



# NATO

MODELLING & SIMULATION  
CENTRE OF EXCELLENCE  
ROME - ITALY



## MODELLING & SIMULATION COURSES & TRAINING ACTIVITIES





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 MODELLING & SIMULATION  
 CENTRE OF EXCELLENCE  
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& Wargaming Course

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Colonel (ITA AF) Felice DE ROSA

Welcome to the NATO Modelling and Simulation Centre of Excellence (NATO M&S COE) Catalogue. As a NATO-accredited Centre of Excellence and Education Training Facility, we contribute to the Alliance capacity building. The NATO M&S COE enhances NATO by providing expertise in all four pillars:

- **Education & Training:** We offer a wide range of courses and training programs on modelling and simulation, from basic to advanced levels. Our courses are designed to help you develop the skills and knowledge you need to effectively use modelling and simulation in your work.
- **Analysis & Lessons Learned:** We collect and analyse data from NATO exercises and operations. This data helps us to identify best practices and lessons learned, which we share with NATO forces to improve their performance.
- **Doctrine Development and Standardization:** We work with NATO forces to develop and standardize doctrine and procedures for using modelling and simulation. This ensures that NATO forces are using modelling and simulation in a consistent and effective way.
- **Concept Development and Experimentation:** We develop and experiment with new concepts and ideas for using modelling and simulation. Our work helps NATO forces to stay ahead of the curve and to be prepared for the challenges of the future.

*The NATO M&S COE is committed to innovation. We believe that modelling and simulation can be a powerful tool for transforming NATO forces. We are constantly looking for new ways to use modelling and simulation to improve NATO capabilities. We invite you to learn more about the NATO M&S COE and the services we offer. You can find more information on our website or by contacting us directly.*



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DIRECTOR'S MESSAGE



E&T BRANCH ACTIVITIES



NATO APPROVED & LISTED COURSES



M&S COE COURSES AND SEMINARS



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## E&T BRANCH ACTIVITIES



The NATO M&S COE Doctrine Education & Training Branch is a multi-nationally established and sponsored entity that offers recognized expertise and experience in the field of Modelling and Simulation to the benefit of the Alliance.

We are committed to providing training and education to NATO M&S Subject Matter Experts (SMEs), organizing M&S courses and workshops, supporting the operational training of M&S tools, processes, and systems, providing M&S support to NATO operations and training, and interacting with national M&S agencies, institutions, industry, academia, and organizations.

What does the NATO M&S COE Doctrine Education & Training Branch do? The NATO M&S COE Doctrine Education & Training Branch does the following:

- Coordinates Training and Expert Certification for M&S SMEs: We coordinate the training and expert certification of NATO M&S SMEs to ensure that they have the skills and knowledge they need to effectively use modelling and simulation in their work.
- Organizes M&S courses and workshops: We organize a variety of M&S courses and workshops to provide

NATO personnel with the latest knowledge and skills in modelling and simulation.

- Supports the operational training of M&S tools, processes, and systems: We support the operational training of NATO personnel on the use of M&S tools, processes, and systems to ensure that they are able to use them effectively in real-world operations.
- Provides M&S support to NATO operations and training: We empower NATO forces to make sound decisions and fulfil their mission goals.
- Interacts with national M&S agencies, institutions, industry, academia, and organizations: We engage to share knowledge and promote best practices in modelling and simulation.

### Who is the NATO M&S COE Doctrine Education & Training Branch for?

The NATO M&S COE Doctrine Education & Training Branch is for NATO personnel who are interested in learning more about modelling and simulation. We offer courses and training programs for all levels of experience, from beginners to experts. How can I learn more about the NATO M&S COE Doctrine Education & Training Branch? You can learn more by visiting our website or contacting us directly. We would be happy to answer any questions you have about our programs and services.



E&T BRANCH ACTIVITIES



NATO APPROVED & LISTED COURSES



M&S COE COURSES AND SEMINARS



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## NATO Modelling & Simulation Basic Course

**AIM:** Provides to the attendees a basic education in the field of Modelling & Simulation (M&S), through the knowledge of theory, processes, techniques, procedures and technologies oriented to M&S NATO & PfP military purposes. This E&IT solution is a 5 day resident course that introduce Modelling and Simulation in a military context.

The following methods of instructions are employed: interactive lectures; demonstrations; case study.

The course is supported by several external entities, NATO HQs, Academia, and Industry.

**Date:** Generally in March & November

**Duration:** 1 week

**Course structure:** Resident, twice a year

**Target Audience:** Personnel coming from NATO Bodies and NATO Nations.

The NATO M&S Basic Course is also open to Partners as follows: Euro-Atlantic Partnership Council (EAPC); NATO's Mediterranean Dialogue (MD); Istanbul Cooperation Initiative (ICI); Partners across the globe (Afghanistan, Australia, Iraq, Japan, Pakistan, Republic of Korea, New Zealand, Mongolia); International organization (UN, EU, OSCE).

- a. **Rank Level:** OR, OF2 thru OF5, Civilians equivalent
- b. **Language Proficiency:** Language skills: English: 3,2,3,2. IAW STANAG 6001
- c. **Pre course knowledges:** To be familiar with tools used to support exercises below the joint operational level in NATO (eg: JCATS). It is mandatory to perform the Introduction to M&S course (ADL211)

**CLASSIFICATION:** NATO UNCLASSIFIED

**DISCIPLINE:** Modelling & Simulation

**AREA:** Basic Knowledge about Modelling & Simulation

**DEPTH OF KNOWLEDGE:** LEVEL 200

**ETOC CODE:** ETE-MS-21732

**ADMIN NOTE:** More detailed information and NATO CCD are available on the NATO Electronic Education and Training Opportunities Catalogue (ETOC) and on the M&S COE web site.



## NATO APPROVED & LISTED COURSES



### *NATO Exercise Support, M&S Integration Specialist Course*

**AIM:** The course is designed to provide the students with a knowledge package focused on NATO exercises and training doctrine, with a strong focus on federation and integration of C2 and constructive simulation systems. The course will provide the foundations of the skill set required to effectively conduct M&S integration specialist support in NATO exercises, below the **joint** operational level. The final objective is to enhance knowledge of national M&S senior users by creating awareness of the NATO-specific simulation issues as well as of the emerging M&S integration and federation capabilities.

The course is supported by NATO Joint Force Training Centre (JFTC), Lawrence Livermore National Laboratory (LLNL).

**Date:** Generally in May

**Duration:** 1 week

**Course structure:** Resident, yearly

**Target Audience:** Personnel coming from NATO Bodies and NATO

Nations, in possess of consolidated experience in constructive simulation systems.

- a. **Rank Level:** Officers (OF), Other Ranks (OR), Civilians
- b. **Language Proficiency:** Language skills: English: 3,3,3,3. IAW STANAG 6001
- c. **Pre course knowledges:** To be familiar with tools used to support exercises below the joint operational level in NATO (eg: JCATS). It is also recommended to perform the Introduction to M&S course (ADL 211) and/or **NATO Modelling & Simulation Basic Course**

**CLASSIFICATION:** NATO UNCLASSIFIED

**DISCIPLINE:** Modelling & Simulation

**AREA:** Federation and Integration of C2 and Constructive Simulation Systems

**DEPTH OF KNOWLEDGE:** LEVEL 300

**ETOC CODE:** ETE-MS-32189

**ADMIN NOTE:** More detailed information and NATO CCD are available on the NATO Electronic Education and Training Opportunities Catalogue (ETOC) and on the M&S COE web site.





### *NATO CAX Specialist Certification Course*

**AIM:** The course is designed to provide the students with a basic knowledge package about NATO exercises and training. It is focused to develop the operator skills and required for an effective conduct of a Computer Assisted Exercise (CAX).

It provides students with the comprehensive skills required during NATO exercise and to certify them as NATO CAX operators able to support NATO exercises at joint operational level and above. The final objective is to enhance knowledge of national M&S senior users by creating awareness of the NATO-specific simulation issues as well as of the emerging M&S capabilities. The course is supported by NATO Joint Warfare Centre (JWC).

**Date:** Generally June/July

**Duration:** 1 week

**Course structure:** Resident, twice a year

**Target Audience:** Personnel coming from NATO Bodies and NATO Nations, in possess of consolidated experience in constructive simulation systems

- a. **Rank Level:** Officers (OF), Other Ranks (OR), Civilians.
- b. **Language Proficiency:** Language skills: English: 3,3,3,3. IAW STANAG 6001
- c. **Pre course knowledges:** To be familiar with tools used to support exercises below the joint operational level in NATO (eg: JTLS-JEMM). It is also recommended to perform the Introduction to M&S course (ADL 211) and/or NATO Modelling & Simulation Basic Course

**CLASSIFICATION:** NATO UNCLASSIFIED

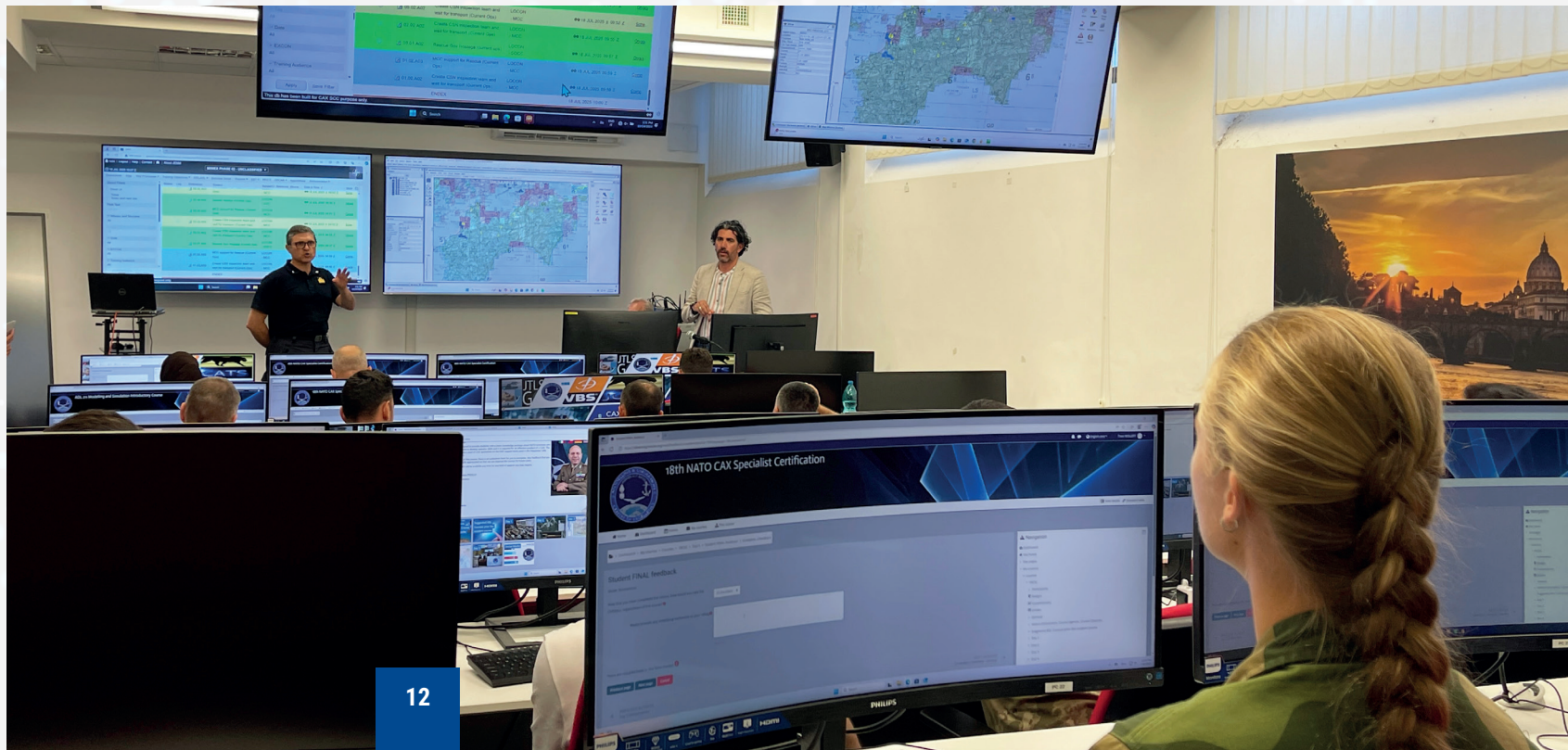
**DISCIPLINE:** Modelling & Simulation

**AREA:** CAX and Simulation Systems

**DEPTH OF KNOWLEDGE:** LEVEL 300

**ETOC CODE:** ETE-CT-31405

**ADMIN NOTE:** More detailed information and NATO CCD are available on the NATO Electronic Education and Training Opportunities Catalogue (ETOC) and on the M&S COE web site.





## ADL 211 M&S Introductory Course

**AIM:** The course is sponsored, designed and developed by NATO Modelling & Simulation Centre of Excellence (NATO M&S CoE) with the support of NATO ACT ETEE for its distribution on the JADL NATO LMS. It covers the origin of military M&S, basic terminology used and classification of M&S applications according to the NATO Modelling and Simulation Master Plan. This course is provided in e-learning format.

**Date:** 24/7

**Duration:** Subjective N/A

**Course structure:** On line

**Target Audience:** All interested in M&S

- a. **Rank Level:** For Officers (OF), Other Ranks (OR), Civilians of all fields
- b. **Language Proficiency:** Language skills: English: 2,2,2,2. IAW STANAG 6001
- c. **Pre course knowledges:** N.A.

**CLASSIFICATION:** NATO UNCLASSIFIED

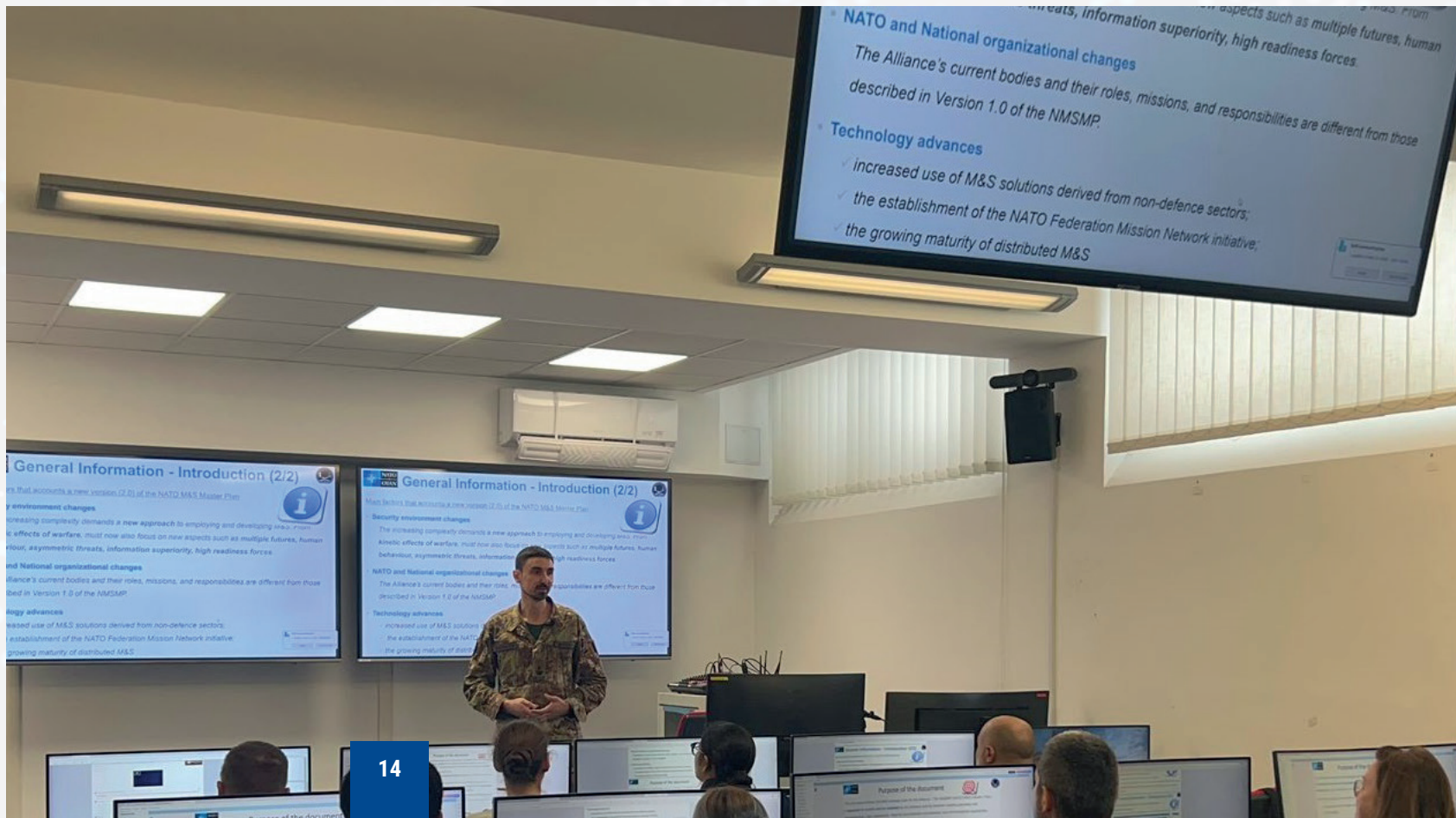
**DISCIPLINE:** Modelling & Simulation

**AREA:** General Knowledge about Modelling & Simulation

**DEPTH OF KNOWLEDGE:** LEVEL 200

**ETOC CODE:** ETE-MS-16917

**ADMIN NOTE:** More detailed information and NATO CCD are available on the NATO Electronic Education and Training Opportunities Catalogue (ETOC) and on the M&S COE web site.





### M&S JTLS - GO Foundation Course

**AIM:** The course is designed to serve as a groundwork for the NATO Approved CAX Specialist course. The training will be focused on JTLS-GO simulator system the course agenda is fluid and can change in accordance with specific training requirements that match the NATO annual requirements and the Target Audience needs. It provides the students with a knowledge package about the JTLS-GO functionalities useful to better understand the activities that will be conducted on the follow CAX Specialist course. It is focused to develop JTLS-GO operator skills, the student's activity will be certified by the M&S COE.

**Date:** Generally in June or July previous the NATO CAX Specialist

**Duration:** One week

**Course structure:** Residential

**Target Audience:** Personnel coming from NATO Bodies and NATO Nations, in possess of consolidated experience in constructive simulation systems

- a. **Rank Level:** Officers (OF), Other Ranks (OR), Civilians
- b. **Language Proficiency:** Language skills: English: 3,3,3,3. IAW STANAG 6001
- c. **Pre course knowledges:** To be familiar with tools used to support exercises below the joint operational level in NATO (eg: JTLS-JEMM). It is also recommended to perform the Introduction to M&S course (ADL 211), and/or **NATO Modelling & Simulation Basic Course**

**CLASSIFICATION:** NATO UNCLASSIFIED

**DISCIPLINE:** Modelling & Simulation

**AREA:** JTLS-GO Simulator

**DEPTH OF KNOWLEDGE:** LEVEL 300

**ETOC CODE:** N/A

**ADMIN NOTE:** More detailed information are available on the M&S COE web site.





### M&S JTLS - GO Practitioner Course

**AIM:** The course is designed as an expert-level Training course to the NATO Approved CAX Specialist course. The training will be focused on JTLS-GO simulator system and it change in accordance with specific training requirements that match the NATO annual requirements and the eventual specific Target Audience needs. The course recognizes the relevance of JTLS-GO knowledge within the alliance, and the importance of sharing and expanding expertise in JTLS-GO across NATO and its member nations. Prospective participants must be certified as CAX Specialist operators. Upon completion of the course, participants will receive a dedicated certification.

**Date:** Generally in October

**Duration:** One week

**Course structure:** Residential

**Target Audience:** Personnel coming from NATO Bodies and NATO Nations, in possess of consolidated experience in constructive simulation systems.

- a. **Rank Level:** Officers (OF), Other Ranks (OR), Civilians
- b. **Language Proficiency:** Language skills: English: 3,3,3,3. IAW STANAG 6001
- c. **Pre course knowledges:** To be familiar with tools used to support exercises at the joint operational level in NATO (eg: JTLS-JEMM). It is also recommended to perform the **NATO Modelling & Simulation Basic Course and the JTLS - GO Foundation Course**

**CLASSIFICATION:** NATO UNCLASSIFIED

**DISCIPLINE:** Modelling & Simulation

**AREA:** JTLS-GO Simulator

**DEPTH OF KNOWLEDGE:** LEVEL 300

**ETOC CODE:** N/A

**ADMIN NOTE:** More detailed information is available on the M&S COE web site.





### M&S COE Seminar "Systems Tool Kit (STK) for military applications"

**AIM:** The seminar offers a practical and structured introduction to AGI's Systems Tool Kit (STK) to model and analyse aerospace and defence scenarios across the air, space, and electromagnetic domains. Aimed at professionals involved in mission design, operations, and system analysis, the seminar blends theoretical foundations with hands-on exercises to build confidence in the use of advanced simulation tools.

Participants will work on realistic scenarios involving aircraft operations, satellite maneuvers, radar systems, and communication links, progressively developing multi-domain simulations that reflect current operational challenges. Key STK modules such as Aviator, Astrogator, and Communications will be used throughout the course to provide a complete overview of the platform's capabilities.

The fourth day is focused on Shield Master, a software solution developed by GMSPAIZO for missile defence network analysis. Through Shield Master, participants will gain an understanding of threat modelling (including ballistic, cruise, and hypersonic missiles), radar coverage simulation, and defence system deployment. In the last part of the seminar, the NATO M&S

COE's Electromagnetic Layer for Multi-domain Operations (ELMO) will be presented.

By the end of the training, attendees will be equipped to independently design and evaluate complex aerospace and defence scenarios using STK and to explore advanced capabilities related to missile threat response planning with Shield Master.

**Date:** Generally in November

**Duration:** One week

**Course structure:** Residential

**Target Audience:** Personnel coming from NATO Bodies and NATO Nations, in possess of experience in modelling and simulation

**a. Rank Level:** Officers (OF), Other Ranks (OR), Civilians

**b. Language Proficiency:** Language skills: English: 3,3,3,3. IAW STANAG 6001

**c. Pre course knowledges:** N.A.

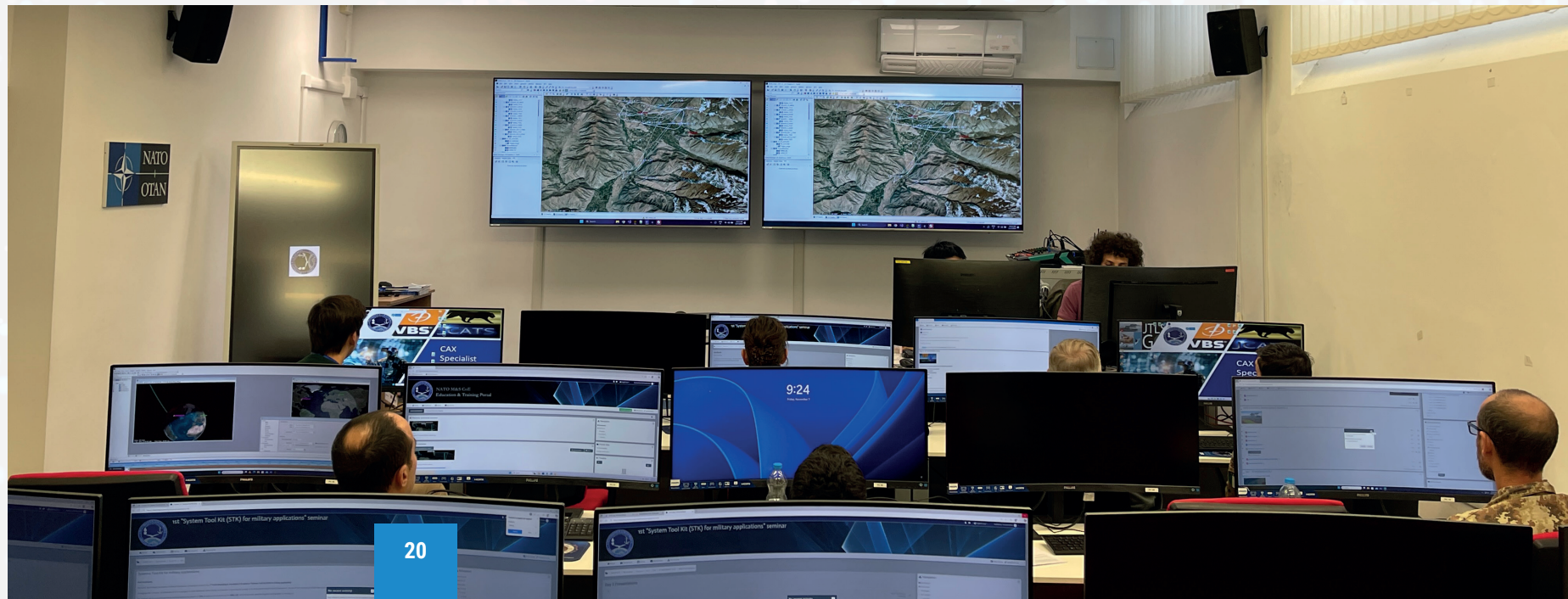
**CLASSIFICATION:** NATO UNCLASSIFIED

**DISCIPLINE:** Modelling & Simulation

**AREA:** Simulation Systems

**DEPTH OF KNOWLEDGE:** LEVEL 300

**ADMIN NOTE:** See Administrative Instructions published on the M&S COE web site.





### *M&S Support to Experimentation & Wargaming Course*

**AIM:** The aim of the training module is to equip NATO personnel, defence analysts, and simulation professionals with the skills necessary to design, execute, and analyse advanced simulation-based experiments and wargaming activities.

By combining operational relevance with a hands-on methodology, the module offers a practical and structured approach to integrating Modelling & Simulation within NATO's experimentation and decision-making framework.

**Date:** Generally in November

**Duration:** 7 working days

**Course structure:** Residential

**Target Audience:** Personnel coming from NATO Bodies and NATO Nations, Partners EAPC, MD, ICI, Partners across the Globe (AFG, AUS, IRQ, JPN, PAK, KOR, NZL, MNG) I.O.(UN, EU, OCSE)

- a. **Rank Level:** Officers (OF), Other Ranks (OR), Civilians
- b. **Language Proficiency:** Language skills: English: 3,3,3,3. IAW STANAG 6001
- c. **Pre course knowledges:** To be familiar with NATO Experimentation and Wargaming doctrine (Ex. CD&E Handbook, the AMSP series, and the NATO Wargaming Handbook). The course is aligned with NATO experimentation doctrine

**CLASSIFICATION:** NATO UNCLASSIFIED

**DISCIPLINE:** Modelling & Simulation

**AREA:** Simulation Systems

**DEPTH OF KNOWLEDGE:** LEVEL 300

**ADMIN NOTE:** See Administrative Instructions published on the M&S COE web site.



**ADL:** ADVANCED DISTRIBUTED LEARNING (ON LINE)

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**AAR:** AFTER ACTION REVIEW

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**CAX:** COMPUTER ASSISTED EXERCISE

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**COA:** COURSE OF ACTIONS

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**CT:** COLLECTIVE TRAINING

---

**DET:** DOCTRINE EDUCATION & TRAINING

---

**E&T:** EDUCATION AND TRAINING

---

**EO:** EXERCISE OBJECTIVE

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**ETOC:** NATO E&T OPPORTUNITIES CATALOGUE

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**GEO:** GEOGRAPHY

---

**HQ:** HEAD QUARTER

---

**JCATS:** JOINT CONFLICT AND TACTICAL SIMULATION

---

**IT:** INDIVIDUAL TRAINING

---

**JEMM:** JOINT EXERCISE MANAGEMENT MODULE

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**JFTC:** JOINT FORCE TRAINING CENTER

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**JTLS-GO:** JOINT THEATRE LEVEL SIMULATION GLOBAL OPERATIONS

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**JWC:** JOINT WARFARE CENTER

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**LLNL:** LAWRENCE LIVERMORE NATIONAL LABORATORY

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**MEL/MIL:** MAIN EVENT LIST MAIN INCIDENT LIST

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**MJO:** MAJOR JOINT OPERATION

---

**NCIA:** NATO COMUNICATION AND INFORMATION AGENCY

---

**NETF:** NATO EDUCATION TRAINING FACILITIES

---

**OOB:** ORDER OF BATTLE

---

**PFP:** PARTNERSHIP FOR PEACE

---

**SCEN:** SCENARIO

---

**SIM:** SIMULATOR

---

**SJO:** SMALL JOINT OPERATION

---

**TO:** TRAINING OBJECTIVE

---

**VBS:** VIRTUAL BATTLE SPACE

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**CENTRE OF EXCELLENCE**  
**ROME - ITALY**



**NEVER STOP EXPLORING**

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