behavior analytics that collect IP information from network traffic.
- 3.11.10.3. The solution must track changes and secure your environment by monitoring for suspicious activity, user role changes, unauthorized access and more.
- 3.11.10.4. The solution, based on observed security events and asset risk profile, assigns a risk score.
- 3.11.10.5. The solution must discover assets dynamically across networks, endpoints, and cloud environments.

- 3.11.10.6. The solution must use either host names, MAC addresses, or IP addresses to uniquely identify assets.
  - 3.11.10.7. The solution must collect and fuse user-relevant data from multiple data sources across the security infrastructure automatically.
  - 3.11.10.8. The solution's Machine learning must be used to enable sophisticated behavioral analytics in the solution.
  - 3.11.10.9. The solution without any rules or signatures, must detect bad behavior.
  - 3.11.10.10. The solution for each detected and identified for asset, must provide a kill chain view of security events.
  - 3.11.10.11. The solution must track threats based on the user rather than the threat type.
- 3.11.11 Supply delivery and installation of Network Security System and must consist of the following:
- 3.11.11.1 1 license Next-Generation Firewall (NGFW) with built-in and full-featured Software-Defined Wide Area Network (SD-WAN)
  - 3.11.11.2 1 license Intrusion Prevention System (IPS)
  - 3.11.11.3 250 license Endpoint Detection and Response (EDR)
  - 3.11.11.4 1 license Security Information and Event Management (SIEM)
  - 3.11.11.5 1 license Security Orchestration, Automation and Response (SOAR)
  - 3.11.11.6 1 license Sandboxing
  - 3.11.11.7 1 license Threat Intelligence
  - 3.11.11.8 1 license Network Detection and Response (NDR)
  - 3.11.11.9 1 license User and Endpoint Behavior and Analytics (UEBA)
  - 3.11.11.10 1 lot Administration Training
  - 3.11.11.11 1 lot Programming and Configuration Services
  - 3.11.11.12 1 lot Deployment and Implementation
  - 3.11.11.13 Two (2) years warranty and support services

### 3.12 Campus Network

- 3.12.1. Core/Distribution Switches minimum specifications:
- 3.12.1.1. 24-port 1/10/25G
  - 3.12.1.2. 4-port 40/100G
  - 3.12.1.3. Switching Capacity: Up to 2.0 Tbps
  - 3.12.1.4. Forwarding rate: Up to 1 Bpps
  - 3.12.1.5. MTBF: 336,780 hrs
  - 3.12.1.6. Platform features:
  - 3.12.1.7. Software Maintenance Upgrade
  - 3.12.1.8. Stateful Switchover (SSO)
  - 3.12.1.9. Secure Boot
  - 3.12.1.10. MACsec Encryption (256-bit AES-GCM)
  - 3.12.1.11. Enterprise QoS
  - 3.12.1.12. Shaping/Bandwidth
  - 3.12.1.13. Routing Information Protocol version 2 (RIPv2), and next generation
  - 3.12.1.14. Open Shortest Path First version 2 (OSPFv2), and OSPFv3
  - 3.12.1.15. Enhanced Interior Gateway Routing Protocol (EIGRP), and EIGRPv6
  - 3.12.1.16. Border Gateway Protocol Version 4 (BGPv4), and BGPv6
  - 3.12.1.17. L3 Routed Sub-Interfaces
  - 3.12.1.18. Virtual eXtensible LAN (VXLAN)
  - 3.12.1.19. Software-Defined Access (SD-Access)
  - 3.12.1.20. Bluetooth Ready
  - 3.12.1.21. Out of Band Device Mgmt
  - 3.12.1.22. Field-replaceable fan-tray units
  - 3.12.1.23. 4-fans
  - 3.12.1.24. Redundant PSU

- 3.12.1.25. Perpetual licensing
- 3.12.1.26. Quantity Requirement: Two (2) Units

3.12.2. Structured Cabling Works:

- 3.12.2.1. The winning bidder shall supply, install and test UTP and Fiber Optic Cables and all necessary materials essential for various network nodes as defined in this Terms of Reference
- 3.12.2.2. The winning bidder must provide a network node schedule that basically tabulates the various network nodes required

3.12.3. Five (5) Access POE Switches (24 ports) with the following minimum specifications:

- 3.12.3.1. 24 ports full PoE+ (8 mGig ports up to 10G, 16 ports up to 1G)
- 3.12.3.2. Modular uplink options
- 3.12.3.3. Switching Capacity: 352Gbps
- 3.12.3.4. Switch capacity with stacking: 532Gbps
- 3.12.3.5. Forwarding Rate: 261.9 Mpps
- 3.12.3.6. Forwarding rate with stacking: 395Mpps
- 3.12.3.7. DRAM: 4G
- 3.12.3.8. Flash: 4G
- 3.12.3.9. IP unicast routing protocols (including static, Routing Information Protocol Version 1 [RIPv1], RIPv2, RIPv6, and Open Shortest Path First [OSPF], Routed Access)
- 3.12.3.10. Advanced IP unicast routing protocols (including Full [OSPF], Enhanced Interior Gateway Routing Protocol [EIGRP], and Intermediate System-to-Intermediate System Version 4 [IS-ISv4])
- 3.12.3.11. MTBF: 353,960 hrs
- 3.12.3.12. Redundant PSU
- 3.12.3.13. SD-Access
- 3.12.3.14. Bluetooth ready
- 3.12.3.15. Perpetual licensing
- 3.12.3.16. Quantity Requirements: Five (5)

3.12.4. Indoor WiFi Access Points (APs)

- 3.12.4.1. 802.11n version 2.0 (and related) capabilities
  - 3.12.4.1.1. 4x4 MIMO with four spatial streams
  - 3.12.4.1.2. 802.11n and 802.11a/g beamforming
  - 3.12.4.1.3. 20- and 40-MHz channels
  - 3.12.4.1.4. PHY data rates up to 890 Mbps (40 MHz with 5 GHz and 20 MHz with 2.4 GHz)
- 3.12.4.2. 802.11ac
  - 3.12.4.2.1. 4x4 downlink MU-MIMO with four spatial streams
  - 3.12.4.2.2. MRC
  - 3.12.4.2.3. 802.11ac beamforming
  - 3.12.4.2.4. 20-, 40-, 80-, and 160-MHz channels
  - 3.12.4.2.5. PHY data rates up to 3.47 Gbps (160 MHz with 5 GHz)
- 3.12.4.3. 802.11ax
  - 3.12.4.3.1. 4x4 downlink MU-MIMO with four spatial streams
  - 3.12.4.3.2. Uplink/downlink OFDMA
  - 3.12.4.3.3. TWT

- 3.12.4.3.4. BSS coloring
- 3.12.4.3.5. MRC
- 3.12.4.3.6. 802.11ax beamforming
- 3.12.4.3.7. 20-, 40-, 80-, and 160-MHz channels
- 3.12.4.3.8. PHY data rates up to 5.38 Gbps (160 MHz with 5 GHz and 20 MHz with 2.4 GHz)

#### 3.12.4.4. System Memory

- 3.12.4.4.1. 2048 MB DRAM
- 3.12.4.4.2. 1024 MB flash

#### 3.12.4.5. Ports

- 3.12.4.5.1. 1x 100, 1000, 2500 Multigigabit Ethernet (RJ-45) – IEEE 802.3bz
- 3.12.4.5.2. Auto-MDIX support
- 3.12.4.5.3. Management console port (RJ-45)
- 3.12.4.5.4. USB 2.0 @ 4.5W

#### 3.12.4.6. Deployment

- 3.12.4.6.1. Compatible with Wireless LAN Controller C9800

#### 3.12.4.7. Quantity Requirements: Thirty (30)

### 3.12.5. Outdoor WIFI Access Points (APs)

#### 3.12.5.1. Interfaces

- 3.12.5.1.1. 1x 100/1000/2500 BASE-T (Ethernet) uplink interface
- 3.12.5.1.2. 1x Gigabit Ethernet SFP
- 3.12.5.1.3. Management console port (RJ-45)

#### 3.12.5.2. Integrated OMNI Directional antenna

#### 3.12.5.3. Multigigabit Ethernet support

#### 3.12.5.4. Environmental

- 3.12.5.4.1. Nonoperating (storage) temperature: -40° to 185°F (-40° to 85°C)
- 3.12.5.4.2. Nonoperating altitude test: 17,000 ft (5182 m)
- 3.12.5.4.3. Operating temperature: -40° to 149°F (-40° to 65°C) with no solar loading, -40° to 131°F (-40° to 55°C) with solar loading
- 3.12.5.4.4. Operating altitude test: 17,000 ft (5182 m)
- 3.12.5.4.5. Operating humidity: 0% to 100% (condensing)
- 3.12.5.4.6. IEC 60529 Ingress Rating: IP66/IP67
- 3.12.5.4.7. Wind resistance up to 100 mph (161 km/h) sustained winds and 165 mph (266 km/h) wind gusts
- 3.12.5.4.8. Icing protection: MIL-STD-810F, 13mm 13mm (0.5 in.)
- 3.12.5.4.9. Corrosion: NEMA 250-2008 (600 hrs. salt, 1200 hrs. mixed gas)
- 3.12.5.4.10. Solar radiation: EN 60068-2-5 (1120 W/m<sup>2</sup>)
- 3.12.5.4.11. Vibration: MIL-STD-810, Method 514.4

#### 3.12.5.5. Deployment

- 3.12.5.5.1. Compatible with Wireless LAN Controller C9800

#### 3.12.5.6. Quantity Requirements: Five (5)

### 3.12.6. WLAN Controller Specifications:

- 3.12.6.1. The controller shall support Fixed uplinks 2x 10G/Multigigabit copper or 2x 10G/Multigigabit fiber
- 3.12.6.2. The controller shall support 5 Gbps tunneling capacity
- 3.12.6.3. The controller shall support up to 500 APs and 10,000 clients
- 3.12.6.4. The controller shall support patching for Wireless Controller
- 3.12.6.5. The controller shall support patching for Wireless AP
- 3.12.6.6. The controller shall support new AP hardware without need for upgrading/rebooting controller
- 3.12.6.7. The controller shall support Encrypted Threat Analytics
- 3.12.6.8. The controller shall support Web Content Filtering
- 3.12.6.9. The controller shall support assurance use cases
- 3.12.6.10. The controller shall support automation for multi-site management
- 3.12.6.11. The controller shall support location services
- 3.12.6.12. The controller shall support multiple PSK keys
- 3.12.6.13. The controller shall support various programmability and telemetry using NETconf, RESTconf, YANG model etc.
- 3.12.6.14. The controller shall support public cloud deployment with cloud "Marketplace" presence
- 3.12.6.15. High Availability mode shall support controller inline data plane mode as well as local switching mode and Mesh mode
- 3.12.6.16. High Availability mode shall allow geographically dispersed installation between Controllers
- 3.12.6.17. The controller failover shall not trigger client de- authentication and re-association
- 3.12.6.18. Heartbeat interval shall not be longer than 100msec
- 3.12.6.19. The controller shall support hot WLC software patching for fixing bugs
- 3.12.6.20. The controller shall support hot AP software patching for fixing bugs
- 3.12.6.21. The controller shall support new AP hardware without need for upgrading entire controller software.
- 3.12.6.22. The controller shall support rolling AP upgrade
- 3.12.6.23. The controller shall support rolling AP upgrade without need for clustering
- 3.12.6.24. The redundant Controller shall sync Access Point and Client Status, including DHCP IP lease status
- 3.12.6.25. "Access Point shall be able to proactively distribute Client connection before and after association
- 3.12.6.26. and tracking client condition in real time using data packet RSSI "
- 3.12.6.27. The controller shall support standard-based, secure AP- Controller data & control protocol like CAPWAP. protocol that has known vulnerability like PAPI cannot be used.
- 3.12.6.28. The controller shall support Inter-Controller Wireless Roaming
- 3.12.6.29. The controller shall maintain per-user Application usage and shall be able to export it for network analytics.
- 3.12.6.30. The controller shall support Multi Languages options from embedded GUI Management
- 3.12.6.31. The controller shall provide per-Client Connection Scoring and provide reasoning of Client Connection Score
- 3.12.6.32. The controller shall support Cellular offload using IPv6 tunneling to Mobile Core network
- 3.12.6.33. The controller shall be able to support multiple RF Management profile per group of APs, including Transmit Power Control and Dynamic Channel Assignment on both 2.4GHz and 5Ghz
- 3.12.6.34. The controller shall be able to identify and avoid interferers with network performance impact analysis report

- 3.12.6.35. The controller shall support optimized, automatic channel width (20~160Mhz) selection over 5GHz, 802.11ac
- 3.12.6.36. The solution shall provide Mobile App customization for admins
- 3.12.6.37. The solution shall provide Day 0 provision workflows
- 3.12.6.38. The solution shall provide protocol support like mDNS, uPnP, LLMNR, Link-Local
- 3.12.6.39. The Solution shall provide simple, intuitive Device Monitoring
- 3.12.6.40. The solution shall provide ease of device registration like Mobile app camera scanning, Home network scan, image scan and manual entry
- 3.12.6.41. The solution shall provide option for sharing device with invite
- 3.12.6.42. The controller shall support per-user and per-WLAN based application recognition and control that throttle usage by rate-limiting
- 3.12.6.43. The controller application recognition technology shall support exporting to 3rd party compatible format, such as NetFlow v9
- 3.12.6.44. The controller shall provide policy-based mDNS gateway including Chromecast gateway
- 3.12.6.45. The controller shall support new application signatures without upgrading controller software
  
- 3.12.6.46. The controller shall provide OS-level VoIP integration with Mobile Device, provides FMC (Fixed Mobile Convergence) solution
- 3.12.6.47. Access Point shall support Apple FastLane
- 3.12.6.48. Access Point shall be able to support 802.11r-based fast roaming and generic WPA2 devices under same SSID
- 3.12.6.49. The controller shall be able to prioritize Skype4Business call as a per-user Application prioritization policy.
- 3.12.6.50. Access Point shall defer off channel scanning upon activity of high priority traffic
- 3.12.6.51. Access Point should support Load-based Call Admission Control
- 3.12.6.52. The controller shall provide options to choose trustworthy QoS tag from multiple sources (DSCP, UP) and maintains priority tag over end-to-end network
- 3.12.6.53. The controller shall provide Device Profiling using multiple profiling methods to reduce false-detection
- 3.12.6.54. "The system shall provide secure onboarding service for both employee and guest based on standard-based security protocol
- 3.12.6.55. Proposed system shall not use public cloud as user data repository"
- 3.12.6.56. The controller shall be able to embedded custom web portal page (HTML) to fully customize user experience without additional cost or extra box
- 3.12.6.57. The controller shall provide rule-based rogue classification and automatically run rogue mitigation action
- 3.12.6.58. The controller shall be able to detect employee device connection to Rogue Access Point and contain it automatically
- 3.12.6.59. The controller shall support Content Security using DNS integration, Web Classification shall be fully customizable
- 3.12.6.60. The system shall support control plane encryption on both IPv4 and IPv6
- 3.12.6.61. The Controller's image upgrade shall be done through secure, encrypted transport
  
- 3.12.6.62. The controller shall be able to provide unique pre-shared keys to the devices that do not support the 802.1x security protocol
- 3.12.6.63. The controller shall provide FIPS-140/CC certification, including certification pending
- 3.12.6.64. The controller shall support Identity PSK for on boarding
- 3.12.6.65. The controller shall support Umbrella integration
- 3.12.6.66. The controller shall support identification & mitigation of threats inside encrypted traffic
- 3.12.6.67. The controller shall support mapping of specific VLANs to single SSID, depending on Access Point location and user
- 3.12.6.68. "The controller shall support automatic VLAN assignment per SSID to load-



balance user connection.

- 3.12.6.69. assigned VLAN pool shall be same as number of available VLAN in the system"
- 3.12.6.70. The system shall support monitoring and provisioning from Mobile App, supporting iOS and Android
- 3.12.6.71. The controller shall support packet fragmentation between Access Point and controller communication
- 3.12.6.72. The controller shall provide concentrator feature for all of telecommuter user and business traveler
- 3.12.6.73. The controller shall not have fixed regulatory domain setup to maintain single inventory for global deployment
- 3.12.6.74. The controller shall display the client-side network information such as client-RSSI, dis-association reason, etc.

3.12.6.75. The controller shall be able to display Wi-Fi 6 dedicated Dashboard

3.12.6.76. Quantity Requirements: Two (2)

3.12.7 Supply delivery and installation of Campus Network and must at least consist of the following:

- 3.12.7.1 2 units Distribution switches 24 port, 10G
- 3.12.7.2 5 units PoE Switch 24 ports 10G
- 3.12.7.3 30 units Wifi Access Points (Indoor)
- 3.12.7.4 5 units Wifi Access Points (Outdoor)
- 3.12.7.5 2 units WLAN Controller
- 3.12.7.6 5 units Data Cabinet
- 3.12.7.7 5 units Uninterruptable Power Supply 1kva
- 3.12.7.8 5 licenses 24-Port PoE Switch License (5 years)
- 3.12.7.9 35 licenses Software License for Wifi Access Points (5 years)
- 3.12.7.10 1 lot Configuration and activation
- 3.12.7.11 1 lot Installation and structured cabling
- 3.12.7.12 10 pax Administration Training
- 3.12.7.13 Two (2) years warranty and support services

### 3.13 Data Center Compute Nodes

The winning bidder shall provide all the servers and storage appliances for the hosting of all systems and applications as defined in this Terms of Reference. Must have three (3) years support services.

#### 3.13.1. Data Center Compute System

Three (3) Application Servers with licensed operating system minimum specifications as follows:

- 3.13.1.1. Processor: Dual processor with at least 2.3Ghz, 40C/80T, 11.2GT/s, 60M Cache, Turbo, HT (270W) DDR4-3200
- 3.13.1.2. Memory: 1TB RAM
- 3.13.1.3. Storage: 2x800GB SSD SAS ISE Mix Use 12Gbps (RAID 1) and 2x 7.68TB SSD SAS ISE Read Intensive 12Gbps
- 3.13.1.4. Disk Controller: RAID 0, 1, 10, 5 or 50
- 3.13.1.5. Network ports: 2x Dual Ports 25GbE with optics and 1x Dual Ports 1GbE
- 3.13.1.6. Fiber Channel (FC Card): 2x DP FC32
- 3.13.1.7. Must have N+1 Fan redundancy
- 3.13.1.8. Must have Dual Redundant Power Supply
- 3.13.1.9. Operating System: Linux Enterprise (Licensed copy)
- 3.13.1.10. Warranty: Onsite services (36 months), Hard drive warranty (36 months)

3.13.2. Data Nodes consisting of Three (3) Sets of Rack Data Servers with licensed operating system(Linux Cluster):

- 3.13.2.1. Processor: Dual processor with at least 2.3Ghz, 40C/80T, 11.2GT/s, 60M Cache, Turbo, HT (270W) DDR4-3200
- 3.13.2.2. Memory: 1TB RAM
- 3.13.2.3. Storage: 2x800GB SSD SAS ISE Mix Use 12Gbps (RAID 1) and 2x 7.68TB SSD SAS ISE Read Intensive 12Gbps.
- 3.13.2.4. Disk Controller: RAID 0, 1, 10, 5 or 50
- 3.13.2.5. Network ports: 2x Dual Ports 25GbE with optics and 1x Dual Ports 1GbE
- 3.13.2.6. Fiber Channel (FC Card): 2x DP FC32
- 3.13.2.7. Must have N+1 Fan redundancy
- 3.13.2.8. Must have Dual Redundant Power Supply
- 3.13.2.9. Operating System: RHEL Ent. (Virtual DC) (Licensed copy)
- 3.13.2.10. Warranty: Onsite services (36 months), Hard drive warranty (36 months)

3.13.3. GPU Nodes consisting of two (2) Bare-Metal Facial Recognition Servers with licensed operating system, with minimum specifications as follows:

- 3.13.3.1. Processor: At least 2x 64Cores @ 2.45Ghz
- 3.13.3.2. Memory: 512GB RAM
- 3.13.3.3. Storage: 2x 400GB SSD (RAID1) and 6x 4TB (R5) configured.
- 3.13.3.4. Disk Controller: RAID 0, 1, 10, 5 or 50
- 3.13.3.5. Network ports: 2x Dual Ports 25GbE with optics
- 3.13.3.6. GPU: 3x 16GB
- 3.13.3.7. PCIe slots: Gen4
- 3.13.3.8. Must have N+1 Fan redundancy
- 3.13.3.9. Must have Dual Redundant Power supply
- 3.13.3.10. Operating System: RHEL Ent. (Licensed copy)

3.13.4. Data Center Virtualization Software Licenses for Server Nodes with licensed operating system the following minimum specifications:

- 3.13.4.1. Must support VM-aware storage
- 3.13.4.2. Must support API and Policy Driven Storage Capabilities
- 3.13.4.3. Must support for 4K Native Storage
- 3.13.4.4. Must support Persistent Memory
- 3.13.4.5. Must support Single Reboot
- 3.13.4.6. Must support Quick boot
- 3.13.4.7. Must support Live Migration of Workloads
- 3.13.4.8. Must Protect VM and Data
- 3.13.4.9. Must support Virtual TPM 2.0
- 3.13.4.10. Must support FIPS 140-2 Compliance
- 3.13.4.11. Support for MSFT VBS
- 3.13.4.12. Must support Ensure System Uptime
- 3.13.4.13. Must support Share Data Center Resources
- 3.13.4.14. Must support Endpoint Security
- 3.13.4.15. Must support Fault Tolerance up to 8vcpu
- 3.13.4.16. Must support Per-VM Enhanced VM migration Compatibility
- 3.13.4.17. Must support Instant Clone
- 3.13.4.18. Must support Proactive High Availability
- 3.13.4.19. Must support VM-level Encryption
- 3.13.4.20. Must support Hypervisor Integrated Containers
- 3.13.4.21. Must support Centralized Network Management
- 3.13.4.22. Must support Load Balancing

- 3.13.4.23. Must support Prioritize Resources to Virtual Machines
- 3.13.4.24. Must be OEM license

3.13.5 Supply delivery and installation of Data Center Compute Nodes and must at least consist of the following:

- 3.13.5.1 2 units Intelligent Modular Uninterruptable Power Supply 250kva
- 3.13.5.2 4 units Power Module 50kva
- 3.13.5.3 1 units BCB Box, 250kva
- 3.13.5.4 4 sets CRV4 Thermal Management Solutions
- 3.13.5.5 20 10 units Server Rack, 42U x 600 width x 1200-dimension, front single & rear split mesh door, with side panels, RAL7021 black, flat pack into 5 cartons
- 3.13.5.6 1-unit RDU-THUB Sensor Extension Module
- 3.13.5.7 2 sets IRM-TIDD - 3rd Party Device Driver Development (Modbus /SNMP)
- 3.13.5.8 4 units M6 Rack, Blade Main Logic Board
- 3.13.5.9 7 units M6 Rack without CPU memory drive 1U with Small Form Factor 10Hard Disk Drive backplane
- 3.13.5.10 4 units Integrated Management Controller
- 3.13.5.11 7 units 12G Serial Attached SCSI (SAS) Redundant Array of Independent Disks (RAID) Controller with 4GB Flash-Backed Write Cache (FBWC) (16 drive) with 1U bracket
- 3.13.5.12 8 units QLogic 2x32 Gigabit Fibre Channel (GFC) Gen 6 Enhanced Peripheral Component Interconnect Express (PCIe) Host Bus Adapter (HBA)
- 3.13.5.13 2 units Windows Server 2022 Data Center (16 Cores/Unlimited Virtual Machines)
- 3.13.5.14 13 units Advanced Micro Devices (AMD) 3.0GHz 7313 155W 16C/128MB Cache Double Data Rate 4th Generation (DDR4) 3200MHz
- 3.13.5.15 7 units Voice Interface Card (VIC) 15428 Quad Port 10 25 50G MLOM
- 3.13.5.16 66 units 32GB Registered Dual Inline Memory Module (RDIMM) SRx4 3200 (16Gb)
- 3.13.5.17 4 units 240GB 2.5in M.2 Serial Advanced Technology Attachment (SATA) Micron G1 Solid State Drive (SSD)
- 3.13.5.18 12 units 1.9TB 2.5-inch Enterprise Value 6G Serial Advanced Technology Attachment (SATA) Solid State Drive (SSD)
- 3.13.5.19 6 units NVIDIA T4 Peripheral Component Interconnect Express (PCIe) 75W 16GB
- 3.13.5.20 14 units 25 Gigabit Ethernet Small Form-Factor Pluggable (25GBASE-SR SFP) Module
- 3.13.5.21 14 units 3.8TB 2.5in Enterprise Value 6G Serial Advanced Technology Attachment (SATA) Micron G1 Solid State Drive (SSD)
- 3.13.5.22 20 sets Redetec with Point detectors: Novec1230 suppression for 3.0m<sup>3</sup>
- 3.13.5.23 2 units MDS 9100V 500W Port Side Exhaust Power Supply Unit (PSU)
- 3.13.5.24 1 license IRM-3D - Custom 3D Graphic Layout Software
- 3.13.5.25 8 licenses for annual subscription Solution Support M6 Rack w/o CPU, memory, drive, 1U w for 3 years subscription
- 3.13.5.26 7 licenses Trusted Platform Module 2.0 (FIPS 140-2 Compliant)
- 3.13.5.27 2 for annual licenses ISV 24X7 Windows Server 2022 Data Center (16 Core) for 3-year subscription
- 3.13.5.28 48 for annual licenses ISV 24X7 Windows Server 2022 Data Center - Additional for 3-year subscription
- 3.13.5.29 5 licenses Red Hut Enterprise Linux for Virtual Datacenters (1-2 CPU, Unlim VN) 3-year Support and Subscription required
- 3.13.5.30 5 licenses Red Hut Enterprise Linux for Virtual Datacenters Premium 24x7 - 3-year Support
- 3.13.5.31 6 licenses NVIDIA General Repository for Interaction Datasets (GRID) Software OPT-OUT
- 3.13.5.32 6 licenses NVIDIA General Repository for Interaction Datasets (GRID) Software OPT-OUT
- 3.13.5.33 2 licenses MDS 9124V 64G FC switch 8 port upgrade licenses

- 3.13.5.34 1 license MDS 9128V Nexus Operating System (NX-OS) version 9.3.1
- 3.13.5.35 1 license MDS Advantage Subscription M9100V 3-year subscription
- 3.13.5.36 1 license Embedded Solution support for MDS
- 3.13.5.37 48 licenses Windows Server 2022 Data Center - Additional 2 Cores
- 3.13.5.38 3 yearly subscription Yearly extended warranty for Redetec with Point Detectors: Novec 1230 suppression for 3.0m<sup>3</sup>
- 3.13.5.39 12 sets Temperature Sensor Cable Set
- 3.13.5.40 2 pcs Dome IP Camera mounting bracket
- 3.13.5.41 27 pcs Bottom plate for server rack, 600\*1200
- 3.13.5.42 27 pcs 600mm W power shielding Trough, Tool less mounting on Top Panel, 1 piece
- 3.13.5.43 27 pcs 600mm W data shielding partition, Tool less mounting on Top Panel, set of 2 pieces
- 3.13.5.44 640 pcs 1U-Toolless Mounting Metal Blank Panel
- 3.13.5.45 40 pcs Geist Monitored Unit Level PDU, Vertical, 230V/32A, IEC603091P+N+E, 3m Power Cord, 20xC13, 4xC19, U-Lock Outlets, Black
- 3.13.5.46 2 pcs 120mm width cross row overhead cable bridge for power cables
- 3.13.5.47 2 pcs 300mm width cross row overhead cable bridge for data cables
- 3.13.5.48 28 pcs 600mm width rack top mount cable channel
- 3.13.5.49 74 pcs Temperature and Humidity Sensor
- 3.13.5.50 1 pc 8COM extension card
- 3.13.5.51 2 pcs ECM Input and Output Switch Sub Assembly
- 3.13.5.52 2 card IS-Unity-DP SNMP/Web Card
- 3.13.5.53 2 pcs 15m Parallel cable for EXM, APM (250/400/600)
- 3.13.5.54 12 units Temperature Sensor
- 3.13.5.55 4 units IRMS01T - Temperature Sensor
- 3.13.5.56 1 pc 8 Digital Input Analog Input extension card
- 3.13.5.57 1 pc 8 Digital Output Analog Output extension card
- 3.13.5.58 1 pc IP Door Controller / CHD806-1U
- 3.13.5.59 2 pcs Optical Fingerprint Reader
- 3.13.5.60 1 pc Fingerprint Release Device - USB
- 3.13.5.61 2 pcs EP68 - Exit Button
- 3.13.5.62 2 licenses RDU-A G2 or RDU501 License Extension - 1 Device (Maximum order of 16 PER Device RDU-A G2, 32 per device (RDU501)
- 3.13.5.63 2 licenses, node Basic Support for DCM
- 3.13.5.64 7 licenses Integrated Management Controller (IMC) Supervisor - Advanced
- 3.13.5.65 7 licenses Central Per Server
- 3.13.5.66 4 licenses Intersight Software as a Service (SaaS)
- 3.13.5.67 12 licenses Intersight Software as a Service (SaaS) - Advantage
- 3.13.5.68 12 units Vision 6FM200-X, 200AH, 12V VRLA Batteries
- 3.13.5.69 4 units Battery Cabinet
- 3.13.5.70 4 units Battery Breaker
- 3.13.5.71 4 units Blanking Panel
- 3.13.5.72 7 units Ball Bearing Rail Kit for M6 Rack Servers
- 3.13.5.73 24 units M5 Small Form Factor drive blanking panel
- 3.13.5.74 158 units Dual In-line Memory Module (DIMM) Blanks
- 3.13.5.75 7 units M6 Supercap
- 3.13.5.76 7 units M6 1U/2U Super Cap cable
- 3.13.5.77 13 units Heatsink 1U Small Form Factor M6
- 3.13.5.78 7 units M6 Riser2 HH; x16; LPBkt; (CPU2)
- 3.13.5.79 7 units M6 Riser3 HH; x16; LPBkt; (CPU2)
- 3.13.5.80 7 units 600GB Serial Attached SCSI (SAS) 12Gb 10K Revolutions Per Minute (RPM) 4K Small Form Factor (SFF) Internal Hard Drive
- 3.13.5.81 14 units 1600W Alternating Current (AC) Power Supply for Rack Server
- 3.13.5.82 14 units Power Cord Jumper, C13-C14 Connectors, 2 Meter Length
- 3.13.5.83 2 units Cabinet Jumper Power Cord, 250 VAC 13A, C14-C15 Connectors
- 3.13.5.84 2 units Windows Server 2022 Data Center (16Cores/Unlim VM) Rec Media DVD Only

- 3.13.5.85 2 units Boot optimized M.2 Redundant Array of Independent Disks (RAID) controller
- 3.13.5.86 4 units 480GB 2.5-inch Enterprise Value 6G Serial Advanced Technology Attachment Solid State Drive (SATA SSD)
- 3.13.5.87 24 units 32 Gbps Fibre Channel SW SFP+, LC
- 3.13.5.88 4 units MDS 9132 Fan Tray Port Side Exhaust
- 3.13.5.89 1-unit MDS 9124V Accessory Kit
- 3.13.5.90 20 units Rackmount kit
- 3.13.5.91 1 lot Project Management Services
- 3.13.5.92 1 lot Installation and Configuration
- 3.13.5.93 1 lot Deployment and implementation services
- 3.13.5.94 Two (2) years warranty and support services

### 3.14 Data Center Block and File Storage System

#### 3.14.1. Enterprise Block Storage System Specifications:

- 3.14.1.1. Must have 200TB usable capacity.
- 3.14.1.2. Must support block, file, and vVols.
- 3.14.1.3. Connectivity is FC32
- 3.14.1.4. Designed for six nines of availability
- 3.14.1.5. Must support Active-Active, end-to-end NVMe controllers
- 3.14.1.6. Must support Next-gen media (SSD and SCM)
- 3.14.1.7. Must have a data reduction rate of 4:1
- 3.14.1.8. Must be future-proof and provides data-in-place upgrades within the same generation or next-generation of appliances, or scale-out of their existing environment with a second system equal to their current model.
- 3.14.1.9. Must have proactive cloud-analytics reporting and monitoring tool for storage, servers, and SAN switch
- 3.14.1.10. Must include built-in intelligence to eliminate dozens of time-consuming tasks and decision points. Labor-intensive processes like initial volume placement, migrations, load balancing

#### 3.14.2. Enterprise File Storage System Specifications:

- 3.14.2.1. Must have 160TB usable capacity with min. 7K rpm HDD
- 3.14.2.2. The architecture must support non-disruptive automated re- balance of data across storage pools for optimum performance and capacity efficiency in the event of subsequent expansion of the system.
- 3.14.2.3. The storage must support a Single File System scalable up to 50+ Petabytes of usable capacity.
- 3.14.2.4. The storage can scale dynamically under a single namespace for the entire provided capacity with no virtualization layer or global namespace technologies, with no need for additional software on University.
- 3.14.2.5. RAID technology should not be used for data protection but can be used for disk protection. Must use snapshots and checkpoints capabilities for data protection.
- 3.14.2.6. Must support users of object storage as an external tier for long-term retention and scalability.
- 3.14.2.7. The storage must support inline data reduction.
- 3.14.2.8. The storage must support Directory and User quotas.
- 3.14.2.9. The storage must support Automated File Tiering.
- 3.14.2.10. The storage must support File Archives to the cloud.
- 3.14.2.11. The storage must support the use of snapshots for replication.
- 3.14.2.12. The storage must support capacity expansion without the need for a maintenance window

3.14.3. Enterprise SAN (Storage Area Network) Switch Specifications:

3.14.3.1. The fabric must support the ff services:

- 3.14.3.1.1. Hardware-based virtual fabric isolation with virtual SANs (VSANs) and FC routing with Inter-VSAN Routing (IVR)
- 3.14.3.1.2. Intelligent network services and advanced traffic management capabilities
- 3.14.3.1.3. Virtual SAN (VSAN)
- 3.14.3.1.4. Port channel with multipath load balancing
- 3.14.3.1.5. Flow-based and zone-based QoS

3.14.3.2. Ports

- 3.14.3.2.1. 16, 8, 4, and 2 Gbps auto-sensing with 16 Gbps of dedicated bandwidth per Fibre Channel port
- 3.14.3.2.2. Up to 50 fixed ports, including 40 16-Gbps Fibre Channel, eight 10-Gbps FCoE, and two 10-Gbps FCIP and iSCSI ports

3.14.4 Supply delivery and installation of Data Center Block and File Storage System and must at least consist of the following:

- 3.14.4.1 Enterprise Block Storage System
- 3.14.4.2 Enterprise File Storage System
- 3.14.4.3 Enterprise SAN (Storage Area Network)
- 3.14.4.4 Administration Training
- 3.14.4.5 Programming and Configuration Services
- 3.14.4.6 Deployment and Implementation
- 3.14.4.7 Two (2) years warranty and support services

### 3.15 Data Center Back-Up System

The winning bidder must deploy, set up and configure the back-up appliance at the existing facilities at EB Rm 204, an effective and right-sized back up system that will enable effective data restoration in case the need arises. It must comply with the following minimum specifications for an Enterprise On-Premise Disk Back-Up System:

- 3.15.1. The solution must deliver protection storage, protection software, search, advanced monitoring, and analytics in a single and easy-to- deploy appliance
- 3.15.2. The solution must be an integrated set of appliances with the following specifications:
  - 3.15.2.1. 64TB Capacity Storage
  - 3.15.2.2. 2x Intel CPU
  - 3.15.2.3. At least 4x 10GbE
- 3.15.3. The solution must include tools for effective management
- 3.15.4. The solution must be able to protect both physical and virtual environments
- 3.15.5. The solution must support native tiering to public and/or private clouds for long-term retention
- 3.15.6. The solution must support an average 55:1 data deduplication rate.

- 3.15.7. The solution must support reporting capabilities for physical capacity utilization for chargeback and capacity planning
- 3.15.8. The winning bidder must set up the back-up infrastructure in a virtualized environment to reduce equipment footprint and optimize the data without compromising the replication of the production environment.
- 3.15.9 Supply delivery and installation of Data Center Back-Up System and must at least consist of the following:
  - 3.15.9.1 2 units Server with 64TB Capacity Storage
  - 3.15.9.2 1 lot Back-up System
  - 3.15.9.3 10 pax Administration Training
  - 3.15.9.4 1 lot Configuration Services
  - 3.15.9.5 1 lot Deployment and Implementation
  - 3.15.9.6 Two (2) years warranty and support services

### **3.16 University Information System**

Having a robust system that would remove the gap of data deprivation is a major improvement. The accuracy, easily accessible, and secure data will improve the operation of processing such requests and needed information as demanded. For each user, there are tools available to facilitate daily administrative work in an academic environment.

- 3.16.1. Requires Perpetual Licensing
- 3.16.2. UIS must consist of the following modules and functional requirements:
  - 3.16.2.1. Student Information System. This system is designed to store and manage student information such as personal data, academic performance, academic history, Transcript of Records, and other data relevant to the student. This module provides easy data access and simplifies various tasks the campus may require for processing requests, reports, and/or analytical processes.
  - 3.16.2.2. System features, transactions, and reports:
    - 3.16.2.2.1. Must have tools to enable migration of existing student database, register new students, generate adhoc reports, monitor and management of various service requests.
    - 3.16.2.2.2. Must contain Complete Student information, academic data file, and scanned submitted documents of students converted into PDF.
    - 3.16.2.2.3. Must support Fast generation of TOR and Form 9
    - 3.16.2.2.4. Must be capable to generate a List of Candidates for Graduation, scholarships, and honors.
    - 3.16.2.2.5. Must be able to receive approved electronic grades from Deans.
    - 3.16.2.2.6. Must be able to apply Tags to documents being submitted by new enrollees and remind students of missing documents that need to be submitted
    - 3.16.2.2.7. Must have a mobile application that will enable access to online services relevant to the students such as request for an electronic copy of grades,

request for transcripts of records, copies of the COM, and others to be determined by the University

- 3.16.2.2.8. The Mobile Application must be compatible with the latest versions of Android and IOS mobile devices.
- 3.16.2.2.9. Must have a Free Higher Education Application and Reports Generation System
- 3.16.2.2.10. Must have a Reports Generation System (CSC, DBM, CHED and other Government Reports)
- 3.16.2.2.11. Must have an Online Verification System
- 3.16.2.2.12. Must have an electronic issuance of Transcript of Records, Diploma, SO, Certifications, etc.
- 3.16.2.2.13. Must have an Online Testing and Admission Scheduling System
- 3.16.2.2.14. Must have a Faculty Evaluation System

3.16.3. Human Resources Information System (HRIS). The HRMS is a system that will manage, automate and integrate various human resources functions and processes. At a minimum, the system should have the basic modules such as Time Keeping and Monitoring, Payroll System, and Personnel Information System

3.16.3.1 Required HRIS Modules, at a minimum:

3.16.3.1.1 Time Keeping Monitoring System

- 3.16.3.1.1.1 Ability to integrate with Facial Recognition System for Daily Time Record (DTR) purposes
- 3.16.3.1.1.2 The solution must have an option for online time-in/time-out
- 3.16.3.1.1.3. Must have an option for employees to request timesheet record correction
- 3.16.3.1.1.4. Should be able to automatically compute the accumulation of leaves
- 3.16.3.1.1.5. Must have a real-time display for leave credits/balance
- 3.16.3.1.1.6. Should be able to automatically detect tardiness, under time and other time deductions
- 3.16.3.1.1.7. Ability to monitor regular and special holidays with automated computation of pay rates
- 3.16.3.1.1.8. Ability to prepare summary of attendance and absences
- 3.16.3.1.1.9. Must be able to prepare summary of overtime for validation and approval

3.16.3.1.2 Payroll System



- 3.16.3.1.2.1 Must be able to generate pay slips, payroll registers, and deduction lists, including Tax/BIR forms and reports for government agencies on a monthly, quarterly and annual basis
- 3.16.3.1.2.2. Must be able to do automated table of deductions for SSS/GSIS, HDMF (Pag-ibig), Phil-health and Withholding taxes
- 3.16.3.1.2.3. Ability to do Automated scheduling of other deductions like salary loans, advances and other deductions
- 3.16.3.1.2.4. Must be able to do Auto computation of payroll based on specified cut-off dates
- 3.16.3.1.2.5. Able to maintain the database for historical payroll summary, withholding taxes, and contributions

#### 3.16.3.1.3. Personnel Information System

- 3.16.3.1.3.1. Able to do maintenance of personnel data and information
- 3.16.3.1.3.2. Must be able to do encoding and tagging of service accomplishments and training attended
- 3.16.3.1.3.3. Must be able to allow linkage of personnel file to University Information System
- 3.16.1.1.3.4. Ability to identify training needs based on structured training programs per position
- 3.16.1.1.3.5 Able to generate, Service Records, PDS,etc

#### 3.16.3.1.4. HRIS Mobile Application

- 3.16.3.1.4.1. The mobile application must be compatible to the latest versions of Android and IOS mobile devices and made available in Google Play and Apple Store
- 3.16.3.1.4.2. The solution must have a secured authentication strategy
- 3.16.3.1.4.3. The solution must connect to the University Human Resource Management System API and DB
- 3.16.3.1.4.4. The solution should be provision for updates for future revisions and releases
- 3.16.3.1.4.5. Time Keeping Monitoring System
  - 3.16.3.1.4.5.1. The solution should provide a user dashboard, to display employee's leave balance, overtime, notifications/notices
  - 3.16.3.1.4.5.2. The solution must have an option for online time-in/time-out

- 3.16.3.1.4.5.3. Solution must have an option for employees to request for timesheet record correction
- 3.16.3.1.4.5.4. The solution must allow supervisors to approve leave, overtime, and other employee requests
- 3.16.3.1.4.5.5. The solution must automatically compute the accumulation of leaves
- 3.16.3.1.4.5.6. The solution must have a real-time display for leave credits/balance
- 3.16.3.1.4.5.7. The solution must automatically detect latest, under times, LWOP, and other time deductions
- 3.16.3.1.4.5.8. The solution must be able to monitor regular and special holidays with automated computation of pay rates
- 3.16.3.1.4.5.9. The solution must be able to prepare a summary of attendance and absences
- 3.16.3.1.4.5.10. The solution must be able to prepare a summary of overtime for validation and approval

#### 3.16.3.1.4.6. Automated Payroll System

- 3.16.3.1.4.6.1. The solution must provide the ability for the Employees to view and download their Pay slips on their mobile devices
- 3.16.3.1.4.6.2. The solution must be able to do the automated table of deductions for SSS, Phil-health, and Withholding taxes
- 3.16.3.1.4.6.3. The solution must be able to do Automated scheduling of other deductions like salary loans, advances, and other deductions
- 3.16.3.1.4.6.4. The solution must be able to do the Auto computation of payroll based on specified cut-off dates
- 3.16.3.1.4.6.5. The solution must be able to maintain the database for historical payroll summary, withholding taxes and contributions

#### 3.16.3.1.4.7. Personnel Information System

- 3.16.3.1.4.7.1. The solution must be able to do maintenance of personnel data and information

- 3.16.3.1.4.7.2. The solution must be able to do encoding and tagging of service accomplishments and training attended
- 3.16.3.1.4.7.3. The solution must be able to identify training needs based on structured training programs per position
- 3.16.4. Enrollment Module that provides online registration with an automatic assessment of fees, linked with the other modules to facilitate the automatic advising of subjects, automated generation of slips, reports, and another Post- Enrollment (Adding/Changing/Dropping)
  - 3.16.4.1. System Features, Transactions, and Reports
    - 3.16.4.1.1. Must support the easy generation of List of grades and unpaid school fees
    - 3.16.4.1.2. Must support automatic generation of List of Allowed Subjects to be taken & Schedules
    - 3.16.4.1.3. Must have the ability to prevent the choosing of subjects with pre-requisites not yet taken
    - 3.16.4.1.4. Must support the ability to show the maximum number of allowed units to a particular student that can be enrolled based on previous semester grades and completed pre-requisites. Capability to add and decrease units by the registrar department
    - 3.16.4.1.5. If required, it must support Enlistment to ROTC and PE subjects
    - 3.16.4.1.6. Must support Automatic generation of assessment and registration slips
    - 3.16.4.1.7. Must support Online queries of available subjects by students
    - 3.16.4.1.8. Must support the generation of reports such as Summary of enrolled students, Summary of unpaid school fees, Summary of Tuition Fees collected, and other summary reports directly correlated with student enrollments
- 3.16.5. Student Service Module – to monitor and track students’ complete personal information, achievements, awards, special talents, absences, admission test and interview results, and student training/seminars completed, and subsequently make this data available to the Student Affairs and Services Office, academic adviser, department head and the College.
  - 3.16.5.1. System Features, Transactions, and Reports
    - 3.16.5.1.1. The solution must be able to monitor students referred for counseling
    - 3.16.5.1.2. The solution must be able to monitor students with failing grades, incomplete grades (INC), dropped
    - 3.16.5.1.3. The solution must be able to record examination and interview results
    - 3.18.5.1.4. The solution must be able to assign working scholars or student assistants to various departments and monitor their performance and attendance
- 3.16.6. System Administration Module that will manage and administer the maintenance of the UIS modules

and all transactions related to User Access Rights, Audit Trail, Currently Log Users, List of Screens and Reports, List of Users and its access Screens and Reports. At a minimum, it should be able to:

- 3.16.6.1. Provide comprehensive user access rights entry and monitoring
- 3.16.6.2. Able to monitor users currently logged in to the system.
- 3.16.6.3. Perform user audit trail
- 3.16.6.4. Able to provide user access reports that will aid the administrator review access rights given to certain users and checking/validating user access to specific reports and modules in general

### 3.16.7. University Accounting System

3.16.7.1. Supply and installation of an Accounting System which shall digitize the University's accounting processes and workflows and generate e-NGAS reports. It must consist of the following modules at a minimum:

#### 3.16.7.1.1. Procurement Module

- 3.16.7.1.1.1. Solution must have Complete list of Supplier's details. Details include their complete name (for individual) / organization name (for non- individual), TIN, addresses, business style, contact information, payment terms, bank details and other helpful information needed by the University
- 3.16.7.1.1.2. Solution must be able to group suppliers up to two levels as needed by the organization.
- 3.16.7.1.1.3. Solution must have a Dashboard that will provide users easy access to information on the Transactions (Create and Approve Purchase Request, Purchase Orders and Receiving transactions), System Reports, and Master Tables
- 3.16.7.1.1.4. Solution must be able to record Purchase Request and generate a PR form. The Purchase Request must capture essential information such as: Requestor, Purchase Type (Goods, Services, Capital Expenses, Consumables), Date Needed, and the Item Details and Quantity.
- 3.16.7.1.1.5. Solution must allow users to create Request for Quotation to invite Suppliers into a bidding process for the requested items.
- 3.16.7.1.1.6. Solution must be able to present details of canvass to aid in decision making for purchases
- 3.16.7.1.1.7. Solution must be able to record Purchase Orders and generate a PO form. The Purchase Order should be able to retrieve and automatically populate the details of approved Purchase Requests and capture essential information such as: Supplier Details, Purchase Type, Chargeable Department, and Delivery Info. The Purchase Order should allow users to select the VAT Class of each item (Vatable/Exempt) and automatically calculate the VAT for each item if applicable.

- 3.16.7.1.1.8. Solution must have a functionality to adjust the amount and quantity of the Purchase Order.
- 3.16.7.1.1.9. The solution must be able to generate summarized or detailed reports which shows all purchase request in a given period
- 3.16.7.1.1.10. The solution must be able to generate summarized or detailed reports which shows of all purchase order in a given period
- 3.16.7.1.1.11. The solution must be able to generate a report that shows purchase requests that are unserved, partially served or fully served
- 3.16.7.1.1.12. The solution must be able to generate a report that shows purchase orders that are unserved, partially served or fully served

#### 3.16.7.1.2. Budgeting Module

- 3.16.7.1.2.1. The solution must be able to allow the setup of responsible signatories for approval of budget
- 3.16.7.1.2.2. Solution must allow users to setup monthly or annual budget for departments, and activities based on the General Appropriations Act (GAA), Special Allotment Release Order (SARO), and the Agency Budget Matrix
- 3.16.7.1.2.3. Solution must be able to classify budget transactions to Personnel Services, Maintenance and Other Operating Expenses, Capital Outlay, and Financial Expenses
- 3.16.7.1.2.4. Solution must allow setup of Notice of Cash Allocation as transaction limits
- 3.16.7.1.2.5. Solution must have a Dashboard that would provide users easy access to information on the Transactions (Record and Approve Budget Realignment, Budget Earmark, and Obligation Request transactions), System Reports, and Master Tables
- 3.16.7.1.2.6. Solution must allow users to setup monthly or annual budget for departments, and activities based on the General Appropriations Act (GAA), Special Allotment Release Order (SARO), and the Agency Budget Matrix
- 3.16.7.1.2.7. Solution should only allow transactions to proceed based on approved budget. Budget review and approval should apply to earmarking for purchase requests, and obligation requests for purchase orders.
- 3.16.7.1.2.8. Solution must be creating a request for fund appropriation by requesting department and generate an RFA form. The RFA should be able to capture information on the requestor, department, priority, and purpose of the appropriation.
- 3.16.7.1.2.9. Solution must be able to reclassify approved budget from one expense item to another within the same budget classification.
- 3.16.7.1.2.10. Solution must be able to generate a report that shows the status and details of appropriations, obligations, and payments

- 3.16.7.1.2.11. Solution must be able to generate reports on RFA for a given period
- 3.16.7.1.2.12. Solution must be able to generate reports that compares and shows variance between budgeted and actual transactions on the P&L, departments, and activities
- 3.16.7.1.2.13. Solution must be able to generate a report that shows utilization of Cash Allocation including lapsing, and savings.

### 3.16.7.1.3. Accounts Payables and Disbursements Module

- 3.16.7.1.3.1. Solution must allow users to set the recognition of withholding taxes either upon recording of accounts payable or upon disbursement depending on the organization's policy
- 3.16.7.1.3.2. Solution must have a Dashboard that would provide users easy access to information on the Transactions (Record and Approve Payables and Disbursement transactions), System Reports, and Master Tables
- 3.16.7.1.3.3. Solution must be able to record Payable Vouchers and generate an APV form. The Payable Voucher should allow users to input the Supplier Invoice Number and be able to retrieve and automatically populate the details of the selected Receiving Report/s. Accounting entries should be automatically generated based on the default entry setup.
- 3.16.7.1.3.4. Solution must allow users to input Supplier Invoices for transactions that are not based on Purchase Orders and Receiving Report such as utility bills. Accounting entries should be automatically generated based on the default entry setup
- 3.16.7.1.3.5. Solution must allow users to record Request for Payment and generate an RFP form based on approved Payable Vouchers or Open Invoices
- 3.16.7.1.3.6. Solution must be able to record Payment Vouchers and generate a Payment Voucher form. The Payment voucher should allow users to tag and apply payments to specific Supplier Invoice/s or Payable Voucher/s and should have controls to avoid double payment of the same payable. Accounting entries should be automatically generated based on the default entry setup.
- 3.16.7.1.3.7. Solution must be able to record adjustments on Supplier Invoices and Accounts Payable using a Debit Memo. The Debit Memo activity should be able to automatically calculate the tax impact of the adjustment and generate the corresponding accounting entries.
- 3.16.7.1.3.8. Solution must allow users to monitor and update the status of checks prepared whether on-hand, released, cancelled, or stale.

- 3.16.7.1.3.9. Solution must be able to capture details of receipts for fund replenishments, reimbursements, and liquidations. Users should also be able to select the appropriate GL Account for the receipt and generate the corresponding accounting entries.
  - 3.16.7.1.3.10. Solution must be able to generate a report that shows the payable ledger per supplier group or specific supplier in a given period
  - 3.16.7.1.3.11. Solution must be able to generate a summarized or detailed report that shows accounts payable aging in a given period. The Aging report should allow users to define whether the report is based on transaction date or due date as well as the aging parameters (weekly, monthly, custom defined aging).
  - 3.16.7.1.3.12. Solution must be able to generate a report that shows approved and unapproved RFP for a given period
  - 3.16.7.1.3.13. Solution must be able to generate a summarized or detailed report that shows the payment ledger per supplier group or per supplier in a given period
  - 3.16.7.1.3.14. Solution must be able to generate a summarized or detailed report that shows the payment ledger for fund replenishments, reimbursements and liquidations in a given period
  - 3.16.7.1.3.15. Solution must be able to generate a report that shows the status of all checks in a given period
- 3.16.7.1.4. Revenues and Collections Module
- 3.16.7.1.4.1. Solution must have Complete list of Customer's details. Details include their complete name (for individual) / organization name (for non- individual), TIN, addresses, business style, contact information, payment terms, bank details and other helpful information needed by the organization
  - 3.16.7.1.4.2. Solution must be able to group customers up to two levels as needed by the organization.
  - 3.16.7.1.4.3. Solution must have Complete list of Customer's details. Details include their complete name (for individual) / organization name (for non- individual), TIN, addresses, business style, contact information, payment terms, bank details and other helpful information needed by the organization
  - 3.16.7.1.4.4. Solution must be able to group customers up to two levels as needed by the University.
  - 3.16.7.1.4.5. Solution must have a Dashboard that would provide users easy access to information on the Transactions (Create and Approve Sales Orders, Invoice, and Collection transactions), System Reports, and Master Tables
  - 3.16.7.1.4.6. Solution must be able to record Customer Orders and generate an Order form. The Customer Order must capture essential information such as: Customer Details, Customer PO Number,

#### Order Type (Goods or Services), Delivery Information, and Item Details

- 3.16.7.1.4.7. Solution must be able to record Invoice or Billing Statement and generate the corresponding forms. The Invoice or Billing Statement should automatically populate the details from approved Customer Order/s. accounting entries should automatically be generated based on the default entry setup.
  - 3.16.7.1.4.8. Solution must be able to record adjustments on Invoices and Accounts Receivable using a Credit Memo. The Credit Memo activity should be able to automatically calculate the tax impact of the adjustment and generate the corresponding accounting entries.
  - 3.16.7.1.4.9. Solution must allow users to record cash and collection deposits and generate the corresponding accounting entries to recognize the proper cash in bank account.
  - 3.16.7.1.4.10. Solution must allow users to record cash and collection deposits and generate the corresponding accounting entries to recognize the proper cash in bank account.
  - 3.16.7.1.4.11. Solution must be able to generate summarized or detailed reports which shows all invoice and billing statements in a given period
  - 3.16.7.1.4.12. Solution must be able to generate a report that shows statement of account and accounts receivable aging in a given period. The Aging report should allow users to define whether the report is based on transaction date or due date as well as the aging parameters (weekly, monthly, custom defined aging).
  - 3.16.7.1.4.13. Solution must be able to generate a report that shows the receivable ledger per customer group or specific customer in a given period
  - 3.16.7.1.4.14. Solution must be able to generate summarized or detailed reports which shows all collections in a given period
  - 3.16.7.1.4.15. Solution must be able to generate summarized or detailed reports which shows all cash and check deposits in a given period as well as undeposited cash and collections.
- 3.16.7.1.5. General Ledger and Accounting Module
- 3.16.7.1.5.1. Solution must be able to create Chart of Accounts for Balance Sheet and Profit and Loss Statement. The Chart of Accounts can be grouped up to three levels to allow drill down of accounts when reporting.
  - 3.16.7.1.5.2. Solution must be able allow creation of Books of Accounts which will contain the accounting entries from transactions. The Books of Accounts should be classified into the General Ledger Book, Disbursement Book, Cash Receipts Book, Sales Book and Purchases Books.
  - 3.16.7.1.5.3. Solution must allow users to format the summarized and detailed reports for the Balance Sheet and Profit and Loss Statement



- 3.16.7.1.5.4. Solution must allow users to setup multiple dimensions for income and expense accounts for more detailed reporting. Up to four dimensions can be created which are: profit center or cost center, revenue type, principal or major customer type, and location.
- 3.16.7.1.5.5. Solution must allow the creation of multiple currencies and setup the conversion rate for functional and reporting currency
- 3.16.7.1.5.6. Solution must allow creation of Subsidiary ledgers for Customers, Suppliers, Employees, and others as defined by the user.
- 3.16.7.1.5.7. Solution must allow setup of various tax codes and tax rates for VAT, Creditable Withholding Taxes, and Expanded Withholding Taxes
- 3.16.7.1.5.8. Solution must allow users to enter the amounts which will be set as the beginning balance for each account.
- 3.16.7.1.5.9. Solution must have a Dashboard that would provide users easy access to information on the Transactions (Create and Approve Journal Entries), System Reports, and Master Tables
- 3.16.7.1.5.10. Solution must allow users to record journal entries to record transactions that are not from the other modules such as adjustments and reclassification entries. Journal Entries should allow the user to select the proper books of account where the entry is recorded and should have controls to check the balance of total debit and credit accounts.
- 3.16.7.1.5.11. Solution must be capable of month- end and year-end process to close transactions and proceed to the next control period
- 3.16.7.1.5.12. Solution must be able to generate reports which contains of all the Balance Sheet and Income Statement Accounts in a given period
- 3.16.7.1.5.13. Solution must be able to generate summarized and detailed reports which shows financial position of the organization in a given period
- 3.16.7.1.5.14. Solution must be able to generate summarized and detailed reports which shows financial performance of the organization in a given period. Profit and Loss Statement may be comparative, monthly, quarterly, annually, tabular (all months), and can be drilled down per dimension.
- 3.16.7.1.5.15. Solution must be able to generate reports that contains all the accounts relating to a university's assets, liabilities, owners' equity, revenue, and expenses
- 3.16.7.1.5.16. Solution must be able to generate reports that contains all the details of all transactions made per user
- 3.16.7.1.5.17. Solution must be able to generate reports that contains the details of all accounts with subsidiary ledgers
- 3.16.7.1.5.18. Solution must be able to generate tax reports and tax forms for VAT and Withholding Taxes based on the mandated forms.

Reports shall include Monthly, Quarterly, Annual VAT Report, Summary List of Sales & Purchases (SLSP), and Expanded & Creditable Withholding taxes, as well as the latest BIR Form 2307.

### **3.17 Learning Management System (LMS)**

The proposed LMS must include perpetual licensing and must have the following modules and capabilities at a minimum:

#### **3.17.1. Administration Module**

- 3.17.1.1. The solution must have a Database that is connected to a server that can be accessed at all times needed.
- 3.17.1.2. The solution must allow the migration of structured data such as Programs, Subjects, Teachers, Students, Subject code, and the likes
- 3.17.1.3. All passwords created by the system must be Key sensitive
- 3.17.1.4. The solution must allow Users to change their password and username upon the first login
- 3.17.1.5. Allow Incoming Events and School Mission, Vision to be viewable on Newsfeed
- 3.17.1.6. Capable of uploading a photo to serve as a profile picture per User
- 3.17.1.7. Equipped with Live – Chat, and Messaging between Users

#### **3.17.2. Professor Module**

- 3.17.2.1. Able to provide view access to Teachers for student attendance monitoring
- 3.17.2.2. Capable of creating lesson plans and attaching or linking related files such as learning modules, PowerPoint files, excel, PDF, text, and word files with a maximum file size of 20Mb
- 3.17.2.3. The solution must allow the addition of student/user activities such as Homework, Quizzes, and Examinations
- 3.17.2.4. Able to allow Teachers to set up time limits on testing and other output-based student activities
- 3.17.2.5. The solution must allow the setting of date ranges for users to take the assigned activities
- 3.17.2.6. Able to display activity Scores immediately viewable immediately upon activity completion
- 3.17.2.7. Allow the list of created questions to be viewable and editable by the activity creator
- 3.17.2.8. The solution must allow the creation of lessons and quizzes one at a time with the same subject description

#### **3.17.3. Student Modules**

- 3.17.3.1. Automated posting of classes enrolled by a certain student to its user account
- 3.17.3.2. The solution must allow User/Class attendance within the LMS
- 3.17.3.3. Able to attach files to the lesson downloadable to the user's gadgets
- 3.17.3.4. The solution must allow student activity results to be viewable immediately after the activity
- 3.17.3.5. Able to post detailed activity results within 24 hours
- 3.17.3.6. The solution must have a Summary table for Current activities, conducted activities, and Missed Activities

#### **3.17.4. Parents Module**

- 3.17.4.1. Provide Parents or Guardians with access to allow monitoring of activities and progress of the students under their direct care (e.g., children, personal scholars, etc.)
- 3.17.4.2. Able to support limitless addition of students within the parents or guardians' care

### 3.18 Unified Database Platform

The Unified Database Platform must meet the following specifications, at a minimum:

- 3.18.1. Must be cloud agnostic and cloud-native and can support deployments in bare metal, VMs, or Kubernetes both in on-premises infrastructure as well as cloud for at least the following options:
  - 3.18.1.1. Baremetal
  - 3.18.1.2. VMware vSphere
  - 3.18.1.3. AWS
  - 3.18.1.4. Google Cloud Platform
  - 3.18.1.5. Microsoft Azure
- 3.18.2. It must support both the SQL and NoSQL APIs under a common storage substrate to address current and future use cases.
- 3.18.3. Capable of enabling client applications to auto-discover cluster nodes and cluster topology using an application-friendly library.
- 3.18.4. Able to support a single synchronous cluster stretched across multiple AZ's/regions/clouds and support multiple advanced replication architectures for the resiliency of the system.
- 3.18.5. Able to horizontally scale out/in/up/down with minimal to no business disruptions
- 3.18.6. Must offer a single user interface across various clouds with simplified database management and monitoring like DB upgrades, backups, security & on-demand scaling of nodes to simplify operation and management
- 3.18.7. The proposed solution shall support distributed ACID and transactions with strong data consistency.
- 3.18.8. The proposed solution must include at least 144 cores of database license subscription for production and 144 cores of database license for non- production.
- 3.18.9. Must include one (1) year Enterprise Support for production and non- production
- 3.18.10. Able to provide the ability to increase computing capacity linearly by adding new nodes to the existing database system with no downtime.
- 3.18.11. The proposed solution must support data replication between two isolated instances to support application-level active-active deployments.
- 3.18.12. Able to enhance the primary cluster capability with additional read-replica nodes to facilitate reads closer to the customer base.
- 3.18.13. Able to support data affinity to comply with country/region-specific regulatory/compliance requirements.
- 3.18.14. Must support encryption in transit and rest to have a strong security posture.

- 3.18.15. The proposed solution shall be able to provision and manage in a fully air-gapped environment.
- 3.18.16. Shall support region/zone/cloud affinity to define different data serving topologies to keep the data serving nodes closer to the user base
- 3.18.17. Capable of horizontally scaling with no downtime to support adhoc peak workloads or increase in sizing without interruption
- 3.18.18. The proposed solution must offer a single user interface across various clouds with simplified database management and monitoring like DB upgrades, backups, security & on-demand scaling of nodes to simplify operation and management
- 3.18.19. The proposed solution must have CDC capability to generate events on data change.
- 3.18.20. Must have API for management automation
- 3.18.21. The proposed solution must support advance SQL features like stored procedure, foreign keys, triggers, json support (filtering, constraints and projections) to support current and future use cases

### **3.19 Executive Information System**

Supply, Installation, and Configuration of an Executive Dashboard compliant with the following specifications:

- 3.19.1. Reporting and Dashboard
  - 3.19.1.1. All-in-one Reporting, Dash Boarding, and Analysis. The solution must support multiple use cases of visualization software including reporting, interactive analysis, and business intelligence.
  - 3.19.1.2. Authentication. The solution must support different ways of authentication - native, database, windows, LDAP, etc.
  - 3.19.1.3. Role-Based Reporting. The solution should be able to support the concept of role-based reporting, dashboarding, and analysis. For example, when a user logged on, he sees only the information (projects, graphs, tables, gauges, data) he is authorized for
  - 3.19.1.4. Sharing and collaboration. The solution must contain drill-down ways that users can share analysis and collaborate on the same visual interface
- 3.19.2. RDBMS Database
  - 3.19.2.1. The database product must be 100% open source with Enterprise Support from the database provider
  - 3.19.2.2. The product must be cloud-native and should run on a public cloud such as AWS, GCP, and Azure as well as on-premise. It should support bare metal, VMs, or container deployment.
  - 3.19.2.3. The product must be able to synchronize the data across multiple sites and support multiple advanced replication architectures

- 3.19.2.4. The product must support distributed ACID with both serializable & snapshot isolation
  - 3.19.2.6. The product must offer a single user interface across various clouds with simplified database management and monitoring like DB upgrades, backups, security & on-demand scaling of nodes to simplify operation and management
  - 3.19.2.7. The product must enable University applications to auto- discover cluster nodes and cluster topology.
  - 3.19.2.8. The product must provide the ability to increase computing capacity in a linear fashion by adding new nodes to the existing database system with no downtime
- 3.19.3. Supply and Delivery of 50 units tablet with the following specification:
- 3.19.3.1 Capacity: 512 GB,
  - 3.19.3.2 Size: 12.9 inch.
  - 3.19.3.3 Display: Liquid Retina XDR display, 12.9-inch (diagonal) mini-LED backlit, Multi-Touch display with IPS technology, 2D backlighting system with, 2,596 full-array local dimming zones, 2732-by-2048-pixel resolution at 264 pixels per inch (ppi), ProMotion technology, Wide color display (P3), True Tone display, Fingerprint-resistant oleophobic coating, fully laminated display, Antireflective coating, 1.8% reflectivity, SDR brightness: 600 nits max, XDR brightness: 1,000 nits max, full screen, 1,600 nits peak (HDR content only), 1,000,000:1 contrast ratio, Supports Apple Pencil (2nd generation) Apple Pencil hover
  - 3.19.3.4 M2 chip, 8-core CPU with 4 performance cores and 4 efficiency cores 10-core GPU 16-core Neural Engine 100GB/s memory bandwidth 8GB RAM on models with 128GB, 256GB, or 512GB storage 16GB RAM on models with 1TB or 2TB storage
  - 3.19.3.5 Cellular and Wireless: Wi-Fi 6E (802.11ax) with 2x2 MIMO; speeds up to 2.4 Gbps4 Simultaneous dual band Bluetooth 5.3 Wi-Fi + Cellular models: 5G (sub-6 GHz) with 4x4 MIMO Gigabit LTE with 4x4 MIMO and LAA Model A2761 and A2437: 5G NR (Bands n1, n2, n3, n5, n7, n8, n12, n14, n20, n25, n26, n28, n29, n30, n38, n40, n41, n48, n66, n70, n71, n77, n78, n79)5 FDD-LTE (Bands 1, 2, 3, 4, 5, 7, 8, 11, 12, 13, 14, 17, 18, 19, 20, 21, 25, 26, 28, 29, 30, 32, 66, 71) TD-LTE (Bands 34, 38, 39, 40, 41, 42, 46, 48) UMTS/HSPA/HSPA+/DC-HSDPA 850, 900, 1700/2100, 1900, 2100 MHz) Data only6 Wi-Fi calling5 eSIM7
  - 3.19.2.9.6 SIM Card: Nano-SIM eSIM7

### **3.20 University Mobile Application for Students and Faculty**

- 3.20.1. The required License type must be perpetual with three (3) years of Support Services
- 3.20.2 The proposed mobile app must have the following modules:
  - 3.20.2.1. Login and Registration Module
  - 3.20.2.2. University Announcement Module
  - 3.20.2.3. University Events Calendar Module
  - 3.20.2.4. Application Administration Module
  - 3.20.2.5. About Us Module
  - 3.20.2.6. Staff Directory Module
  - 3.20.2.7. University Emergency Notifier Module
  - 3.20.2.8. Building and Student Services Locator

3.20.3. The proposed mobile app must have the following features:

3.20.3.1. Login and Registration Module

- 3.20.3.1.1. Allows the automated registration of faculties and students to the mobile app
- 3.20.3.1.2. Allows the login of faculties and students to the mobile app
- 3.20.3.1.3. Allows the automated retrieval of lost passwords
- 3.20.3.1.4. Allows the creation and updating of user profiles for registered users
- 3.20.3.1.5. Allows uploading of user achievements and awards to its user profile

3.20.3.2. University Announcement Module

- 3.20.3.2.1. Allows the posting of university announcements and activities
- 3.20.3.2.2. Allows editing of posted announcements and activities
- 3.20.3.2.3. Allows push notification of important announcements
- 3.20.3.2.4. Allows the deletion of previously posted announcements

3.20.3.3. University Events Calendar Module

- 3.20.3.3.1. Allows posting of University Calendar Events and Activities. Events and activities must have the following data fields
  - 3.20.3.3.1.1. Date and Time of Events and Activities
  - 3.20.3.3.1.2. Location of Events and Activities
  - 3.20.3.3.1.3. Information about the Events and Activities
  - 3.20.3.3.1.4. Contact information of Event Organizers
- 3.20.3.3.2. Allows editing of posted University Calendar Events and Activities
- 3.20.3.3.3. Allows deletion either thru automated or manual of previously posted University Calendar Events and Activities
- 3.20.3.3.4. Allows user notification thru alerts for this upcoming event
- 3.20.3.3.5. Allows online registration to Events and Activities

3.20.3.4. Application Administration Module

- 3.20.3.4.1. Allows creation and deletion of users
- 3.20.3.4.2. Allows posting and administration of the following modules:
- 3.20.3.4.3. Login and Registration Module
- 3.20.3.4.4. University Announcement Module
- 3.20.3.4.5. University Events Calendar Module
- 3.20.3.4.6. Application Administration Module
- 3.20.3.4.7. Staff Directory Module
- 3.20.3.4.8. University Emergency Notifier Module
- 3.20.3.4.9. Building and Student Services Locator

3.20.3.5. About Us Module

3.20.3.5.1. Allows the posting of About Us information about the University

3.20.3.5.2. Allows posting of the following information:

- 3.20.3.5.2.1. About the University
- 3.20.3.5.2.2. Programs and Services
- 3.20.3.5.2.3. University Officers Profile
- 3.20.3.5.2.4. University Colleges and Departments
- 3.20.3.5.2.5. University Contact Information

3.20.3.6. University Emergency Notifier Module

3.20.3.6.1. Allows the student to notify the University Security Center of any emergency services

3.20.3.6.2. This emergency notification must be completed with at least a two-click process

3.20.3.6.3. Notification Information sent to the University Security Center must include the following:

- 3.20.3.6.3.1. Name of Student
- 3.20.3.6.3.2. Address of Student
- 3.20.3.6.3.3. Contact Information
- 3.20.3.6.3.4. Emergency Contact Information
- 3.20.3.6.3.5. Name of Parents or Guardian
- 3.20.3.6.3.6. GIS Information of the Student
- 3.20.3.6.3.7. (Optional) Nature of Emergency

3.20.3.6.4. Allows faculty/student to report complaints either to faculty, non-teaching staff, or co-faculty/students

3.20.3.6.5. Allows the faculty/student to monitor the status of reported complaints and issues

3.20.3.7. Building and Student Services Locator

3.20.3.7.1. Allows virtual Campus Tours of University Buildings and Services using Pictures, videos, and Maps

3.20.3.7.2. Allows the specific University Building to be located by the students using directions provided by GIS maps

3.20.4. Security Center Command and Control Modules

3.20.4.1. Must have the following Modules

- 3.20.4.1.1. Computer-Aided Dispatch System (CAD)
- 3.20.4.1.2. Visualization App
- 3.20.4.1.3. Asset App

3.20.4.2. The Proposed Solution must support the following features:

3.20.4.2.1. Computer-Aided Dispatch System (CAD)

- 3.20.4.2.1.1. Receive complaints and reports thru the University Mobile Application
  - 3.20.4.2.1.2. Ability to validate these reports and complaints
  - 3.20.4.2.1.3. See the GPS Location of the reporter
  - 3.20.4.2.1.4. Identify and Plot thru GIS available field assets
  - 3.20.4.2.1.5. Dispatch nearby assets according to the type of reports
  - 3.20.4.2.1.6. Receive Situational Reports from field assets
  - 3.20.4.2.1.7. Send Situational Reports to Student/Faculty Reporter
  - 3.20.4.2.1.8. Generate Management Reports and Usage Reports
  - 3.20.4.2.1.9. Store data to University's Main Data Storage for Images and Videos sent by Citizen Reporters
  - 3.20.4.2.1.10. Send and Receive messages to and from field assets
  - 3.20.4.2.1.11. Send and Receive messages to and from Student/Faculty Reporters
  - 3.20.4.2.1.12. Record all messages
  - 3.20.4.2.1.13. Ability to blast to all registered users, important information
  - 3.20.4.2.1.14. Ability to create User Logins, User Profiles, and User Policies
  - 3.20.4.2.1.15. Must be installed on-premise
- 3.20.4.2.2. Visualization App
- 3.20.4.2.2.1. Must have a user dashboard for operators, management, and Security command center floor
  - 3.20.4.2.2.2. Visualized over GPS, verified location reports coming from Faculty and Students
  - 3.20.4.2.2.3. Must have the ability to display a list of reports and their current status
- 3.20.4.2.3. Asset App
- 3.20.4.2.3.1. Ability to receive dispatch orders coming from University Security Center including case information, reporter location, details, images, GPS data
  - 3.20.4.2.3.2. Ability to verify dispatch orders
  - 3.20.4.2.3.3. Ability to send and receive situational reports
  - 3.20.4.2.3.4. Ability to send Images from Mobile phones and GPS Data
  - 3.20.4.2.3.5. Send and Receive messages to and from University Security Center

### 3.21 University Command and Control Center (UC3)

- 3.21.1 Technical working and monitoring area for System, Network, Security, and Applications Administrators/Operators. Supply delivery and installation of University Command and Control Center and must consist of the following (No OSM):
- 3.21.1.1 Supply delivery and installation of 5 units Desktop Computers (Refer to 3.1.2.3 for the minimum Specifications):
  - 3.21.1.2. 6 units 55 inches wall-mounted LED Monitors
  - 3.21.1.3. 1 lot Security Center Command and Control Modules
  - 3.21.1.4 1 lot Incident Management System
  - 3.21.1.5 5 units Uninterruptable Power Supply 1kva
  - 3.21.1.6 15 pax End-user's Training
  - 3.21.1.7 10 pax Administration Training



- 3.21.1.8 1 lot Installation and Configuration
- 3.21.1.9 1 lot Deployment and implementation services
- 3.21.1.10 1 lot Video Analytics and Video Management System
- 3.21.1.11. Separate UPS configured as N+1 must be provided
- 3.21.1.12. Provision of all essential furnishings
- 3.21.1.13 Two (2) years warranty and support services

### 3.22 Video Wall Display (Electronic Billboard)

This video wall will serve as digital public advertisements, notifications and/or announcements that can be viewed from farther distance. (No OSM)

- 3.22.1. Provision of multiple LED monitors tiled together to form a large video wall, at least 3m x 6m
- 3.22.2. Installation shall be near the main gate of the campus.
- 3.22.3. Outdoor Die Casting Aluminum 500mm x 500mm Fixed LED Wall, with LED HD Video processor, Complete Cables and assembly, Installation, testing and commissioning, mobilization
  - 3.22.3.1 **Weather resistance:** The LED wall should be able to withstand harsh weather conditions such as rain, wind, and extreme temperatures. It should also have an IP rating of at least **IP65**
  - 3.22.3.2 Operating temperature: normally -40°C +60°C
  - 3.22.3.3 Relative humidity: normally 10-99% RH
  - 3.22.3.4 Refresh rate: at least 3840 Hz
  - 3.22.3.5 **Brightness:** At least **6000 NITs**
  - 3.22.3.6 Must have contrast Ratio: 4,000:1
  - 3.22.3.7 Pixel Pitch: at least 6.94mm
  - 3.22.3.8 Power Supply (V): 100 to 240
  - 3.22.3.9 Must have an IP rating of IP65 or IP67 for Weatherproof Design
  - 3.22.3.10 Must be RoHS compliant
  - 3.22.3.11 Must have 3 in 1 pixel configuration
  - 3.22.3.8 Two (2) years warranty and support services

### 3.23. Electrical Works and Power Back-Up System

The winning bidder shall provide the necessary electrical works to supply additional power required for the Smart Campus project, including the Innovation Hub, and a back-up system to ensure continuous operation during power utility outages. All devices and/or equipment supplied and installed must be BMS ready, meaning it should be able to integrate with a BMS for monitoring and probably control as needed. The winning bidder shall provide a working and operational system based on the intent as stated herein. The following scope of works, equipment, and devices shall be provided as part of the winning bidder's deliverables:

- 3.23.1. Design and build of a power shed facility sufficient to house standby generators with synchronizer system sufficient to supply the demand load and future load of the whole university. This includes major electrical equipment such as 2 units of 3-phase WYE to DELTA Dry Type Power Transformer, and switchgears that will supply the entire campus.
  - 3.23.1.1 The winning bidder shall determine the placements or location of components and rating of components (i.e., generator room, switchboard room, office, transformer room, etc.) with

the approval of the committee. Safety, maintenance and replacement works and standards must be considered in selecting the placements of different components.

- 3.23.1.2 The site shall be developed to accommodate the standard requirements of a modern state university that complies with the standards prescribed by the National Building Code of the Philippines, the relevant Accessibility Law, the inclusivity of the Gender and Development (GAD) Program, Post-COVID-19 design standards, and other referral codes for design standard of buildings. All mitigation interventions on site to address DRR-CCA concerns should be taken into consideration
- 3.23.2 Wires, Grounding and cables essential to complete the system are inclusive including the necessary conduits and poles.
- 3.23.3 Supply and installation of two (2) units of standby generator that can accommodate the demand load and set inclusive of day tank with fuel capacity sufficient for 8-hours continuous operation at full load and all other essential auxiliaries (Auxiliary tank that can store Liters of Fuel during operation and externally installed outside of Power Shed/house).
- 3.23.4 Supply and installation of at least 1 MVA Dry-type 3-phase WYE to DELTA Power Transformer.
  - 3.23.4.1 The total load of the transformer shall be limited to 80% of the maximum transformer rating
- 3.23.5. Supply and installation of one (1) ACB with appropriate rating with Switch Setting Board
- 3.23.6. Supply and installation of one (1) MDB with MCCBs connected with BUSBARS and with cabinet enclosures. System must be readily available for the BUS TIE/Coupler System.
- 3.23.7. Supply and installation of Automatic Transfer Switch/s (ATS/s)
- 3.23.8. Cable supply and labor works chargeable by the Electric Cooperative shall be through the account of the winning bidder
- 3.23.9 Cable supply and labor works connected to the different buildings (*Refer to ANNEX H*) supported by the backup system shall be through the account of the winning bidder.
- 3.23.10 Bidders shall perform preliminary visit on the site location for confirmation of the proposed location of placement and rating of the equipment and the power house for the safety measures of students and employees
- 3.23.11 The source voltage that will be supplied to the building must be compatible to the different facilities of the building
- 3.23.12 The maximum voltage drops from the source to each of the building connected shall not be greater than 2.5 percent
- 3.23.13 Complete sets of protective devices shall be used in accordance with the latest edition of Philippine Electrical Code (PEC) (i.e., lightning arresters, surge protectors, etc.)
- 3.23.14 All supplies of the smart class rooms and laboratories shall be through the account of the winning bidder
- 3.23.15 All the materials and equipment used shall comply with the latest edition of PEC
- 3.23.16 All installation works shall comply with the latest edition of PEC
- 3.23.17 All installation works must preserve the cleanliness of the university and safety of the end users

### 3.24. Professional Services

#### 3.24.1. Conceptual Design Development

3.24.1.1. Participating bidders are required to submit in their bid submission copies of preliminary Conceptual Designs of the following:

3.24.1.1.1. Data Center Floor Layout, Mechanical & Electrical Designs

3.24.1.1.2. Command Center Floor layout, Mechanical & Electrical Designs

3.24.1.1.3. Network Block Diagrams

3.24.1.1.4. Smart Campus Block Diagram

3.24.1.1.5. LMS Workflow and Process Flow Diagrams

#### 3.24.2. Detailed Design Development

The winning bidder must submit for review and approval Detailed Engineering Designs (DED) of the Innovation Hub Building including all fit out works such as the data center, command and control center, eLibrary, eLaboratories and other specialty partitions with the said building. Such is in compliance with the Philippine Building Code and is also required for permitting purposes. The DEDs must be signed and sealed by Professional Engineers (PEs) of the respective engineering discipline. The DEDs should cover the following at the minimum:

3.24.2.1. Civil and Architectural Designs

3.24.2.2. Electrical Designs

3.24.2.3. Mechanical Designs

3.24.2.4. Fire Safety and Protection Designs

3.24.2.5. Plumbing Designs

3.24.2.6. Auxiliary System Designs

The winning bidder must submit 5 sets printed in A3 paper size along with compiled soft copies. Soft copies refer to scanned original signed copies of the DED Plans.

#### 3.24.3. As-Built Plans

3.24.3.1. Develop and submit As-Built Plans for all trades covered in the data center fit-out works, cabling works and system deployments. The As-Built Plans must accurately reflect the actual installations, and other relevant works completed and duly signed off by the signing authority designated by EVSU, as well as the respective trade engineers from the winning bidder's side. Mechanical and Electrical Load Schedules must form part of the As-Built plans. Submittal should be in the following form:

3.24.3.1.1. 3 Sets of Print Outs in A1 Sheet, (properly compiled and labeled accordingly)

3.24.3.1.2. 3 Sets of Print Outs in A3 Sheets (properly compiled and labeled accordingly)

3.24.3.1.3. Soft Copies in pdf format, compiled and stored in a USB Drive

3.24.4. Project Management Services

3.24.4.1. The winning bidder must appoint a Project Management Team that will oversee project completion within the terms, conditions, scope and deliverables stated in the Terms of Reference.

3.24.4.2. The Project Management Team (PMT) shall be responsible in planning, coordination and execution according to the requirements and conditions of the project.

3.24.4.3. The PMT must be composed of the following, at a minimum

3.24.4.3.1. Project Manager – shall be the overall head of the PMT and is responsible for the overall orchestration of project implementation. Shall be responsible is project status reporting, issue resolution and drive the timely completion of the project.

3.24.4.3.2. Project Administrator – responsible for project administrative works such as, but not limited to, documents filing and safekeeping, progress tracking, personnel management, and coordination.

3.24.4.3.3. Project Implementation Specialist 1 – shall be responsible in ensuring construction compliance per approved engineering designs

3.24.4.3.4. Project Implementation Specialist 2 – will be responsible in ensuring all systems and platforms configurations are carried out in accordance with the overall project intent

3.24.4.3.5. Project Implementation Specialist 3 – shall be responsible in ensuring that all ICT Infrastructure roll-out are properly executed as per approved plans

3.24.4.3.6. Technical Adviser – responsible in providing guidance and fixes on technical issues that may be experienced during project delivery

3.24.4.3.7. Project Secretariat – shall be responsible in assisting the Project Manager and Project Administrator in all other administrative work such as, but not limited to, communications management, vendor management, permitting and scheduling.

3.24.5. System Configuration

3.24.5.1. The winning bidder shall perform configuration settings to ensure that all systems seamlessly interact accordingly.

3.24.5.2. Must set the appropriate network and security policies to ensure uninterrupted network traffic under normal conditions

3.24.6. Application Development and Customization

3.24.6.1. The winning bidder, as the need arises, shall develop peripheral applications to complement the primary systems to ensure full compliance with the required systems and platforms.

- 3.24.6.2. Customization work must be carried out specifically on the portal and GUI development.

#### 3.24.7. Vulnerability and Penetration Testing (VAPT)

The winning bidder must provide VAPT services which intends to identify potential vulnerabilities of the installed systems which could be exploited by individuals with malicious intent. The VAPT Services should be able to mitigate security vulnerabilities. The scope of services shall include the following, at a minimum:

- 3.24.7.1. Prepare and submit for end-user approval VAPT procedures
- 3.24.7.2. Perform the vulnerability and simulated hacking not later than 6 months from “Go Live” date
- 3.24.7.3. Penetration testing shall focus on the following:
  - 3.24.7.3.1. Network
  - 3.24.7.3.2. Web Application
  - 3.24.7.3.3. Mobile Penetration
- 3.24.7.4. Prepare and submit assessment and penetration testing report
- 3.24.7.5. Submit corrective (if any) recommendations for end-user implementation

#### 3.24.8. 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:

- 3.24.8.1. If available, install service packs, firmware and/or patches to keep the OS up to date
- 3.24.8.2. 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
- 3.24.8.3. Install End-Point Protection

#### 3.24.9. Operations & Maintenance Manuals

- 3.24.9.1. The winning bidder, upon completion of the project, must compile and submit all users, operation, and maintenance manuals of all supplied equipment and devices, such as but not limited to:
  - 3.24.9.1.1. IT appliances, equipment, and devices
  - 3.24.9.1.2. Desktops
  - 3.24.9.1.3. Generator Set
  - 3.24.9.1.4. UPS
  - 3.24.9.1.5. PACUs
  - 3.24.9.1.6. Comfort Cooling
  - 3.24.9.1.7. CCTV System

- 3.24.9.1.8. Door Access System
- 3.24.9.1.9. Fire Protection System
- 3.24.9.1.10. Various Sensors
- 3.24.9.1.11. Various Monitors
- 3.24.9.1.12. Smart Campus Devices

3.24.9.2. The winning bidder may submit the consolidated and compiled manuals in soft copy.

### **3.25. Warranty and Support Services**

3.25.1. The university requires warranty, support, and maintenance services, which shall be valid for within the specified duration as stated per component in Section 3.0 of this document. The winning bidder must include the following, at a minimum, among other terms and conditions of the warranty and support contract:

- 3.25.1.1. Break-fix provision
- 3.25.1.2. Replacement of Defective Parts or Units whichever is applicable
- 3.25.1.3. Provision of Service Units (not more than 2 days upon completion of the diagnosis) in cases where the supplied equipment is/are pulled out from the facility or would require replacement
- 3.25.1.4. Periodic Preventive Maintenance Services (PMS) compliant with the manufacturer's PMS specifications

3.25.2. After Sales Support of 24/7 and with 24 to 72 hours replacement of defective units, subject to final diagnosis and analysis of the technical issue.

3.25.3. The reckoning of activation of warranties and software should either be upon activation by the end-user or turnover and acceptance of the end-user. Whichever comes earlier.

### **3.26. Testing and Commissioning**

3.26.1. Equipment Stand-Alone Testing

This refers to the power-up and testing to be conducted in all ICT Equipment, M&E equipment, and support devices as supplied and installed. The winning bidder is required to present the testing procedures specified by the respective manufacturer. At a minimum:

- 3.26.1.1. Collate/compile and present all testing forms provided by the respective manufacturer. The manufacturer or its authorized representative must certify the authenticity of the presented testing forms
- 3.26.1.2. Testing forms must be provided in duplicates during actual testing. University personnel, designated to witness the testing, will also record the testing results accordingly.
- 3.26.1.3. Testing to be done must comply with the manufacturer's prescribed testing methods and its results must be within the expected outcome. Deviations from the standard testing procedures are not acceptable, unless necessary and approved by the University.

- 3.26.1.4. Should the test results be not within the expected outcome as per the manufacturer's specifications, the winning bidder is required to perform troubleshooting exercises on the spot and testing to be done not more than 2 hours from the time of the first testing done. Should the issue persist, the winning bidder is given 48 hours to submit a Test Failure Report and perform corrective measures accordingly. Upon completion, retesting must be done in the presence of University personnel, twice with at least 36 hours interval to assure non-repetitive of the issue.

### 3.26.2 Campus Network Testing

The winning bidder shall conduct testing of the completed campus network installation. Functional test of the campus network is required. Functional test in this context means that the test must yield results aligned with the design intent of the network, as defined in this Terms of Reference. The winning bidder shall submit the testing Methods of Procedures (MoPs) along with pre-defined results, which shall be assessed and approved by the University. The pre-defined results shall be the basis of success should the actual testing results match these pre- defined test results.

### 3.26.3 LMS Testing

The LMS testing involves the simulation of the actual use of the system, based on the defined functional requirements stated in this Terms of Reference. The winning bidder shall perform a demonstration of the LMS through a simulation of how the users are likely to access and use the system. Similarly, University will require the submission of MoPs prior to actual testing.

### 3.26.4 Smart Campus Solutions Testing

The winning bidder shall perform functional tests on all modules and/or sub-systems installed to be followed by integrated testing to ascertain the interoperability of the Smart Campus System. All testing to be performed must be witnessed by University nominated personnel.

## 4.0. Knowledge Transfer, Training, and Capacity Building

Prior to the project handover, the winning bidder must conduct a walk-through for University nominated personnel. The intent primarily is to orient these personnel on the supplied equipment/devices, completed installations, equipment type, functionalities, basic operations & maintenance, and how these are integrated holistically.

### 4.1. Technology Training

- 4.1.1. The winning bidder must arrange and facilitate technology and solutions orientation covering all solutions that have been implemented.
- 4.1.2. The training must include the following, at a minimum:
  - 4.1.2.1. The basic operation of installed devices and software
  - 4.1.2.2. Smart Campus design runs through
  - 4.1.2.3. Network and Security Orientation
  - 4.1.2.4. Run through of various configurations and policy settings
  - 4.1.2.5. LMS User and Administrator Training

- 4.1.2.6. Mobile Application User and Administrator Training
- 4.1.2.7. E-Laboratories Facility Orientation
- 4.1.2.8. Orientation on Support Structure based on the severity of

**4.2. At a minimum, the Knowledge Transfer and training sessions must include the following:**

- 4.2.1. Classroom session – presentation of designs, equipment specifications, equipment functionality, backup systems, troubleshooting, operations, and maintenance.
- 4.2.2. Facility Walk-Through – physical inspection of all installed equipment and devices, operation demonstration i.e., powers up/down, settings, basic configuration, etc.
- 4.2.3. The initial session must be delivered and conducted prior to facility handover. The initial session should be delivered not more than 30 days after the completion of testing and commissioning.
- 4.2.4. The winning bidder must propose effective scheduled sessions to avoid information overload and maximize the effectiveness of the knowledge transfer.
- 4.2.5. The winning bidder shall provide training manuals/modules, visuals, and all essential training materials.
- 4.2.6. Given several uncertainties or movement restrictions due to the pandemic, EVSU shall allow the winning bidder to deliver the Instructor- Led training through an online video conferencing platform, though the preference is face-to-face classroom type of training. However, for facility walk-through sessions, the winning bidder must send its representatives onsite to physically conduct the walk-through.
- 4.2.7. EVSU, through the Project Director, shall designate attendees/participants for the Training. For this purpose, its Project Director shall submit a list of the attendees/participants to the winning bidder not later than 7 days from notice of the schedule of Training. In the orderly and efficient administration of Training, the attendees/participants shall not exceed ten (10) persons at any given time.

**5. Construction Safety and Health Program**

- 5.1. The winning bidder shall include in its project staffing a Certified COSH Professional that will develop a set of detailed rules to cover the processes and practices that shall be utilized in the construction project in conformity with the OSHS including the personnel and the penalties for violations.
- 5.2. The Safety Officer shall be responsible for the inspection of the work environment, including the location and operation of the machinery, adequacy of workspace/area, work environment conditions, protection, and other safety and work hazards.

**6. Implementation Timeline**

- 6.1. Project implementation shall be Four Hundred Twenty (420) days from the date of the Notice to Proceed (NTP). The winning bidder must complete and hand over the project within the prescribed implementation timeline.

Participating bidders are required to include in their bid submission a high-level Gantt Chart that will illustrate the project implementation schedule per WBS.



## 7. Bidder Competency Requirements and Submittals

- 7.1. The bid submission shall be in sufficient detail to show compliance with the Specification and shall include the following:
  - 7.1.1. Statement of compliance, or otherwise, against the Specifications for the System offered.
  - 7.1.2. A scaled drawing showing the proposed layout of all the equipment in the proposed System.
  - 7.1.3. A detailed technical description of the proposed System, including all the equipment and software offered.
  - 7.1.4. A working timeline including the periods of design and manufacture, delivery, installation, training, site acceptance testing, and commissioning.
  - 7.1.5. A description of the architectural, civil, mechanical, electrical, and other data center facility-related works as well as the Power House.
    - 7.1.6. Colored brochures of all equipment supplied including racks and consoles
  - 7.1.7. The participating bidder must include the following certifications in its bid submission:
    - 7.1.7.1. Manufacturer's Certificate or Manufacturer's Authorization from the manufacturer or authorized distributor of the Desktop, Network, and Server that the bidder is an authorized dealer/reseller to join the bid and it has validated the full solution of the project. The certification must also state that the manufacturer of the server and network, through its local office, is capable of providing support for the proposed solution which will be implemented in this particular project. The aforesaid Certification or Manufacturer's Authorization must be issued by the Manufacturer's in-country (Philippines) office. In cases where the Manufacturer has no Representative Office in the Philippines, the bidder may secure said Certification or Manufacturer's Authorization from the Manufacturer's Regional Office exercising supervision over all activities in the Philippines.
    - 7.1.7.2. Manufacturer's Certificate or Distributor's Certificate stating that the equipment supplied is not obsolete or shortly to be phased out of production
    - 7.1.7.3. Warranty Certificates of all supplied equipment and devices, stating the warranty coverage
- 7.2. The bidder should have ISO 9001:2015 Quality Management Systems. In the case of a Joint Venture (JV), any of the parties forming the JV must possess the ISO Certifications as stated herein.

## ***Section VIII. Checklist of Technical and Financial Documents***

# Checklist of Technical and Financial Documents

## I. TECHNICAL COMPONENT ENVELOPE

ITEM NO.	DOCUMENTS	PRESCRIBED FORMS
<b><u>CLASS “A” DOCUMENTS</u></b>		
<b>LEGAL DOCUMENTS</b>		
1	<b>Updated and valid PhilGEPS Registration Certificate (PLATINUM MEMBERSHIP) (all pages, including its Annexes); <u>OR</u></b>	-
	<b>Updated and valid Registration certificate</b> from Securities and Exchange Commission (SEC), Department of Trade and Industry (DTI) for sole proprietorship, or Cooperative Development Authority (CDA) for cooperatives or its equivalent document; <b><u>AND</u></b>	-
	<b>Valid and Current Mayor’s or Business permit issued by the city or municipality</b> where the principal place of business of the prospective bidder is located, or the equivalent document for Exclusive Economic Zones or Areas; <b><u>AND</u></b>	-
	<b>Updated and valid Tax clearance</b> per E.O. No. 398, s. 2005, as finally reviewed and approved by the Bureau of Internal Revenue (BIR).	-
<b>TECHNICAL DOCUMENTS</b>		
2	<b>Statement of the bidder of all its ongoing government and private contracts</b> , including contracts awarded but not yet started, if any, whether similar or not similar in nature and complexity to the contract to be bid. The statement shall include for each contract the following:  a. name of contract; b. date and period of contract; c. amount of contract and value of outstanding contracts; d. date of delivery/ performance; e. end-user's acceptance or official receipts issued for the contract (if completed); f. copy of the contract <b><u>AND</u></b>	ANNEX A
3	<b>Statement of the bidder’s Single Largest Completed Contract (SLCC) similar to the contract to be bid</b> , except under conditions provided for in Sections 23.4.1.3 and 23.4.2.4 of the 2016 revised IRR of RA No. 9184, within the relevant period as provided in the Bidding Documents; <b><u>AND</u></b>	ANNEX B
4	<b>Philippine Contractors Accreditation Board (PCAB) License; <u>OR</u> Special PCAB License in case of Joint Ventures;</b>	
5	<b>Original copy of Bid Security</b>	
	FORMS OF BID SECURITY	AMOUNT OF BID SECURITY (EQUAL TO PERCENTAGE OF THE ABC)
	a) Bid Securing Declaration; <b><u>OR</u></b>	NOTARIZED
		ANNEX C

	b) Cash, Cashier's/ managers check issued by a Universal or Commercial Bank equivalent to Two Percent (2%); <b><u>OR</u></b>	30,000,000.00	
	c) Surety Bond equivalent to Five Percent (5%) ( <i>If security bond, attach the original copy of the official receipt of premium payment and certification issued by the Insurance Commission</i> )	75,000,000.00	
6	<b>Conformity with the Schedule of Requirements; <u>AND</u></b>		Section VI of the Philippine Bidding Documents
7	<b>Conformity with the Technical Specifications</b> , which may include:		
	a) Statement of compliance, or otherwise, against the Specifications for the System offered.		
	b) A scaled drawing showing the proposed layout of all the equipment in the proposed System.		
	c) A detailed technical description of the proposed System, including all the equipment and software offered.		
	d) Statement of a working timeline including the periods of design and manufacture, delivery, installation, training, site acceptance testing, and commissioning.;		
	e) Colored brochures of all equipment supplied including racks and consoles;		
	f) ISO 9001:2015 Quality Management Systems Certificate. In the case of a Joint Venture (JV), any of the parties forming the JV must possess the ISO Certifications as stated herein.		
	g) Manpower requirements (list names and designations); for equipment bidding, list down in-house technicians and maintenance personnel;		
	i. Manufacturer's Certificate or Manufacturer's Authorization from the manufacturer or authorized distributor of the Desktop, Network, and Server that the bidder is an authorized dealer/reseller to join the bid and it has validated the full solution of the project. The certification must also state that the manufacturer of the server and network, through its local office, is capable of providing support for the proposed solution which will be implemented in this particular project. The aforesaid Certification or Manufacturer's Authorization must be issued by the Manufacturer's in-country (Philippines) office. In cases where the Manufacturer has no Representative Office in the Philippines, the bidder may secure said Certification or Manufacturer's Authorization from the Manufacturer's Regional Office exercising supervision over all activities in the Philippines.		
	ii. Manufacturer's Certificate or Distributor's Certificate stating that the equipment supplied is not obsolete or shortly to be phased out of production		
	iii. Certification that the personnel to be deployed is trained and accredited of the product to be supplied (with attachment of the personnel's profile, ID, etc.)		
iv. After-sales service/parts (state warranty, guarantee, etc.) or proof of manufacturer's/Supplier's warranty for all supplied equipment and devices,			

	stating the warranty coverage, whichever is applicable;	
	h) Project Requirements, which shall include the following:	
	i. Organizational chart for the contract to be bid;	
	ii. List of contractor’s key personnel (e.g., Project Manager, Project Engineers, Materials Engineers, and Foremen), to be assigned to the contract to be bid, with their complete qualification and experience data;	
	iii. List of contractor’s major equipment units, which are owned, leased, and/or under purchase agreements, supported by proof of ownership or certification of availability of equipment from the equipment lessor/vendor for the duration of the project, as the case may be;	
	iv. Duly signed Site Inspection Report	
	v. Construction Schedule & S-Curve	
	vi. Duly signed Manpower Schedule	
	vii. Duly signed Construction Methods	
	viii. Value Engineering Analysis of the Design and Construction Method	
	ix. Duly signed Equipment Utilization Schedule	
	x. Construction Safety & Health Program	
	xi. Construction Safety Guidelines	
	xii. Duly signed PERT/CPM or other project scheduling tools.	
	xiii. Original of duly signed Bid Prices in the Bill of Quantities for the Design and Build Components	
	xiv. Duly accomplished Detailed Estimates Form, including a summary sheet indicating the unit prices of construction materials, labor rates, and equipment rentals used in coming up with the Bid; and	
	xv. Cash Flow by Quarter	
	<b>Original duly signed Omnibus Sworn Statement (OSS)</b>	
8	It should be supported with	ANNEX D
	a) Original Notarized Special Power of Attorney if the signatory is other than the owner for sole proprietorship, or of all members of the joint venture giving full power and authority to its officer to sign the OSS and do acts to represent the Bidder. <b><u>OR</u></b>	
	b) Original Notarized Secretary's Certificate in case of a corporation, partnership, or cooperative in accordance with the forms provided in the bidding documents.	

<b>FINANCIAL DOCUMENTS</b>		
9	The Bidder’s <b>audited financial statements</b> , showing, among others, the Supplier’s total and current assets and liabilities, stamped “received” by the BIR or its duly accredited and authorized institutions, for the preceding calendar year which should not be earlier than two (2) years from the date of bid submission; <b><u>AND</u></b>	-

10	The bidder's computation of <b>Net Financial Contracting Capacity</b> (NFCC) (duly signed); <b><i>OR</i></b>	-
	A <b>committed Line of Credit</b> from a Universal or Commercial Bank in lieu of its NFCC computation	
<b>CLASS "B" DOCUMENTS</b>		
11	If applicable, a <b>duly signed joint venture agreement (JVA)</b> in case the joint venture is already in existence; <b><i>OR</i></b>  duly notarized statements from all the potential joint venture partners stating that they will enter into and abide by the provisions of the JVA in the instance that the bid is successful.	ANNEX E
<b>OTHER DOCUMENTARY REQUIREMENTS UNDER RA NO. 9184 (AS APPLICABLE)</b>		
12	<i>[For foreign bidders claiming by reason of their country's extension of reciprocal rights to Filipinos]</i> Certification from the relevant government office of their country stating that Filipinos are allowed to participate in government procurement activities for the same item or product	-
13	Certification from the DTI if the Bidder claims preference as a Domestic Bidder or Domestic Entity.	-

## II. FINANCIAL COMPONENT ENVELOPE

ITEM NO.	DOCUMENTS	PRESCRIBED FORMS
1	Original of duly signed and accomplished <b>Financial Bid Form.</b> ; <b><i>AND</i></b>	ANNEX F
2	Original of duly signed and accomplished <b>Price Schedule(s)</b> .	ANNEX G

## III. SUBCONTRACT REQUIREMENTS

ITEM NO.	DOCUMENTS	PRESCRIBED FORMS
1	Same Documentary Requirements with the Principal Bidder.	-

## *Section IX. Bidding Forms*

**ANNEX A**

**Statement of Ongoing and Awarded but Not Yet Started Contracts**

This is to certify that \_has the following ongoing and awarded but not yet started contracts:

Name of Contract	Date of Contract	Duration of Contract	Owner's Name and Address	Kinds of Goods	Amount of Contract	Value of Outstanding Contracts	Date of Delivery

Name and Signature of Authorized Representative

Date

**\*Instructions:**

- a) State all ongoing contracts including those awarded but not yet started (government and private contracts which may be similar or not similar to the project called for bidding) as of the day before the deadline of submission and opening of bids.
- b) **If there is no ongoing contract including awarded but not yet started as of the aforementioned period, state none or equivalent term.**
- a) The total amount of the ongoing and awarded but not yet started contracts should be consistent with those used in the Net Financial Contracting Capacity (NFCC) in case an NFCC is submitted as an eligibility document.



**ANNEX B**

**Statement of Single Largest Completed Contract Similar to the Contract to be Bid**

This is to certify that\_ has the largest completed contract within **the last five years**:

Name of Contract	Date of Contract	Duration of Contract	Owner's Name and Address	Kinds of Goods	Amount of Completed Contract	Date of Delivery	End User's Acceptance or Official Receipt(s) or Sales Invoice (If completed)

Name and Signature of Authorized Representative

Date

**\*Instructions:**

- a) Cut-off date: The day before the deadline of submission and opening of bids.  
 In the column for “End-User’s Acceptance”, indicate the date of acceptance or Official Receipt(s) or Sales Invoice.

**ANNEX C**

**Bid Securing Declaration Form**

*[shall be submitted with the Bid if bidder opts to provide this form of bid security]*

REPUBLIC OF THE PHILIPPINES)  
CITY OF \_\_\_\_\_) S.S.

**BID SECURING DECLARATION**

**Project Identification No.: *[Insert number]***

To: *[Insert name and address of the Procuring Entity]*

I/We, the undersigned, declare that:

1. I/We understand that, according to your conditions, bids must be supported by a Bid Security, which may be in the form of a Bid Securing Declaration.
2. I/We accept that: (a) I/we will be automatically disqualified from bidding for any procurement contract with any procuring entity for a period of two (2) years upon receipt of your Blacklisting Order; and, (b) I/we will pay the applicable fine provided under Section 6 of the Guidelines on the Use of Bid Securing Declaration, within fifteen (15) days from receipt of the written demand by the procuring entity for the commission of acts resulting to the enforcement of the bid securing declaration under Sections 23.1(b), 34.2, 40.1 and 69.1, except 69.1(f), of the IRR of RA No. 9184; without prejudice to other legal action the government may undertake.
3. I/We understand that this Bid Securing Declaration shall cease to be valid on the following circumstances:
  - a. Upon expiration of the bid validity period, or any extension thereof pursuant to your request;
  - b. I am/we are declared ineligible or post-disqualified upon receipt of your notice to such effect, and (i) I/we failed to timely file a request for reconsideration or (ii) I/we filed a waiver to avail of said right; and
  - c. I am/we are declared the bidder with the Lowest Calculated Responsive Bid, and I/we have furnished the performance security and signed the Contract.

**IN WITNESS WHEREOF**, I/We have hereunto set my/our hand/s this \_\_\_\_\_ day of *[month]* *[year]* at *[place of execution]*.

*[Insert NAME OF BIDDER OR ITS AUTHORIZED REPRESENTATIVE]*

*[Insert signatory's legal capacity]*

Affiant

**SUBSCRIBED AND SWORN** to before me, in the city of \_\_\_\_\_, this \_\_\_\_\_ day of \_\_\_\_\_, 2021, by the Affiant who is personally known to me and who exhibited his/her (any competent evidence of identity) issued by (issuing agency) on (date of issue) at (place of issue).

NOTARY PUBLIC

Doc. No. \_\_\_\_\_;  
Page No. \_\_\_\_\_;  
Book No.; Series  
of 2021.

## ANNEX D

### Omnibus Sworn Statement

*[shall be submitted with the Bid]*

REPUBLIC OF THE PHILIPPINES)  
CITY/MUNICIPALITY OF \_\_\_\_\_) S.S.

### AFFIDAVIT

I, [Name of Affiant], of legal age, [Civil Status], [Nationality], and residing at [Address of Affiant], after having been duly sworn in accordance with law, do hereby depose and state that:

1. *[Select one, delete the other:]*

*[If a sole proprietorship:]* I am the sole proprietor or authorized representative of [Name of Bidder] with office address at [address of Bidder];

*[If a partnership, corporation, cooperative, or joint venture:]* I am the duly authorized and designated representative of [Name of Bidder] with office address at [address of Bidder];

2. *[Select one, delete the other:]*

*[If a sole proprietorship:]* As the owner and sole proprietor, or authorized representative of [Name of Bidder], I have full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract for [Name of the Project] of the [Name of the Procuring Entity], as shown in the attached duly notarized Special Power of Attorney;

*[If a partnership, corporation, cooperative, or joint venture:]* I am granted full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract for [Name of the Project] of the [Name of the Procuring Entity], as shown in the attached [state title of attached document showing proof of authorization (e.g., duly notarized Secretary's Certificate, Board/Partnership Resolution, or Special Power of Attorney, whichever is applicable)];

3. [Name of Bidder] is not "blacklisted" or barred from bidding by the Government of the Philippines or any of its agencies, offices, corporations, or Local Government Units, foreign government/foreign or international financing institution whose blacklisting rules have been recognized by the Government Procurement Policy Board, by itself or by relation, membership, association, affiliation, or controlling interest with another blacklisted person or entity as defined and provided for in the Uniform Guidelines on Blacklisting;

4. Each of the documents submitted in satisfaction of the bidding requirements is an authentic

copy of the original, complete, and all statements and information provided therein are true and correct;

5. [Name of Bidder] is authorizing the Head of the Procuring Entity or its duly authorized representative(s) to verify all the documents submitted;

6. *[Select one, delete the rest:]*

*[If a sole proprietorship:]* The owner or sole proprietor is not related to the Head of the Procuring Entity, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

*[If a partnership or cooperative:]* None of the officers and members of *[Name of Bidder]* is related to the Head of the Procuring Entity, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

*[If a corporation or joint venture:]* None of the officers, directors, and controlling stockholders of *[Name of Bidder]* is related to the Head of the Procuring Entity, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

7. *[Name of Bidder]* complies with existing labor laws and standards; and
8. *[Name of Bidder]* is aware of and has undertaken the responsibilities as a Bidder in compliance with the Philippine Bidding Documents, which includes:
  - a. Carefully examining all of the Bidding Documents;
  - b. Acknowledging all conditions, local or otherwise, affecting the implementation of the Contract;
  - c. Making an estimate of the facilities available and needed for the contract to be bid, if any; and
  - d. Inquiring or securing Supplemental/Bid Bulletin(s) issued for the *[Name of the Project]*.
9. *[Name of Bidder]* did not give or pay directly or indirectly, any commission, amount, fee, or any form of consideration, pecuniary or otherwise, to any person or official, personnel or representative of the government in relation to any procurement project or activity.
10. In case advance payment was made or given, failure to perform or deliver any of the obligations and undertakings in the contract shall be sufficient grounds to constitute criminal liability for Swindling (Estafa) or the commission of fraud with unfaithfulness or abuse of confidence through misappropriating or converting any payment received by a person or entity under an obligation involving the duty to deliver certain goods or services, to the prejudice of the public and the government of the Philippines pursuant to Article 315 of Act No. 3815 s. 1930, as amended, or the Revised Penal Code.

**IN WITNESS WHEREOF**, I have hereunto set my hand this \_\_\_\_\_ day of \_\_\_\_\_, 2021 at \_\_\_\_\_, Philippines.

*[Insert NAME OF BIDDER OR ITS AUTHORIZED REPRESENTATIVE]*

*[Insert signatory's legal capacity]*

Affiant

**SUBSCRIBED AND SWORN** to before me, in the city of \_\_\_\_\_, this \_\_\_\_\_ day of \_\_\_\_\_, 2021, by the Affiant who is personally known to me and who exhibited his/her (any competent evidence of identity) issued by (issuing agency) on (date of issue) at (place of issue).

NOTARY PUBLIC

Doc. No. \_\_\_\_\_;  
Page No. \_\_\_\_\_;  
Book No.; Series  
of 2021.

**ANNEX E**

FORMAT OF JOINT VENTURE AGREEMENT (JVA)

KNOW ALL MEN BY THESE PRESENTS:

That this JOINT VENTURE AGREEMENT is entered into by and between:

(Name of Company), a corporation duly organized and registered under Philippine law, with principal office address at (address), and represented herein by (Position), (Name)

-and-

(Name of Company), a corporation duly organized and registered under Philippine law, with principal office address at (address), and represented herein by (Position), (Name)

That the above parties are duly authorized by their respective corporations to enter into and bind their respective corporations to a Joint Venture Agreement, pursuant to a valid Board Resolution issued by their respective Board of Directors/Trustees.

That all parties agree to join together their manpower, equipment, and what is needed to establish a project-specific Joint Venture for the purpose of bidding, and if successful, undertaking of the hereunder stated project of the NATIONAL ECONOMIC AND DEVELOPMENT AUTHORITY (NEDA).

NAME OF PROJECT	ABC

That both parties agree to be jointly and severally liable for the entire assignment.

That both parties agree that (Name of Company) shall act as the lead organization and (Name of Company) as partner organization; and (Name of Company), as the lead organization, will oversee the administration and content of the eligibility and proposal submissions, coordinate with NEDA on any matter that needs attending to, and implement the project in the event that the joint venture wins the bid.

That both parties agree that (Name), (Position), of (Name of Company), shall be the Official Representative of the Joint Venture, and is granted full power and authority to do, to execute, and perform any and all acts necessary, and/or to represent the Joint Venture in the entire bidding and implementation process, as fully and effectively as the Joint Venture may do so as if personally present, without prejudice to the authority of the Joint Venture partners to exercise their power of substitution and revocation.

That this Joint Venture Agreement shall remain in effect only for the above stated

Project until terminated by both parties or in the event of an unsuccessful bidding.

In witness thereof, we have hereunto affixed our signatures this \_\_\_\_\_ day of \_\_\_\_\_ 2021 at \_\_\_\_\_.

*(Name of Company)*

*(Name of Company)*

by:

by:

*(Name)*  
*(Position)*

*(Name)*  
*(Position)*

WITNESSES:

*(Signature of Witness)*

*(Signature of Witness)*

*(Name of Witness)*

*(Name of Witness)*

Address:

Address:



## ACKNOWLEDGEMENT

BEFORE ME, a Notary Public for and in the (City/Province/Municipality) of \_\_\_\_\_ this \_\_\_\_\_ day of \_\_\_\_\_ 2021, personally appeared:

NAME	ID PRESENTED/EXPIRATION	PLACE OF ISSUE

known to me and to me known to be the same persons who executed the foregoing instrument which they acknowledged to me to be their free and voluntary act and deed, consisting of page/s, including this page in which this Acknowledgement is written, duly signed by them and their instrumental witnesses on each and every page hereof.

Doc. No. \_\_\_\_\_

Page No. \_\_\_\_\_

Book No. \_\_\_\_\_

Series of 2021.

**ANNEX F**

**Bid Form for the Procurement of Goods**

*[shall be submitted with the Bid]*

**BID FORM**

Date : \_\_\_\_\_

Project Identification No. : \_\_\_\_\_

*To: [name and address of Procuring Entity]*

Having examined the Philippine Bidding Documents (PBDs) including the Supplemental or Bid Bulletin Numbers *[insert numbers]*, the receipt of which is hereby duly acknowledged, we, the undersigned, offer to *[supply/deliver/perform]* *[description of the Goods]* in conformity with the said PBDs for the sum of *[total Bid amount in words and figures]* or the total calculated bid price, as evaluated and corrected for computational errors, and other bid modifications in accordance with the Price Schedules attached herewith and made part of this Bid. The total bid price includes the cost of all taxes, such as, but not limited to: *[specify the applicable taxes, e.g. (i) value added tax (VAT), (ii) income tax, (iii) local taxes, and (iv) other fiscal levies and duties]*, which are itemized herein or in the Price Schedules,

If our Bid is accepted, we undertake:

- a. to deliver the goods in accordance with the delivery schedule specified in the Schedule of Requirements of the Philippine Bidding Documents (PBDs);
- b. to provide a performance security in the form, amounts, and within the times prescribed in the PBDs;
- c. to abide by the Bid Validity Period specified in the PBDs and it shall remain binding upon us at any time before the expiration of that period.

*[Insert this paragraph if Foreign-Assisted Project with the Development Partner:*

Commissions or gratuities, if any, paid or to be paid by us to agents relating to this Bid, and to contract execution if we are awarded the contract, are listed below:

Name and address of agent	Amount and Currency	Purpose of Commission or gratuity
_____	_____	_____
(if none, state "None")		

Until a formal Contract is prepared and executed, this Bid, together with your written acceptance thereof and your Notice of Award, shall be binding upon us.

We understand that you are not bound to accept the Lowest Calculated Bid or any Bid you may receive.

We certify/confirm that we comply with the eligibility requirements pursuant to the PBDs.

The undersigned is authorized to submit the bid on behalf of *[name of the bidder]* as evidenced by the attached *[state the written authority]*.

We acknowledge that failure to sign each and every page of this Bid Form, including the attached Schedule of Prices, shall be a ground for the rejection of our bid.

Name: \_\_\_\_\_

Legal capacity: \_\_\_\_\_

Signature: \_\_\_\_\_

Duly authorized to sign the Bid for and behalf of: \_\_\_\_\_

Date: \_\_\_\_\_

**ANNEX G**

***PRICE SCHEDULE***

*Name of Bidder* \_\_\_\_\_

*Project Identification Number* \_\_\_\_\_

**PROCUREMENT OF SMART CAMPUS ENHANCEMENT PROGRAM OF  
EASTERN VISAYAS STATE UNIVERSITY (EVSU)**

<b>QTY.</b>	<b>PARTICULARS</b>	<b>BRAND AND MODEL</b>	<b>UNIT PRICE (in PhP)</b>	<b>TOTAL BID per line item (in PhP)</b>
<b>TOTAL BID</b>			<b>PHP</b> _____	

*Note: The Bidder shall provide the total bid amount, inclusive of all applicable government taxes and service charges.*

Name: \_\_\_\_\_  
\_\_\_\_\_

Legal Capacity: \_\_\_\_\_

Signature: \_\_\_\_\_  
\_\_\_\_\_

Duly authorized to sign the Bid for and behalf of:  
\_\_\_\_\_  
\_\_\_\_\_

## **ANNEX H**

### **LIST OF BUILDINGS**

Supply power to the following buildings in the Eastern Visayas State University Main Campus:

- I. Women's Technology Building
- II. New COBE Building
- III. Graduate School Building
- IV. Cafeteria
- V. Food Innovation Center
- VI. Shared Service Facility
- VII. ORDEX Building
- VIII. Academic Building
- IX. Wood Working/New Administration Building
- X. SASO/SSG Student Center Building
- XI. Learning Commons
- XII. Science Building
- XIII. EVSUFA Balay
- XIV. Asia Pacific
- XV. Water Supply System
- XVI. Innovation Hub
- XVII. EVSU Multi-Purpose Cooperative

