



NORTH ATLANTIC TREATY ORGANISATION

HEADQUARTERS SUPREME ALLIED COMMANDER TRANSFORMATION
7857 BLANDY ROAD, SUITE 100
NORFOLK, VIRGINIA, 23551-2490

REQUEST FOR PROPOSAL

RFP-ACT-SACT-25-52

NATO Modeling and Simulation Courses Content Development

Bidding Instructions

RFP-ACT-SACT-25-52

Table of Contents

| | |
|--|----|
| BIDDING INSTRUCTIONS | 3 |
| 1. General..... | 3 |
| 2. Classification | 3 |
| 3. Definitions..... | 3 |
| 4. Eligibility | 3 |
| 5. Duration of Contract | 4 |
| 6. Exemption of Taxes..... | 4 |
| 7. Amendment or Cancellation | 4 |
| 8. Bidder Clarifications..... | 4 |
| 9. Bid Closing Date..... | 5 |
| 10. Bid Validity..... | 5 |
| 11. Content of Proposal..... | 5 |
| 12. Proposal Submission..... | 5 |
| 13. Late Proposals | 6 |
| 14. Bid Withdrawal | 6 |
| 15. Bid Evaluation | 6 |
| 16. Proposal Clarifications..... | 6 |
| 17. Award | 7 |
| 18. Communications..... | 7 |
| 19. Points of Contact: | 7 |
| Enclosure 1: Proposal Content / Checklist..... | 8 |
| Enclosure 2: Compliance Statement | 9 |
| Enclosure 3: Past Performance Information Form | 10 |
| Enclosure 4: Price Proposal | 11 |
| Annex A | 13 |
| Annex B | 19 |
| Annex C | 21 |
| Annex D | 24 |
| Annex E | 26 |

RFP-ACT-SACT-25-52

BIDDING INSTRUCTIONS

1. General

This is a Firm Fixed Price deliverable contract in accordance with the HQ SACT General Terms and Conditions; Contract Award is contingent upon funding availability; Partial bidding is allowed.

HQ SACT GENERAL TERMS AND CONDITIONS DATED 03/13/2024 ARE APPLICABLE TO THIS PROCUREMENT AND CAN BE LOCATED ON THE ACT WEBSITE AT WWW.ACT.NATO.INT/CONTRACTING UNDER CONTRACTOR INFORMATION.

2. Classification

This Request for Proposal (RFP) is a NATO UNCLASSIFIED document.

3. Definitions

- (a) The “Prospective Bidder” shall refer to the entity that has indicated thereon its intention without commitment, to participate in this RFP.
- (b) The term “Bidder” shall refer to the bidding entity that has completed a bid in response to this RFP.
- (c) The term “Contractor” shall refer to the bidding entity to whom the contract is awarded.
- (d) The term “Contracting Officer” designates the official who executes this RFP on behalf of HQ SACT.
- (e) “Contracting Officer’s Technical Representative” or “COTR” is the official who is appointed for the purpose of determining compliance of the successful bid, per the technical specifications.
- (f) The term “HQ SACT” shall refer to Headquarters Supreme Allied Commander Transformation.
- (g) The term “ACT” shall refer to Allied Command Transformation.
- (h) The term “NATO” shall refer to the North Atlantic Treaty Organisation.
- (i) The term “days” as used in this RFP shall, unless otherwise stated, be interpreted as meaning calendar days.

4. Eligibility

This RFP is open to governmental or commercial entities:

- (a) Established in a North Atlantic Treaty Organisation Alliance member nation.
- (b) Working in the required field and legally authorised to operate in the country or countries in which this contract is to be performed at the time of bidding.
- (c) Has performed the desired past performance including size, cost and scope, as described in this RFP.

RFP-ACT-SACT-25-52

- (d) **All proposed key personnel on this requirement must be citizens of a NATO member nation.**

5. Duration of Contract

- (a) The contract awarded shall be effective upon date of award.
- (b) **Period of Performance:** The contract period of performance is from 1 July to 30 November 2025.

6. Exemption of Taxes

In accordance with the agreements, (Article VIII of the Paris Protocol, dated 28 August 1952) goods and services under this contract are exempt from taxes, duties, and similar charges.

7. Amendment or Cancellation

- (a) HQ SACT reserves the right to amend or delete any one or more of the terms, conditions, or provisions of the RFP prior to the date set for bid closing. A solicitation amendment or amendments shall announce such action.
- (b) HQ SACT reserves the right to cancel, at any time, this RFP either partially or in its entirety. No legal liability on the part of HQ SACT shall be considered for recovery of costs in connection to bid preparation. All efforts undertaken by any bidder shall be done considering and accepting, that no costs shall be recovered from HQ SACT.

8. Bidder Clarifications

- (a) Prospective Bidders should seek clarification at their earliest convenience. Any explanation regarding the meaning or interpretation of this RFP, terms, clause, provision, or specifications, shall be requested in writing from the Contracting Officer. The Contracting Officer must receive such requests for clarification no later than 3 (three) calendar days prior to the bid closing date.
- (b) In lieu of a bidders' conference, HQ SACT invites bidders to submit initial technical questions **no later than 30 May 2025**.
- (c) Information in response to all inquiries / requests for clarification to a prospective bidder shall be furnished to all prospective bidders at <http://www.act.nato.int/contracting> as a Question-and-Answer addendum. All such addendums and any necessary solicitation amendments shall be incorporated into this RFP. Oral Interpretations shall not be binding.

RFP-ACT-SACT-25-52

9. Bid Closing Date

Bids shall be received at HQ SACT, Purchasing and Contracting Office, **no later than 27 June 2025 at 0900 hours, Eastern Time, Norfolk, Virginia, USA**. No bids shall be accepted after this time and date. **No hard copy proposals will be accepted.**

10. Bid Validity

Bids shall remain valid for a period of one hundred and twenty days (120) from the applicable closing date set forth within this RFP. HQ SACT reserves the right to request an extension of validity. Bidder shall be entitled to either grant or deny this extension of validity. HQ SACT shall automatically consider a denial to extend the validity as a withdrawal of the bid.

11. Content of Proposal

The company description portion of its technical proposal shall be limited to 10 pages.

A table of contents for the entire proposal:

- (a) The bidder's full name, address, point of contacts, telephone, fax number, and website;
- (b) Compliance statement (See Enclosure #1)
- (c) Past performance (See Enclosure #2); references will be accepted in lieu of past performance;
- (d) Provision of technical and price volumes;
- (e) Compliance matrix (See Annex B to Statement of Work).

12. Proposal Submission

- (a) Proposals shall be submitted electronically in two separate PDF documents; One containing the Technical Proposal and one containing the Price Proposal, each emailed separately to:
- (b) Technical Proposal: hqsact.techproposal@nato.int
- (c) Price Proposal: hqsact.priceproposal@nato.int
- (d) Email subjects shall include the solicitation information along with company name (for example: RFP-ACT-SACT-25-52_Tech_ABC Inc. / RFP-ACT-SACT-25-52_Price_ABC Inc.). Allow sufficient time in your submission should you encounter email size challenges.
- (e) **Price proposals shall be in U.S. Dollar currency**. Contractor may request payment post award in alternate currency based on agreed conversion rate.
- (f) Prices shall be on a Firm Fixed Price Basis and include any relevant discount schedule.
- (g) No oral bids or oral modifications or telephonic bids shall be considered.

RFP-ACT-SACT-25-52

- (h) It is the ultimate responsibility of a prospective bidder prior to submission that all proposal submissions are reviewed to ensure they meet the technical, contractual and administrative specifications and that offers meet the limitations and expressed conditions.

13. Late Proposals

- (a) It is solely the bidder's responsibility that every effort is made to ensure that the proposal reaches HQ SACT prior to the established closing date and time. Only if it can be unequivocally demonstrated that the late arrival of the bid package was the result of NATO staff negligence (mishandling) shall the bid be considered.
- (b) A delay in email exchange due to the server or size restrictions does not constitute a delay by NATO.

14. Bid Withdrawal

A bidder may withdraw their bid up to the date and time specified for bid closing. Such a withdrawal must be completed in writing or facsimile, with attention to the HQ SACT Contracting Officer.

15. Bid Evaluation

- (a) The evaluation of bids and determination as to the responsiveness and technical adequacy or technical compliance, of the products or services requested, shall be the responsibility of HQ SACT. Such determinations shall be consistent with the evaluation criteria specified in the RFP.
- (b) HQ SACT is not responsible for any content that is not clearly identified in any proposal package.
- (c) Proposals shall be evaluated and awarded based upon the proposal that represents the best value to NATO. The following factors are considerations:
 - 1. Successful administrative submission of bid packages as requested paragraph 11, as listed in this RFP.
 - 2. Successful determination of compliance with mandatory criteria. (Compliant/non-compliant)
 - 3. Technical factors / pricing factors rated the following: **Technical / Price = 70/30**
 - 4. Acceptance of HQ SACT General Terms and Conditions.

16. Proposal Clarifications

During the entire evaluation process HQ SACT reserves the right to discuss any bid with the order to clarify what is offered and interpretation of language within the bid, to resolve in potential areas of concern.

RFP-ACT-SACT-25-52

17. Award

- (a) HQ SACT intends to award a **firm fixed price deliverables contract** to the Offeror whose proposal represents the **Best Value** offer to NATO. **Partial awards will be considered.**
- (b) HQ SACT will collect information from references provided by the Offeror in regard to its past performance. Contractors must provide authorization to contact references.
- (c) HQ SACT reserves the right to negotiate minor deviations to the listed General Terms and Conditions to this RFP.

18. Communications

All communication related to this RFP, between a prospective bidder and HQ SACT shall only be through the nominated HQ SACT Contracting Officer. Designated contracting staff shall assist the HQ SACT Contracting Officer in the administrative process. There shall be no contact with other HQ SACT personnel regarding this RFP. Such adherence shall ensure Fair and Open Competition with equal consideration and competitive footing leverage to all interested parties.

19. Points of Contact:

(PLEASE INCLUDE ALL BELOW ON ALL CORRESPONDENCE)

| | | | |
|-------------------|---------------------|--------------|--|
| Margaret Anderson | Contracting Officer | 757-747-3699 | margaret.anderson@nato.int |
| Tonya Bonilla | Contracting Officer | 757-747-3575 | tonya.bonilla@nato.int |
| Louise Syms | Contracting Officer | 757-747-3788 | louise.syms@nato.int |

RFP-ACT-SACT-25-52

Enclosure 1: Proposal Content / Checklist

PROPOSAL CONTENT / CHECKLIST

Table of Contents

- ☐ Bidder's name, address, POC, Contact numbers, email address.
- ☐ Compliance Statement.
- ☐ Past Performance (including References).
- ☐ Technical Proposal.
- ☐ Price Proposal
- ☐ Compliance matrix (See Annex B to Statement of Work).

RFP-ACT-SACT-25-52

Enclosure 2: Compliance Statement

COMPLIANCE STATEMENT TO SEALED BID RFP-ACT-SACT-25-52

It is hereby stated that our company has read and understands all documentation issued as part of RFP-ACT-SACT-25-52. Our company proposal submitted in response to the referenced solicitation is fully compliant with the provisions of RFP-ACT-SACT-25-52 and the intended contract with the following exception(s); such exemptions are considered non-substantial to the HQ SACT solicitation provisions issued.

| <u>Clause</u> | <u>Description of Minor Deviation</u> |
|---------------|---------------------------------------|
| ----- | ----- |
| ----- | ----- |
| ----- | ----- |
| ----- | ----- |
| ----- | ----- |

Company: _____ Signature: _____

Name & Title: _____ Date: _____

Company Bid Reference: _____

Bidder's proposal must be based on full compliance with the terms, conditions and requirements of the RFP and all future clarifications and/or amendments. The bidder may offer variations in specific implementation and operational details provided that the functional and performance requirements are fully satisfied. In case of conflict between the compliance statement and the detailed evidence or explanation furnished, the detailed evidence/comments shall take precedence/priority for the actual determination of compliance. Minor or non-substantial deviations may be accepted. Substantial changes shall be considered non- responsive.

RFP-ACT-SACT-25-52

Enclosure 3: Past Performance Information Form

(Company is required to submit minimum of one – references may be submitted in lieu of past performance).

PAST PERFORMANCE INFORMATION FORM

Contracting Entity:

Contract No:

1. Type of Contract (Firm Fixed Price, IDIQ, Requirements):
2. Title of Contract:
3. Description of Work Performance and Relevance to Current Acquisition (Type of facility, capacity, estimated patronage, summary of staff used):
4. Contract Dollar Amount:
5. Period of Performance:
6. Name, Address, Fax and Telephone No. of Reference:
7. Indicate Whether Reference Acted as Prime or Sub-contractor:
8. Comments regarding compliance with contract terms and conditions:
9. Complete Contact Information for client:
10. Permission to contact client for reference: Yes/ No

Name/Signature of Authorized Company Official

This Enclosure is designed to assist the respective company provide HQ SACT with all necessary documents/information required. For clarification, please refer to Bidding Instructions in part 1 of subject solicitation.

Enclosure 4: Price Proposal

SEALED BID PRICE PROPOSAL

SUBJECT: RFP-ACT-SACT-25-52

Please find on behalf of (**Insert: Company Name**) to provide HQ SACT with services (collectively referred as "ITEMS"), subject to the provisions, terms and conditions stated in RFP-ACT-SACT-25-52 and the "**Insert: Company Name Technical Proposal**", submitted in accordance with solicitation provisions.

| M&S Verification, Validation and Accreditation Course – Content Development | | | |
|--|---------------------------------------|-------------------------------------|--------------|
| Serial | Activity | Deliverables | Price |
| 1 | CCD III Development | Course Control Document III. | \$ |
| 2 | Course Content development | Course Content. | \$ |
| 3 | Feedback on the course implementation | Feedback. | \$ |

| NATO M&S Standardization Course – Content Development | | | |
|--|---------------------------------------|-------------------------------------|--------------|
| Serial | Activity | Deliverables | Price |
| 1 | CCD III Development | Course Control Document III. | \$ |
| 2 | Course Content development | Course Content. | \$ |
| 3 | Feedback on the course implementation | Feedback. | \$ |

RFP-ACT-SACT-25-52

Please verify and acknowledge propriety of above, by duly completing signatures below.

Authorizing Company Official:

Printed Name: _____

Position: _____

Title: _____

Authorizing Company (Signature): _____

Date: _____

Company Name Witness Official:

Printed Name: _____

Position: _____

Title: _____

Witness (Signature): _____

Date: _____

Annex A
STATEMENT OF WORK (SOW)
NATO Modeling and Simulation Courses Content Development

1. Introduction

The contractor shall develop Modelling and Simulation (M&S) Courses ready for posting on the NATO Advance Distance Learning (ADL) platform. Modelling Simulation and Learning Technologies Branch (MSLT) Branch that falls under the Allied Command Transformation Multi Domain Force Development Directorate is responsible for the current and the future NATO requirements that can be satisfied by M&S solutions.

2. Background and Scope of Work

a. Background

- i. Global Programming is how NATO manages the training needs of personnel from member and partner nations to provide tailored training solutions to satisfy all NATO requirements.
- ii. A NATO training requirement is identified when skills, competence, or technical ability are necessary to accomplish the mission within the NATO Command Structure or NATO Force Structure. A NATO requirement's scope is outside the national training responsibility and serves a need to ensure interoperability among nations.
- iii. Training is categorized into disciplines which organize the support structure available to the training. Each discipline has a Requirements Authority (RA) and a Department Head (DH). RA is tasked to identify the NATO Command Structure training requirements and DH is tasked to find solutions satisfying the requirements.
- iv. Education Training Exercise and Evaluation (ETEE) discipline contains Modelling and Simulation (M&S) Functional Area. The MSLT Branch is Requirement Authority for M&S.
- v. Based on the results of the gap analysis in 2024, there is a need for M&S Standardization and Verification, Validation and Accreditation courses available through NATO Advance Distance Learning (ADL) platform. Due to resource limitations within HQ SACT, contractor support is required to develop the content of these NATO M&S Courses.

b. Scope of Work

- i. The work in this SOW consists of three tasks **for two (2) separate courses** generating products for successful course implementation in NATO ADL platform.
 1. Develop the CCDIII based on the provided CCDIII template and already create Performance Statements and Standards being part of CCDII.
 2. Develop the Course Content based on the CCDIII in the form of Slides and Speaking Notes in PowerPoint.
 3. Provide feedback and recommendation on improvements of the implemented Course Content in NATO ADL platform.
- ii. With the active participation and involvement of Headquarters Supreme Allied Command Transformation (HQ SACT), the contractor shall provide the CCDIII, Course Content and feedback to implemented Course Content. The Course Content will enable the implementation of the course into NATO e-learning platform. The implementation itself is not part of the contract and will be provided by HQ SACT.

3. Type of Contract and Period of Performance

- a. **Type of Contract:** This is a firm fixed price deliverables contract.
- b. **Period of Performance:** The contract period of performance is from 01 July to 30 November 2025.

4. Tasking and Deliverables

- a. **Tasks**
 - i. **COURSE 1: M&S Verification, Validation and Accreditation Course – Content Development**
 1. Task 1: Develop the CCDIII based on the provided CCDIII template and already create Performance Statements and Standards being part of CCDII.
 2. Task 2: Develop the Course Content based on the CCDIII in the form of Slides and Speaking Notes in PowerPoint.
 3. Task 3: Provide feedback and recommendation on improvements of the implemented Course Content in NATO ADL platform.

ii. **COURSE 2: NATO M&S Standardization Course – Content Development**

1. Task 1: Develop the CCDIII based on the provided CCDIII template and already create Performance Statements and Standards being part of CCDII.
2. Task 2: Develop the Course Content based on the CCDIII in the form of Slides and Speaking Notes in PowerPoint.
3. Task 3: Provide feedback and recommendation on improvements of the implemented Course Content in NATO ADL platform.

b. **Deliverables and Schedule of Delivery**

i. **COURSE 1: M&S Verification, Validation and Accreditation Course – Content Development**

| Serial | Activity | Deliverables | Deadline |
|--------|---------------------------------------|--|---|
| 1 | CCD III Development | Course Control Document III. The document contains the program of classes. It includes mostly coupled Teaching Points in Lessons. The most important input to the CCDIII development is an extract from CCDII provided in the Annex C. Annex E is a template that describe CCDIII structure with explanation what needs to be filled in. | Within 1 months after Contract Award and NLT 30 July 2025 |
| 2 | Course Content development | Course Content. The Course Content is delivered in the form of Slides with Speaking Notes in PowerPoint based on CCDIII. For Slides with Speaking Notes – graphic solution is not requested. If not provided, then a description of what the visuals could look like and what it should contain is needed. The solution could be a video or picture. Graphic solutions and Course Content implementation into NATO platform is not part of the contract. If a specific citation within a slide is needed then it needs to be explicitly mentioned. It is requested to collect Directives/Best Practices, Standards, Documentations or links to the subject to enable to implement a repository within the ADL course. Support of the kick-off meeting with HQ SACT ADL Implementation Team is requested. | NLT 1 October 2025 |
| 3 | Feedback on the course implementation | Feedback. The feedback contains recommendations for improvements of | NLT 2 November 2025 |

| | | | |
|--|--|---|--|
| | | implemented Course Content in ADL platform. There is approximately 1 month given to the HQ SACT Implementation Team to develop the ADL solution. Based on the first draft implementation to provide feedback on recommended changes within the ADL solution. Contractor is provided with the credentials to NATO ADL solution. | |
|--|--|---|--|

ii. **COURSE 2: NATO M&S Standardization Course – Content Development**

| Serial | Activity | Deliverables | Deadline |
|--------|---------------------------------------|--|---|
| 1 | CCD III Development | Course Control Document III. The document contains the program of classes. It includes mostly coupled Teaching Points in Lessons. The most important input to the CCDIII development is an extract from CCDII provided in the Annex D. Annex E is a template that describe CCDIII structure with explanation what needs to be filled in. | Within 1 months after Contract Award and NLT 30 July 2025 |
| 2 | Course Content development | Course Content. The Course Content is delivered in the form of Slides with Speaking Notes in PowerPoint based on CCDIII. For Slides with Speaking Notes – graphic solution is not requested. If not provided, then a description of what the visuals could look like and what it should contain is needed. The solution could be a video or picture. Graphic solutions and Course Content implementation into NATO platform is not part of the contract. If a specific citation within a slide is needed then it needs to be explicitly mentioned. It is requested to collect Directives/Best Practices, Standards, Documentations or links to the subject to enable to implement a repository within the ADL course. Support of the kick-off meeting with HQ SACT ADL Implementation Team is requested. | NLT 1 October 2025 |
| 3 | Feedback on the course implementation | Feedback. The feedback contains recommendations for improvements of implemented Course Content in ADL platform. There is approximately 1 month given to the HQ SACT Implementation Team to develop the ADL solution. Based on the first draft | NLT 2 November 2025 |

| | | | |
|--|--|--|--|
| | | implementation to provide feedback on recommended changes within the ADL solution. Contractor is provided with the credentials to NATO ADL solution. | |
|--|--|--|--|

5. Acceptance Criteria

Acceptance criteria for each deliverable will be in line with the guidance provided by COTR. These will be established in detail at the Kick-Off meeting, in consultation with the stakeholders. Part of any bid should provide estimate of output and work against each deliverable to enable effective and collaborative establishment of deliverable acceptance criteria.

HQ SACT expects the company that all products to be created at a level which reflects experience in the field of military modeling and simulation, recent engagement with NATO, and experience with designing courses.

- a. The Contracting Officer Technical Representative (COTR) is responsible to:
 - i. Resolve outstanding disputes, problems, deficiencies, and/or questions on the technical aspects of the SOW;
 - ii. Review and approve all Contractor outputs/products for completeness and accuracy;
 - iii. The COTR shall review the Contractor's work at regular intervals as required. The COTR's written approval of work reported, and deliverables submitted is mandatory for Contractor invoices to be successfully processed.
 - iv. The COTR/D-COTR shall receive a letter of appointment from the Contracting officer that describes in detail his/her roles and responsibilities to which he/she shall sign formal acceptance.

6. Contractor Performance Requirements and Reporting

- a. The Contractor shall report to the COTR and the Contracting officer, detailing progress on the SOW for the reporting period. The report shall include, but not be limited to, the following information:
- b. Summary of work (by contractor position) for tasking and deliverables for the reporting period.
- c. Current or anticipated problems/deficiencies and recommended solution.

- d. The COTR may amend the reporting requirements to receive alternate and/or additional data and information on a more frequent or less frequent basis and may request other reports that detail designated aspects of the work or methods to remedy problems and deficiencies. The Contracting Officer shall receive at least one monthly report, regardless of COTR changes. However, note that the report is NOT a deliverable subject to acceptance.

7. Proof of Past Performance

Minimum of one past performance citations within the last seven years to show that it has successfully completed work that is similar to or directly traceable to the requirements outlined in this SOW

8. Place of Performance

Work under this contract will be conducted at the contractor's premises, including virtual meetings with HQ SACT.

9. Physical Security

- a. **Personnel Clearances:** The work will only contain unclassified information, NATO clearance is not needed, but preferable.
- b. **Security Conditions:** Contractor personnel shall comply with all the local host nation, NATO security provisions and other policies and procedures, as required.
- c. **Electronic Devices:** The Contractor shall abide by the security restrictions regarding carrying and using electronic devices (e.g., laptops, cell phones) in the HQ SACT. The Contractor shall be responsible for staying the necessary clearance from the HQ SACT Security Office before bringing any such device into the HQ SACT work. If required, as determined by the COTR, HQ SACT may provide access to NATO ICT capabilities, but otherwise, the contractor will provide their own equipment.

Annex B Requirements Matrix

COURSE 1: M&S Verification, Validation and Accreditation Course – Content Development

| SER | ITEM | COMPLIANT | NOT COMPLIANT |
|-----|--|---|----------------------------------|
| 1 | Contractor is national of NATO Member nation. | | |
| 2 | At least one member of the proposed team possesses a master's degree in M&S. Alternatively, he/she can demonstrate 5 years' professional experience in M&S domain. | | |
| 3 | Demonstrated proficiency in English as defined in STANAG 6001 (Standardized Linguistic Profile (SLP) 3333 - Listening, Speaking, Reading and Writing) or equivalent. | | |
| 4 | Minimum of one past performance citations within the last seven years to show that it has successfully completed work that is similar to or directly traceable to the requirements outlined in this SOW. | | |
| SER | CRITERIA | RANGE | SCORE COMPLIANT (Out of 100 pts) |
| 1 | Experience with the M&S discipline (methods, techniques, tools). | No experience or familiarity: 0 Familiar with theory and practical experience <10 years: 1-10 Practical experience >10 years: 11-20 | |
| 2 | Experience with design of courses in military domain. | No experience: 0 Practical experience < 5 years: 5-10 Practical experience in military domain > 5 years: 11-20 | |
| 3 | Experience with design, development/support of VV&A products/activities. | No experience: 0 Practical experience < 5 years: 5-10 Practical experience > 5 years: 11-20 {Examples of products/activities are in Annex C} | |
| 4 | Experience with M&S VV&A Standards. | No experience: 0 Practical experience < 5 years and participation in development of M&S VV&A Standards: 5-10 Practical experience > 5 years and participation in development of M&S VV&A Standards: 11-20 | |
| 5 | Recent engagement (events, workshops, studies, symposiums, projects) with NATO M&S Stakeholders: NMSG, HQ SACT, SHAPE in the last 5 years. | No involvement: 0 less than 2 projects/events: 1-10 2 or more projects/events: 11-20 | |

COURSE 2: NATO M&S Standardization Course – Content Development

| SER | ITEM | COMPLIANT | NOT COMPLIANT |
|-----|--|---|----------------------------------|
| 1 | Contractor is national of NATO Member nation. | | |
| 2 | At least one member of the proposed team possesses a master's degree in M&S. Alternatively, he/she can demonstrate 5 years' professional experience in M&S domain. | | |
| 3 | Demonstrated proficiency in English as defined in STANAG 6001 (Standardized Linguistic Profile (SLP) 3333 - Listening, Speaking, Reading and Writing) or equivalent. | | |
| 4 | Minimum of one past performance citations within the last seven years to show that it has successfully completed work that is similar to or directly traceable to the requirements outlined in this SOW. | | |
| SER | CRITERIA | RANGE | SCORE COMPLIANT (Out of 100 pts) |
| 1 | Experience with the M&S discipline (methods, techniques, tools). | No experience or familiarity: 0 Familiar with theory and practical experience <10 years: 1-10 Practical experience >10 years: 11-20 | |
| 2 | Experience with design of courses in military domain. | No experience: 0 Practical experience < 5 years: 5-10 Practical experience in military domain > 5 years: 11-20 | |
| 3 | Experience with NATO Standardization process. | No experience: 0 Practical experience < 5 years: 5-10 Practical experience > 5 years and participation in NMSG M&S Standards subgroup (MS3) subgroup or work with NATO Standardization Office: 11-20 | |
| 4 | Experience with NATO M&S Standards and Development. | No experience: 0 Practical experience < 5 years and participation in development of M&S STANRECs/STANAGs: 5-10 Practical experience > 5 years and participation in development of M&S STANAGs : 11-20 | |
| 5 | Recent engagement (events, workshops, studies, symposiums, projects) with NATO M&S Stakeholders: NMSG, HQ SACT, SHAPE in the last 5 years. | No involvement: 0 less than 2 projects/events: 1-10 2 or more projects/events: 11-20 | |

Annex C

Extract from the M&S Verification, Validation and Accreditation Course CCDII

The Modeling & Simulation Verification, Validation and Accreditation course is designed for civil and military professionals who are involved in the development, analysis, and modification of models and simulations. The course focuses on three key areas: verifying and validating a model, developing proposals for model modifications, and providing constructive feedback on simulation system analysis.

The aim of the course is to prepare civil and military professionals to strengthen their ability to verify, validate, and modify models and simulations. Participants will focus on three key areas: model verification and validation, proposing model modifications, and offering constructive feedback on simulation system and its components. Proficiency level: 300.

Performance Statement (PS) 1: Students will critically evaluate existing models, focusing on their accuracy, reliability, and alignment with real-world data.

Standards for PS1:

- a) Concepts: Students will compare the fundamental concepts of verification, validation and accreditation, including their differences, purposes, and significance in the modelling and simulation domain.
- b) Simulation System Components Assessment: Students will identify and describe the key components of a simulation system, such as conceptual model, input model, executable model, state variables, output metrics, user, etc. Students will explain how these components interact to produce simulation results.
- c) Data Sources Evaluation: Students will analyse various data sources used in simulation system (e.g., historical data, sensor data, surveys). They will critically evaluate the quality, relevance, and reliability of these data sources for models calibration and validation.
- d) Model Assumptions Scrutiny: Students will evaluate the effects of assumptions that underlie models. Students will then validate how these assumptions impact the behaviour and outcomes of models.
- e) Sensitivity Analysis Techniques: Students will group sensitivity analysis methods (e.g., one-factor-at-a-time, Monte Carlo).
- f) Validation Metrics Selection: Students will explain the trade-offs between different validation metrics.

- g) Comparative Model Evaluation: Students will compare multiple models (e.g., different algorithms, parameterizations). Students will assess which model best represents real-world phenomena.
- h) Visualization and Communication: Students will create visualizations (e.g., plots, graphs) to communicate analysis of model effectively.

Performance Statement (PS) 2: Students will apply industry-standard techniques for model verification and validation. This includes assessing the quality of simulation results and identifying areas for improvement.

Standards for PS2:

- a) Selecting Appropriate Verification Methods: Students will explain various verification methods (e.g., code inspection, walkthroughs, static analysis) and apply fundamental methods based on the context of the model.
- b) Selecting Appropriate Validation Methods: Students will explain various validation methods (e.g. Face validation, sensitivity analysis, comparative model evaluation) and apply fundamental methods based on the context and use of the model.
- c) Designing Effective Validation Experiments: Students will design validation experiments that rigorously test the model against real-world data or empirical evidence. This includes defining validation criteria and selecting appropriate test cases.
- d) Assessing Model Sensitivity and Uncertainty: Students will compare sensitivity analysis and uncertainty quantification techniques. Students will explain variations in input parameters impact model behaviour and how to quantify uncertainty in simulation results.
- e) Addressing Model Limitations and Assumptions: Students will explain limitations and assumptions of different models. Students will identify and document these limitations transparently, ensuring that stakeholders understand the model's boundaries.
- f) Documenting Verification and Validation Processes: Students will prepare clear and concise documentation for verification and validation activities. This includes recording procedures, results, and any recommended modifications based on feedback.

Performance Statement (PS) 3: Students will adjust parameters, analyse different scenarios, and enhance model performance.

Standards for PS3:

- a) Understanding Model Structure and Components: Students will explain the architecture of models, including their components (variables, equations, parameters). Students will identify and manipulate key elements within a model.
- b) Parameter Adjustment Techniques: Students will apply changes in parameters and predict the model behaviour and performance.
- c) Model Calibration and Validation: Students will match real-world data by calibrating models. Students will apply techniques for adjusting model parameters to achieve a good fit with observed outcomes.
- d) Implementing Model Enhancements: Students will modify the model.
- e) Version Control and Documentation: Students will document changes, track revisions, and maintain a clear history of model updates.
- f) Ethical Considerations in Model Modification: Students will discuss ethical implications related to model modifications. The discussion includes topics such as bias, unintended consequences, and transparency when altering simulation models.

Annex D

Extract from the NATO M&S Standardization Course CCDII

The NATO M&S Standardization Course is specifically designed for military and civilian personnel working in training, research and experimentation-oriented facilities. Participants will explore two critical areas: proposing new NATO M&S terms and developing robust requirements for M&S standards. By the end of the course, students will possess the knowledge and skills needed to enhance M&S practices within the NATO context.

The course aims to provide participants with a intermediate understanding of NATO-specific Modelling and Simulation (M&S) terminology, process and standards, empowering them to propose new terms and develop M&S standards effectively. Proficiency level:300.

Performance Statement (PS) 1: Students will explain key NATO-specific Modeling and Simulation (M&S) terms, including their context and significance within the NATO framework.

Standards for PS1:

- a) Identify Key Terms: Students will identify key NATO-specific M&S terms.
- b) Define Terms: Students will accurately define each of these key terms.
- c) Contextual Understanding: Students will explain the context in which each term is used within the NATO framework.
- d) Significance of Terms: Students will explain the significance and implications of each term within the NATO M&S context.
- e) Inter-relationships: Students will distinguish the relationships and dependencies between different M&S terms.
- f) Application of Terms: Students will apply these terms correctly in discussions and written communications about NATO M&S.
- g) Critical Analysis: Students will critically analyse the use of these terms in NATO M&S literature and standards.
- h) Continuous Monitoring: Students will discuss effective methods to monitor any changes or additions to NATO-specific Modelling & Simulation (M&S) terminology.

Performance Statement (PS) 2: Students will actively propose new M&S terms relevant to NATO operations, considering the organization's unique requirements and challenges.

Standards for PS2:

- a) Understand NATO Operations: Students will explain NATO operations and the context in which M&S is currently applied.
- b) Understand NATO Terminology process. Student will explain NATO Terminology process in the context of M&S.

- c) Identify Gaps: Students will identify gaps or ambiguities in the current M&S terminology that could benefit from new terms.
- d) Propose Terms: Students will propose new terms to fill these gaps, ensuring they are relevant to NATO operations.
- e) Justify Proposals: Students will provide a clear rationale for each proposed term, explaining why it is necessary and how it contributes to M&S within the NATO context.

Performance Statement (PS) 3: Students will create effective requirements for Modelling and Simulation standards, ensuring consistency, quality, and interoperability across M&S applications.

Standards for PS3:

- a) Understand Existing Standards: Students will discuss existing M&S STANAGs and STANRECs within the NATO context.
- b) Understand Standardisation Process. Student will discuss existing NATO M&S Standardization Governance.
- c) Identify Gaps in Standards: Students identify gaps or inconsistencies in the current M&S standards that could benefit from further development.
- d) Develop Requirements for New Standards: Students will develop new requirements for M&S standards to address these gaps, ensuring they are relevant and effective for NATO operations.
- e) Ensure Consistency: Students will review new requirements consistency and while considering existing NATO M&S standards and practices ensuring overall M&S Interoperability.

Annex E CDIII Template

| COURSE CONTROL DOCUMENT III - PROGRAMME OF CLASSES | | | | |
|---|---|---|-----------------------------|----------------------------------|
| ETOC Code: <i>ETOC code is mandatory & an ETF may also add their internal course ID #.</i> | Title: | | | |
| PO # : | <i>Insert the performance statement describing what a learner will be able to do upon completion of a specified Performance Objective (PO).</i> | | | |
| ELO # : | <i>Insert the Enabling/Learning Objective (ELO) title.</i> | | | |
| PERFORMANCE | <i>The statement clear, concise and precise statement representing a logical and complete segment of what is to be learned to achieve a PO.</i> | | | |
| CONDITIONS | <i>A list of the conditions which describe the situation in which learning will occur.</i> | | | |
| Given | <i>What the student is given during learning and practice.</i> | | | |
| Denied | <i>What the student is denied during learning and practice.</i> | | | |
| Environment | <i>Learning environment location, <u>not</u> the job.</i> | | | |
| STANDARDS | <i>Defines what the student or trainee will be able to do, related to the level of proficiency that determines if the required level of learning is achieved.</i> <i>The student shall/will:</i> | | | |
| ASSESSMENT | <i>A summary for the ELO is provided here. This content should be captured within the plan of assessment. Practical or Written. Group or Individual. On own or combined with other Enabling/Learning Objectives (ELO). Formal or informal instructor feedback. Also indicates how the results are used to determine disposition on final status of course completion.</i> | | | |
| INSTRUCTIONAL STRATEGY | <i>Indicate the methods of instruction and various environments when more than one.</i> | | | |
| Content | Method | Environment | Time (min) | References |
| Lesson #1 – <i>A label assigned the 1st grouping of teaching points (TPts)</i> | <i>Identify methods</i> | <i>Identify physical location of E&IT</i> | <i>Estimate of the time</i> | <i>Links content to a source</i> |
| TPt1 | | | | |
| TPt2 | | | | |
| TPt3 | | | | |
| Lesson #2 – <i>A label assigned to a 2nd grouping of TPts</i> | | | | |
| TPt1 | | | | |
| TPt2 | | | | |
| Lesson #3 – <i>A label assigned to a 3rd grouping of TPts</i> | | | | |

| | | | | |
|--|--|--|--|--|
| TPt1 | | | | |
| TPt2 | | | | |
| TPt 3 | | | | |
| Total minutes of learning | | | | |
| Test | | | | |
| Test debrief | | | | |
| Total time | | | | |
| PROFICIENCY LEVEL / DEPTH OF KNOWLEDGE: | <i>Specifies a level (100-400) -Proficiency level of performance resulting from the completion of the ELO (based on the performance requirements statements stemming initially from the TRA annex and subsequently from the Requirements Review activity leading up to the Discipline ADC and captured in the annual DAP) -DoK - level of knowledge and skills (i.e. the level of learning).</i> | | | |
| REFERENCES: | <i>A list of reference used in the instructing and learning for the ELO.</i> | | | |
| LIMITATIONS: | <i>A description of limitations which prevent the completion of Enabling/Learning Objective.</i> | | | |
| SPECIAL RESOURCES: | <i>Ones to note of importance or difficulty to obtain for E&IT iteration. Do not repeat all from the Given. Comments that further clarify the design intent captured within the Enabling/Learning Objective.</i> | | | |