



**Ministry
of Defence**

**JSP 939
Defence Policy for Modelling & Simulation (M&S)**

Part 1: Directive

Foreword

As a key enabler, Modelling & Simulation (M&S) has wide application across the Defence enterprise, both in terms of cost benefits and providing a mechanism for satisfying challenging Defence requirements. It also provides environmental benefits over traditional options.

Better coordination of activity, guidance and acquisition are needed to enable Defence to derive the maximum benefit from investment in M&S. This JSP sets out appropriate direction, clear governance structures and suitable mechanisms to resolve issues and reduce risk, enabling the Front Line Commands (FLCs) to develop and deliver M&S-based solutions in a technically coherent manner.

Under the direction and guidance of the Defence Modelling and Simulation Office (DMSO), the aim is to provide a coherent framework of M&S enablers and resources, accessed through the Defence Simulation Centre (DSC), that are reusable, interoperable, reconfigurable and cost effective, not just across the Defence enterprise but also with our allies.

As the Defence 3* Military Capability Management Functional owner, I mandate compliance with this JSP, beginning with early engagement with the DMSO, through its DSC, to ensure success.

A handwritten signature in black ink, appearing to read 'Rob Magowan', with a stylized flourish at the end.

*Lieutenant General Sir Robert Magowan KCB CBE RM
Deputy Chief of Defence Staff (Military Capability)
Functional Owner for Military Capability Management*

Preface

How to use this JSP

1. JSP 939 provides Defence Direction and Guidance for the acquisition, development and usage of M&S across Defence and its application areas. This JSP contains the policy and direction on M&S from a Defence Enterprise¹ perspective and guidance on the processes involved and best practice to apply to any M&S acquisition and development.
2. The JSP is structured in two parts:
 - a. **Part 1 - Directive**, which provides the direction that must be followed in accordance with statute or policy mandated by Defence or on Defence by Central Government.
 - b. **Part 2 - Guidance**, which provides guidance and best practice that will assist the user to comply with the Directive(s) detailed in Part 1. Expanding on general M&S policy compliance advice, Part 2 is expected to evolve and include fresh sections that address specific application and focus areas of M&S that includes (but not limited to) the following:
 - (1) M&S Application Areas:
 - (a) Education & Training (E&T).
 - (b) Acquisition and Test & Evaluation (T&E).
 - (c) Defence Experimentation (DE) and Operational Analysis (OA).
 - (d) Multi Domain Operations (MDO).
 - (2) M&S Focus Areas.
 - (a) Threat Models.
 - (b) Digital Twins.
 - (c) Wargaming.
 - (d) Artificial Intelligence (AI) and Machine Learning (ML).
 - (e) eXtended Reality (XR).

Coherence with other Policy and Guidance

3. This JSP is designed to be compatible with the following Defence directives.

¹ For the purposes of this document, an enterprise is defined as an organisation whether it is Defence as a whole or each of the single Services.

Related JSP	Title
JSP 440	The Defence Manual of Security
JSP 441	Information, Knowledge, Digital and Data in Defence
JSP 453	Digital Policies and Standards for Defence
JSP 465	Defence Geospatial Intelligence Policy
JSP 490	Defence Manual of Cryptography
JSP 745	Digital Publishing Policy
JSP 822	Defence Direction and Guidance for Training and Education
JSP 901	Technical Governance and Assurance of Capability
JSP 906	Defence Principles for Coherent Capability
JSP 920	MOD Standardization Management Policy
JSP 945	MOD Policy for Configuration Management

Training

4. There is no specific requirement to undertake training in order to make use of this JSP; however, relevant educational courses to support the requirement for Suitably Qualified and Experienced Personnel (SQEP) are delivered by Cranfield University at the Defence Academy. Recommended courses include the following:

- a. An Introduction to Defence Simulation (IDS).
- b. Simulation Employment Training (SimET).
- c. Masters in Defence Simulation & Modelling (MSc DSM).

5. More details on these courses and other related courses can be found via the Defence Academy website at www.da.mod.uk.

Changes to this version of JSP 939

6. The most significant change is the way that the JSP treats different M&S application areas. Past versions have primarily focused on Training and Education whereas this version recognises the broader role of M&S across a range of application areas and sets the conditions for wider adoption and coherence. Topics covered have been split into Application areas (the use cases for M&S) and M&S Focus areas (the tools and capabilities M&S uses) as listed above in para 2.

7. Part 2 of JSP 939 provides guidance on how to apply the policy. The way this guidance is provided has been updated to make JSP 939 more accessible and useable to M&S users. A template has been created for each M&S application and focus area to provide tailored and specific advice and guidance on how to apply the policy. The intent is for these templates to be developed and iterated as required and a work plan is in place to produce these regular updates to Part 2.

8. The term DMA&S has been replaced with DMSO. The standing up of DMSO absorbed DMA&S and it took on the Defence Technical Authority for M&S role.

9. Other changes include:

- a. The acknowledgment of the Service Command Technical Authorities (SCTAs) as M&S focal points across Defence organisations. This sets the conditions for

potential future establishment of roles in areas not currently covered (e.g. DE&S, Dstl). Service Command Technical Authority posts may be renamed as Simulation Coherence Technical Authorities to reflect this change.

b. Emphasis on the authority of DMSO and the SCTAs alone in determining compliance with policy and the escalation route through the DMSGB and the MCB should it be required.

c. The requirement for M&S programmes to use authoritative data (particularly Threat Data) as the default.

d. The requirement for any digital models of Blue platforms/services/equipment developed as part of the procurement process to be provided to the Defence Simulation Centre so they can be made available for M&S purposes pan-Defence.

Further Advice and Feedback – Contacts

10. The owner of this JSP is UKStratCom DMSO. For further information on any aspect of this guide, or to ask questions not answered within the subsequent sections, or to provide feedback on the content, please contact any of the following or any DMSO Service Command Technical Authority (SCTA) (if known):

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DMSO Technical Authority (TA) Hd	UKStratCom-DMSO-TA-Hd@mod.gov.uk	07833 441 339
DMSO TA Group Mailbox	UKStratCom-DMSO-TA@mod.gov.uk	
Defence Simulation Centre Front Door	UKStratCom-DSC-Enquiries@mod.gov.uk	

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Section 1: Aim and Objectives

Aim

1. The aim of this JSP is to support the Defence objective to provide Value for Money (VfM) for M&S across the Defence Enterprise.

Objectives

2. This JSP is designed to deliver the following objectives:

- a. direct, ensure and assure the coherent development of M&S in support of Defence Outputs.
- b. maximum exploitation in any investment in M&S resources (models, data, systems, etc).
- c. ensure Defence will have effective and technically coherent M&S based capabilities that are interoperable (where appropriate), reconfigurable, innovative and provide VfM at the DE level.

Scope

3. This JSP sets out the technical governance and assurance framework to be applied as appropriate to M&S² across Defence and its varied application and focus areas. The role of the DMSO is to promote VfM at the DE level and build corporate knowledge supported by the DSC.

4. In line with the scope of the Defence M&S Governance Board (DMaSGB) (as detailed in Section 3), this JSP applies to the computer-based M&S that has the intention or potential to be networked or which uses models that might reasonably be re-used in, or used to support, other simulation systems. It is intended to evolve from an initial focus on Education and Training (E&T) to cover all such uses of M&S across Defence.

5. M&S is a key enabler for Defence that is increasingly supporting a wide range of activities that include: decision making, E&T, mission rehearsal, acquisition, operational analysis, T&E, and experimentation. Such disparate activities provide a challenge in the delivery of VfM in accordance with JSPs 901 and 906 and the exploitation of investment.

Key Policy Principles

6. Improved direction, governance, advice, guidance and coordination across Defence will yield more flexible, affordable, effective and efficient M&S-based systems via the following key principles:

- a. The DMSO approach is to maximise VfM across the DE by promoting technical coherence for M&S across Defence, and with Allies, without stifling innovation.

² See Section 5 for definitions.

- b. Defence M&S resources (including models, data, etc) and corporate knowledge, as provided through the DSC (even though they may originate elsewhere in Defence), are to be developed and exploited where appropriate.
- c. M&S is to be developed coherently across Defence and exploited to deliver the widest possible benefits to support Defence Final Outputs.
- d. TLBs' M&S strategies and supporting plans are to conform to this policy and are to be reflected in their respective annual Command Plans or equivalent.
- e. Applicable M&S change activity is to be compliant with DMSO Technical Authority (TA) direction, initially through engagement with the DSC.
- f. All M&S assets and resources used and available to Defence are to be registered with the DSC including software licences and 3D models.
- g. Interoperability is to be considered for all M&S systems and developed through a common technical architectural approach.
- h. The reuse of authoritative data for which Defence has appropriate Intellectual Proprietary Rights (IPR).
- i. Authoritative M&S data and models are to be used where available.

Document Structure

7. The early sections of this document are intended to provide sufficient background material to set the core policy statements in context. Readers with sufficient knowledge of Defence M&S will be able to turn directly to Section 4, which contains the core policy statements, responsibilities and processes. In more detail:

- a. Section 2 provides basic background information on the high-level management of M&S in Defence.
- b. Section 3 provides information on the principal organisations that have a specific interest in the development, management and provision of M&S in Defence.
- c. Section 4 provides the key policies relating to M&S in Defence.
- d. Section 5 covers M&S Acronyms, Abbreviations and Definitions.

Defence M&S Policy Roles and Responsibilities

8. **Head Office Roles and Responsibilities.** DIRECT: To assist DCDS (Mil Cap) in meeting the responsibilities as associated with the Functional Owner for Capability Coherence role, the DMaSGB will routinely consider appropriate elements of M&S. It will provide prioritised, clear direction and guidance on capability coherence issues or technical compliance issues that cannot be resolved at the DMSO level. To support this point:

- a. DCDS (Mil Cap) delegates authority of the DMSO TA to UKStratCom DMSO.
- b. UKStratCom DMSO delegates appropriate authority to each of the SCTAs to fulfill their duties.

c. UKStratCom DMSO provides regular M&S Projects Status updates to the DMaSGB.

9. TLB Roles and Responsibilities. DEVELOP, DELIVER, OPERATE:

a. **DMSO** will be provided by UKStratCom Joint Warfare (JW) to support, advise and assure coherence across all M&S development in Defence. It will:

- (1) work with Industry, Allies and appropriate organisations to identify and propose relevant architectures, including which M&S standards Defence should follow, in order to promote reuse and interoperability.
- (2) assure systems compliance against the coherence principles described in JSP 939 Section 4 in order to ensure coherence and VfM at the DE level.
- (3) support the TLBs in making the most appropriate acquisition choices for Defence; where serious conflicts of interest arise, these will be referred to the DMaSGB.
- (4) provide the Training Requirements Authority (TRA) function for the M&S courses delivered at the Defence Academy.
- (5) prioritise the taskings carried out by the DSC.
- (6) engage Industry through the DMSO Industry Advisory Group (DIAG).
- (7) engage with the NATO M&S Group (NMSG) in order to promote M&S collaboration with Allies.
- (8) engage with appropriate Standards Development Organisations (SDOs) such as the Simulation Interoperability Standards Organization (SISO) and the Open Geospatial Consortium (OGC) to obtain early awareness of activity and be able to exert influence to the benefit of Defence.

b. **DMSO TA Hd** will be supported by a team of DMSO Service Command Technical Authority (SCTA) representatives, a TA Support Team (TAST) and potentially technical representatives from other application areas of M&S (such as digital twins) as appropriate.

c. **DMSO TAST** is to provide impartial specialist M&S technical advice to Defence and to support the SCTAs.

d. **A SCTA** post is to be established by each Service Command, appointing SQEP to the post in agreement with the DMSO Hd. Each SCTA is empowered to act on behalf of the DMSO TA Hd for assessment and assurance alongside advice duties against Defence M&S policy. The starting point for each M&S based system is that it is JSP 939 non-compliant until shown otherwise, assured by the relevant SCTA and endorsed by the DMSO TA Hd.

Evidence collected to determine JSP 939 compliance is to be recorded in a DMSO Capability Technical Assessment Report (CTAR) form that is to be stored and managed by the DSC. All in Defence have access to the CTAR forms unless there is suitable reasoning to protect.

With DMSO not wishing to stifle innovation but still ensure that VfM for Defence is achieved, it is imperative that each SCTA is a ratified M&S expert (as determined by DMSO Hd), able to understand the technical implications or nuances of any innovative proposals.

Whereas contractor support may be sought to support the SCTA function, an individual (preferably in uniform for environment experience and credibility purposes) must take assurance responsibilities on behalf of their specific domain. More details on the SCTA role can be found in Part 2 of this JSP.

e. **The DSC**, through its role in providing a M&S focal point and related activities, will support the DMSO TA in providing technical coherence across the DE. Any Defence user seeking to develop or procure M&S based systems is to liaise with the DSC to register their activity.

The DSC provides a Front Door acting as single point of contact for all M&S enquiries alongside a team dedicated to building and managing M&S corporate knowledge.

Section 2: Background

Context

10. The aim of driving VfM for Defence at the enterprise level will be delivered through the exploitation of investment and resources in an approach that supports coherence, interoperability and reuse. This approach is supported by:

- a. the provision of appropriate M&S advice and guidance.
- b. a framework for JSP 939 compliance assessment and assurance.
- c. the DSC that provides the required mechanism to enable access to available resources through a single point of access.

M&S Domain Environments

11. Recognising that one size does not fit all in terms of M&S solutions, each domain (e.g. Land, Air, Maritime) will determine its own Enterprise M&S Architecture and determine whether any new programme or project is, or needs to be, coherent with that architecture. Regardless, the requirement for Defence to reuse the same authoritative data remains paramount as does the need for interoperability across the domains and with Allies. The DMSO SCTAs will assess and assure against this requirement.

M&S Application Areas

12. Beyond each domain M&S environment, it is recognised that variations in approach to coherence may be required for each major M&S application area. Although the direction in Part 1 of JSP 939 applies pan-Defence, content within Part 2 of JSP 939 includes guidance pertinent to specific application areas.

M&S Governance

13. Defence M&S Governance is owned by DCDS Mil Cap and promulgated through JSP 939. Where any issues with M&S coherence are identified, if they cannot be resolved by the SCTA(s), they will be referred to the DMSO TA Head for resolution. Beyond that the DMA SGB, and ultimately the Military Capability Board, are available for a decision in line with their mediation and arbitration processes.

M&S Coherence

14. M&S Capability coherence will be achieved in the following ways:

- a. **Direction.** All users of M&S (including capability areas and delivery agents) are to follow DMSO direction on JSP 939 compliance issues.
- b. **Compliance.** All M&S capability or solution changes are to be JSP 939 compliant and all capability areas are to ensure that this is to be included as a specific mandated requirement in any URD (as detailed in the [Knowledge in Defence \(KiD\) tool](#)).

15. Capability areas and delivery agents are to engage with the DMSO TA via the DSC at inception, when a SCTA will be allocated for engagement throughout the project lifecycle.

16. The DMSO TA will expose common requirements to identify intervention opportunities for collaboration and reuse between projects through routine engagement.

17. It should be noted that for Defence Experimentation and Operational Analysis purposes in particular, HMT policy (e.g. [the Aqua Book: guidance on producing quality analysis for government](#)) holds higher authority than this JSP.

Compliance Assessment and Assurance

18. Assessment and Assurance duties are conducted by the DMSO SCTAs. Compliance against JSP 939 can be determined by the SCTAs alone and endorsed by the DMSO TA Hd.

19. Practical technical assessment of solutions is encouraged for activities such as Invitation To Negotiate (ITN) which should not be a paper only exercise.

Use of Authoritative Data for M&S

20. M&S developers and operators are expected to use Defence-approved authoritative data as the default option. Where this is not possible, a waiver is to be sought from the appropriate DMSO SCTA.

a. **Threat M&S.** Defence Intelligence (DI) threat model and data, built at varying fidelities across multiple warfighting domains in coordination with foreign partners, is the sole authoritative source for threat M&S and is expected to be used where available. Defence M&S activities requiring representation of threat systems will coordinate with DI at the earliest opportunity to identify requirements and define an appropriate support plan.

b. **Geospatial Data.** Geospatial data is to be sourced through the DSC. Where this is not achieved, a Spatial Data Management Plan (SDMP) is to be raised in accordance with JSP 465. Defence Geospatial Intelligence Policy.

21. Following direction from Capability Sponsors, Capability Delivery Teams are to provide data for any platforms or sensors or equipment that is procured or acquired for M&S purposes including performance data via the DSC.

Good M&S Commercial Practice

22. In the early stages of a M&S project, collaboration between DMSO, PM and Commercial staff is essential during the requirement and contract setup phases. This can ensure the technical requirements are accurately translated into functional requirements and use the appropriate contracting terms through life, i.e. IP, continuous improvement, technical upgrades. This collaboration effort ensures that the project's technical feasibility aligns with commercial viability leading to well-defined project scopes, realistic contract terms and successful project outcomes.

Section 3: Organisations

Overview

23. This section describes the various organisations that provide direction along with those that acquire, manage and develop M&S systems in Defence.

DMaSGB

24. The DMaSGB is responsible for strategic M&S direction and the resolution of associated issues. The DMaSGB is co-chaired by Assistant Chief of Defence Staff (ACDS) (Capability & Force Development) C&FD and UKStratCom Director of Capability (DCap) and aims to provide collective governance of Defence M&S based capabilities.

25. The DMaSGB Objectives and Responsibilities are as follows:

- a. contribute to the demand signal for the Defence M&S based systems, ensuring pan-Defence coherence.
- b. monitor the performance of major Defence M&S programme initiatives and identify, cohere and assure risks and issues to delivery and use.
- c. identify, prioritise and agree programmatic intervention opportunities to optimise Defence M&S capabilities and ensure that enterprise-wide benefits are realised.
- d. provide oversight and endorsement of Departmental M&S policy, enforcing compliance with JSP 939 thus ensuring that M&S capabilities are developed and delivered in a technically coherent and pan-Defence minded manner.
- e. consider and settle any technical coherence or non-compliance issues that cannot be resolved at the DMSO level and, if necessary, escalating to the Military Capability Board (MCB) for a decision in line with its mediation and arbitration process.
- f. direct the FLCs to establish SCTA posts (to work closely with DMSO), independent of capability areas and resource with SQEP to provide SME advice and guidance and to ensure JSP 939 compliance.

UKStratCom Joint Warfare (JW)

26. UKStratCom JW provides the funding and oversight of the DMSO ensuring that approved policy and strategy is followed and the sought benefits achieved.

DMSO

27. DMSO is responsible for realising the following benefits:

- a. the exploitation of investment and VfM for M&S across the DE.
- b. the improved and enhanced interoperability, ability to be able to reuse data, and better M&S capability that a coherent approach provides.

28. The DMSO reports to the DMA SGB providing pan Defence Co-Ordination and Coherence through the JSP 939 Policy and the Implementation Plan.
29. **DMSO TA.** This team is responsible for:
- a. the provision of M&S technical advice and guidance through the SCTAs and other DMSO TA representatives.
 - b. assessment and assurance of JSP 939 compliance.
30. **DSC.** The primary role of the DSC is to support the DMSO TA and its core functions include:
- a. knowledge and information management (including communications).
 - b. management of the DSC M&S Catalogue.
 - c. management of the DMSO Common Simulation Services.
 - d. management and exploitation of available experimentation facilities.
 - e. verification, validation & accreditation duties as appropriate.
 - f. management and exploitation of available test & reference capabilities.
31. **DMSO Simulation and SE Laboratory (SSEL).** The DMSO SSEL directly supports the delivery of M&S educational courses at the Defence Academy.

Defence M&S Organisations

32. The single service M&S organisations are as follows³:
- a. StratCom SCTA duties for Defence & Joint M&S capabilities are fulfilled by AH TAST sat within DMSO.
 - b. The RAF and Space SCTA is based within the Air and Space Warfare Centre (ASWC) and consists of an SO1 SCTA and an SO2 Deputy SCTA. Whilst managed by the ASWC, the SCTA reports to the DMSO Hd TA and RAF COS Cap.
 - c. The Army does not have a dedicated stand-alone SCTA, this role is undertaken by SO1 Training Capability Strategy and their SO2 Synthetics, a byproduct of pre-Army Operating Model structures. To mitigate this dual purpose the Land Training Test and Reference Capability will support this function as part of The Collective Training Transformation Programme.
 - d. The RN does not currently have a dedicated SCTA and work is ongoing within NCHQ to establish this post. As an interim measure the SPARTAN team are supporting where possible.
33. In addition to the above, the Army's Combat Aviation Programmes, which procure capability for the Joint Helicopter Command (JHC), whilst not a service command in its own right, is treated as such by DMSO due to the way that it procures, develops and

³ Accurate as of December 2023.

operates multiple M&S systems. As a result, it nominates a WO1 pilot of sufficient stature and with M&S expertise and experience to act as its own specific SCTA.

NATO M&S Group

34. The mission of the [NATO M&S Group](#) (NMSG) is to promote co-operation among Alliance bodies, NATO member nations and partner nations to maximise the effective utilisation of M&S. DMSO Hd holds the post of the UK's NMSG Principal Member alongside a S&T representative from Dstl with Industry providing a representative.

35. There are 2 NMSG subgroups, the Military Operational Requirements Subgroups (MORS) and the M&S Standards Subgroup (MS3). The DMSO TA Hd is the UK's principal member on the MS3.

Section 4: Policies for the Management and Provision of M&S

Management and Provision of Defence M&S

36. The management and provision for all M&S throughout Defence is subject to the policy defined in JSP 939.

Compliance Assessment & Assurance

37. Through initial engagement with the DSC to initiate the process, JSP 939 compliance is assessed by the DMSO SCTAs, against a set of specific '*M&S Coherence Principles*' as detailed below in Para 38. These coherence principles are used to help determine JSP 939 compliance rather than rules as they are used as benchmarks for consideration. This approach assists in the aim to not stifle innovation in a pragmatic manner.

38. Evidence of how each coherence principle is assessed is to be recorded and when assurance is complete, it is to be stored within the DSC with access available to Defence.

39. These DMSO TA representatives make a recommendation to the DMSO TA Hd as to whether a M&S project/programme meets JSP 939 Compliance before it is endorsed by the DMSO Hd. It should be noted that a project/programme is deemed non-compliant until shown otherwise.

40. The JSP 939 M&S Coherence Principles are as follows:

a. **Coherence Principle 1: Reuse Existing.** Those available existing systems, components, services, data and licences that meets the M&S requirement shall be used as the default or 'Do Minimum' option for consideration.

Purpose of Coherence Principle: To promote the exploitation of available M&S resources.

b. **Coherence Principle 2: Procuring for Reuse.** Any new or modified or enhanced M&S components, services and data acquired shall be made available for reuse via the DSC M&S Catalogue using formats specified in the [Defence M&S Standards Profile](#) (DMSP) and covered by Def Stan 03-050.

Purpose of Coherence Principle: Ensuring that any M&S resources procured are exploitable.

c. **Coherence Principle 3: M&S Standards.** Any M&S standards selected for use by the capability or technical solution change shall be compliant with Def Stan 03-050.

Purpose of Coherence Principle: Ensures that M&S standards are chosen that support VfM for Defence at the Enterprise level.

d. **Coherence Principle 4: Distributed Simulation Enumerations.** All new and revised distributed simulation enumerations shall comply with the DMSO Distributed Simulation Enumerations Policy and be registered with the DSC.

Purpose of Coherence Principle: Essential for the interoperability between connected and interoperating M&S systems.

e. **Coherence Principle 5: M&S Enterprise Architecture.** All M&S-based capability must be developed, wherever possible, in accordance with the existing domain architecture as chosen by each Single Service. This will comply with the DMSO Enterprise Architecture approach (both in terms of engineering approach to implementing the architecture and the agreed physical architecture itself) as advised and approved by the relevant SCTA.

Purpose of Coherence Principle: Supports M&S technical coherence across each of the domains.

f. **Coherence Principle 6: Technical Documentation.** Suitable documentation shall be acquired for all M&S-based capabilities and the content be made available for reuse for Defence purposes; this includes Interface Control Documents (ICDs), 3D model metadata, design documentation etc.

Purpose of Coherence Principle: Supports interoperability and connectivity between M&S and other systems.

g. **Coherence Principle 7: Synthetic Environment (SE) Data.** All M&S-based capability needs for SE content data are to be sourced via the DSC including terrain data, 3D models, hydrographic data etc. If this is not followed or achievable for whatever reason, then the direction within JSP 465 Defence Geospatial Intelligence Policy (or equivalent for other data types) applies and a Spatial Data Management Plan (SDMP) is to be created and approved.

Purpose of Coherence Principle: Ensures that authoritative and coherent sources of (geo)spatial data are used.

h. **Coherence Principle 8: Research and Reports Exploitation.** All M&S-related research and decision support activity, including any outputs, is to be registered with the DSC through its Front Door.

Purpose of Coherence Principle: Promotes the exploitation of such activity and helps reduce duplication.

Management of M&S Standards

41. Standards are recognised as being key to meet interoperability and reuse requirements in any coherent approach both internal to Defence but also with Other Government Departments, Allies and Industry.

42. Per policy, Defence does not wish to own standards unless necessary. Open standards are a priority but common or community standards are acceptable but only if no open ones are available. Proprietary standards are deemed a liability and are to be avoided. A modified open standard is no longer open and treated as a proprietary standard.

43. For the above reasons, DMSO will be involved with appropriate Standards Development Organisations as appropriate and as resource allows.

Collaboration with National and International Partners

44. The primary route for coherence with Allies will be through the NATO M&S Group. In addition, there may be activities across the FVEYS community and also bilateral agreements.

Section 5: M&S Acronyms, Abbreviations and Definitions

45. Where they exist, Defence is to use NATO agreed definitions.
46. NATO [defines](#) M&S as the discipline that 'develops and/or uses models, simulations and simulation systems'. It is important to note that M&S is a term in itself and not the sum of the two words 'modelling' and 'simulation'.
47. The NATO definitions of 'model' and 'simulation' are:
 - a. Model - a physical, mathematical or otherwise logical representation of a system, entity, phenomenon, or process.
 - b. Simulation - the execution of a system model over time.
48. A Synthetic Environment (SE) is a representation of the real world, within which any combination of players may interact.
49. Other M&S acronyms and definitions can be found within the [Knowledge in Defence \(KiD\) tool](#).

