PHILIPPINE BIDDING DOCUMENTS

Supply, Delivery, Installation and Commissioning of Aerodrome, Enroute and Approach Simulators for the Comprehensive Air Traffic Service (CATS) Program and Other ATS-related Training

BID NO. 25-70-08 BRAVO

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.

Table of Contents

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

Notes on the Invitation to Bid

The Invitation to Bid (IB) provides information that enables potential Bidders to decide whether to participate in the procurement at hand. The IB shall be posted in accordance with Section 21.2 of the 2016 revised IRR of RA No. 9184.

Apart from the essential items listed in the Bidding Documents, the IB should also indicate the following:

a. The date of availability of the Bidding Documents, which shall be from the time the IB is first advertised/posted until the deadline for the submission and receipt of bids;

b. The place where the Bidding Documents may be acquired or the website where it may be downloaded;

c. The deadline for the submission and receipt of bids; and

d. Any important bid evaluation criteria (*e.g.*, the application of a margin of preference in bid evaluation).

The IB should be incorporated in the Bidding Documents. The information contained in the IB must conform to the Bidding Documents and in particular to the relevant information in the Bid Data Sheet.

INVITATION TO BID

SUPPLY, DELIVERY, INSTALLATION AND COMMISSIONING OF AERODROME, ENROUTE AND APPROACH SIMULATORS FOR THE COMPREHENSIVE AIR TRAFFIC SERVICE (CATS) PROGRAM AND OTHER ATS-RELATED TRAINING

1. The **Civil Aviation Authority of the Philippines (CAAP)**, through the **Corporate Operating Budget for CY2025** intends to apply the sum of **Php255,000,000.00** being the ABC to payments under the contract for the **Supply, Delivery, Installation and Commissioning of Aerodrome, Enroute and Approach Simulators for the Comprehensive Air Traffic Service (CATS) Program and Other ATS-related Training- Bid No. 25-70-08 Bravo.** Bids received in excess of the ABC shall be automatically rejected at bid opening.

2. The **CAAP** now invites bids for the above Procurement Project. Delivery of the Goods is required within **240 calendar days**. Bidders should have completed, within **the last 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.

   a. Bidding is open to all interested bidders, whether local or foreign, subject to the conditions for eligibility provided in the 2016 revised IRR of RA No. 9184.

4. Prospective Bidders may obtain further information from **CAAP** and inspect the Bidding Documents at the address given below during **8:00am to 5:00pm at the BAC Office.**

5. A complete set of Bidding Documents may be acquired by interested Bidders on **20 August 2025 until deadline of submission of bid** from the given address and website(s) 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 **Php50,000.00 (exclusive of any and all taxes imposed by relevant government agencies)**. The Procuring Entity shall allow the bidder to present its proof of payment for the fees in person.

   It may also be downloaded free of charge from the website of the Philippine Government Electronic Procurement System (PhilGEPS) and the CAAP website, if

Bidders shall pay the applicable fee for the Bidding Documents not later than the date and time of submission of their bids.

6. The **CAAP** will hold a Pre-Bid Conference on **29 August 2025 @ 9:30 AM** through video conferencing or webcasting ***via Google Meet***, which shall be open to prospective bidders.

7. Bids must be duly received by the BAC Secretariat through manual submission at the office address indicated below on or before **10 September 2025 @ 9:30 AM.** 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 on **10 September 2025 @ 9:30 AM** at the given address below **at Conference Room, CAAP Main, Old MIA Road Pasay City** and/or **via Google Meet**. Bids will be opened in the presence of the bidders' representatives who choose to attend the activity.

10. The **CAAP** 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. Upon payment of the bid documents, bidders must provide their respective email addresses to the BAC Secretariat. All communications, including but not limited to Notices, Resolutions, and Replies, among others, will be sent to the email address provided by the bidder/s. The date when such email was sent shall be considered the date of receipt of the bidder/s for purposes of complying with the requirements under RA 9184.

12. For further information, please refer to:

LEANDRO R. VARQUEZ
Head, BAC Secretariat
3/F Supply, Procurement Building
Civil Aviation Authority of the Philippines
MIA Road, Pasay City, Metro Manila 1300
Telephone No.: (02) 8246 4988 loc 2236
Email: **bac@caap.gov.ph**

13. You may visit the following websites for downloading of Bidding Documents:
https://notices.philgeps.gov.ph
https://caap.gov.ph

ATTY. DANJUN G. LUCAS
Chairperson, Bids and Awards Committee- Bravo

Section II. Instructions to Bidders

Notes on the Instructions to Bidders

This Section on the Instruction to Bidders (ITB) provides the information necessary for bidders to prepare responsive bids, in accordance with the requirements of the Procuring Entity. It also provides information on bid submission, eligibility check, opening and evaluation of bids, post-qualification, and on the award of contract.

1. Scope of Bid

The Procuring Entity, **Civil Aviation Authority of the Philippines (CAAP)** wishes to receive Bids for the **Supply, Delivery, Installation and Commissioning of Aerodrome, Enroute and Approach Simulators for the Comprehensive Air Traffic Service (CATS) Program and Other ATS-related Trainings**, with identification number **BID NO. 25-70-08 BRAVO.**

The Procurement Project (referred to herein as "Project") is composed of Two (2) Sets of Aerodrome Tower Simulator with a 360° Horizontal Field of View (HFOV) and One (1) Set of Enroute/Approach Radar and Procedural Radar Simulator, 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 CY2025 in the amount of **Php255,000,000.00**.

2.2. The source of funding is the CAAP Corporate Operating Budget CY2025, APP Item No. 2894 (CBA No. 25-05-630) dated May 09, 2025.

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. Foreign ownership limited to those allowed under the rules may participate in this Project.

5.3. 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:

a. For the procurement of Non-expendable Supplies and Services: The Bidder must have completed a single contract that is similar to this Project, equivalent to at least fifty percent (50%) of the ABC.

5.4. 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:

a. Subcontracting is not allowed.

8. Pre-Bid Conference

The Procuring Entity will hold a pre-bid conference for this Project on the specified date and time and either at its physical address **Conference Room, CAAP Main, Old MIA Road Pasay City** and/or through videoconferencing 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 the last **5 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 the **BDS.**

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 the **BDS.**

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:

a. Philippine Pesos.

14. Bid Security

14.1. The Bidder shall submit a Bid Securing Declaration 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 and shall be callable on demand. 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 one copy of the first and second components of its Bid.

The Procuring Entity may request additional hard copies and/or electronic copies of the Bid. However, failure of the Bidders to comply with the said request shall not be a ground for disqualification.

16. Deadline for Submission of Bids

16.1. The Bidders shall submit on the specified date and time and either 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

18.1. 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 Entity's 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 14 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 project having several items that shall be awarded as one 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

20.2. 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

21.1. 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

Notes on the Bid Data Sheet

The Bid Data Sheet (BDS) consists of provisions that supplement, amend, or specify in detail, information, or requirements included in the ITB found in Section II, which are specific to each procurement.

This Section is intended to assist the Procuring Entity in providing the specific information in relation to corresponding clauses in the ITB and has to be prepared for each specific procurement.

The Procuring Entity should specify in the BDS information and requirements specific to the circumstances of the Procuring Entity, the processing of the procurement, and the bid evaluation criteria that will apply to the Bids. In preparing the BDS, the following aspects should be checked:

a. Information that specifies and complements provisions of the ITB must be incorporated.

b. Amendments and/or supplements, if any, to provisions of the ITB as necessitated by the circumstances of the specific procurement, must also be incorporated.

Bid Data Sheet

ITB Clause	
5.3	For this purpose, contracts similar to the Project shall be: a. Supply, Installation, Training, Testing and Commissioning of Integrated Aerodrome and Radar Simulator; and b. Completed within 5 years prior to the deadline for the submission and receipt of bids.
7.1	Subcontracting is not allowed.
10.1	Bidders are required to submit the following as part of the technical documents: 1. Certificate of Authorized Distributorship from the manufacturer of the goods being offered; 2. Duly notarized Certification and Undertaking; and 3. Proof and other supporting documentary evidence of the bidder's statement of compliance with technical specifications required under Section VII. Technical Specifications, as applicable, such as printed copy of the datasheet/brochure with complete specification downloadable from the internet or official webpage of the manufacturer.
12	The price of the Goods shall be quoted DDP Civil Aviation Authority of the Philippines, Old MIA Road, Pasay City or the applicable International Commercial Terms (INCOTERMS) for this Project.
14.1	The bid security shall be in the form of a Bid Securing Declaration, or any of the following forms and amounts: a. The amount of not less than **Php5,100,000.00**, if bid security is in cash, cashier's/manager's check, bank draft/guarantee or irrevocable letter of credit; or b. The amount of not less than **Php12,750,000.00** if bid security is in Surety Bond.
15	Each page thereof is initialed by the duly authorized representative/s of the Bidder. Submitted Eligibility, Technical and Financial documents are properly marked with index tabs (ear tabs) and sequentially paginated in accurate order in the form i.e., "page 3 of 100". Pagination is sequential throughout the documents inside the envelope. Each bidder shall submit one copy of the first and second components of its Bid.
19.2	Partial Bid is not allowed. The goods are grouped in a single lot and the lot shall not be divided into sub-lots for the purpose of bidding, evaluation, and contract award.

20.2	For purposes of Post-qualification, the following document(s) shall be required: 1. Latest income **and** business tax returns filed through the Electronic Filing and Payment System (EFPS); 2. Business licenses and permits required by law (Registration Certificate, Mayor's Permit, & Tax Clearance); 3. Latest Audited Financial Statements stamped received by the BIR; 4. Proof of completion of the submitted SLCC which shall be a verifiable copy of the Contract, Purchase Order or Framework Agreement, and **any** of the following documents: a. corresponding Sales Invoice/s; b. Official Receipt/Cash Receipt/Collection Receipt; 5. Certificate of Project Completion/ Certificate of Acceptance of the submitted SLCC; 6. Per CAAP Memorandum dated 17 September 2018 re: Disqualification of Prospective Bidders with Pending Case against the Government in the procurement activities of the CAAP, all prospective bidders shall be required to submit the ff: a. A Certification under oath attesting that they have no pending case(s) against the Government, in addition to the eligibility requirements for bidders as prescribed under the Revised Implementing Rules and Regulations (Revised IRR) of RA 9184; **and** b. Legal Clearance to be issued by the CAAP Enforcement and Legal Service with respect to the non-pendency of any cases of prospective bidders against the Authority.
21.2	No further instructions.

Section IV. General Conditions of Contract

Notes on the General Conditions of Contract

The General Conditions of Contract (GCC) in this Section, read in conjunction with the Special Conditions of Contract in Section V and other documents listed therein, should be a complete document expressing all the rights and obligations of the parties.

Matters governing performance of the Supplier, payments under the contract, or matters affecting the risks, rights, and obligations of the parties under the contract are included in the GCC and Special Conditions of Contract.

Any complementary information, which may be needed, shall be introduced only through the Special 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 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 specifications at no extra cost to the Procuring Entity in accordance with the Generic Procurement Manual. In addition to tests in the **SCC**, **Section VII (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

Notes on the Special Conditions of Contract

Similar to the BDS, the clauses in this Section are intended to assist the Procuring Entity in providing contract-specific information in relation to corresponding clauses in the GCC found in Section IV.

The Special Conditions of Contract (SCC) complement the GCC, specifying contractual requirements linked to the special circumstances of the Procuring Entity, the Procuring Entity's country, the sector, and the Goods purchased. In preparing this Section, the following aspects should be checked:

a. Information that complements provisions of the GCC must be incorporated.

b. Amendments and/or supplements to provisions of the GCC as necessitated by the circumstances of the specific purchase, must also be incorporated.

However, no special condition which defeats or negates the general intent and purpose of the provisions of the GCC should be incorporated herein.

Special Conditions of Contract

GCC Clause	
1	**Delivery and Documents –** 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: *[For Goods supplied from abroad, state:]* "The delivery terms applicable to the Contract are DDP delivered Civil Aviation Authority of the Philippines, Old MIA Road, Pasay City. In accordance with INCOTERMS." *[For Goods supplied from within the Philippines, state:*] "The delivery terms applicable to this Contract are delivered Civil Aviation Authority of the Philippines, Old MIA Road, Pasay City. Risk and title will pass from the Supplier to the Procuring Entity upon receipt and final acceptance of the Goods at their final destination." Delivery of the Goods shall be made by the Supplier in accordance with the terms specified in Section VI (Schedule of Requirements). For purposes of this Clause the Procuring Entity's Representative at the Project Site is **Ms. April Frances P. Obiña**, ATMO III/Procurement Planning Head, Planning Division, Air Traffic Service. **Incidental Services –** The Supplier is required to provide all of the following services, including additional services, if any, specified in Section VI. Schedule of Requirements: a. performance or supervision of on-site assembly and/or start-up of the supplied Goods; b. furnishing of tools required for assembly and/or maintenance of the supplied Goods; c. furnishing of a detailed operations and maintenance manual for each appropriate unit of the supplied Goods; d. 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 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.
	e. 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. The Contract price for the Goods shall include the prices charged by the Supplier for incidental services and shall not exceed the prevailing rates charged to other parties by the Supplier for similar services. **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: 1. 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 2. in the event of termination of production of the spare parts: i. advance notification to the Procuring Entity of the pending termination, in sufficient time to permit the Procuring Entity to procure needed requirements; and ii. 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 costs 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 **five (5) years**. Spare parts or components shall be supplied as promptly as possible, but in any case, within **sixty (60) days** 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 on at least four (4) sides as follows: Name of the Procuring Entity Name of the Supplier Contract Description Final Destination Gross weight Any special lifting instructions Any special handling instructions Any relevant HAZCHEM classifications
	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.
2.2	This is a Turn-Key Project, payment will be after issuance of project completion Certification of CAAP.
4	The inspections and tests that will be conducted are: Factory Acceptance Test and Site Acceptance Test

Section VI. Schedule of Requirements

The delivery schedule expressed as weeks/months stipulates hereafter a delivery date which is the date of delivery to the project site.

Item Number	Description	Quantity	Total	Delivered, Weeks/Months
1	**Aerodrome Tower Simulator with a 360° Horizontal Field of View**	**2**	**Lots**	**Two Hundred Forty (240) Calendar Days**
	Complete with:			
	2x Controller Working Position			
	1x Supervisor Position			
	4x Pseudo Pilot Positions			
	7x Position Voice Communication System (VCS) connecting all controller, supervisor and pseudo-pilot position			
	2x Scenario Development Station			
	8x Airport Visual Database in a High-Fidelity 3D Model and Site Specific Model			
	Tower Console			
	Furniture and Chairs			
2	**Enroute/Approach Radar Simulator**	**1**	**Lot**	
	Complete with:			
	4x Executive Controller and Assistant Suite			
	1x Dedicated Supervisor Console for Session Coordination			
	4x Pseudo Pilot Positions			
	1x Workstation for Scenario Creation			
	Integrated Voice Communication and Control System (VCCS) linking all controller, pilot and supervisor positions for simulated radio and intercom interactions.			
	1x A3/A4 color network printer to support printing of flight			

	strips, reports and documentation.			
	Furniture and Chairs			
3	System Integration Capability	**1**	**Lot**	
4	Site Renovation and Infrastructure Enhancement Works under the Simulator Project	**1**	**Lot**	
5	Relocation of Existing Pseudo Pilot Workstations	**1**	**Lot**	
6	Facility Partitioning, Environmental Conditioning and Furnishing	**1**	**Lot**	
7	Factory and Site Training	**1**	**Lot**	
8	Factory and Site Acceptance	**1**	**Lot**	
9	Operator and Maintenance Documentations	**1**	**Lot**	

Section VII. Technical Specifications

Notes for Preparing the Technical Specifications

A set of precise and clear specifications is a prerequisite for Bidders to respond realistically and competitively to the requirements of the Procuring Entity without qualifying their Bids. In the context of Competitive Bidding, the specifications (*e.g.* production/delivery schedule, manpower requirements, and after-sales service/parts, descriptions of the lots or items) must be prepared to permit the widest possible competition and, at the same time, present a clear statement of the required standards of workmanship, materials, and performance of the goods and services to be procured. Only if this is done will the objectives of transparency, equity, efficiency, fairness, and economy in procurement be realized, responsiveness of bids be ensured, and the subsequent task of bid evaluation and post-qualification facilitated. The specifications should require that all items, materials and accessories to be included or incorporated in the goods be new, unused, and of the most recent or current models, and that they include or incorporate all recent improvements in design and materials unless otherwise provided in the Contract.

Samples of specifications from previous similar procurements are useful in this respect. The use of metric units is encouraged. Depending on the complexity of the goods and the repetitiveness of the type of procurement, it may be advantageous to standardize the General Technical Specifications and incorporate them in a separate subsection. The General Technical Specifications should cover all classes of workmanship, materials, and equipment commonly involved in manufacturing similar goods. Deletions or addenda should then adapt the General Technical Specifications to the particular procurement.

Care must be taken in drafting specifications to ensure that they are not restrictive. In the specification of standards for equipment, materials, and workmanship, recognized Philippine and international standards should be used as much as possible. Where other particular standards are used, whether national standards or other standards, the specifications should state that equipment, materials, and workmanship that meet other authoritative standards, and which ensure at least a substantially equal quality than the standards mentioned, will also be acceptable. The following clause may be inserted in the Special Conditions of Contract or the Technical Specifications.

Sample Clause: Equivalency of Standards and Codes

Wherever reference is made in the Technical Specifications to specific standards and codes to be met by the goods and materials to be furnished or tested, the provisions of the latest edition or revision of the relevant standards and codes shall apply, unless otherwise expressly stated in the Contract. Where such standards and codes are national or relate to a particular country or region, other authoritative standards that

ensure substantial equivalence to the standards and codes specified will be acceptable.

Reference to brand name and catalogue number should be avoided as far as possible; where unavoidable they should always be followed by the words "*or at least equivalent*." References to brand names cannot be used when the funding source is the GOP.

Where appropriate, drawings, including site plans as required, may be furnished by the Procuring Entity with the Bidding Documents. Similarly, the Supplier may be requested to provide drawings or samples either with its Bid or for prior review by the Procuring Entity during contract execution.

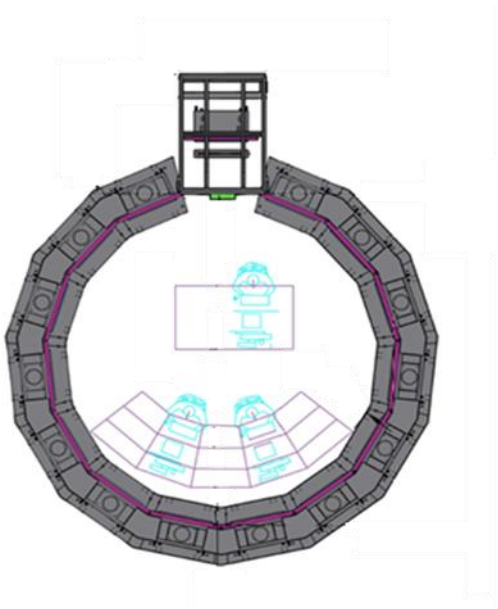
Bidders are also required, as part of the technical specifications, to complete their statement of compliance demonstrating how the items comply with the specification.

In case of Renewal of Regular and Recurring Services, the Procuring Entity must indicate here the technical requirements for the service provider, which must include the set criteria in the conduct of its performance evaluation.

Technical Specifications

Bidders must state here either "Comply" or "Not Comply" against each of the individual parameters of each Specification stating the corresponding performance parameter of the equipment offered. Statements of "Comply" or "Not Comply" must be supported by evidence in a Bidders Bid and cross-referenced to that evidence. Evidence shall be in the form of manufacturer's un-amended sales literature, unconditional statements of specification and compliance issued by the manufacturer, samples, independent test data etc., as appropriate. A statement that is not supported by evidence or is subsequently found to be contradicted by the evidence presented will render the Bid under evaluation liable for rejection. A statement either in the Bidder's statement of compliance or the supporting evidence that is found to be false either during Bid evaluation, post-qualification or the execution of the Contract may be regarded as fraudulent and render the Bidder or supplier liable for prosecution subject to the applicable laws and issuances.

Item	Specification	Compliance Statement	Reference to support statement (also INDICATE PAGE No.)
I	**INTRODUCTION**		
	The Civil Aviation Authority of the Philippines (CAAP) intends to procure **Two (2) Sets of Aerodrome Tower Simulator with a 360° Horizontal Field of View (HFOV)** and **One (1) Set of Enroute/Approach Radar and Procedural Radar Simulation** systems, including all associated hardware, software, project management, engineering services, training and logistics support. Simulation systems shall provide the ATC training programs with facilities to train the CAAP ATC personnel in all phases of their work from the initial training of basic ATC procedures and phraseology to advanced training to obtain and maintain the ATC proficiency and licensing as required.		
2	**AERODROME TOWER SIMULATOR**		
2.1	The Aerodrome Tower Simulator will be used by CAAP for Air Traffic Control (ATC) Tower rating, re-currency, proficiency training and evaluation of new procedures.		
2.2	The new Aerodrome Tower Simulator must be capable of seamless integration with other systems, including the existing Aerodrome Simulator as well as the new Approach and Area Control Centre (ACC) Simulators, to support simultaneous and coordinated simulation exercises. To demonstrate compliance with this requirement, the bidder or manufacturer shall submit		

	an official certificate or signed declaration confirming that their proposed system is technically capable of such integration. The certificate must also state that the integration functionality is included within the scope of supply, along with all necessary interfaces, protocols and support services required to ensure successful interoperability. Proposals that do not include this certification will be considered non-compliant with the integration requirement.		
2.3	As a minimum, the following systems, equipment and services shall be supplied for the Aerodrome Tower Simulator System		
2.4	The proposed Aerodrome Simulator shall provide a **360° Horizontal Field of View (HFOV)**, utilizing **15 sets of 86" 4K UHD LED display monitors** configured in portrait orientation, along with 2 additional spare monitors for redundancy or replacement purposes. The simulator must include a **movable entry door** to facilitate easy access without compromising the immersive environment. The **3D visual system** shall support **full 360° panning** in any direction, enabling the dynamic positioning of the out-of-the-window aerodrome view in alignment with the controller working positions (consoles) inside the simulator. The system must offer a **minimum internal diameter of 5,220 mm**, ensuring sufficient working space for operational use and movement. A sample layout illustrating the proposed configuration is provided below. 		

2.4.1	2 x Controller positions (Runway, Surface Movement/Coordinator)		
2.4.2	1 x Supervisor position		
2.4.3	4 x Pseudo-Pilot positions		
2.4.4	7-position Voice Communications System (VCS) connecting all the controller, supervisor and pseudo-pilot positions		
2.4.5	Voice Recognition capability		
2.5	2 x scenario development stations		
2.6	Visual Database for:		
2.6.1	1 x NAIA (Manila International Airport)		
2.6.2	1 x MCIA (Mactan-Cebu International Airport)		
2.6.3	1 x Plaridel Airport		
2.6.4	1 x Davao International Airport		
2.6.5	1 x Clark International Airport		
2.6.6	1 x Caticlan Airport		
2.6.7	1 x Panglao-Bohol Airport		
2.6.8	1 x Generic Parallel Runway airport (preferably Bulacan Airport Layout)		
2.7	Tower Consoles		
2.8	Furniture and chairs for simulator positions		
2.9	Factory and Site Training		
2.10	Factory and Site Acceptance Testing		
2.11	Operator and Maintenance documentations		
3	**EQUIPMENT**		
3.1	**2 – TOWER CONTROLLER POSITION**		
3.1.1	Flight progress strip printer		
3.1.2	Radar screens ground/Air traffic		
3.1.3	Electronic Flight Strip (EFS) Touch Entry Device (TED) with the capability of utilizing a **stylus pen** as the primary input device for entering commands and remarks		
3.1.4	General information display (Met data, ATIS, AFTN/AMHS messages, airfield lightings, aerodrome information, Navaids status display, electronic strips …)		
3.1.5	Voice and communication system (Touch screen, Headset and mic, Footswitch and PTT microphone, telephone)		
3.1.6	Appropriate tower consoles		
3.1.7	Two flight strip bays, each equipped with a minimum of five (5) strip holder slots, designed to support standard air traffic control operations.		
3.1.8	A total of thirty (30) physical flight strip holders provided to facilitate manual flight progress tracking in		

	accordance with standard air traffic control procedures.		
3.2	**4 – PSEUDO-PILOT POSITION**		
3.2.1	Dual screen for air/ground monitoring and command interactions		
3.2.2	Electronic Data strips (EDD)		
3.2.3	Voice and communication system (Touch screen, Headset and mic, Footswitch and PTT microphone, telephone)		
3.2.4	Appropriate consoles		
3.2.5	Capability to prepare exercises		
3.2.6	Capability to display 3D image		
3.3	**SUPERVISOR/EXERCISE PREPARATION POSITION**		
3.3.1	Dual screen for air/ground monitoring and command interactions		
3.3.2	Electronic Data strips (EDD)		
3.3.3	Voice and communication system (Touch screen, Headset and Mike, Footswitch and PTT microphone, telephone)		
3.3.4	Appropriate console		
3.3.5	Capability to prepare exercises		
3.3.6	Capability to interact with any of the aircraft, and trainees on VCCS		
3.4	**HIGH-FIDELITY 3D MODEL AND 4K DISPLAY SOLUTION**		
3.4.1	**High-Fidelity 3D Model and Site-Specific Airport Model**		
3.4.1.1	The 3D airport model shall provide an accurate and high-fidelity representation of site-specific environments, specifically tailored to depict the following seven designated airports, as listed: 1) NAIA (Manila International Airport) 2) MCIA (Mactan-Cebu International Airport) 3) Plaridel Airport 4) Davao International Airport 5) Clark International Airport 6) Caticlan Airport 7) Panglao-Bohol Airport		
3.4.1.2	The 3D airport model shall be developed in full-scale (1:1) using precise metric dimensions, ensuring accurate spatial representation. Each model must incorporate high-fidelity geometry and high-resolution textures that authentically reflect the distinctive features and unique characteristics of each airport. The modeling shall capture all relevant elements with a		

	high level of detail, enabling realistic visualization from multiple perspectives. The airport shall be fully rendered in three dimensions, allowing for immersive viewing from the aerodrome control tower perspective, as well as from roaming ground-level and aerial viewpoints, to support comprehensive training and situational awareness.		
3.4.1.3	The 3D airport model must accurately reflect and align with the official data provided in the Aeronautical Information Publication (AIP) for each designated airport. The model shall faithfully replicate all critical aerodrome elements, including but not limited to: airport layout, Aerodrome Reference Point (ARP), runway and taxiway dimensions and configurations, runway threshold locations, lighting systems, navigational aids (navaids), aircraft parking stands, signage, and apron (ramp) details.		
3.4.1.4	While the official AIP will be provided, it shall be the responsibility of the Bidder to obtain and capture all necessary site-specific reference photographs required for accurate 3D modeling. The Bidder is expected to conduct on-site visits to each designated airport to photograph in detail all relevant structures, buildings, signage, surface materials, and other visual elements essential for high-quality 3D rendering and texture mapping. To facilitate this, the necessary security clearance and permissions to access airside areas, including the ability to drive on the airfield, will be arranged and provided. The Bidder shall ensure that all photographic data is collected in compliance with applicable airport and aviation security protocols.		
3.4.1.5	The 3D airport model shall include realistic environmental states to accurately represent daytime, nighttime and rainy conditions, closely simulating real-world scenery and atmospheric effects. Each environmental state must feature appropriately tailored textures, lighting, reflections and shading to ensure immersive and operationally relevant visual experiences. All textures and visual elements across the three states shall be seamlessly aligned, ensuring smooth transitions and preventing any texture shifting, misalignment or "texture jumping" when switching between environmental modes. The visual fidelity and continuity between states must be maintained to support uninterrupted simulation realism.		

3.4.1.6	All textures used in the 3D airport models shall be derived from high-quality photographs captured on-site at each specific airport, during both daytime and nighttime conditions. The textures shall be produced in high resolution, ensuring exceptional clarity and detail when rendered on the 4K UHD display system.		
3.4.1.7	All terminals, buildings and airport structures shall be fully modeled in three dimensions, with detail applied to all visible sides. Each model must accurately reflect the true dimensions, shapes, rooflines and rooftop features to capture the distinctive architectural characteristics of each site-specific structure. The modeling shall go beyond basic forms to include nuanced details such as antennae, HVAC units, skylights, and signage, ensuring high visual fidelity. Furthermore, all structures must be textured using site-specific photographic references, with separate high-resolution textures for both daytime and nighttime conditions, providing a realistic and immersive visual experience under varying lighting environments.		
3.4.1.8	The type and exact location of passenger boarding bridges (jet bridges) shall accurately reflect the site-specific configurations of each airport. Each bridge must be modeled in its deployed (extended) position, precisely aligned with the corresponding aircraft parking stand to ensure realistic representation and operational authenticity within the 3D airport environment.		
3.4.1.9	The apron areas must be modeled in high fidelity, accurately reflecting all pavement markings with correct color matching and positioning based on site-specific references. These markings shall include, but are not limited to, stand guidance lines, lead-in and lead-out lines, aircraft stand designations, safety zones and vehicle lane indicators. In addition, the aprons must incorporate all relevant structural elements, including site-specific floodlighting systems, modeled in full detail. This includes the correct type of floodlight heads, as well as the associated support poles, base protectors, mounting details and power distribution boxes, ensuring a realistic and operationally accurate representation of each airport's apron environment.		
3.4.1.10	The natural ground terrain shall be rendered using site-specific vegetation textures, accurately representing the local flora and landscape features in		

	their appropriate seasonal state (e.g., dry, wet, lush or dormant).		
3.4.1.11	All man-made ground surfaces, including runways, taxiways, aprons, aircraft parking areas and service roads, shall be precisely aligned with site-specific airport textures.		
3.4.1.12	All airside service roads used by ground support vehicles shall be accurately modeled to match the site-specific layout of each airport. This includes the exact routing, width and surface type, whether paved, gravel or dirt, based on actual on-site conditions. The roads shall be rendered using appropriate high-resolution textures and materials that reflect the true composition and condition of the surfaces. Where applicable, center divide lines, edge markings, and other roadway indicators shall be included.		
3.4.1.13	All airport navaids shall be fully modeled in high-detail 3D, accurately reflecting their site-specific type, location, dimensions, and orientation. Each navaid including, but not limited to, ILS components, VORs, NDBs, glide slope antennas, localizers, DME stations and marker beacons, must be recreated with realistic geometry, proper color schemes and high-resolution textures that match their actual appearance at each airport.		
3.4.1.14	The 3D airport model must incorporate all site-specific airfield lighting systems, accurately representing the runways, taxiways, aprons, Precision Approach Path Indicators (PAPI), and approach lighting systems. The lighting systems must reflect the correct fixture types and arrangements, including edge lights, centerline lights, threshold lights, and stop bars, ensuring both visual realism and operational accuracy in day, night, and low-visibility simulation scenarios.		
3.4.1.15	All site-specific airport markings and signage aids shall be accurately and comprehensively modeled to reflect the real-world layout and operational standards of each airport. This includes, but is not limited to, runway and taxiway markings, aircraft lead-in and lead-out lines, parking stand designators with ID numbers, runway holding positions and vehicle movement lines with corresponding pavement markings. All alphanumeric identifiers and directional text must be clearly legible in the simulator environment, especially when displayed on high-resolution 4K systems. In addition, aircraft directional		

	signage shall be created in fully detailed 3D, featuring daytime visibility and internally lit configurations for nighttime operations, ensuring realism and usability across all lighting conditions.		
3.4.1.16	The 3D airport model shall include accurately modeled, site-specific surroundings, capturing both immediate and distant environmental features in daytime and nighttime conditions. This includes detailed representations of cityscapes, nearby buildings, infrastructure and other prominent structures, all modeled in full 3D with high-resolution textures on all visible sides. Any obstruction lights, where applicable, must be included and positioned accurately in accordance with their real-world counterparts. For distant terrain and skyline elements, 2D billboard representations may be used to optimize performance while maintaining visual realism.		
3.4.1.17	All mountainous terrain visible from the airport control tower shall be accurately modeled in full 3D, capturing the correct geographic location, elevation and topographical features from all viewing angles. High-resolution satellite imagery textures shall be applied to ensure realistic surface detail and visual authenticity. The terrain must include all mountains within the visible range of the control tower, with the ground surface rendered as a continuous, seamless landscape extending from the airport to the farthest visible peak. No visual gaps, elevation breaks or texture discontinuities shall be present, ensuring a fully immersive and geospatially accurate simulation environment.		
3.4.1.18	All airport visual checkpoints utilized by air traffic controllers shall be accurately created and fully modeled in 3D, based on their precise geographic coordinates and elevation data.		
3.4.1.19	The 3D airport model must deliver consistently smooth visual performance, free from jittering or stuttering, even during complex simulation scenarios. It shall maintain high graphical fidelity while supporting the simultaneous movement of up to fifty (50) aircraft within the environment. The system must be optimized to ensure fluid motion and responsiveness, preserving visual realism and operational accuracy under full load conditions.		

3.4.1.20	The Aerodrome Simulator manufacturer must demonstrate prior experience in the development of at least ten (10) site-specific, high-fidelity 3D airport models used in Air Traffic Control (ATC) simulation systems. As part of the submission, the Bidder shall provide detailed validation material in the form of side-by-side comparisons between the developed 3D airport models and the actual real-world airports. These comparisons must be presented using high-resolution images or 4K video formats, clearly showcasing the accuracy, level of detail and visual realism of the 3D models. The validation must include multiple viewpoints, specifically from the airport control tower and the apron area, to effectively illustrate the model's fidelity from operationally critical perspectives.		
3.4.1.21	The Bidder shall submit a Certificate issued by the Aerodrome Simulator manufacturer, confirming compliance with the requirements outlined in item 3.4.1.20. This submission must include a Side-by-Side Comparison of the developed 3D airport models and the corresponding real-world airports, clearly demonstrating the accuracy and fidelity of the simulation. The comparison shall be presented in high-resolution images or 4K video formats, and must be accompanied by all relevant technical documentation to substantiate the quality and authenticity of the 3D model development.		
3.4.2	**Ultra-HD Multi Screen Display System**		
3.4.2.1	15 Sets of 86" Commercial-Grade Ultra-HD/4K Displays The displays shall be purpose-built for mission-critical applications, capable of reliable performance for 18 hours per day, 7 days a week (18/7 operation). These units must support portrait orientation and ensure high durability, visual clarity and seamless system integration.		
3.4.2.2	Mandatory Features: a. The display must support native 4K video input signals via HDMI and DisplayPort (DP) connections, ensuring compatibility with modern Image Generators (IGs). b. Each display must support daisy-chaining to adjacent units, enabling an alternative image backup path in case of a failure, enhancing system resilience.		

	c. The display shall include an integrated redundant power supply with automatic switching functionality, ensuring uninterrupted operation in the event of a power module failure. d. Support for SNMP (Simple Network Management Protocol) communication between the display and the IG must be provided. This enables remote control of display functions (e.g. power, input source) and real-time status monitoring for diagnostics and health checks. e. The display must support onsite field-repairability without requiring return-to-factory servicing. No special tools should be needed and a junior technician with 1–2 years of experience must be able to perform the repairs confidently using standard procedures and parts.		
3.4.2.3	Specification: Panel Inch: 86inch Number Of Pixel: 3,840 x 2,160 Brightness: 500cd/㎡ Contrast Ratio: 1,100 : 1 Viewing Angle: 178° / 178° Life Time (Typ.): 50,000 Hours Temp. / Humidity: 0°C ~ 35°C, 10% ~ 80% Power (AC): 100 ~ 240V / 50 ~ 60Hz Input Ports: 2 x DP (Support 4K), 3 x HDMI (Support 4K), 1 x RS232C, 1 x RJ45 Output Ports: 1 x DP (Daisy Chain, Support 4K), 1 x RS232C Power Consumption: 350W Language: Multi Languages		
3.4.3	**4K CAT6A Extender**		
3.4.3.1	Distribute uncompressed UHD 4K at 60 Hz YUV 4:4:4 video, audio, power, or IR together up to 328 ft. (100 m) over a single CAT6A cable.		
3.4.3.2	HDMI 2.0 and HDCP 2.2 ; Approvals CE, FCC, IC, RCM, and VCCI		
3.4.3.3	The extender uses visually lossless video compression technology (VLC) to ensure the HD lossless transmission of HDR and 4K @ 60 Hz/4:4:4 over CAT5e/CAT6a cable. Automatic EDID management.		
3.4.3.4	IR pass-through allows you to control the source from the display location or control the display from the		

	source location. Use two RS-232 control systems for serial communication by connecting to the devices via serial cables to control the source device or display		
3.4.3.5	Bandwidth — 18 Gbps; Maximum Pixel Clock for Transmitter @ 594 MHz and Receiver @ 584 MHz		
3.4.4	**Display Structure and Design**		
3.4.4.1	Heavy-Duty Industrial-Grade Display Structure for 86" Display Panels The support structure must be engineered to securely hold 86" commercial-grade displays, allowing for easy sliding and rotation to facilitate service and maintenance while maintaining stability, alignment and operational integrity.		
3.4.4.2	Mandatory Features: a. Each display structure shall be independent and self-standing, equipped with lockable castor wheels and adjustable leveling feet to ensure stability and ease of mobility during setup or repositioning. b. The design must allow each structure to be precisely aligned with adjacent units, enabling the formation of a customizable curved radius to suit the simulation environment's visual configuration. c. The base platform of each structure must include secure interlocking or fastening mechanisms to maintain the correct radius and consistent alignment once positioned. d. The display mounting brackets and supporting structure must offer multi-axis adjustment capability (including pitch, roll and yaw) to enable fine-tuning of the display's position and orientation for seamless image alignment. e. The structure must be designed to eliminate stray light intrusion into the simulation area, particularly at the gaps between displays and structural frames, ensuring an immersive and visually consistent environment. f. The mounted 86" display must allow for convenient front and/or rear access for routine service and maintenance, without requiring full disassembly or removal from the structure. g. The structure must support a minimum load capacity of 120 kg, ensuring safe and stable support of the display unit and all related mounting hardware.		

3.4.4.3	The Bidder shall submit detailed design documentation of the display structure to demonstrate full compliance with the above-stated requirements. The submission must include engineering drawings, specifications and structural load analysis to validate functionality, stability, adjustability and serviceability of the proposed solution.		
3.4.4.4	Access to and from the simulator shall be provided through one of the integrated display units, which must be designed to function as a movable entry/exit point without compromising the continuity of the 360-degree visual display. This entry display must seamlessly align and integrate with the adjacent displays to maintain a uniform and uninterrupted panoramic image during simulation exercises.		
3.4.4.5	The entry access display must be engineered to automatically hold its position securely without the need for manual locking mechanisms. It shall allow smooth and effortless entry and exit from both inside and outside the simulator. The design must prioritize user convenience and safety, ensuring that access can be achieved quickly and reliably without disrupting the structural integrity or the continuity of the 360-degree display.		
3.4.4.6	For safety and accessibility, the entry/exit area must be designed with a completely clear and unobstructed floor surface, free from any objects, steps or structural obstacles that could pose a tripping hazard or impede smooth access to and from the simulator.		
3.4.4.7	The Bidder/Manufacturer shall submit detailed design documents and/or shop drawings of the proposed display structure, clearly demonstrating its modularity and full compliance with the specifications outlined in items 3.4.4.1 to 3.4.4.6. These documents must be included as part of the Technical Component of the submission.		
3.4.4.8	The Bidder/Manufacturer shall also provide documented proof of prior experience in the design, build and commissioning of a 360-degree display mounting structure featuring a movable entrance. This submission shall include project references, photographs and/or videos, clearly demonstrating the Bidder's technical competence and successful implementation of similar systems in past projects.		
3.4.5	**PC Based Visual Image Generators based on Vega Scene Graph (VSG) technology or better**		

3.5	**Voice Communication System (VCS)**		
3.5.1	Touch Panel Interface – Centralized control via an intuitive touch screen display.		
3.5.2	Radio Frequency Selection – Ability to select and switch between multiple radio frequencies, as needed.		
3.5.3	Direct Access Lines – Pre-configured point-to-point communication lines for rapid contact.		
3.5.4	Dial Lines – Standard dial functionality for flexible communications.		
3.5.5	Audio Routing – Audio must be routable to either headsets or external speakers, depending on the controller's preference.		
3.5.6	ATIS Recording and Playback – Built-in functionality to record and replay Automatic Terminal Information Service (ATIS) messages.		
3.5.7	Radio Noise Injection – Capability to inject realistic background or environmental noise into selected radio frequencies for enhanced simulation fidelity.		
3.5.8	Student and Instructor Jacks – Each position shall include dedicated student and instructor audio jacks, with the instructor having override capability.		
3.5.9	Discrete Instructor–Supervisor Communication – A private communication channel must be available for non-disruptive interactions between instructor and supervisor.		
3.5.10	Customizable Button Labels – Ability to modify button identifications on the touch panel directly from the scenario preparation tool.		
3.5.11	Position-Specific Panel Layouts – Each control position within a scenario must be able to have a unique voice communication panel layout, tailored to its operational role.		
3.6	**Voice Recognition System**		
3.6.1	Compliance with ICAO Standards – The voice recognition system shall support standard Air Traffic Control (ATC) phraseology as defined in ICAO ATM Doc 4444-RAC/501 – Chapter 12, applicable specifically to tower and ground control operations.		
3.6.2	Autonomous Scenario Execution – The system must allow tower training scenarios to operate without pseudo-pilot intervention, leveraging integrated voice recognition and voice synthesis capabilities to simulate realistic pilot-controller interaction.		
3.6.3	Command Responsiveness – The system shall accurately receive and execute commands directed at		

	all moving aircraft and ground vehicles, interpreting instructions in real time.		
3.6.4	Seamless Integration and Override – The voice recognition system must be fully compatible with manual operations, allowing instructors or pseudo-pilots to override the system when necessary for training flexibility or error correction.		
3.6.5	Complex Command Handling – The system must support the recognition and proper execution of multiple sequential commands issued to a single aircraft or ground vehicle within a single voice transmission. Additionally, it shall be capable of interpreting compound instructions directed to two separate entities (such as aircraft or vehicles) in one transmission, utilizing the command word "break" as a delimiter between the respective call signs and command sets.		
3.6.6	Per-Aircraft Assignment – Voice recognition functionality shall be assignable on a per-aircraft or vehicle basis, linked directly to each flight plan or unit ID.		
3.7	**DIGITAL MULTI-CHANNEL AUDIO/DATA RECORDER.** The system shall include a high-fidelity multi-channel recording system capable of capturing voice, command inputs and data for review and training assessment.		
3.8	**PLAYBACK AND DEBRIEFING TOOLS.** Integrated tools must support synchronized playback of recorded scenarios for trainee debriefing, performance evaluation and training analysis.		
3.9	**NETWORK INFRASTRUCTURE.** A Local Area Network (LAN) shall be provided, including all necessary servers, routers, and switches, to support stable and high-performance communication between system components.		
3.10	**SPARE PARTS.** An adequate supply of critical spare parts must be included to ensure system uptime and maintenance efficiency. The list should include essential components for voice recognition hardware, network devices, and any proprietary modules.		
4	**OPERATIONAL SPECIFICATIONS**		
4.1	**OPERATIONAL POSITIONS**		
4.1.1	**Pseudo Pilots**		
4.1.1.1	Pseudo-pilots shall have the capability to start, stop, pause and rewind a simulation session, allowing dynamic scenario control during training.		

4.1.1.2	Each pseudo-pilot shall be assignable to a specific sector, with the ability to control and manage all associated traffic within that sector.		
4.1.1.3	The system must allow the transfer of control of individual flights from one pseudo-pilot to another, either within the same sector or to a different sector, ensuring seamless coordination and realistic traffic flow.		
4.1.1.4	Pseudo-pilots shall be capable of simulating pilot communications and behaviors for all or a selected subset of flight plans operating within their assigned sectors.		
4.1.1.5	Pseudo-pilots must be able to simulate VHF/UHF radio transmissions through the VCS associated with their sector(s), supporting realistic communication between controllers and virtual pilots.		
4.1.1.6	The system shall provide telephone functionality for simulating coordination with external agencies such as adjacent control centers, fire/rescue services, and airport authorities. It shall also support internal intercom communication between all training and supervisory positions.		
4.1.1.7	Pseudo-pilots shall have the ability to introduce and manage abnormal or emergency scenarios, such as system failures, aircraft incidents or weather disruptions, to challenge and assess trainee decision-making under pressure.		
4.1.1.8	The system shall support print and display capabilities for relevant simulation information, including flight strips, communication logs or scenario summaries, as needed.		
4.1.1.10	**Macro Panel**		
4.1.1.10.1	The simulation system shall include a Macro Panel designed to streamline and accelerate pseudo-pilot operations by allowing the creation, execution and management of command macros. The Macro Panel must support the following functionalities below.		
4.1.1.10.2	Users shall be able to select an aircraft or vehicle, choose a corresponding macro, and execute it directly to apply pre-configured command sequences efficiently.		
4.1.1.10.3	When a macro is selected, the system shall allow the input of dynamic parameters (e.g., heading, altitude, speed) to tailor the macro to the specific operational context.		

4.1.1.10.4	The panel must support the creation of macros that combine multiple commands in a predefined sequence, allowing them to be applied in a single execution for rapid and consistent scenario control.		
4.1.1.10.5	The system shall support up to 40 macros for airborne aircraft, all accessible on a single macro page.		
4.1.1.10.6	The system shall support up to 40 macros for grounded aircraft, all accessible on a single macro page.		
4.1.1.10.7	The system shall support up to 40 macros for vehicles, all accessible on a single macro page.		
4.1.1.10.8	Users shall be able to reposition macro buttons via drag-and-drop within a macro page, enabling customized layouts.		
4.1.1.10.9	Each macro shall allow modification of its display label and button background color to improve readability and accessibility.		
4.1.1.10.10	Users shall be able to create new macros by defining a name, associated commands, optional parameters, label and color.		
4.1.1.10.11	The system shall support editing of existing macros, including changes to command sequences, parameters, labels and visual attributes.		
4.1.1.10.12	Users shall be able to delete macros individually through the Macro Panel interface.		
4.1.1.10.13	All macros and their configurations, including layout positions, shall be persistently saved and retained across sessions.		
4.1.1.10.14	The system shall support password protection for macro creation, editing, and deletion to prevent unauthorized changes.		
4.1.1.10.15	The system shall automatically load all saved macros and their layouts at runtime to ensure continuity of operations.		
4.1.1.10.16	The system shall support a shared macro configuration that can be applied uniformly across all pseudo-pilot positions.		
4.1.1.10.17	The system shall allow individual pseudo-pilot positions to define and use unique macro sets independent of other positions.		
4.1.2	**Instructor/supervisor**		
4.1.2.1	The system shall allow the Instructor/Supervisor role to be initiated from any pilot workstation within the simulation environment.		

4.1.2.2	The Instructor/Supervisor interface shall function as a pseudo-pilot position but with access to full simulation data, including aircraft status, traffic, weather and scenario information.		
4.1.2.3	The Instructor/Supervisor role shall be assignable to either a dedicated student display for observation or to a central supervision station overseeing the entire simulation session.		
4.1.2.4	The Instructor/Supervisor shall have the ability to start, stop, rewind, fast-forward and replay recorded simulation exercises to support live training and post-exercise debriefings.		
4.1.2.5	The Instructor/Supervisor interface shall display a comprehensive list of all flight plans associated with the exercise, categorized as active, pending, closed or removed.		
4.1.2.6	The Instructor/Supervisor shall have access to and be able to modify key scenario parameters, including weather settings, unusual event triggers, exercise traffic configurations and radar display layouts.		
4.1.2.7	The Instructor/Supervisor shall be capable of overtaking and handing back control of any aircraft from or to a pseudo-pilot position at any time during the simulation.		
4.1.2.8	The Instructor/Supervisor shall have access to all active Voice Communication System (VCS) channels within the simulation session for monitoring and communication purposes.		
4.1.2.9	The Instructor/Supervisor shall have access to a simulated telephone system to initiate or receive communications representing external entities such as adjacent control centers, emergency services (e.g., fire brigade) and airport authorities, as well as internal communication with any simulation position.		
4.1.2.10	The Instructor/Supervisor shall be able to introduce abnormal or emergency scenarios, including predefined or custom events, at any time during the simulation to test participant responses.		
4.1.2.11	The Instructor/Supervisor interface shall support printing and exporting of relevant simulation data and displays, including flight plans, logs, radar views, and session summaries.		
4.1.3	**Session Supervisor**		
4.1.3.1	The system shall allow the Session Supervisor role to be launched from any pilot workstation within the simulation environment.		

4.1.3.2	The Session Supervisor shall be capable of overseeing and managing the entire simulation session in real time.		
4.1.3.3	The Session Supervisor shall have the ability to start, stop, rewind and replay a simulation exercise, supporting both live control and after-action review.		
4.1.3.4	The Session Supervisor interface shall provide access to the complete list of flight plans associated with the exercise, including active, pending, closed and removed statuses.		
4.1.3.5	The Session Supervisor shall have access to and be able to modify core simulation parameters, including weather scenarios, unusual events, aircraft and vehicle traffic, and, radar display configurations.		
4.1.3.6	The Session Supervisor shall be equipped with simulated telephone functionality to communicate with external entities such as adjacent control centers, fire services and airport authorities, as well as internal simulation roles.		
4.1.3.7	The Session Supervisor shall have the capability to take over or relinquish control of any individual aircraft's piloting functions during the exercise.		
4.1.3.8	The Session Supervisor shall have full access to all Voice Communication System (VCS) channels involved in the current simulation session.		
4.1.3.9	The Session Supervisor shall be able to inject abnormal or emergency situations, including predefined and custom events, at any point during the simulation.		
4.1.3.10	The Session Supervisor interface shall support the printing or exporting of simulation data, including displays, flight plan details, event logs and session summaries.		
4.1.4	**Exercise Preparation**		
4.1.4.1	The system shall allow the allocation of specific simulation positions to function as dedicated exercise preparation workstations.		
4.1.4.2	Exercise preparation capabilities shall be available from any pilot, supervisor or instructor workstation within the simulation environment.		
4.1.4.3	Exercise preparation shall also be supported on standard Windows-based instructor PCs used for administrative or professional tasks outside of the simulation environment (e.g., office workstations).		
4.1.4.4	The system shall allow for exercises to be checked and tested in standalone mode, as well as in integrated		

	mode with TWR 3D visual display systems or multiple air traffic control working positions.		
4.1.4.5	The system shall support the export and transfer of airspace configurations and exercise scenarios between the existing CATC simulator system and the new simulator system, in both directions.		
4.1.4.5	**Exercise design shall comprises the following functions:**		
4.1.4.5.1	Air space and geographical design environment.		
4.1.4.5.2	Traffic exercise design and associated testing functions using simulated airspace data such as flight plan, air routes, aircraft performance from the simulator		
4.1.4.5.3	Controller workload assessment		
4.1.4.5.4	Display of Individual Aircraft flight profiles and Comparison between ATC preferred routes and Great Circle routes		
4.1.4.5.6	Display of Hourly traffic patterns		
4.1.4.5.7	Allow preview of exercises without launching an exercise on the simulator		
4.1.5	**System Administrator**		
4.1.5.1	The system shall provide a centralized Monitoring and Control Software (MCS) for system administrators to monitor and manage all simulator components.		
4.1.5.2	The MCS shall include a graphical user interface (GUI) that provides real-time status monitoring and control of the simulator system.		
4.1.5.3	The MCS GUI shall display the operational status of all simulator modules and workstations, including servers and working positions.		
4.1.5.4	The MCS GUI shall display the status of the entire simulation network, including switches, routers and other internetworking devices.		
4.1.5.5	The MCS GUI shall indicate the status of all running applications across simulator components, including servers and workstations.		
4.1.5.6	The MCS shall provide a single-button function to forcefully terminate unresponsive or hung applications on any system component.		
4.1.5.7	The MCS shall provide single-button controls to start, shut down or reboot the entire simulator system or individual workstations as needed.		
4.1.5.8	The MCS GUI shall visually represent the operational status of each machine using color codes: green for operational, red for down, and orange for attention required.		

4.1.5.9	The MCS shall provide single-button remote access to any simulator machine to allow administrators to inspect and manage running applications.		
4.1.5.10	The MCS shall include a visual and audio alarm system to notify administrators of system abnormalities, along with automatic logging of all faults, events and anomalies with precise timestamps.		
4.1.6	**Other Functions**		
4.1.6.1	Electronic Flight Strips		
4.1.6.2	Strip Printing		
4.1.6.3	CPDLC		
4.1.6.4	SMGCS		
4.1.6.5	Information Display Screen		
4.1.6.6	Flight Plan List		
4.1.6.7	Record & Playback		
4.1.6.8	Student Monitoring & Reports		
4.2	**Operational Scenarios**		
4.2.1	The system shall support the following **aircraft ground movement** scenarios as part of the simulation:		
4.2.1.1	Pushback from stand or gate position.		
4.2.1.2	Powerback maneuver using aircraft thrust reversal.		
4.2.1.3	Push/Pull operations using ground support vehicles.		
4.2.1.4	Aircraft towing operations (tow movement).		
4.2.1.5	Engine start-up procedures on the ground.		
4.2.1.6	Taxi along the shortest calculated route to destination.		
4.2.1.7	Taxi via a defined series of taxiways specified by the controller.		
4.2.1.8	Taxi into a designated holding bay.		
4.2.1.9	Taxi to a runway holding point.		
4.2.1.10	Helicopter hover and air taxi operations on the ground or low altitude.		
4.2.1.11	Hold short of a runway as instructed.		
4.2.1.12	Hold short of an active stop bar.		
4.2.1.13	Follow another aircraft or vehicle.		
4.2.1.14	Follow a designated "Follow Me" vehicle.		
4.2.1.15	Give way to other traffic at intersections or crossings.		
4.2.1.16	Line up on the runway for departure.		
4.2.1.17	Backtaxi along the runway to reach takeoff position.		
4.2.1.18	Execute a takeoff procedure.		
4.2.1.19	Abort a takeoff roll and decelerate safely.		
4.2.1.20	Engage runway arresting cable (if equipped and applicable).		
4.2.1.21	Vacate the runway automatically at the nearest appropriate exit.		

4.2.1.22	Vacate the runway at a controller-specified location.		
4.2.1.23	The system shall allow a departing aircraft to follow an assigned ground route automatically from its parking position to the designated runway using either shortest-path routing or a defined taxiway sequence.		
4.2.1.24	The system shall allow an arriving aircraft to follow an assigned ground route automatically from the runway exit point to its designated parking stand, following either optimized or predefined taxi instructions.		
4.2.2	The system shall support the following **aircraft airborne movement** scenarios as part of the simulation environment:		
4.2.2.1	Execute standard takeoff procedures from a runway.		
4.2.2.2	Join a left-hand or right-hand traffic circuit.		
4.2.2.3	Extend any leg of the traffic circuit (e.g., downwind, base, or final).		
4.2.2.4	Perform a straight-in approach to a runway.		
4.2.2.5	Conduct a visual approach under visual meteorological conditions (VMC).		
4.2.2.6	Fly a Standard Instrument Departure (SID) as defined in the flight plan or ATC instruction.		
4.2.2.7	Fly a Standard Terminal Arrival Route (STAR) as defined in the flight plan or ATC instruction.		
4.2.2.8	Join an en-route airway or published route.		
4.2.2.9	Join a route at a specific fix or waypoint.		
4.2.2.10	Fly a specified heading, including controlled rate-of-turn adjustments.		
4.2.2.11	Perform climbs or descents, including setting and adjusting vertical rate of change.		
4.2.2.12	Adjust speed, including acceleration or deceleration rates, as required.		
4.2.2.13	Intercept and follow a specified VOR radial or airway track.		
4.2.2.14	Proceed directly to a designated fix or navigation waypoint.		
4.2.2.15	Follow another aircraft visually or procedurally, maintaining separation.		
4.2.2.16	Perform a landing, touch-and-go, stop-and-go, land-and-hold-short, low approach or missed approach as per instruction.		
4.2.2.17	Enter and maintain an orbit (360° turn) at a specified point or altitude.		
4.2.2.18	Enter and hold in a standard holding pattern at a designated fix or waypoint.		

4.2.2.19	Rock the aircraft's wings (for visual signaling or training purposes).		
4.2.2.20	Instantly reposition the aircraft to a specified new location in space (e.g., to initialize a scenario or reset position).		
4.2.3	**Aircraft Effects**		
4.2.3.1	The system shall support the following visual and functional **aircraft effects** during simulation:		
4.2.3.1.1	The system shall allow aircraft to perform wing rock maneuvers for visual signaling or training scenarios.		
4.2.3.1.2	The system shall support landing gear extension and retraction commands, with corresponding animation and status updates.		
4.2.3.1.3	The system shall support toggling of landing lights on and off, visible to controllers and other simulated aircraft.		
4.2.3.1.4	The system shall support toggling of navigational lights on and off, including position and anti-collision lights.		
4.2.3.1.5	The system shall support the simulation of various emergency events to enhance training realism. These events shall include crash landings, with the option to display with or without an explosion; tire bursts that may occur during taxiing, takeoff or landing; engine fires affecting one or more engines; and hydraulic system failures, configurable for aircraft with up to four engines. These effects shall be visually and functionally represented within the simulation environment and shall be controllable by authorized users such as instructors or supervisors.		
4.2.3.2	The system shall support the simulation of **special weather effects** to enhance environmental realism. The following weather conditions shall be available:		
4.2.3.2.1	Rain, including light, moderate, and heavy intensities. Heavy rain shall generate visual splash effects behind the aircraft upon touchdown in the runway touchdown zone.		
4.2.3.2.2	Snow, with visual accumulation and reduced visibility effects appropriate to snowfall intensity.		
4.2.3.2.3	Sand, simulating airborne dust and surface obscuration in desert or dry environments.		
4.2.3.2.4	Thunderstorms, including lightning, thunder sounds, and associated turbulence effects.		
4.2.3.2.5	Haze, simulating reduced horizontal visibility due to fine particles in the atmosphere.		
4.2.3.2.6	Fog, representing dense low-level obscuration with configurable visibility range.		

4.2.3.2.7	Mist, simulating light fog conditions with partial visibility reduction.		
4.2.3.2.8	Low clouds, including broken or overcast layers at adjustable altitudes, affecting visibility and aircraft immersion.		
4.2.4	**Helicopter Movements**		
4.2.4.1	The system shall support the following **helicopter-specific movement scenarios** within the simulation environment:		
4.2.4.1.1	Air Taxi – The helicopter shall be able to perform low-altitude forward movement above the surface, typically below 100 feet AGL, while remaining airborne and within the aerodrome vicinity.		
4.2.4.1.2	Hover Taxi – The helicopter shall be capable of ground-effect hovering at low speed and low altitude, typically not exceeding walking speed and remaining within close proximity to the surface.		
4.2.4.1.3	Load Pickup and Drop – The system shall support external load operations, allowing helicopters to simulate the pickup, transport, and drop of loads using slings or cargo hooks, with accurate positioning and visual effects.		
4.2.5	**Aircraft Pilot Management**		
4.2.5.1	The aircraft flight profile shall be consistent with all relevant operational parameters, including the filed flight plan, aircraft performance characteristics, current flight phase and air traffic control instructions. The system shall manage and support the following functions:		
4.2.5.1.1	Aircraft Type Management – Ensure accurate flight dynamics and procedural behavior according to the selected aircraft type.		
4.2.5.1.2	SSR Allocation and Management – Assign, modify and track Secondary Surveillance Radar (SSR) codes for all aircraft in simulation.		
4.2.5.1.3	Speed Assignment – Support setting, modifying and monitoring airspeed, including acceleration and deceleration.		
4.2.5.1.4	Heading Assignment – Allow dynamic assignment and adjustment of aircraft heading.		
4.2.5.1.5	Altitude and Level Assignment – Permit assignment of flight levels or altitudes, including standard transition logic.		
4.2.5.1.6	Altitude Reference Display – Display and support transitions between QFE, QNH and standard pressure (1013 hPa) references.		

4.2.5.1.7	Arc DME Navigation – Support Direct Measuring Equipment (DME) arcs for lateral navigation.		
4.2.5.1.8	VOR Radial Navigation – Support intercept and tracking of VOR radials.		
4.2.5.1.9	Procedure Turns – Simulate base turn, 45/180°, and 80/260° procedure turns for approach alignment.		
4.2.5.1.10	Direct-to-Beacon Instruction – Permit direct routing to a specified navigation aid or fix.		
4.2.5.1.11	Circuit Instruction – Manage circuit procedures including: standard low-altitude traffic circuits, break procedures, emergency circuits, helicopter-specific circuits, and, custom integrations: downwind, abeam tower, base leg, long base, final, long final, opposite and full circuit.		
4.2.5.1.12	Aborted Takeoff – Simulate rejected takeoff procedures with appropriate aircraft behavior.		
4.2.5.1.13	Touch-and-Go Instructions – Support repeated landing and takeoff operations on the same runway.		
4.2.5.1.14	Go-Around Instruction – Execute missed approach procedures upon instruction or trigger.		
4.2.5.1.15	Landing Management – Manage standard, short-field or long landing roll procedures based on aircraft configuration and runway assignment.		
4.2.5.1.16	Rate of Climb/Descent – Assign and manage vertical rate instructions (e.g., feet per minute).		
4.2.5.1.17	Climb/Descent Slope Management – Define and control the slope angle for vertical profiles.		
4.2.5.1.18	Delay Actions – Enable aircraft to delay or hold at any point based on instructions or conditions.		
4.2.5.1.19	Holding Patterns – Assign, enter and exit standard or non-standard holding procedures.		
4.2.5.1.20	Approach Type and Clearance – Manage clearance and execution of various approach types (e.g., ILS, visual, RNAV).		
4.2.5.1.21	Helicopter Operations Management – Support rotary-wing operations such as takeoff and landing from arbitrary points, hovering and winching procedures.		
4.2.5.1.22	Departure Management – Simulate complete departure sequences, including taxi, line-up, and takeoff clearance.		
4.2.5.1.23	Vectoring Control Interface – Provide a unified interface for issuing and displaying heading, level and speed instructions under radar vectoring.		
4.2.5.1.24	Conditional Instruction Execution – Allow predefined instructions to be triggered by specific conditions, such		

	as: crossing a waypoint or fix, reaching a specific heading, crossing a flight level or altitude, and, completion of a timed delay or hold.		
4.2.5.2	Pilot positions shall be operated using a mouse-driven Human-Machine Interface (HMI), designed to streamline user interaction by presenting only contextually feasible and operationally valid actions. For instance:		
4.2.5.2.1	During the takeoff phase of an aircraft, landing instructions shall be automatically disabled and not displayed as selectable options.		
4.2.5.2.2	For each aircraft, only realistic speed values and climb/descent rates, derived from the aircraft's performance characteristics, shall be available in the command menus.		
4.2.6	**Special Animated Effects**		
4.2.6.1	The system shall support, at a minimum, the following **animated effects** to enhance visual realism and scenario immersion:		
4.2.6.1.1	Asymmetric flap deployment		
4.2.6.1.2	Landing gear extension and retraction		
4.2.6.1.3	Engine fire animation		
4.2.6.1.4	Fuselage fire animation		
4.2.6.1.5	Visibly damaged aircraft structure		
4.2.6.1.6	Collision effects (with or without explosion): a. Aircraft-to-aircraft collision b. Aircraft-to-vehicle collision c. Aircraft-to-obstacle collision d. Vehicle-to-obstacle collision		
4.2.6.1.7	Aircraft crabbing on arrival and departure to simulate wind correction		
4.2.6.1.8	Aircraft skidding off runway		
4.2.6.1.9	Aircraft skidding off other movement areas		
4.2.6.1.10	Drag chute deployment (on or off runway)		
4.2.6.1.11	Foam and water discharge from fire trucks		
4.2.6.1.12	Smoke emissions from buildings or chimneys		
4.2.6.1.13	Windsock movement responding dynamically to wind direction		
4.2.7	**Event Modeling & Planning**		
4.2.7.1	The system shall include an advanced Event Modeling and Planning capability within the scenario preparation tool. This tool must enable the definition, configuration and control of events as part of the exercise design and execution process.		
4.2.7.1.1	The system shall allow events to be triggered:		

	a. At a specific simulation time; or, b. When an aircraft reaches a defined position (e.g., over a navigation fix or waypoint)		
4.2.7.1.2	The system must support the modeling of the **aircraft-related events**: a. Abort Takeoff b. Aircraft Activation c. Bird Strike d. Drag Chute Failure e. Engine Failure f. Flaps Failure g. Gear Failure h. Gear-Up Landing i. Hydraulic Failure j. Low Fuel Condition k. Skidding Off Runway l. Aircraft Termination m. Transponder Activation/Failure		
4.2.7.1.3	The system must support the modeling of **external factors**: a. Flock of Birds b. Personnel Movement c. Dog Movement		
4.2.7.1.4	The system must support the modeling of **radar failures**: a. Primary Radar b. Secondary Radar c. Synthetic Radar		
4.2.7.1.5	The system must support the modeling of **position/system failures**: a. Flight Data Processing System (FDPS) b. Wind Sensors c. Weather Display System d. Landing Aid Control e. Navigation Aid (NAVAID) Control f. NOTAM Availability g. Weather Control System		
4.2.7.1.6	During runtime, the system shall enable the Session Supervisor or Instructor to: a. Create new events b. Modify existing events c. Suspend or pause events d. Resume suspended events e. Postpone or schedule events f. Delete events g. Duplicate and reuse events		

4.2.8	**Emergencies**		
4.2.8.1	The system shall support the definition and activation of emergency events, either during scenario preparation or dynamically at runtime via the Supervisor and/or Pseudo-Pilot positions.		
4.2.8.1.1	The following emergencies shall be configurable: a. Aircraft Skidding b. Aborted Takeoff c. Bird Strike d. Drag Chute Failure e. Landing Gear Failure f. Engine Failure g. Radio Transmission Failure h. Low Fuel Condition i. Dog Movement on Movement Area j. Equipment Failure k. Personnel Movement on Operational Surfaces l. Radar Failure – Total Radar System Failure and/or Individual Radar Failures (Primary, Secondary or Synthetic)		
4.2.8.2	Emergencies shall be triggered manually by an operator or automatically as part of a scheduled event.		
4.2.8.3	All emergency conditions shall result in realistic system behavior, appropriate visual and audio cues, and, dynamic impact on simulation parameters.		
4.2.8.4	Events shall be editable, repeatable and terminable during the exercise runtime.		
4.2.9	**Weather**		
4.2.9.1	The system shall enable the creation, customization and management of localized and frontal weather systems during scenario preparation.		
4.2.9.2	Each weather system shall support the definition of the following parameters: a. Type of weather effect b. Duration of the weather event c. Visibility range (adjustable in meters or kilometers) d. Runway surface condition (e.g., wet, dry, icy, snow-covered) e. Cloud layers: configurable up to three independent layers, each with customizable base altitude, thickness and coverage.		
4.2.9.3	The following meteorological phenomena must be available: a. Mist b. Ground Fog		

	c. Fog d. Drizzle e. Rain f. Thunderstorm (with lightning effects) g. Smoke h. Smog i. Haze j. Dust		
4.2.9.4	The system shall support the association of a METAR (Meteorological Aerodrome Report) with any defined weather system.		
4.2.9.5	The METAR data may drive automatic population of weather parameters, ensuring alignment with real-world or training-scenario conditions.		
4.3	**Learning Management System (LMS)**		
4.3.1	The system shall enable Air Traffic Controllers to engage in self-directed learning through structured learning packages containing audio-visual content on ATC-related subjects, including airspace structure, airfield layout and operational procedures.		
4.3.2	Controllers shall access the LMS using individual login credentials, with access privileges determined by their assigned training curriculum or qualification level.		
4.3.3	Each learning package shall include integrated audio and visual interfaces to effectively deliver content in a multimedia format.		
4.3.4	Visual content shall support various formats such as text descriptions, static images and embedded video, designed to illustrate and explain teachable scenarios.		
4.3.5	Audio narration shall be synchronized with the visual content, with the option for users to enable or disable narration as desired.		
4.3.6	Interactive assessments, such as quizzes or short question-and-answer sections, may be embedded within learning packages to support knowledge retention and learner evaluation.		
4.3.7	Learning modules shall include embedded references or hyperlinks to relevant ICAO publications and documents to provide regulatory and procedural context.		
4.3.8	**Phraseology Packages**		
4.3.8.1	The system shall support phraseology learning modules designed to enable Air Traffic Controllers to practice standard Aviation English voice transmissions in accordance with ICAO standards.		

4.3.8.2	Each module shall feature synchronized audio narration with an option for the trainee to enable or disable narration as needed for flexible learning.		
4.3.8.3	The phraseology content within the learning packages shall be customizable by instructors, allowing for scenario-specific or region-specific phraseology training.		
4.3.9	**Learning Package Management**		
4.3.9.1	The LMS shall allow instructors to create, edit and update individual learning packages through an integrated content authoring interface.		
4.3.9.2	The system shall include at least two pre-loaded/sample learning packages for reference, demonstration or immediate use.		
4.3.9.3	It shall be possible to define structured training curriculums comprising multiple learning packages tailored to specific training objectives.		
4.3.9.4	The LMS shall support the assignment of training curriculums to groups of controllers, based on roles, experience level or certification requirements.		
4.3.9.5	All learning packages developed within the simulator environment shall be easily exportable and portable between different LMS or simulator systems to support interoperability and scalability.		
4.3.10	**User Management**		
4.3.10.1	The system shall implement role-based access control (RBAC) with distinct user roles including Administrator, Instructor and Controller, each with appropriate permission levels.		
4.3.10.2	Administrators shall have full access to user management functions, including user account creation, password resets, role assignment and account deactivation/reactivation.		
4.3.10.3	Instructors shall have the ability to view, monitor and generate training records and progress reports for controllers under their supervision.		
4.3.10.4	Controllers shall have secure login access to the LMS and be able to view and interact with assigned learning packages in accordance with their training curriculum.		
5	**ENROUTE/APPROACH RADAR SIMULATOR**		
5.1	The Enroute/Approach Radar Simulator shall support comprehensive air traffic control (ATC) training by enabling the development and assessment of essential operational competencies. These include air situation awareness through the interpretation and management of dynamic airspace conditions; effective		

	ATC teamwork and coordination across units and sectors; and proficient communication skills using standard aviation phraseology with both aircraft and adjacent ATC units.		
5.2	The system shall facilitate operational understanding of procedures and the local ATC environment, as well as workload management under varying traffic scenarios. Additionally, it shall support air traffic flow planning to ensure efficient sequencing, problem detection and resolution for conflict avoidance, and proper handling of emergency procedures. The simulator shall also help trainees develop the ability to maintain composure and decision-making effectiveness under stress, thereby enhancing overall operational readiness.		
5.3	The Simulator System is the fundamental element to train Air Traffic Controllers (Aerodrome and/or Enroute/Approach Control) and has a great importance to test new procedures, new divisions of the airspace, routes, aviation policy, conflict analysis and traffic flow, as well as the air traffic controllers´ workload. The simulator shall have the capability to provide both procedural and radar control scenarios.		
5.4	The Simulator System shall be equipped with comprehensive features to support the simulation of various ATC operations and training scenarios. Specifically, it shall include capabilities to simulate: a. Terminal Maneuvering Area (TMA) control procedures; b. Area (enroute) control procedures; c. Analysis and evaluation of operational procedures for training or procedural assessment; d. Application and testing of special procedures under specific operational scenarios; e. Use of targeted programs for controller review, skills refreshment, or procedural updates; f. Reproduction and playback of both audio and radar/data recordings from simulation exercises for debriefing and analysis; g. Assessment and evaluation of Air Traffic Controller performance based on predefined metrics and scenario outcomes; h. Workload analysis and evaluation to assess controller capacity and sector complexity; and,		

	i. Realistic simulation of emergency situations, including abnormal aircraft operations, system failures and other critical incident responses to assess controller reaction and procedural adherence.		
5.5	The simulation system shall support training of new recruits by providing a capability to simulate basic ATC procedures with generic environments with or without surveillance data (radar control and procedural) that becomes progressively more demanding including local procedures and environments.		
5.6	For advanced ATC training, the simulation systems shall provide a highly accurate and realistic representation of local air traffic control procedures and operational environments. The simulated procedures shall reflect those published in the Philippine Aeronautical Information Publication (AIP) and its subsequent amendments, as well as the applicable ATC Standard Operating Procedures (SOPs). Furthermore, the system shall incorporate the provisions outlined in the Letters of Agreement (LOAs) between the Manila Area Control Center (ACC) and adjacent Flight Information Region (FIR) boundary control units in neighboring States, ensuring seamless simulation of cross-border coordination and procedures.		
5.7	The simulation system shall support the execution of multiple individual training exercises simultaneously, as well as large-scale simulations integrating all elements within a single scenario, including both Approach (APP) and Area Control (ACC) environments.		
5.8	The system shall be capable of processing a minimum of 200 simultaneous active flight plans (FPLs), ensuring sufficient capacity for complex and high-density training scenarios.		
5.9	To support focused training (e.g., phraseology, procedural basics), instructors and students shall be able to run individual training exercises on a single controller workstation.		
5.10	The system shall feature a user-friendly Human-Machine Interface (HMI) that enables the preparation, configuration and management of all required simulation data, including environmental parameters.		
5.11	An integrated ATC radio and telephone communication system shall be provided through a Voice Communication and Control System (VCCS). This		

	system shall link all training positions (Tower, Enroute and Approach), operational supervisor stations and technical supervisor consoles.		
5.12	The VCCS shall emulate actual voice communication channels as used in live ATC operations, consistent with those defined in the training scenarios.		
5.13	The proposal shall include a minimum of **Thirty-Two (32)** over-ear headsets with Push-to-Talk (PTT) functionality, with two headsets allocated per working position and appropriate spare units.		
5.14	All voice communications shall be recorded in full synchronization with surveillance data, flight data and controller communications, to enable comprehensive review and debriefing.		
5.15	The simulation system shall incorporate advanced aircraft modeling algorithms capable of replicating realistic aircraft performance both on the ground and in all airborne phases of flight.		
5.16	The initial delivery shall include a complete set of aircraft performance modeling data for all civil and military aircraft types commonly operating within the local ATC airspace. The supplier shall provide a detailed list of supported aircraft types in the proposal.		
5.17	The aircraft modeling capabilities shall ensure accurate computation of aircraft dynamics across all flight phases, including climb, cruise, descent and maneuvering.		
5.18	The system shall include sufficient pseudo pilot positions to support and manage all simulation exercises effectively.		
5.19	One operational supervisor position (session coordinator) shall be included to oversee Enroute/Approach and procedural simulation sessions.		
5.20	Built-in functionality for student performance analysis and grading shall be included, enabling detailed tracking of individual progress and objective evaluation.		
5.21	The system shall be capable of integration with the existing Tower Simulator to enable seamless execution of integrated Tower and Radar training exercises.		
5.22	The simulation application software shall be fully compatible with and operable on the latest version of Microsoft Windows.		
6	**HARDWARE CONFIGURATION OF THE ENROUTE/APPROACH RADAR SIMULATOR**		

6.1	The proposed operational hardware configuration for the Enroute/Approach and Procedural Simulator shall include the following components: a. Four (4) sets of Executive Controller and Assistant Suite equipped with flight strip printers. Two suites designated for Enroute (ACC) operations and two suites for Approach (APP) operations. b. One (1) dedicated supervisor console for session coordination, monitoring and management of simulation exercises. c. Four (4) pseudo-pilot positions, configurable to support both Enroute and Approach simulation requirements. d. One (1) workstation for scenario creation, data management and simulation environment configuration. e. Integrated Voice Communication and Control System (VCCS). A complete voice communication system linking all controller, pilot and supervisor positions for simulated radio and intercom interactions. f. One (1) A3/A4 color network printer to support printing of flight strips, reports and documentation.		
6.2	The simulator system architecture shall be modular and scalable, allowing for straightforward future expansion. Additional controller suites shall be seamlessly integrable without requiring significant system reconfiguration or downtime.		
6.3	Pseudo-pilot workstations shall be physically separated from the controller training suites, either by placement in a separate room or through the use of physical partitions within the same room, to ensure operational realism and minimize auditory or visual interference during simulation exercises		
7	**FUNCTIONAL REQUIREMENTS**		
7.1	The simulator shall support the following **core functionalities**: a. Surveillance Simulation: Emulation of surveillance track data from MSSR Mode S, PSR radars, ADS-B/C, and MLAT sources. b. Flight Plan Management: Simulation of flight plan data, including correlation with surveillance tracks and generation of synthetic tracks when surveillance data is unavailable.		

	c. ATS Inter-Center Coordination: Support for simulation of ATS coordination messages with adjacent FIRs via AIDC protocols. d. Meteorological Message Simulation: Emulation of meteorological data and message formats as used in operational environments. e. CPDLC Simulation: Full simulation of Controller–Pilot Data Link Communications functionality. f. Recording & Playback: Recording and synchronized playback of all exercise data, including audio and system events. g. Display Printing: Capability to print Air Situation Display (ASD) snapshots via the system printer. h. Flight Strip Handling: Generation, distribution and display of electronic flight progress strips, with optional paper strip printing. i. System Emulation: Emulation of operational sector configurations, including dynamic sectorization and position collapse/expansion. j. Radar Display: Real-time rendering of radar traffic based on surveillance and synthetic track data.		
7.2	**Major Functional Simulator Sub Systems**		
7.2.1	At a minimum, the simulator system shall include the following major functional components: a. Air Traffic Control Generator – Core engine for scenario execution, managing aircraft movements and controller interactions. b. Surveillance Data Processing System (SDPS) with Multi-Radar Tracker (MRT) – Processes radar and surveillance inputs, including simulated PSR, SSR Mode S, ADS-B, and MLAT data. c. Flight Data Processing System (FDPS) – Manages flight plans and coordination, optionally integrated with an Electronic Flight Strip System (EFSS). d. Datalink Communication System (DLS) – Supports simulation of CPDLC for controller–pilot digital communication. e. Data Recording and Playback (REC/PLB) – Enables synchronized recording and playback of all exercise data, including audio, radar and flight plan events.		

	f. Air Situation Display (ASD) – High-fidelity radar display emulating operational interfaces for enroute and approach control. g. Voice Communication and Control System (VCCS) – Simulates operational radio and intercom communications between controllers, pilots and other units. h. Database Management System (DBMS) – Centralized tool for managing simulation environment data, configurations and user inputs. i. Printer System – Includes network printers (A3/A4) for hard copy outputs such as flight strips and air situation snapshots. j. Controller Consoles with Ancillary Equipment – Ergonomically designed workstations for controllers, equipped with input/output peripherals, headsets and displays.		
7.2.2	**Air Traffic Generator (ATG) simulation minimum requirements**		
7.2.2.1	The ATG shall support both single-exercise scenario mode and fully integrated mode, enabling seamless simulation across Tower, Approach and Enroute controller positions.		
7.2.2.2	The ATG shall allow each simulation position to control exercises independently, including adjusting execution speed, selecting scenarios from a predefined list, and, utilizing pause, stop, restart and playback functions.		
7.2.2.3	The ATG shall support comprehensive exercise recording and replay, ensuring full synchronization of data and voice for effective evaluation and analysis.		
7.2.2.4	The ATG shall provide the ability to freeze and print the ASD on a network-connected printer as part of exercise review and documentation.		
7.2.2.5	The ATG shall implement the execution and control of training exercises, and, must support (but not be limited to) the following functions: a. Exercise session configuration and control; b. Simulation of external message traffic, including AFTN and AMHS; c. Realistic navigation and flight dynamics for all simulated aircraft; d. Primary and secondary radar data generation, including PSR and MSSR (Mode S and SSR Modes 3A/C); e. Generation of ADS-B and ADS-C tracks;		

	f. Generation of MLAT (Multilateration) tracks; g. Flight plan management including creation, modification, cancellation, and termination; and, h. ATS inter-center coordination through AIDC, and support for aeronautical and meteorological messaging via AFTN and AMHS.		
7.2.2.6	All surveillance tracks generated by PSR, MSSR (Mode S and SSR 3A/C), ADS-B/C and MLAT shall be visually distinguished using configurable track symbology. The symbology shall be reviewed and aligned with those used in existing operational systems.		
7.2.2.7	The ATG shall be capable of simulating a minimum of 200 aircraft simultaneously, with full support for associated flight plan and surveillance data.		
7.2.3	**Surveillance Data Processing (SDPS) with Multi Radar Tracking (MRT) – Minimum Simulation Requirements**		
7.2.3.1	The system shall be capable of processing radar data, including MSSR (Modes S, 3A, and C) and PSR tracks, as well as correlated MSSR/PSR data and weather information from up to four (4) independent radar sources.		
7.2.3.2	It shall support the processing and accurate display of surveillance tracks received via ADS-B and ADS-C systems.		
7.2.3.3	The system shall provide track detection capabilities in both Mono-Radar mode (local tracks) and Multi-Radar mode (fused system tracks).		
7.2.3.4	It shall automatically correlate system tracks with their associated flight plan data for accurate identification and monitoring.		
7.2.3.5	The system shall generate Short-Term Conflict Alerts (STCA), including both predictive and critical alerts, to warn controllers of potential loss of separation.		
7.2.3.6	It shall provide Minimum Safe Altitude Warning (MSAW) alerts, both predictive and critical, based on aircraft position and terrain data to prevent controlled flight into terrain (CFIT).		
7.2.3.7	Dangerous Area Infringement Warnings (DAIW) shall be generated for aircraft predicted to enter or currently entering, restricted or hazardous airspace, with both predictive and critical alert levels.		
7.2.3.8	The system shall detect and respond to standard emergency transponder codes—7500 (hijacking), 7600 (radio failure) and 7700 (general emergency).		

7.2.3.9	It shall generate Reduced Vertical Separation Minimum (RVSM) alerts to indicate aircraft deviations from prescribed vertical separation standards in RVSM airspace.		
7.2.3.10	The system shall support the simulation of radar anomalies such as false targets caused by multipath reflections or clutter, for enhanced training realism.		
7.2.3.11	It shall allow for the creation and evolution of synthetic tracks based on flight plan data and manual entries from controller workstations, enabling realistic simulation of non-radar targets.		
7.2.3.12	The display of radar data and associated functionalities shall replicate the operational characteristics of real-world radar systems currently in use, ensuring training relevance and familiarity.		
7.2.3.13	The system shall be capable of processing and displaying a minimum of 200 simultaneous aircraft tracks without degradation in performance or responsiveness.		
7.2.4	**Flight Data Processing System (FDPS) – Minimum Simulation Requirements**		
7.2.4.1	The system shall be capable of receiving, validating and processing simulated AFTN/AMHS messages in ICAO 2012 format.		
7.2.4.2	It shall validate and process input data received from controller workstations, ensuring integration with operational procedures.		
7.2.4.3	The system shall analyze flight plan routes, calculate the complete flight path and estimate times over significant waypoints.		
7.2.4.4	It shall support the automatic assignment of Secondary Surveillance Radar (SSR) codes as well as Standard Instrument Departures (SID) and Standard Terminal Arrival Routes (STAR).		
7.2.4.5	The system shall simulate coordination between adjacent AFTN/AMHS and AIDC centers, functioning in conjunction with the Air Traffic Generator (ATG).		
7.2.4.6	It shall manage the transfer of flight plans across sectors or between simulation entities in a coordinated manner.		
7.2.4.7	The system shall perform real-time analysis of traffic to detect and assess congestion or bottlenecks in the simulated airspace.		
7.2.4.8	It shall support the complete lifecycle management and evolution of flight plans across all flight phases and maintain Repetitive Flight Plan (RPL) databases.		

7.2.4.9	The system shall dynamically update flight plan estimates based on inputs received from the Surveillance Data Processing System (SDPS) and GRIB meteorological data.		
7.2.4.10	It shall include the ability to manage restricted areas and simulate the impact of their activation on traffic routing.		
7.2.4.11	The system shall incorporate the management of simulated weather information to affect flight planning and rerouting.		
7.2.4.12	The system shall provide Medium Term Conflict Detection (MTCD) functionality that continuously monitors and analyzes the predicted 4D trajectories of all flights, based on filed flight plan data, to detect potential horizontal and vertical separation infringements within a defined look-ahead time.		
7.2.4.13	It shall include a NOTAM (Notice to Airmen) administrator to simulate issuance, modification, and cancellation of NOTAMs within training exercises.		
7.2.4.14	The system shall support automatic processing and dissemination of flight plan information to relevant controller positions.		
7.2.4.15	A database of Repetitive Flight Plans (RPL) shall be maintained and accessible for simulation planning and execution.		
7.2.4.16	It shall perform full validation of all submitted flight plans, including compliance with ICAO 2012 format standards.		
7.2.4.17	The system shall generate Medium-Term Conflict Alerts (MTCA) to inform controllers of potential conflicts well in advance.		
7.2.4.18	It shall monitor cleared flight levels and generate Cleared Level Adherence Monitoring (CLAM) alerts in the event of deviations.		
7.2.4.19	The system shall detect deviations from assigned routes and trigger Route Adherence Monitoring (RAM) alerts accordingly.		
7.2.4.20	It shall provide full handoff capabilities between controller positions and between adjacent simulated sectors.		
7.2.4.21	The system shall be capable of processing inbound and outbound flights across sector and FIR boundaries, accurately simulating entry and exit procedures.		
7.2.4.21.1	The Flight Data Processing System (FDPS) shall be capable of processing both printed paper flight		

	progress strips and electronic strips based on the following parameters: a. Flight Status – The strip shall reflect the current phase of flight (e.g., active, planned, completed). b. Waypoints – Each strip shall display designated waypoints relevant to the flight route. c. Flight Type – Strips shall be categorized and formatted according to the type of operation: Approach, Arrival, Departure and Enroute. d. Strip Sorting Capability – The system shall support the sorting of strips based on: • Estimated Time Over (ETO); • Flight Level; • Alphanumeric Call Sign.		
7.2.4.21.2	The specific strip format shall be subject to confirmation and approval by the Civil Aviation Authority of the Philippines (CAAP).		
7.2.4.22	Additionally, for the Aerodrome Simulator, a corresponding vehicle strip shall be implemented to simulate ground vehicle operations within the aerodrome movement area.		
7.2.4.23	Flight strips shall dynamically reflect the evolution of flight plans in real-time during the exercise.		
7.2.4.24	Upon activation of a flight, paper flight strips shall be automatically printed at the relevant controller positions.		
7.2.4.25	The system shall allow the pre-printing of flight strips in advance of the exercise for preparation purposes.		
7.2.4.26	Flight strips shall be automatically reprinted with updated information whenever modifications are made to the corresponding flights.		
7.2.4.27	The Controllers shall have the capability to manually cancel flight plans as required during the simulation.		
7.2.4.28	The FDPS shall support the simulation of both VFR and IFR flight plans in full compliance with ICAO standards.		
7.2.4.29	SSR codes shall be automatically assigned based on flight type (arrival, departure, international or domestic) while ensuring avoidance of code conflicts between aircraft.		
7.2.4.30	Following a predefined delay after the termination of a flight plan, the corresponding SSR codes shall become eligible for reassignment.		
7.2.5	**Communications Data Link System (DLS) – Simulation Minimum Requirement**		
7.2.5.1	The DLS simulation shall implement and manage all required protocols and standards necessary to		

	simulate an air-ground communications network for the exchange of ADS-C and CPDLC data with suitably equipped simulated aircraft.		
7.2.5.2	The DLS shall support the establishment of three types of ADS-C contracts; periodic, demand, and, event-based, with simulated aircraft targets: a. Demand Contract: Instructs the addressed aircraft to immediately transmit an ADS report containing the specified data. b. Periodic Contract: Instructs the aircraft to transmit ADS reports at a frequency specified by the ground controller. c. Event Contract: Automatically transmits an ADS report when a defined event or condition occurs.		
7.2.5.3	The DLS shall fully support all uplink and downlink message groups in accordance with the applicable ICAO Standards for CPDLC and ADS-C communications.		
7.2.5.4	A fully simulated Controller Pilot Data Link Communications (CPDLC) system shall be provided to enable the exchange of data messages between the controller and simulated, data link-equipped aircraft.		
7.2.5.5	The CPDLC interface shall allow controllers to select from a menu of preformatted standard messages for rapid communication, as well as compose free-text messages for flexibility in handling non-standard or complex communication scenarios.		
7.2.5.6	A CPDLC message shall be capable of being composed using a single message element or a combination of up to five message elements. Messages may consist entirely of pre-formatted elements, entirely of free-text elements, or, a combination of both, depending on the operational requirement.		
7.2.6	**Data Record and Playback (REC/PLB) – Simulation Minimum Requirements**		
7.2.6.1	The Data Recorder & Playback System shall record and reproduce the Simulator system technical and operative commands and orders carried out by all the operational positions and in any operational mode (MRT, Mono-Track or By-Pass). The REC/PLB system shall also perform the recording of all the data passing through the Local Area Network (LAN). The system shall be configured as a dual redundant system in order to provide record and playback functionality simultaneously.		

	The Data Record and Playback (REC/PLB) system shall record and reproduce all simulator system technical and operational commands issued by every active operational position, in all operating modes (Multi-Radar Tracking [MRT], Mono-Radar, or By-Pass). It shall also capture all data transmitted over the Local Area Network (LAN). The system shall be configured in a dual-redundant architecture to support simultaneous recording and playback functions without interruption.		
7.2.6.2	The REC/PLB system shall record, at a minimum, the following data: a. System tracks generated by the Surveillance Data Processing System (SDPS). b. Local tracks. c. ADS-B, ADS-C and MLAT tracks. d. Controller-issued commands (including the resulting effects). e. Supervisor-issued commands. f. Control messages, including time, date and system status. g. Flight data, including flight plan details and updates. h. Bookmarks manually inserted by instructors, referencing significant events during the simulation. i. Other relevant commands and data transactions.		
7.2.6.3	The REC/PLB system shall support synchronized playback of recorded data and audio for detailed post-exercise review and analysis. Playback shall be accessible from any system operational position, including the Database Management System (DBMS) workstation.		
7.2.6.4	The REC/PLB system shall maintain automatic synchronization with the Digital Audio Voice Recorder and Playback system integrated into the VCCS during all playback operations.		
7.2.6.5	The REC/PLB system shall continuously monitor its storage capacity. Upon reaching the limit of available media, it shall automatically switch to the secondary recording unit, with a minimum ten-minute overlap to ensure seamless data capture and prevent loss.		
7.2.6.6	The recording function of the system shall remain fully operational even during playback sessions, ensuring uninterrupted data logging at all times.		

7.2.7	**Voice Communications and Control System (VCCS) – Simulation Minimum Requirements**		
7.2.7.1	The bidder shall provide, install, and test a state-of-the-art, computer-based, fully digital Voice Communications and Control System (VCCS) using VoIP technology, capable of integrating all communication channels within the Simulator System.		
7.2.7.2	The VCCS shall be fully synchronized with the simulator system to ensure seamless coordination across all simulation functions.		
7.2.7.3	The VCCS shall be capable of emulating, at a minimum, six (6) VHF radio frequencies, two (2) HF radio frequencies, and, sixteen (16) telephone lines. These lines shall include internal hotlines, external telephone circuits, crash phone communications and other relevant communication interfaces required by the simulator configuration. The system must be designed to reflect the operational setup of the simulator and should provide clear documentation of any inherent spare capacity to support future expansion requirements.		
7.2.7.4	The system shall allow users to select their preferred communication method for both transmitting and receiving, either via speaker or headset, depending on operational preference and position.		
7.2.7.5	Communications shall be operable using a Push-To-Talk (PTT) mechanism, via foot switch or headset-based controls.		
7.2.7.6	VCCS access shall be available at the following positions: a. Executive and Assistant Controller Positions, including all Aerodrome-related positions b. Pseudo Pilot Positions c. Operational Supervisor Position		
7.2.7.7	The VCCS shall support audio output for recording purposes through independent audio channels for each radio frequency, telephone line, hotline, and interphone connection. Each channel shall combine incoming and outgoing communication streams. A Digital Audio Voice Recorder and Playback System shall be included, capable of reproducing synchronized audio output in coordination with the REC/PLB system during playback sessions.		
7.2.8	**Data Base Management System (DBMS) – Simulation Minimum Requirement**		

7.2.8.1	The DBMS shall provide capabilities to prepare, edit and display Site Adaptation Data. At a minimum, this includes display maps, geographic filters, sectorization tables, airport and code tables, route structures, safety net configurations and variable site parameters (VSPs) for the various simulator subsystems.		
7.2.8.2	The DBMS shall also support the full management of simulation exercises with the following functionalities: a. Preparation and configuration of training exercises; b. Maintenance of a centralized library of exercises; c. Library of aircraft and vehicle types; d. Manual classification of exercises by difficulty level; e. Ability to create, modify, duplicate, delete or print exercises or their components; and, f. Storage of executed exercises in individual trainee folders to monitor progress, with the option for instructors to attach evaluations or assessments to each exercise instance.		
7.2.8.3	The system shall be based on a commercial-grade database platform, enabling the creation, editing and management of stored data, including but not limited to: a. Radar system parameters b. System-wide Variable Parameters c. Airport-related data d. Notification and coordination points e. Geographic Maps f. Routes		
7.2.8.4	The bidder shall clearly describe the proposed simulation system's capabilities and capacities in the following areas: a. Exercise Management: • Preparation workstations • User-defined libraries • Number of prepared exercises supported • Flight plan (FPL) management per exercise • Weather condition definitions per exercise • ATS message definitions per exercise b. Training Capacity: • Number of simultaneously active flights • Number of inactive or dormant flights • Number of flights simultaneously managed by pilot positions		

	• Volume of generated messages • Number and variability of weather scenarios c. Adaptation Data Management: • Runway configurations per aerodrome • SID and STAR procedures • ILS procedures by runway • RNAV/GNSS approach procedures • Holding pattern procedures • Missed approach procedures by runway • Non-precision approach procedures • Visual approach procedures • Aircraft types and performance characteristics • Grouping of aircraft by operational categories • Wind simulation capabilities • Recording duration per session • Adjustable playback speeds for post-exercise review		
7.2.8.5	Minimum Simulation Capacity Requirements for Simulation Area		
7.2.8.5.1	The simulation area shall support a minimum coverage of 1024 x 1024 nautical miles (NM).		
7.2.8.5.2	The simulation system shall accommodate flight operations from ground level (0 ft) up to 99,999 ft.		
7.2.8.5.3	The system shall support a minimum of eight (8) distinct control sectors, each independently configurable.		
7.2.8.5.4	The system shall support a minimum of fifty 50 radar maps/sub-maps. The following capabilities and features shall be included:		
7.2.8.5.4.1	Adjustable font sizes for map elements to enhance visibility and usability.		
7.2.8.5.4.2	Dynamic generation of simulation maps incorporating the following elements: a. Sector boundaries b. Airports c. Radar heads/antenna locations d. NAVAIDs (e.g., VOR/DME, NDB, ILS components) e. Fixes and waypoints f. Runway layouts g. Intersections h. Air routes and corridors i. Terrain obstacles or obstructions j. Instrument approach configurations		

	k. Standard Instrument Departures (SIDs), Standard Terminal Arrival Routes (STARs), restricted and special-use airspace l. Multiple scalable map levels (zoom-in/out functionality) m. Off-centered map views for tactical display flexibility n. Layered map presentation, allowing individual layer toggling (e.g., airports, NAVAIDs, airways) o. Altitude-based filtering for selective map content display based on vertical constraints		
7.2.8.6	The DBMS shall be capable of operating independently in a standalone mode, without requiring connectivity to other simulator components.		
7.2.8.7	The DBMS shall be capable of distributing updated aeronautical and system data to all relevant subsystems, including the FDPS, executive controller positions and other operational units, via the system's LAN.		
7.2.8.8	The DBMS shall include functionality to store and manage training documentation and reference materials (e.g., Aeronautical Information Publications, approach plates) in common digital formats such as PDF. These documents shall be accessible on demand from all training and supervisory workstations. A user-friendly search tool shall be provided, enabling keyword-based searches across document names and contents.		
7.2.8.9	The exercise preparation functionality shall be structured into two components: scenario and environment. The scenario component shall define the number of active aircraft along with their respective types and performance characteristics. The environment component shall specify the available system resources, including but not limited to, radar sources, ADS systems, air routes, navigation points and other infrastructure relevant to the simulation.		
7.2.8.10	The exercise planner shall have the capability to create training sessions by scripting predefined actions for various simulation entities, including target aircraft, pseudo-pilots, environmental elements, and, system components such as MET data, NOTAMs and ATIS messages. These scripted actions shall complement the FPL or environmental object plans (e.g., weather phenomena) and may include deviations from planned trajectories, emergency situations and non-standard or		

	delayed responses, thereby enhancing the realism and complexity of the training scenarios.		
7.2.8.11	Access to the course and training planning functionality shall be restricted to authorized personnel only. Each user shall be assigned a unique username and password to ensure secure and traceable access. The planning interface shall enable authorized users to create basic exercise scenarios by selecting appropriate object plans, generating or configuring exercise-specific weather conditions, and preparing or importing relevant FPL, MET and AIS messages.		
7.2.8.12	The DBMS shall have the capacity to store a minimum of 300 exercises.		
7.2.9	**Air Situation Display (ASD) Control Suite – Simulation Minimum Requirements**		
7.2.9.1	The simulation system shall provide a comprehensive graphical representation of the airspace via the ASD, integrating all relevant surveillance data, flight plan information, AIS and MET data.		
7.2.9.2	Each controller suite shall consist of an Executive Controller Position and a corresponding Assistant Position to support coordinated operations.		
7.2.9.3	The ASD shall support zoom-in, zoom-out and off-centering functionalities to enhance situational awareness and customizable airspace views.		
7.2.9.4	The ASD shall display the current operational sectorization clearly, in alignment with the configured exercise environment.		
7.2.9.5	The system shall display aircraft speed vectors either individually or collectively, based on the controller’s preference. Each vector shall indicate the aircraft's bearing and ground speed.		
7.2.9.6	The system shall support both automatic and manual rotation of target labels. Automatic rotation shall be available in 45º increments, while manual adjustments shall be available on demand by the controller.		
7.2.9.7	The ASD shall process and display essential flight data, including aircraft tracks, full and limited data blocks, and, associated alphanumeric symbols. Interaction with displayed data shall be enabled through a keyboard and/or mouse interface.		

7.2.9.8	The system shall integrate and present meteorological data within the ASD and/or the controller console suite to support real-time weather-based decision-making.		
7.2.9.9	The Air Situation Display shall provide, at a minimum, the following information to ensure full situational awareness and effective air traffic control operations: a. QNH Values and Transition Level: Display of current QNH (in hectopascals) and the applicable transition level. b. Surveillance Data: Visualization of MSSR and PSR plots and tracks, ADS-B/ADS-C, and MLAT plots and tracks. This includes correlated tracks and fused system tracks integrating all available surveillance sources. c. Local Maps: Display of high-resolution local and regional maps to support spatial orientation. d. Distance Markers: Range rings centered on reference points or aircraft, with adjustable scaling. e. Sectorization: Clear graphical representation of sector boundaries, including active and adjacent sectors. f. Flights Under Sector Control: Real-time identification and highlighting of flights currently under the control of the respective sector. g. Range and Altitude Filters: Capability to apply user-defined filters based on distance (range) and flight level (altitude) for focused display. h. Coasted and Synthetic Tracks: Display of coasted tracks for temporarily lost targets and synthetic tracks generated from flight plan data. i. Track History: Display of the current position along with a minimum of the six most recent historical positions of each aircraft track. j. Special Code Presentation: Identification and highlighting of aircraft transmitting emergency and special purpose SSR codes (e.g., 7500, 7600, 7700). k. Audible and Visual Conflict Alerts: Real-time alerts for Short-Term Conflict Alert (STCA), Minimum Safe Altitude Warning (MSAW), Dangerous Area Infringement Warning (DAIW), and FDPS-related warnings, with both visual and auditory signals.		

	l. Handover Indication: Clear visual cue for aircraft handover between sectors or controller positions. m. Code Filters: Functionality to filter aircraft display based on SSR code assignments. n. Speed Vector Display: Display of speed vectors with time projection indicators, configurable based on controller preference. o. RVSM Indicator: Identification of aircraft certified for Reduced Vertical Separation Minimum (RVSM) operations. p. 2D Weather Display: Integration of two-dimensional weather overlays showing the location, shape, and at least two levels of intensity of weather phenomena.		
7.2.9.10	The ASD shall include altitude filter capabilities, allowing users to define both minimum and maximum altitude levels for the selective display of aircraft tracks.		
7.2.9.11	The Air Situation Display (ASD) shall provide the capability to visually discriminate between various types of surveillance symbols, including but not limited to: a. Primary Plots; b. Secondary Plots; c. Associated Plots (combination of Primary and Secondary); d. Mono-Radar Tracks; e. ADS-B, ADS-C and MLAT Tracks; f. Multi-Sensor Fused Tracks; g. Coasted Tracks; h. Special Position Identification (SPI) Indicators; and, i. Synthetic Tracks		
7.2.9.12	The final design and symbology used for these elements shall be mutually agreed upon between the bidder and the Civil Aviation Authority of the Philippines (CAAP).		
7.2.9.13	The system shall allow the controller to open a secondary ASD window, which shall retain all functional capabilities of the main display, including zooming, off-centering and full interaction with displayed elements.		
7.2.9.14	In the event of a failure at the executive controller position, the assistant position shall be capable of assuming full display and operational control of the		

	ASD, ensuring continuity of surveillance and control functions.		
7.2.9.15	The assistant position shall be capable of performing the functions of a Flight Data Operator (FDO), providing the operator with, at a minimum, the following functionalities: a. Access to Stored Flight Plan (SFPL) and Repetitive Flight Plan (RPL) databases; b. Viewing, correction and display of AFTN messages; c. Support for all controller functions, including the creation, modification and validation of FPL data; d. Transmission and distribution of AFTN messages; e. Processing and management of NOTAM and ATIS messages; f. Management and monitoring of restricted airspace; and, g. Access to MET and AIS databases.		
7.2.9.16	The FDO function shall be operated via a user-friendly graphical user interface (GUI), utilizing structured display pages and intuitive menu navigation. Flight plan data shall be segmented and presented in clearly defined, editable fields to facilitate ease of review, entry and modification.		
7.2.10	**Electronic Flight Strips (EFS)**		
7.2.10.1	The Electronic Flight Strips (EFS) serve as a digital alternative to traditional paper flight strips, providing real-time flight data display and management at designated training and operational positions.		
7.2.10.2	**Strip Fields**		
7.2.10.2.1	The Electronic Flight Strip (EFS) system shall be capable of incorporating all standard flight data fields in accordance with the ICAO Flight Plan 2012 (FPL 2012) format. The inclusion of specific fields shall be configurable by the user during system customization.		
7.2.10.2.2	Each field within the EFS shall be editable by the operator through intuitive interaction, including mouse-click selection, drop-down menu options or direct keyboard entry.		
7.2.10.3	**Bay Layout**		
7.2.10.3.1	The Electronic Flight Bay (EFB) shall be capable of displaying up to 20 departure and 20 arrival strips simultaneously. These strips may be organized in dedicated columns based on their operational		

	category, such as arrivals, departures or aircraft on taxiways, for clear situational awareness.		
7.2.10.3.2	The bay layout shall dynamically adjust according to the assigned role of the user. Upon a role change, the system shall automatically reconfigure the strip bay layout to reflect the new operational responsibilities. The EFS shall clearly display the current role of the working position.		
7.2.10.3.3	If the number of strips in the pending bay exceeds the available display space, a vertical scrollbar shall be automatically added to enable access to all pending strips.		
7.2.10.3.4	If the maximum number of allowable overlapping strips in the working bay is reached, no additional strips shall be accepted. The system shall notify the controller with a clear visual or textual indication.		
7.2.10.3.5	When an overlapped strip is selected, the system shall bring it to the foreground to ensure full visibility without obstructing other strips.		
7.2.10.3.6	Scrolling functionality shall be provided in the working area when overflow conditions occur to ensure continued usability and strip accessibility.		
7.2.10.4	**Bay sorting**		
7.2.10.4.1	The sorting configuration of each pending bay shall be independently definable, allowing for tailored management of flight strip organization based on operational preferences or procedures.		
7.2.10.4.2	Pending bays shall support sorting by the following criteria: a. Call Sign – Alphabetical sorting based on aircraft call signs. b. Estimated Time of Arrival (ETA) – Sorting strips by the aircraft's projected arrival time. c. Estimated On-Block Time (EOBT) – Sorting based on the expected time the aircraft will arrive at the gate or stand. d. Estimated Time of Departure (ETD) – Sorting by the anticipated take-off time. e. Estimated Off-Block Time (EOBT) – Sorting by the time an aircraft is expected to begin pushback or taxi. f. Bay Insertion Time – Strips are ordered according to the time they are inserted into the bay, with the most recent (last inserted) strip appearing on top.		

	g. Manual Sorting – Working bays shall allow manual sorting by the controller, enabling drag-and-drop or other user-defined arrangements as operationally required. h. Estimated Time Over Fix (ETO) – Sorting based on estimated time over fix time for Enroute strips.		
7.2.10.4.3	This sorting flexibility enhances situational awareness and improves controller efficiency in handling complex traffic scenarios.		
7.2.10.5	**Strip types**		
7.2.10.5.1	All Electronic Flight Strips (EFS) shall be color-coded according to operational requirements to support rapid identification and efficient workflow. The following strip types shall be supported: a. **Inbound Flight Strip** – Represents the flight plan of an inbound aircraft approaching or arriving at the aerodrome. b. **Outbound Flight Strip** – Represents the flight plan of an outbound aircraft scheduled for departure. c. **Overflight Strip** – Represents the flight plan of an aircraft transiting the airspace without landing or departing. d. **Enroute Strip** – Represents the flight plan of an aircraft over a waypoint in Enroute Control. e. **Vehicle Strip** – Represents the movement plan of an airside vehicle operating within the controlled area. f. **Tow Strip** – Represents the movement plan of an aircraft being towed on the airfield.		
7.2.10.5.2	An **Information Strip** is used for displaying general or miscellaneous operational data that does not correspond to any specific flight plan. These strips are not linked to a flight or vehicle plan and serve purely informational purposes for the controller.		
7.2.10.5.3	The system shall automatically generate a **Vehicle Strip** whenever a vehicle is detected entering the controller's area of responsibility. The generated strip shall immediately appear in the relevant Pending Bay of the responsible controller for monitoring and management.		
7.2.10.5.4	**Strip responsibility** is dynamically assigned based on bay location. A user becomes responsible for a flight once the corresponding strip is moved into their Working Bay. Only one user at a time can hold		

	responsibility for a specific flight, and flight data can only be modified by the controller who is currently responsible for that strip.		
7.2.10.6	The Electronic Flight Strip (EFS) system shall allow controllers to interact with flight strips to update and manage **flight progress states**, which represent the current operational status of each flight. Clearances and actions taken by the controller shall be reflected through changes in these states.		
7.2.10.6.1	Upon a change in flight progress state, the EFS shall automatically relocate the strip to the appropriate bay corresponding to the updated flight status, ensuring accurate visual organization and workflow support.		
7.2.10.6.2	The bay location of a strip shall represent its current flight progress state. If a bay is designed to hold strips from multiple progress states, the specific state of each flight shall be clearly indicated directly on the strip, using visual cues such as color codes, icons or text.		
7.2.10.6.3	The definitions and handling of flight progress states shall be configurable per airport implementation, allowing customization to accommodate specific operational procedures or local requirements.		
7.2.10.7	**Flight Progress States and Strip Attributes – Tower Position**		
7.2.10.7.1	The EFS system shall support detailed flight progress state tracking for various traffic types (inbound, outbound, vehicles and tows) in the Tower environment. Each progress state shall be reflected through automatic strip movement between bays and clear visual representation on the strip interface.		
7.2.10.7.2	Inbound Flights: The system shall support the following progress states for inbound flights: a. Traversing CTR – Aircraft is entering or passing through the Control Zone. b. Landing Clearance – Landing clearance has been issued. c. Taxi Clearance – Taxi clearance has been granted post-landing. d. At Apron – Aircraft has reached the apron area. e. At Gate – Aircraft is parked at the assigned gate.		
7.2.10.7.3	Outbound Flights: The system shall support the following progress states for outbound flights: a. Not Cleared – No ATC clearance issued yet.		

	b. ATC Clearance – ATC clearance (route and squawk) has been delivered. c. Push-back Clearance – Push-back clearance issued. d. Taxi Clearance – Taxi clearance issued. e. Line-up Clearance – Clearance to enter the runway has been issued. f. Take-off Clearance – Take-off clearance issued. g. Airborne – Aircraft is airborne and within the Tower's jurisdiction. h. Departed – Aircraft has exited Tower control area.		
7.2.10.7.4	Vehicles: Vehicle strips shall reflect the following progress states: a. Not Cleared – No clearance issued. b. Taxi Clearance – Vehicle has been cleared to move. c. Line-up Clearance – Vehicle authorized to enter runway or holding point. d. At Apron – Vehicle located at or returning to apron.		
7.2.10.7.5	Tows: Towing operations shall be represented with the following states: a. Not Cleared – No clearance for towing has been given. b. Push-back Clearance – Push-back initiated. c. Tow Clearance – Tow clearance has been issued. d. At Apron – Tow operation at apron completed. e. At Gate – Aircraft under tow positioned at the gate.		
7.2.10.8	For APP/Enroute positions, the EFS shall automatically position the flight strip in the appropriate bay corresponding to the actual flight progress state, ensuring seamless coordination between Tower and approach/enroute controllers.		
7.2.10.9	**Flight Progress States and Strip Attributes – Approach/Enroute Positions**		
7.2.10.9.1	The EFS system shall support and visualize flight progress states for Approach (APP) and Enroute (ENR) controller positions using dynamically updated, color-coded electronic strips.		
7.2.10.9.2	The following capabilities are required: a. Clearance Issued (Sequenced for Departure):		

	Strips for departing flights shall reflect clearance issuance and sequencing status. These strips shall be clearly distinguished and positioned according to the departure sequence. b. Color-Coded Departed Flights: Departed flights shall be color-coded based on route and status. Strips shall automatically transition to reflect current position at designated waypoints within the control zone, with timing information received in real time from the Flight Data Processing System (FDPS). c. Color-Coded Arrival Flights: Arrival flights shall be color-coded based on the arrival route and destination aerodrome. Strips shall be presented at associated waypoints and at the arrival airport, reflecting their current progress state. d. Color-Coded Overflights and Cross-Country Flights: Strips for overflights and cross-country flights shall also be appropriately color-coded and automatically distributed to bay positions corresponding to their route waypoints within the jurisdiction area.		
7.2.10.9.3	The EFS strip bay shall replicate real-time manual strip operations for all ATC working positions across units.		
7.2.10.9.4	The configuration and layout of the strip bay shall be customized in consultation with the end-user during the customization meeting with the tenderer, ensuring alignment with operational procedures and national strip handling practices.		
7.2.10.9.5	When a new flight strip is created, the system shall automatically assign it an initial flight progress state in accordance with the predefined operational parameters and the nature of the flight (arrival, departure, overflight, etc.).		
7.2.10.9.6	The user shall be able to update the flight progress state by moving the strip to a different working bay. The system shall automatically adjust the flight progress state only if the new bay is associated with a different default state than the current one. This ensures accurate reflection of the flight's operational stage.		
7.2.10.9.7	Users shall have the capability to modify the flight progress state directly on the strip without relocating		

	it. This functionality is restricted to the runway bay, which is designed to accommodate strips in multiple progress states simultaneously. This allows for efficient handling of various runway operations without impacting bay layout.		
7.2.10.9.8	The system shall enforce strict access control, allowing only the responsible controller, defined as the user who currently holds the strip in their working bay, to modify the flight progress state. This measure ensures data integrity and avoids conflicting updates.		
7.2.10.9.9	The system shall provide intelligent attention triggers (e.g., visual highlights, flashing indicators, or audible tones) to alert the controller of significant changes or required actions related to the flight strip. These alerts must be accompanied by a clear and intuitive acknowledgement mechanism, enabling the user to confirm, dismiss or respond appropriately, thereby maintaining operational awareness and reducing human error.		
7.2.10.9.10	The system shall generate and sort Enroute strips into strip bays representing waypoints.		
7.2.10.10	**Flight Progress State for Exceptional Traffic (Enhanced)**		
7.2.10.10.1	The system shall support flexibility in managing flight progress states to accommodate exceptional traffic scenarios. Exceptional traffic refers to specific flight operations that deviate from standard procedures due to their nature or priority. These may include, but are not limited to, emergency flights, military operations, state or VVIP movements, and other non-routine activities.		
7.2.10.10.2	The system shall enable users to override the normal sequence of flight progress states when operationally required. This includes both skipping and reversing flight progress states to match real-time situational demands.		
7.2.10.10.3	Examples of Exceptional State Handling: a. Skipping Flight Progress States: The user shall be able to move a flight strip directly from an apron bay to the runway bay, bypassing intermediate states such as pushback and taxi. In this scenario, the system shall automatically update the flight progress state—e.g., transitioning the ATC clearance state directly to a line-up state without requiring sequential progression.		

	b. Reversing Flight Progress States: The system shall allow the reversal of progress states when necessary. For example, an outbound flight strip initially located in the runway bay may be moved back to the taxi bay if operational circumstances change (e.g., aborted takeoff or runway congestion). The corresponding flight progress state shall be updated accordingly to reflect the revised status.		
7.2.10.11	**User Actions**		
7.2.10.11.1	The system shall support the manual creation of flight plan-related strips by the user. To ensure data integrity and operational clarity, the system shall automatically detect and prevent the creation of duplicate strips, i.e., multiple strips referencing the same flight plan shall not be permitted.		
7.2.10.11.2	The system shall allow users to manually create information strips, which are not linked to any flight plan. These may be used to convey additional notes or operational information. Users shall be able to select from a library of predefined information strip templates to quickly generate these strips.		
7.2.10.11.3	Users shall have the ability to remove strips by dragging them into a designated waste basket. Strips placed in the waste basket shall be automatically deleted after a configurable, predefined time interval.		
7.2.10.11.3.1	The system shall allow the user to retrieve a strip from the waste basket before it is permanently removed.		
7.2.10.11.3.2	This functionality ensures recovery from accidental deletions while maintaining system cleanliness over time.		
7.2.10.11.4	All movements of digital strips across bays and positions shall include smooth animation. This visual transition is intended to prevent abrupt shifts and to enhance user awareness of strip changes, reducing the likelihood of confusion or missed updates.		
7.2.10.11.5	Offset strip: a. Users shall be able to apply a horizontal offset to a strip, marking it for emphasis or indicating a specific operational status. This function shall be limited to strips located within working bays. b. The offset marking shall persist until the user manually resets or clears it. No automatic reset shall be performed by the system.		

7.2.10.11.6	The system shall allow the user to update strip fields, including predefined inputs (selected from a list), free text inputs or a combination of both, using a computer mouse and/or keyboard.		
7.2.10.11.7	The system shall restrict the editing of strip fields to users who are responsible for the corresponding flight strip.		
7.2.10.11.8	The system shall ensure that manual edits made to a strip field override any subsequent system-generated updates for that field during the remainder of the flight.		
7.2.10.11.9	The system shall support clearance annotations using a stylus, allowing the user to write directly onto the strip displayed on the EFS screen.		
7.2.10.11.10	The system shall ensure that strips transferred to a user role automatically appear in the pending bay associated with that specific role.		
7.2.10.11.11	The system shall allow a user to assume responsibility for a strip by moving it from the pending bay into a designated working bay, thereby gaining control of the associated flight.		
7.2.10.11.12	The system shall allow a strip to be transferred to another user by moving it into a pending bay, which causes the strip to automatically appear in the pending bay on the receiving user's screen.		
7.2.10.11.13	The system shall also support strip transfer via a transfer basket, where placing a strip in the transfer basket results in the strip appearing in the pending bay of the receiving user's display.		
7.2.10.11.14	The system shall allow an operational user to take over the complete EFS screen of another working position in the event of a hardware failure (e.g., monitor malfunction), within the same training exercise.		
7.2.10.11.14.1	During the screen takeover process, the user's role and all associated strips in the working area shall also be transferred automatically to the new working position.		
7.2.10.11.14.2	The takeover function shall only be initiated from a working position that has no role currently assigned, ensuring role integrity and operational continuity.		
7.2.10.11.15	The system shall provide a Picture-in-Picture (PIP) feature that offers a read-only overview of the flight strips displayed at another working position.		
7.2.10.11.15.1	The PIP feature shall be used to gain situational awareness of future or adjacent traffic, and shall support operational use cases such as coordination, training and supervisory monitoring.		

7.2.10.11.15.2	The PIP display shall be clearly distinguishable from the active working area and shall not permit any editing or interaction with the strips shown.		
7.2.10.11.16	The system shall include a Transfer-in-Picture (TIP) functionality that enables users to directly transfer a flight strip into or from the working area of another user.		
7.2.10.11.16.1	This feature facilitates efficient coordination and workload sharing between positions by allowing seamless strip handovers without the need to access the other user's primary interface.		
7.2.10.11.16.2	The transfer action shall be intuitive and clearly indicated on both users' displays to ensure transparency and maintain operational awareness.		
7.2.10.11.17	The system shall support the functionality to move multiple flight strips simultaneously in a single action.		
7.2.10.11.18	The system shall ensure that all alerts generated and visualized in the FDPS are also displayed on the corresponding EFS.		
7.2.10.11.18.1	These alerts shall be clearly presented in a way that is easily recognizable by the user.		
7.2.10.11.18.2	The system shall allow users to configure which specific alerts are displayed on the EFS, ensuring only relevant and actionable alerts are shown based on user preference or role-specific requirements.		
7.2.11	**Printer System**		
7.2.11.1	There shall be a network printer system to allow the printing of relevant simulator information required for post exercise analysis, system status reports and any other necessary information. The printer shall be medium duty with graphics and text capacity preferably laser-jet. This printer system shall be accessible from the pilot positions. A network-connected printer system shall be provided to support the generation of simulator-related documentation, including but not limited to, post-exercise analysis reports, system status summaries and other operational outputs.		
7.2.11.2	The printer shall be a medium-duty device with the capability to handle both graphical and textual outputs, utilizing laser-jet technology or equivalent.		
7.2.11.3	The printer shall be accessible from all pilot positions within the simulator environment to ensure timely and efficient access to printed materials.		

7.3	**Operational Positions Functional/Configuration Requirements**		
7.3.1	**Executive Controller and Assistant Suite Main Features**		
7.3.1.1	The Executive Controller and Assistant positions shall be integrated into a cohesive and ergonomically optimized configuration. Each position shall be equipped with the following minimum components to support operational and training requirements:		
7.3.1.2	<u>Executive Controller Position:</u> a. Air Situation Display (ASD) workstation equipped with a high-resolution 30" color 4K display (minimum resolution 3840 x 2160 pixels). b. Voice Communication Control System (VCCS) display and integrated control panel for managing radio and intercom communication. c. Standard optical mouse and full-size QWERTY keyboard for system interaction. d. Two flight strip bays with a minimum capacity of 15 strip holders each. e. A total of 50 physical flight strip holders to support manual flight progress tracking. f. Electronic Flight Strip (EFS) display system with stylus input for digital flight strip management.		
7.3.1.3	<u>ATC Assistant Position:</u> a. Assistant workstation providing full Flight Data Operator (FDO) functionality, equipped with a 24" color LCD monitor (minimum resolution 1920 x 1200 pixels). b. Dedicated flight strip printer for generating hard copies of flight data as needed. c. VCCS display and control panel, consistent with that of the executive position. d. Two flight strip bays with a minimum of 15 strip holders each. e. A total of 50 flight strip holders to support physical strip handling. f. Optical mouse and full-size QWERTY keyboard for efficient data entry and navigation. g. Display systems for meteorological data, navaid status indicators, and airfield lighting system status. h. Electronic Flight Strip – Training and Exercise Display (EFS TED) with stylus pen for interactive control and simulation input.		

7.3.1.4	This configuration ensures that both executive and assistant positions are capable of supporting realistic and high-fidelity ATC training operations with full coordination, control and data handling capability.		
7.3.2	**Pseudo Pilot Positions Main Features**		
7.3.2.1	The simulator shall include a minimum of four (4) fully functional pseudo pilot positions. Each position shall be equipped with comprehensive control features, data input/output interfaces and real-time displays to effectively manage and support all types of simulation scenarios.		
7.3.2.2	The pseudo pilot interface shall enable the operator to send direct control commands to the ATG, facilitating the manipulation and guidance of simulated aircraft in real-time. Each pilot position shall be equipped with an intuitive, graphical user interface for efficient target manipulation and scenario execution.		
7.3.2.3	All pilot-issued commands shall support the creation and maintenance of a realistic air traffic environment. These commands shall also enable smooth simulation of pilot-controller communications across all phases of flight operations.		
7.3.2.4	The pseudo pilot system shall support, at a minimum, the following functional capabilities: a. All user interface elements shall be accessible through window-based graphical presentations. b. A real-time air situation display, consistent in appearance with that of the executive controller's view. c. Display and management of a comprehensive flight plan list. d. Assignment and identification of aircraft including ICAO callsigns and transponder SSR codes. e. Aircraft type specification and associated performance characteristics. f. Visualization and control of current flight level and assigned cleared level. g. Input and control of vertical speed (ascent/descent rates). h. Control over aircraft heading, including command inputs for turns and heading changes. i. Control of airspeeds, including Indicated Airspeed (IAS), True Airspeed (TAS), and Mach number.		

	j. Altimeter setting adjustments using QNH parameters. k. Route planning and real-time amendments, including DCTs and reroutes. l. Management of standard procedures such as SIDs, STARs, holds, missed approaches, and other route-based clearances.		
7.3.2.5	Each pseudo pilot position shall be integrated with the VCCS to facilitate communication with assigned simulated ATC sectors and the instructor/supervisor, enabling realistic voice interactions during the exercise.		
7.3.2.6	The pseudo pilot system shall allow any position to assume control of any simulated aircraft target at any time during the simulation session, ensuring flexible role assignment and real-time traffic management.		
7.3.2.7	The system shall include a configurable alert or prompt mechanism that notifies the pseudo pilot a predefined time before an expected aircraft action (e.g., descent initiation, speed change, frequency change), enhancing response accuracy and scenario realism.		
7.3.2.8	Pseudo pilots shall be capable of displaying the intended track or planned route of each assigned aircraft target, supporting proactive traffic flow and maneuver planning.		
7.3.2.9	Each Pseudo Pilot Position workstation shall include the following minimum hardware and ergonomic components: a. One 24" color LCD monitor with a minimum resolution of 1920 x 1200 pixels. b. VCCS display and integrated control panel for voice communication. c. Digital slave clock for synchronized simulation timekeeping. d. Optical mouse and full-size QWERTY keyboard for interface interaction and data entry.		
7.3.3	**Operational Supervisor Position Main Features**		
7.3.3.1	The Operational Supervisor Position shall support both supervisory and instructor roles. It shall include full capabilities to enable or disable key simulation subsystems and inputs such as VHF communication channels, radar sources, AFTN inputs, meteorological data feeds and other configurable simulation services.		
7.3.3.2	The supervisor position shall be equipped with full access to the Voice Communication Control System		

	(VCCS), allowing internal communication with all simulation entities, including ATC positions, pseudo pilot stations and other supervisory or instructor roles.		
7.3.3.3	The system shall include comprehensive supervisory functions for managing active simulation sessions.		
7.3.3.3.1	Session Management Features: a. Configuration of operational sectorization and sector boundaries. b. Assignment of airspace sectors to individual ATC positions. c. Allocation of radio frequencies to all ATC and pseudo pilot positions.		
7.3.3.3.1	Session Control Functions: a. Display and configuration of wind charts and upper-air temperature profiles. b. Management of radar data source tables and operational radar feeds. c. Dynamic selection and modification of take-off and landing runways at simulated aerodromes.		
7.3.3.4	The instructor interface shall provide complete control over simulation exercises. The following functions shall be supported: a. Initiate and terminate simulation sessions, including control over run speed (real-time, accelerated or slowed) and playback functionality. b. Activate and manage the record/playback subsystem, allowing pause, fast forward, rewind or normal speed playback. c. Tag or bookmark specific time points in the simulation timeline for rapid return and analysis. d. Simulate degraded system modes by activating or disabling system components such as radar feed, AFTN inputs or navigation data. e. Modify simulated weather parameters, including wind speed, wind direction, visibility and QNH settings. f. Apply VHF communication degradation effects including full signal loss, white noise and intermittent voice dropout.		
7.3.3.5	The Operational Supervisor Position shall be provisioned with the following minimum hardware components: a. One 24" color LCD workstation monitor with a minimum resolution of 1920 × 1200 pixels.		

	b. One 32" Air Situation Display (ASD) as per controller display specifications. c. VCCS display and fully functional control panel. d. Optical mouse and QWERTY keyboard for user interface interaction. e. Real-time meteorological displays, navaid status indicators, and system health overviews.		
7.3.4	**Data Base Management Position Main Features**		
7.3.4.1	The DBMS shall serve as the central system for maintaining and managing the simulator database. It shall fully support the creation, modification and preparation of operational simulation exercises, including the integration of airspace configurations, traffic scenarios, weather profiles and system settings.		
7.3.4.2	The DBMS workstation shall meet the following minimum hardware specifications: a. One 24" color LCD display with a minimum resolution of 1920 × 1200 pixels. b. One 32" Air Situation Display (ASD) consistent with ASD specifications provided for controller positions. c. Optical mouse and standard QWERTY keyboard for data entry and interface navigation.		
7.3.4.3	The DBMS shall provide functionality for conducting dry-run testing of newly created or edited simulation exercises. These test runs shall be visualized on the associated ASD, allowing operators to evaluate and validate the configuration and behavior of the scenario prior to deployment in training or operational simulation sessions.		
7.3.5	**VCCS Communications Stations Main Features**		
7.3.5.1	Each Voice Communication Control System (VCCS) position shall be equipped with the following minimum components to ensure reliable and effective voice communication functionality: a. A 15-inch color touch screen interface for intuitive control and operation of all communication channels. b. An integrated 5-watt loudspeaker with adjustable non-zero volume settings for clear audio output. c. Foot-operated Push-To-Talk (PTT) connector for hands-free transmission capability. d. Foot-operated PTT switch for activation of voice transmission channels.		

	e. Dual headset connectors to accommodate both a student and an instructor/teacher simultaneously. f. Student headset, ergonomically designed for prolonged use and optimized for clear audio reception and transmission. g. Teacher headset, identical in quality to the student headset and suitable for supervisory or instructional roles. h. Selectable output mode allowing the user to toggle between speaker and headset as the preferred audio output device.		
8	**SYSTEM INTEGRATION CAPABILITY REQUIREMENT**		
8.1	The new ACC and Approach Simulator shall be fully integratable with other systems, including both existing and newly deployed Aerodrome Simulators, to support simultaneous multi-unit simulation exercises. The bidder/manufacturer shall provide a formal certification confirming that their proposed system is capable of such integration. This certification must explicitly state that interoperability with external simulator systems is included within the scope of supply.		
9	**SITE REQUIREMENTS**		
9.1	Inclusion of Site Renovation and Infrastructure Enhancement Works under the Simulator Project		
9.1.1	The existing server room located within the Civil Aviation Training Center (CATC) Building shall be renovated, extended and improved to support the operational integration of both the new Aerodrome Tower Simulator System and the new ACC (Area Control Center) and Approach Simulator Systems.		
9.1.2	The new Aerodrome Tower Simulator System shall be installed in a dedicated simulator room adjacent to the current Aerodrome Simulator area within the CATC building. In contrast, the new ACC and Approach Simulator Systems shall be installed in a separate facility, specifically the CFR Building, which is located within the CATC compound.		
9.2	Existing Ceiling Improvement		
9.2.1	Upgrade and improvement of the existing ceiling, including any extended portions of the Server Room, to prevent condensation and ensure effective thermal insulation and moisture protection.		
9.3	Structured Cabling Support Infrastructure		

9.1.3.1	Supply and installation of new cable trays to facilitate the secure and organized routing of data and power cabling: a. From the new simulator room (Aerodrome Simulator) b. To and from the newly extended server room area		
9.4	Raised Floor System		
9.4.1	Provision and installation of a raised flooring system within the Server Room to support underfloor cable management, improve airflow circulation and enhance future scalability for equipment installation.		
9.5	Uninterruptible Power Supply (UPS) System		
9.5.1	Provision of a rack-mounted UPS system dedicated to all simulator equipment, with the following specifications: a. Backup Duration: Minimum of 10 minutes at full load; b. Capacity: Minimum 3 KVA, 230 VAC input, auto-sensing frequency range of 40–70 Hz; and, c. Features: Integrated power surge suppression, battery backup functionality for safe and controlled shutdown in the event of a power failure		
9.6	Structured Network Cabling		
9.6.1	Installation of new CAT6 network cables meeting the following standards: a. ETL and UL listed; b. Compliant with ANSI/TIA-568-C.2; and, c. Capable of handling both broadband and baseband video signals		
9.7	Air Conditioning System for Aerodrome Server Room		
9.7.1	Supply and installation of two (2) wall-mounted split-type inverter air-conditioning units with the following specifications: a. Capacity: 3.0 HP per unit; b. Energy-efficient inverter type; and, c. Independently operable for redundancy and load balancing.		
9.8	Digital Air Conditioning Controller		
9.8.1	Provision of a digital controller system for managing the newly installed air conditioning units in the Server Rooms. The controller shall have the following capabilities:		

	a. Digital programmable high and low temperature setpoints with adjustable hysteresis (in °C or °F); b. BYPASS switch per unit to override the automatic scheduling as needed; c. Individual LED indicators for system status (e.g., Normal operation, ACU fault detection); d. Easily programmable switchover time settings via thumb wheel switches (range: 1 to 99 hours); and, e. Auto-resume function to restore normal load schedules upon recovery from abnormal temperature conditions		
10	**RELOCATION OF EXISTING PSEUDO PILOT WORKSTATIONS**		
10.1	The four (4) existing Pseudo Pilot positions currently located in the server area shall be relocated to the existing Aerodrome Simulator Room.		
10.2	This relocation shall include: a. Dismantling and reinstallation of all associated power supply cables and CAT6 data cables, ensuring full operational connectivity upon re-commissioning. b. Installation of a glass partition with a sliding door to create a dedicated, acoustically managed space for the relocated Pseudo Pilot stations. c. Provision and installation of one (1) unit 2HP Split-Type Inverter Air Conditioning Unit to maintain a controlled thermal environment for equipment and personnel comfort.		
11	**FACILITY PARTITIONING, ENVIRONMENTAL CONDITIONING AND FURNISHING REQUIREMENTS**		
11.1	Provision and Installation of Glass Partitions for the two (2) new Aerodrome Tower Simulator Rooms and the associated Pseudo Pilot Rooms to ensure sound separation, visual clarity and operational delineation.		
11.2	Provision and Installation of eight (8) units of 2HP Split-Type, Inverter Air Conditioning Systems to provide adequate thermal regulation for the Aerodrome Tower Simulator Rooms and Pseudo Pilot areas.		
11.3	Provision and Installation of Glass Partitions for the new ACC and Approach Simulator Rooms and the associated Pseudo Pilot Rooms located at the CFR Building to support controlled simulation environments.		

11.4	Provision and Installation of Seven (7) Units of 2HP Split-Type, Inverter Air Conditioning Systems for the new ACC and Approach Simulator Rooms, Pseudo Pilot Rooms, and the dedicated Server Room within the CFR Building.		
11.5	Supply and Setup of Four (4) Mobile Glass Writing Boards, each measuring 3ft x 4ft, fabricated from 6mm thick tempered glass, complete with stands and caster wheels for flexible instructional or operational use.		
12	**FACTORY TRAINING FOR OPERATIONAL COURSE**		
12.1	A total of four (4) personnel from CAAP Air Traffic Service (ATS) shall attend the Factory Training for the Aerodrome Tower Simulator.		
12.2	An additional six (6) CAAP ATS personnel shall attend the Factory Training for the Approach/ACC Simulator.		
12.3	The bidder shall include in their proposal the detailed training plan, including the duration (minimum of two weeks), location and tentative schedule of the Factory Training.		
12.4	All associated costs for the Factory Training, including but not limited to, Daily Subsistence Allowance (DSA), insurance, international airline tickets and any related expenses, shall be fully borne by the bidder.		
13	**FACTORY ACCEPTANCE TEST**		
13.1	Upon completion of the Factory Training, the bidder/supplier shall conduct a comprehensive Factory Acceptance Test (FAT) to be attended by five (5) designated personnel from CAAP.		
13.2	The bidder shall include in their proposal the complete details of the FAT schedule, including the location, duration (minimum of one week) and tentative dates.		
13.3	All expenses related to the FAT, including but not limited to, Daily Subsistence Allowance (DSA), insurance coverage, international airline tickets and other associated costs, shall be fully borne by the bidder.		
14	**ON-SITE TRAINING FOR OPERATIONAL COURSE WITH BASIC TROUBLESHOOTING**		
14.1	The Aerodrome Tower Simulator operational training shall be attended by five (5) personnel from CAAP ATS.		
14.2	The Approach/ACC Simulator operational training shall likewise be attended by five (5) personnel from CAAP ATS.		
14.3	The bidder shall include in their proposal the detailed schedule, location and duration of the on-site training, which shall be not less than two (2) weeks. The training		

	must cover system operation, functional workflows and basic troubleshooting procedures.		
14.4	All associated costs for the deployment of the trainer(s), including Daily Subsistence Allowance (DSA), insurance, international and local airfare, and, any related logistical expenses, shall be entirely borne by the bidder.		
15	**ON-SITE ACCEPTANCE TEST**		
15.1	Upon completion of the on-site training, the bidder/supplier shall conduct an On-Site Acceptance Test (OSAT) to be participated in by five (5) designated personnel from CAAP. The OSAT shall validate the full functionality, performance and reliability of the installed Aerodrome Tower and Approach/ACC Simulator Systems in their operational environment.		
15.2	The bidder shall include in their proposal the schedule, location and duration of the OSAT, which shall be conducted over a minimum period of two (2) weeks.		
15.3	All costs related to the deployment of the supplier's technical team for the OSAT, including Daily Subsistence Allowance (DSA), insurance, airfare (international and local) and other incidental expenses, shall be borne entirely by the bidder.		
16	**AFTER SALES SERVICES, SPARE PARTS, OPERATION AND TECHNICAL MANUALS**		
16.1	The supplier shall provide a manufacturer's warranty of at least one (1) year from the date of final acceptance, covering factory defects and workmanship for all supplied equipment and components.		
16.2	The manufacturer shall guarantee the availability of spare parts for a minimum of five (5) years from the date of system acceptance. A formal certification of this commitment shall be included in the proposal.		
16.3	The supply of equipment shall include the following additional components: a. Two (2) 86-inch monitors, each paired with a dedicated graphic generator or PC, for each set of the Aerodrome Simulator. b. One (1) lot of fast-moving spare parts, including at least one (1) unit per proposed equipment model, intended to ensure minimal operational downtime.		
16.4	The supplier shall provide: a. Two (2) complete sets of Operational and Maintenance Manuals, covering both hardware and software components.		

	b. Comprehensive as-built drawings and wiring diagrams, to be included as part of the technical documentation package.		
17	**OTHER REQUIREMENTS**		
17.1	The Bidder shall submit a Certification stating that all equipment to be delivered are brand new, free from defects and have not been previously used or refurbished.		
17.2	The Bidder shall submit a Certificate of Authorized or Exclusive Distributorship for the offered products. This certificate must be: a. Issued by the original equipment manufacturer (OEM); and, b. Duly authenticated either by the Philippine Embassy or Consulate in the country of origin or apostilled, in compliance with international document legalization requirements.		

Section VIII. Checklist of Technical and Financial Documents

Notes on the Checklist of Technical and Financial Documents

The prescribed documents in the checklist are mandatory to be submitted in the Bid, but shall be subject to the following:

a. GPPB Resolution No. 09-2020 on the efficient procurement measures during a State of Calamity or other similar issuances that shall allow the use of alternate documents in lieu of the mandated requirements; or

b. Any subsequent GPPB issuances adjusting the documentary requirements after the effectivity of the adoption of the PBDs.

The BAC shall be checking the submitted documents of each Bidder against this checklist to ascertain if they are all present, using a non-discretionary "pass/fail" criterion pursuant to Section 30 of the 2016 revised IRR of RA No. 9184.

Checklist of Technical and Financial Documents

I. TECHNICAL COMPONENT ENVELOPE

Class "A" Documents

Legal Documents

☐ (a) Valid PhilGEPS Registration Certificate (Platinum Membership) (all pages) **in accordance with Section 8.5.2 of the IRR**;

Technical Documents

☐ (b) Statement of the prospective bidder of all its ongoing government and private contracts, including contracts awarded but not yet started, if any, whether similar or not similar in nature and complexity to the contract to be bid; **and**

☐ (c) Statement of the bidder's Single Largest Completed Contract (SLCC) similar to the contract to be bid, 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; **and**

☐ (d) Original copy of Bid Security. If in the form of a Surety Bond, submit also a certification issued by the Insurance Commission **or** Original copy of Notarized Bid Securing Declaration; **and**

☐ (e) Conformity with the Technical Specifications, which may include production/delivery schedule, manpower requirements, and/or after-sales/parts, if applicable; **and**

☐ (f) Original duly signed Omnibus Sworn Statement (OSS) **and** if applicable, Original Notarized Secretary's Certificate in case of a corporation, partnership, or cooperative; or Original Special Power of Attorney 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.

Financial Documents

☐ (g) The prospective bidder's computation of Net Financial Contracting Capacity (NFCC) **or A** committed Line of Credit from a Universal or Commercial Bank in lieu of its NFCC computation.

Class "B" Documents

☐ (h) If applicable, a duly signed joint venture agreement (JVA) in case the joint venture is already in existence **or** 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.

II. FINANCIAL COMPONENT ENVELOPE

☐ (i) Original of duly signed and accomplished Financial Bid Form; **and**

☐ (j) Original of duly signed and accomplished Price Schedule(s).

Other documentary requirements under RA No. 9184 (as applicable)

- ☐ (k) *[For foreign bidders claiming by reason of their country's extension of reciprocal rights to Filipinos]* 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.
- ☐ (l) Certification from the DTI if the Bidder claims preference as a Domestic Bidder or Domestic Entity.

CERTIFICATION AND UNDERTAKING

I, [Name of Authorized Representative], of legal age, Filipino, with residence at [Address], in my capacity as the duly authorized representative of [Name of Bidder] (the "Bidder"), after having been duly sworn in accordance with law, do hereby depose and state:

1. That I am the authorized representative of the Bidder for the project [Name of Project] (the "Project") and as such, I am fully authorized to make this Certification and Undertaking for and on behalf of the Bidder;

2. That I hereby certify and confirm that I have either attended the Pre-Bid Conference conducted for the Project or have duly watched the recorded video thereof, and that I have been given the opportunity to raise and clarify any concerns, issues, or inquiries regarding the bidding documents, instructions, and project requirements during the said Pre-Bid Conference or within the period allowed before the submission and opening of bids;

3. That I further certify and confirm that I have thoroughly reviewed and understood the bidding documents, including all the terms, conditions, and requirements stated therein, and that the Bidder, through its undersigned representative, has no further comments, objections, or reservations regarding the said project requirements;

4. That I undertake and affirm that the Bidder acknowledges the completeness and sufficiency of the bidding documents, and accepts all the terms, conditions, and requirements thereof as binding upon the Bidder;

5. That I execute this Certification and Undertaking freely and voluntarily, with full knowledge and understanding of the legal consequences thereof, for the purpose of complying with the requirements of the procuring entity for the submission of bids in accordance with the provisions of Republic Act No. 9184, otherwise known as the "Government Procurement Reform Act," and its Implementing Rules and Regulations.

IN WITNESS WHEREOF, I have hereunto set my hand this ___ day of _____, 2024, at _____, Philippines.

[Name of Authorized Representative]
[Position]
[Name of Bidder]

SUBSCRIBED AND SWORN to before me this ___ day of _____, 2024, at _____, Philippines, affiant exhibiting to me his/her [ID Details of Authorized Representative].

NOTARY PUBLIC
Doc. No. ____
Page No. ____
Book No. ____
Series of 2024.


Republic of the Philippines
gppb
Government Procurement Policy Board