

HQ Supreme Allied Commander Transformation

## **RFI-ACT-SACT-23-04**

**Headquarters Supreme Allied Commander Transformation**

**Norfolk, Virginia**

## **REQUEST FOR INFORMATION**

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This document contains a Request for Information (RFI) Call for Nations, Industry and Academia input to provide elements of NATO's

### **Next Generation Modelling and Simulation (NexGen M&S) Capability**

Those wishing to respond to this RFI should read this document carefully and in its entirety, and follow the guidance provided.

This RFI is open to NATO Nations, Industry and Academia that originate or are chartered/incorporated within NATO Nations.

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## HQ Supreme Allied Commander Transformation RFI 23-04 General Information

<b>Request For Information No.</b>	23-04
<b>Project Title</b>	<b>2<sup>nd</sup></b> Request for Nations, Industry and Academia input to provide elements of NATO Next Generation Modelling and Simulation (NexGen M&S) capability
<b>Due date for questions concerning requested information</b>	2 DECEMBER 2022
<b>Due date for submission of requested information</b>	06 JANUARY 2023
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## RFI-ACT-SACT-23-04

### 1. INTRODUCTION

- 1.1. **Summary** Headquarters Supreme Allied Commander Transformation (HQ SACT) is issuing this Request for Information (RFI) in order to engage with Nations, Industry and Academia. The intention is to discover that which is immediately available, the art-of-the-possible and state-of-the-art with respect to systems, products, services, technology, and methodologies in the area of M&S, in order to support NATO Governance decision-making on Common Funded Capability Development.
- 1.2. **This is the 2<sup>nd</sup> and final RFI for the Next Generation Modelling and Simulation (NexGen M&S) capability programme. If you responded to RFI #1, which was due 15 July 2022, you are encouraged to review your responses to provide additional and new information, particularly if you were missing the programming and cost related questions outlined in section 4.**
- 1.3. If you did not respond to RFI #1, that is not a bar to responding to this RFI. If you are so inclined, you may include input suitable to RFI #1, in addition to responses germane to this RFI. If you are responding to queries in BOTH RFI's, please section mark your responses accordingly (RFI #1 response; RFI #2 response) to assist with organization of responses."
- 1.4. The purpose of this RFI is to involve Nations, Industry and Academia, through collaboration, in an examination of current and future capabilities related to M&S. The future capabilities will be either Nation-owned or commercially available (procured by a Nation as Host Nation, or by a NATO Agency). HQ SACT has not made a commitment to procure any of the systems, products, services, or technology described herein, and release of this RFI shall not be construed as such a commitment, nor as authorization to incur cost for which reimbursement will be required or sought. Further, respondents are advised that HQ SACT will not pay for any information or administrative costs incurred in responding to this RFI. The costs for responding to this RFI shall be borne solely by the responding party. Not responding to this RFI does not preclude participation in any subsequent RFP, if issued in the future.
- 1.5. This is an RFI **ONLY**. This RFI **DOES NOT** constitute a current Request for Proposal (RFP) nor a commitment to issue a future RFP. HQ SACT is not seeking proposals at this time; therefore, HQ SACT will not accept unsolicited proposals in respect to this RFI.

### 2. GENERAL BACKGROUND

#### 2.1. HQ SACT Framework for Collaborative Interaction (FFCI)

- 2.1.1. HQ SACT has implemented an FFCI to increase opportunities for Nations, Industry and Academia to contribute to HQ SACT's capability development efforts through collaborative work. Such collaboration enables HQ SACT, and NATO as a whole, to benefit from Nations/Industry/Academia models, advice, capabilities and experience in the course of this work. In addition to the benefits HQ SACT gains from such projects, this collaborative effort will provide Nations/Industry/Academia with an improved understanding of NATO's Capability Requirements (CRs) and the associated issues and development challenges that need to be addressed by HQ SACT. Potential collaborative projects are on specific topics that are of mutual interest to all parties but shall be restricted to collaborations in non-procurement areas. Several mechanisms have been developed to support the initiation of collaborative projects between Nations/Industry/Academia and HQ SACT ranging from informal information exchanges, workshops, studies or more extensive collaboration on research and experimentation.

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- 2.1.2.** Depending on the level and type of interaction needed for a collaborative project, a specific agreement may be needed between parties. The FFCI agreement for any specific project, if required by either party for the project to proceed, will range from “Non-disclosure Agreements” (NDA) for projects involving exchange of specific information to more extensive “Declaration of Mutual Collaboration” (DOMC) to address intellectual property and other issues.
- 2.1.3.** More extensive information on the HQ SACT FFCI initiative can be found on the ACT website being developed to support FFCI projects at <http://www.act.nato.int/ffci>. Note that respondents of this RFI are not required to initiate an FFCI agreement in order to respond to this RFI.

### **2.2. The Common Funded Capability Delivery Governance Model (CFCDGM)**

- 2.2.1.** The common funded capability delivery governance model aims to speed the delivery of capabilities required by NATO commanders and the NATO Enterprise. It consists of six life cycle stage, four NATO Governance level decision points, or Gates, and two optional decision Gates.
- 2.2.2.** At the first decision Gate, the Military Committee (MC) approves the Operational Requirements (ORs) and determines whether or not the submission of a Capability Requirements Brief (CRB) is required at the first optional decision Gate. Factors that may lead the MC to require governance approval of this product include anticipated capability type, the expected level of complexity and/or likely existence of more than one viable alternative for filling the OR.
- 2.2.3.** During stage 2 (Requirements Development), a CRB is developed to identify the specific CRs, to identify potential courses of action (COAs), and to examine and confirm the COAs that are best suited to deliver the capability within scope, cost and schedule. With respect to COAs, the CRB is intended to determine their viability to address the approved ORs, including consideration of the possibility of “Adopt” (an existing solution already in-service by Nations, Industry and Academia), “Buy” (acquiring a solution from industry), or “Create” (developing a solution bespoke to NATO). In the case of Buy or Create, solutions could either be delivered through a NATO agency or a Nation being the Host Nation.
- 2.2.4.** **On April 25, 2022, HQ SACT issued RFI #1 to discover the art-of-the-possible and state-of-the-art with respect to systems, products, services, technology, and methodologies. The intent of RFI #1 was to ‘test the market’ and determine relevant materiel and non-materiel solutions that may exist or could be created within Nations, Industry or Academia (as part of the consideration of “Adopt, “Buy or Create”). RFI #1 closed on July 15, 2022.**
- 2.2.5.** During stage 3a (Capability Programme Planning), a Capability Programme Plan (CPP) is created, which includes details about programme scope, schedules, risks, through-life costs, and defines and analyses alternatives to determine acquisition strategies. The CPP is a comprehensive programme design, decomposed into outlined projects, addressing all DOTMLPFI aspects of the required capability change. An Analysis of Alternatives (AoA) occurs during this stage, and involves an analytical comparison of the operational effectiveness, risk & lifecycle cost of alternatives that are under consideration to satisfy operational requirements as described in the Operational Requirement Statement (ORS) and CRs articulated in the Capability Requirements Brief (CRB). Alternatives identified can involve

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combinations of materiel and non-materiel solutions from multiple Nations, Industry and/or Academic sources. **The intent of this RFI (RFI #2) is to collect the information required to conduct these stage 3a activities and inform the development of the CPP.**

- 2.2.6.** This is not a formal request for submissions as part of a procurement; but rather a general request intended to determine whether any possible solutions exist that should be included in one or many alternatives during the development of the CPP.

### **3. PROGRAMME DESCRIPTION**

#### **3.1. Aim**

**3.1.1.** Next Generation Modelling and Simulation (NexGen M&S [NEXGEN MS]) aims to provide a data centric single simulation environment that supports collaborative exercise planning and execution. NEXGEN MS will allow the NATO simulation community the ability to load, parameterize, run, and analyse results of external models in a distributed, collaborative environment. NEXGEN MS aims to provide web based capabilities to support geographically separated commands and the complexity of NATO operations that are focused on the political to tactical levels of war.

**3.1.2.** As NEXGEN MS is intended to be operational for an extended period, it will have new models to interface with through its lifecycle. NexGen M&S will provide an architecture to support the M&S functions that is extensible to adapt to legacy and yet to be developed models. NEXGEN MS will support composable service modules that can be combined into a simulation environment for particular use cases. Guided workflows will assist users through the M&S process and orchestrate the other service components to provide the model management, analyses and visualization functions needs for each step in the M&S process. This includes not only user facing functions but the background services such as data storage and network transport provided by standardized architecture. NEXGEN MS is expected to significantly reduce the time and effort to exploit M&S in NATO settings.

#### **3.2. Effects and Benefits**

**3.2.1.** NEXGEN MS desired effects are identified as:

- a.** Accurately represent the complexity of NATO operations in modelling and simulation systems, in support of geographically distributed commands within NATO and the member nations.
- b.** Provide ease of use and reuse of simulations, enabling more efficient use of resources for conducting simulations and their effective application to support planning, exercises, training, and operations in executing with increased efficiency.
- c.** Persistent access to simulation capabilities with collaboration support to enable the complete simulation lifecycle from ideation to creation, execution, analyses, and lessons learned.
- d.** Superior situation awareness of simulation scenarios.

**3.2.2.** NEXGEN MS expected benefits are identified as:

- a.** Effectiveness. NEXGEN MS will provide a broader range of functions to a wider range of users; executed faster; producing higher quality simulation results that have greater veracity than current systems. NEXGEN MS' increased speed will

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allow use during operations to examine potential scenarios, and improved the speed and quality of decision making.

- b. Efficiency. NEXGEN MS will reduce the time, personnel, and costs associated with developing and employing M&S. It will also improve interoperability, reduce the time needed to resource, and federate M&S for use. It will expedite the planning lifecycle of a distributed simulation event or exercise and deliver training and exercise with increased fidelity.
- c. Availability. NEXGEN MS will be persistent, easily configurable, and readily available. This will increase user access to M&S and NATO's overall capacity to exploit M&S technology.
- d. Flexibility. NEXGEN MS will increase users' ability to customize the environment using shared M&S capabilities across the Alliance. This flexible environment increases NATO's ability to adapt M&S solutions to a dynamic operational environment and accommodate advances in technology.
- e. Risk. NexGen M&S will reduce risk for commanders by supporting more accurate scenario representations which allows an increased understanding of courses of action with improved visualization of the interdependencies that affect these scenarios.

### 4. REQUESTED INFORMATION

- 4.1. This RFI is interested in information that informs alternatives development. Alternatives are comprised of materiel and non-materiel solutions, and combinations thereof, across the DOTMLPFI spectrum that contribute to NEXGEN MS CRs described in Annex A. These include but are not limited to:
  - Systems, products, services, applications (and their functionality), interfaces, data, and dependencies on hardware, facilities, and infrastructure
  - Processes, personnel, and organizational nodes required to operate the capability
  - Technologies and technical standards (open, proprietary)
- 4.2. This RFI will herein refer to one or many potential combinations of these as "your capabilities". This information will inform alternatives and will be described using the NATO Architecture Framework (NAF) v4.
- 4.3. This RFI is also interested in information that informs alternatives analysis from various perspectives. HQ SACT is interested in how Industry and National capabilities relate to the functional and non-functional CRs described in Annex A. CRs have not been prioritized and the number of capability requirements related by a common theme does not indicate priority (i.e. a single CR may be categorized as critical in the future). HQ SACT is also interested in how Industry and National capabilities realise the desired effects and expected benefits described in Section 3.2 across a range of scenarios. NEXGEN MS' scenarios include recurring collective training and exercises, strategic studies, computer-assisted wargames, and experimentation. HQ SACT will derive measures from desired effects and expected benefits during stage 3a.
- 4.4. Lastly, this RFI is interested in information that informs capability programme planning. This includes the availability, readiness, and feasibility of Industry and National capabilities. NEXGEN MS will decompose the programme into outlined projects, addressing all DOTMLPFI aspects, and provide a high-level programmatic schedule.

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- 4.5.** Some of this information was already requested and received by a previous RFI (RFI #1). Please feel free to simply indicate that some information was already provided. However, HQ SACT appreciates any additional information you feel may benefit alternatives development considering the newly developed CRs described in Annex A.

### **Questions for Nations and Industry/Academia**

#### Information to assist alternatives definition.

- What capabilities do your Nation or Company currently employ that you feel would fulfil all or part of the CRs in Annex A? Please provide any technical information such as those listed in Section 4.1.
- Please describe the operational context of how your capability is used (e.g. employment scenarios, workflows, use cases, vignettes, or procedures).
- Please describe the types of users, personnel, and organisational framework required to operate the capability. Please also describe any required skills and training.
- Please describe your capabilities' major relationships, dependencies, and interfaces with other relevant systems and data.

#### Information to assist alternatives analysis (capability requirements).

- Please describe how your capabilities relate to the CRs. Please use the table provided in Annex A to describe the level of support your capabilities could provide (e.g., Full, Partial or None).

Information to assist alternatives analysis (scenarios). Please describe how your capabilities support the following scenarios. These are relevant operational scenarios with conditions under which capabilities may be applied. If possible, please also describe how your capabilities positively affect these processes, considering the previously-stated desired effects and expected benefits.

- Please describe how your capabilities could support NATO military planning/decision making activities.
  - Mission analysis
  - Course of action development
  - Course of action analysis
  - Operational plan testing
  - Operations assessment
- Please describe how your capabilities could support operational analysis and studies in support of military operations analysis and strategic planning.
- Please describe how your capabilities could support computer-assisted wargaming.
  - Allow analysts to conduct pre-wargame simulation to provide insights, limitations, outcomes and/or identify areas for further scrutiny such as inputs to a wargame.
  - Support simulation being run in parallel with a wargame event.

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- Support turn-based game-play and interruptions to interact with simulation activities and events.
- Enable post-wargame simulation to explore alternative decisions and outcomes.
- Please describe how your capabilities could support the ability for users to conduct iterative simulation according to an experimental design faster than real time.
- Please describe how your capabilities support collective training & exercises as outlined in the Bi-Sc Collective Training and Exercise Directive (CT&E) 075-003.

#### Programming.

- Please describe any legal and commercial considerations (e.g. Intellectual Property Rights (IPR) availability, licensing restrictions, export controls or National regulations) preventing its use by NATO.
- Please provide information on when your proposed solutions could be available. What would you estimate the timeframe (in terms of months or years) for implementation and sustainment of your capabilities for NATO (assuming full implementation)? Please take into account technology refresh cycles for the expected lifespan of this capability. Range estimates are acceptable. If possible, please describe the decomposition and phased development and delivery of your proposed capabilities.
- Please describe information regarding the maturity and technical readiness level of your capabilities.
- Please describe the integration of your capabilities with the NATO enterprise. If possible, please describe how long the integration would take.

#### Cost.

- If possible, please provide a Rough Order of Magnitude (ROM) for the cost associated with the implementation and sustainment, to include licensing costs, of your capabilities (assuming full implementation). Please take into account technology refresh cycles for the expected lifespan of this capability. Range estimates are acceptable.
- Please describe how much the capabilities would cost per annum.
- Please describe what training would be included in the provided costs. Would training occur annually or one-time?
- Please provide information to inform operational and maintenance cost estimates.
- Please describe hardware and materiel cost requirements for your capabilities.

#### **For Nations only**

- Would your Nation be able and willing to take the responsibility of a Host Nation on behalf of NATO and provide your capabilities as a turnkey solution for NATO, delivered, managed and maintained by yourselves? HQ SACT understands this information may have already been provided during RFI #1.

#### **For Industry only**



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- If your company/institution does not currently offer a capability that you feel would fulfil all or part of the identified CRs in Annex A, could your company/institution develop capabilities that would fulfil one of several of the CRs? HQ SACT understands this information may have already been provided during RFI #1.
- Would your company/institution be able and willing to provide your capabilities (current or developed) as a turnkey solution for NATO, delivered, managed and maintained by yourselves?

### **For Nations and Industry/Academia**

- Please provide any additional or amplifying information you feel is relevant or will contribute to our analysis.

**4.6. Eligibility to Respond.** Only NATO Nations, Industry and Academia that originate or are chartered/incorporated within NATO Nations are eligible to respond to this RFI. Companies from Partner Nations who want to participate should partner with a primary company headquartered within a NATO Nation.

**4.7. Responses to the RFI.** The response(s) to this RFI may be submitted by e-mail. Submission to include both the Technical and Contracting Points of Contact listed above.

**4.8. Response Date.** Responses to this RFI must be received by 5:00 p.m. EST on 06 JANUARY 2023.

### **NOTE TO RESPONDENTS**

In the interest of time and in order to maximise the number of responses to this RFI, the information to be provided should not be extremely complicated, overly detailed, or require significant effort to complete. Additionally, responses are not required for the Annex if it is not applicable to your capabilities. A statement that the Annex is not applicable will be sufficient. Finally, in addition to your responses, we encourage you to include any existing materials you may have pertaining to your capabilities (e.g., marketing brochures, pamphlets, flyers, etc.).

### **4.9. Clarifications and Questions**

**4.9.1.** Inquiries of a technical nature about this RFI shall be submitted by e-mail solely to the aforementioned POCs by 2359 hours EST on 02 DEC 2022. Accordingly, questions in an e-mail shall not contain proprietary and/or classified information. Answers will be posted as soon as possible on the HQ SACT P&C website at: <https://act.nato.int/contracting>.

**4.9.2.** HQ SACT reserves the right to seek clarification on any submission.

**4.10. Intent/Objectives.** This RFI is intended to provide Nations, Industry and Academia an opportunity to provide data that would allow NATO to determine potential benefits they might receive from a capability.

**4.11. Expected Benefits to Respondents.** Nations, Industry and Academia participants will have the chance to reveal state-of-the-art systems, products, services, and technology in the area of M&S to NATO.

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**4.12. Expected Benefits to NATO.** Exposure to, and understanding of, current, emerging and future capabilities in the area of M&S.

**4.13. Expected Input from Nations, Industry and Academia.** Expected input to this RFI is Nations, Industry and Academia perspective on relevant current, emerging and future capabilities in the area of M&S.

**4.14. Classified Information.** NATO information that is CLASSIFIED is not included herein but can be passed to authorized industry recipients with appropriate clearances and control measures.

**4.15. Proprietary Information.** Proprietary information, if any, should be minimized and clearly marked as such. HQ SACT will treat proprietary information with the same due care as the command treats its own proprietary information, and will exercise due caution to prevent its unauthorized disclosure. Please be advised that all submissions become HQ SACT property and will not be returned.

**4.16. Non-disclosure Principles and/or Non-disclosure Agreement (NDA) with Third Party Company.**

**4.16.1.** Please be informed that HQ SACT may contract a company to conduct the Analysis of Alternatives investigation in support of this project. HQ SACT will follow nondisclosure principles and possibly conclude an NDA with that company to protect submitted information from further disclosure. As the third party beneficiary of this nondisclosure, this RFI serves to inform you of how HQ SACT plans to proceed and of HQ SACT's intent to protect information from unauthorized disclosure, requiring the third party company to protect the disclosed information using the highest degree of care that the company utilizes to protect its own Proprietary Information of a similar nature, and no less than reasonable care. This includes the following responsibilities and obligations:

- The third party company receiving the information shall not, without explicit, written consent of HQ SACT:
  - Discuss, disclose, publish or disseminate any Proprietary Information received or accessed under nondisclosure principles and subject to an NDA, if an NDA is concluded;
  - Use disclosed Proprietary Information in any way except for the purpose for which it was disclosed in furtherance of the goals of the instant project, collaboration, activity or contract; or
  - Mention the other Party or disclose the relationship including, without limitation, in marketing materials, presentations, press releases or interviews
- Exceptions to Obligations. The third party company receiving the information may disclose, publish, disseminate, and use Proprietary Information:
  - To its employees, officers, directors, contractors, and affiliates of the recipient who have a need to know and who have an organizational code of conduct or written agreement with the recipient requiring them to treat the disclosed Proprietary Information in accordance with nondisclosure principles and the NDA (if executed);
  - To the extent required by law; however, the company receiving the information will give HQ SACT prompt notice to allow HQ SACT a reasonable opportunity to obtain a protective order or otherwise protect the disclosed information through legal process; or

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That is demonstrated in written record to have been developed independently or already in the possession of the company receiving the information without obligation of confidentiality prior to the date of receipt from HQ SACT; that is disclosed or used with prior written approval from HQ SACT; obtained from a source other than HQ SACT without obligation of confidentiality; or publicly available when received.

**4.17.** Any response to this RFI is considered to establish consent to this process. A copy of the NDA, if or when concluded, can be provided on request.

**4.18.** Organizational Conflicts of Interest.

**4.18.1.** Companies responding to this RFI and companies conducting Analysis of Alternatives are hereby placed on notice responding to this RFI could conceivably be a factor in the creation of an organizational conflict of interest (OCI) on a future procurement, if a future procurement were to occur within the capability development process.

**4.18.2.** Companies are cautioned to consider OCI when responding to this RFI, and to consider internal mitigation measures that would prevent OCI's from adversely affecting a company's future procurement prospects. OCI's can often be mitigated or prevented with simple, early acquisition analysis and planning and the use of barriers, teaming arrangements, internal corporate nondisclosure policies and firewalls, and similar prophylactic measures.

**4.18.3.** HQ SACT is not in a position to advise responding companies on the existence of OCI or remedial measures, and encourages responding companies to consult internal or external procurement and legal consultants and in-house counsel.

**4.18.4.** OCI considerations should not be considered a barrier to responding, only a factor for long range business planning.

**4.19.** Follow-on:

**4.19.1.** Any and all information provided as part of the submission in response to this RFI maybe considered in developing any future HQ SACT requirements.

**4.19.2.** The data collected in response to this RFI will be used to develop a report to inform the NexGen M&S CPP. The report will provide an assessment to support a decision as to whether NATO should pursue an Adopt, Buy or Create approach to meet NexGen M&S requirements.

**4.19.3.** In the event that there is a competitive bidding process later as part of NATO Common Funded Capability Development, the provision of data, or lack of, will not prejudice any respondent.

**4.20. Summary. This is an RFI only.** The purpose of this RFI is to Nations, Industry and Academia, through collaboration, in an examination of future capabilities related to NexGen M&S with a focus on related systems, products, services, technology, methodologies, and engineering practices. HQ SACT has not made a commitment to procure any capabilities described herein, and release of this RFI shall not be construed as such a commitment, nor as authorization to incur cost for which reimbursement will be required or sought. **It is emphasised that this is an RFI, and not an RFP of any kind.** Thank you in advance for your time and submission to this RFI.

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Annex A to  
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A.1. The table below includes level 1 CRs and level 2 CRs that provide additional detail. Please provide any additional or amplifying information you feel is relevant or will contribute to our analysis (e.g., explanation of any partial fulfilment, clarification as to whether or not your capabilities can fulfil the CRs now or could be modified to do so, etc.). Please use the table to describe the level of support your capabilities could provide. In the Fulfilment column, please use codes (3 = Full, 2 = Partial, 1 = None).

A.2. In requirement statements, the word “shall” indicates it is required to satisfy stakeholders’ needs. The word “should” indicates that a requirement is recommended.

Capability Requirement		Fulfilment	Comments
<b>CR 1.0 - Plan Simulation Event</b>			
NEXGEN MS shall enable distributed and collaborative planning and integration activities			
	<b>CR 1.1 - Collaborative Planning</b>		
	NEXGEN MS shall enable synchronous and asynchronous collaboration for planning and integration activities		
	<b>CR 1.2 - Collaborative Scenario Generation</b>		
	NEXGEN MS should enable simulation users to conduct simulation scenario development activities for the same event		
	<b>CR 1.3 - Modular Scenario Development</b>		
	NEXGEN MS should allow multiple domains of a scenario to be developed independently		
	<b>CR 1.4 - Integrated Exercise and Simulation Planning Activities</b>		
	NEXGEN MS shall enable coordination between operational and simulation users throughout the process to plan, prepare, execute and analyse simulation-based events		
	<b>CR 1.5 - Integrated Programmes</b>		
	NEXGEN MS applications shall integrate with applications from other capability programmes		
	<b>CR 1.6 - Usability</b>		

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Capability Requirement		Fulfilment	Comments
	NEXGEN MS applications should allow simulation activities to be performed by simulation users without the need for specialists		
<b>CR 2.0 - Discover Assets</b>			
NEXGEN MS should facilitate the sharing and discovery of simulation assets <sup>1</sup> and models <sup>2</sup> as stated in the NATO Modelling and Simulation Master Plan			
1 - Modelling and Simulation applications and services as defined by the C3 Taxonomy			
2 - A representation of a real or theoretical system			
	<b>CR 2.1 - Publish Assets</b>		
	NEXGEN MS should allow assets to be made widely discoverable		
	<b>CR 2.2 - Search Assets</b>		
	NEXGEN MS should provide the ability to search assets that have been published		
	<b>CR 2.3 - Search Compositions</b>		
	NEXGEN MS should enable the ability to search for compositions of services. This is a recommended requirement, with terms and definitions used in accordance with Modelling and Simulation as a Service (MSaaS)		
	<b>CR 2.3 - Analyse Assets</b>		
	NEXGEN MS should allow simulation users to assess metadata descriptions of assets		
<b>CR 3.0 - Access Applications</b>			
NEXGEN MS applications shall be accessible to remote users			
	<b>CR 3.1 - Common Access</b>		
	NEXGEN MS shall provide a common access point for simulation users to access applications		
	<b>CR 3.2 - Convenient Access</b>		
	NEXGEN MS shall provide simulation users controlled access to applications from NATO networks without the need to install new software		
	<b>CR 3.3 - Availability</b>		

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Capability Requirement		Fulfilment	Comments
	NEXGEN MS should allow simulation users to access applications within desired time constraints of the users' operating tempo		
<b>CR 4.0 - Develop Simulation Environment</b>			
NEXGEN MS shall allow users to develop and compose simulation environments			
	<b>CR 4.1 - Access Scenario Data</b>		
	NEXGEN MS applications shall access data sources from CR 7 needed to support scenario development		
	<b>CR 4.2 - Develop Scenario</b>		
	NEXGEN MS applications shall enable the activities required to develop a scenario		
	<b>CR 4.3 - Compose Simulation Environment</b>		
	NEXGEN MS should allow integrators to compose simulation environments. This is a recommended requirement, with terms and definitions used in accordance with Modelling and Simulation as a Service (MSaaS) and Simulation Composition Services as defined in the C3 Taxonomy.		
	<b>CR 4.4 - Modular Open Architecture</b>		
	NEXGEN MS should allow severable functionality and system components to be developed, added, removed, or replaced separately and independently		
	<b>CR 4.5 - Software Development Kit - Extensibility</b>		
	NEXGEN MS should allow the independent development of compatible and pluggable content and functionality		
<b>CR 5.0 - Execute Simulation Environment</b>			
NEXGEN MS shall allow simulation users to prepare, execute, and control interoperable simulation environments			
	<b>CR 5.1 - Parameterize Simulation Environment</b>		
	NEXGEN MS shall allow simulation users to initialize stand-alone and distributed simulation environments with required input parameters		
	<b>CR 5.2 - Environment Deployment and Provisioning</b>		

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Capability Requirement		Fulfilment	Comments
	NEXGEN MS shall allow the ability to provision supportive infrastructure		
<b>CR 5.3 - Execute Simulation Environment</b>			
	NEXGEN MS shall allow simulation users to launch, monitor, and control simulation executions		
<b>CR 5.4 - Simulation Management and Control</b>			
	NEXGEN MS shall allow simulation users to conduct simulation management and control activities		
<b>CR 5.5 - Monitor</b>			
	NEXGEN MS shall allows users to remotely monitor simulation execution		
<b>CR 5.6 - Interruptions</b>			
	NEXGEN MS simulation should support interruptions to interact with simulation activities and events (e.g. turn-based game-play)		
<b>CR 5.7 - Iterative</b>			
	NEXGEN MS shall allow simulation users to conduct and analyse iterative simulation according to experimental designs (e.g. explore trade spaces)		
<b>CR 5.8 - Interaction</b>			
	NEXGEN MS shall allow simulation users to control and reconfigure simulation actions and events during a simulation event		
<b>CR 5.9 - Interoperability and Integration</b>			
	NEXGEN MS shall enable interoperability and integration among NATO simulation assets <sup>1</sup> and mission command systems		
	1 - Modelling and Simulation applications and services as defined by the C3 Taxonomy		
<b>CR 6.0 - Analyse Simulation Results</b>			
	NEXGEN MS shall provide the data and functionality required to conduct analysis and after review activities		
	<b>CR 6.1 - Collect Output Data</b>		

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Capability Requirement		Fulfilment	Comments
	NEXGEN MS shall record simulation data as required by after action review and analysis		
<b>CR 6.2 - Conduct Analysis of Simulation Results</b>			
	NEXGEN MS shall allow simulation users to analysis and visualise simulation results		
<b>CR 6.3 - Reporting and Presentation</b>			
	NEXGEN MS shall provide the ability for simulation users to generate reports to support after action reporting activities		
<b>CR 6.4 - Archive Simulation Results</b>			
	NEXGEN MS should archive products, technical execution details, and data associated with simulation events for future discovery		
<b>CR 7.0 - Manage Data</b>			
NEXGEN MS shall enable the acquisition, organisation, and use of data to support operational analysis and simulation development activities			
<b>CR 7.1 - Data Ingestion</b>			
	NEXGEN MS should provide the ability to collect and ingest <sup>1</sup> unstructured and structured data from various sources (e.g. open source, national sources)		
	1 - Extract, transform and store data extracts		
<b>CR 7.2 - Process Data</b>			
	NEXGEN MS should allow analysts to transform, aggregate unstructured and structured data ingested from various sources, and tag, store and manage those data extracts for further exploitation		
<b>CR 7.3 - Analysis</b>			
	NEXGEN MS should allow analysts to conduct analysis as defined by Analytics Services and Statistical Analysis Services in the C3 Taxonomy		
<b>CR 7.4 - Describe Data</b>			
	NEXGEN MS should allow descriptive information to be associated with datasets		
<b>CR 7.5 - Archive Data</b>			



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Capability Requirement		Fulfilment	Comments
	NEXGEN MS should provide the ability to archive datasets while distinguishing between curated and un-curated datasets		
	<b>CR 7.6 - Access Data</b>		
	NEXGEN MS shall provide controlled access to common and agreed-upon datasets		
<b>CR 8.0 - Multifaceted Simulation</b>			
NEXGEN MS shall provide cross-domain, cross-functional simulation at multiple levels of abstraction			
	<b>CR 8.1 - Simulation Effects</b>		
	NEXGEN MS shall provide, or enable the inclusion of capabilities that can provide, cross-domain and cross-functional representation		
	<b>CR 8.2 - Multiple Levels of Abstraction</b>		
	NEXGEN MS shall provide simulation at multiple levels of resolution, including mission level models and campaign level models as commonly understood by the military model hierarchy, as well as defense-enterprise <sup>1</sup> level models		
	1 - Gallagher, Caswell, Hanlon, Hill. "Rethinking the Hierarchy of Analytic Models and Simulations for Conflicts". (2014)		