

Chapter 1 - INTRODUCTION

1.1 ORIGIN OF THE TECHNICAL ACTIVITY

1.1.1 The NATO Modelling & Simulation (M&S) Organisation

In 1996 a temporary NATO working group was set-up to assess the possibility of establishing a permanent M&S organisation within the Alliance. This working group was named the Steering Group for M&S (SGMS) and reported to both the Conference of National Armament Directors (CNAD) and the Military Committee (MC), via the Research and Technology Organisation (RTO).

In 1998, the SGMS published two documents: a final report proposing a NATO M&S organisation and a NATO M&S Master Plan (MSMP). Both documents were approved by first the above-mentioned hierarchy (RTO, CNAD and MC) finally by the North Atlantic Council (NAC) in November 1998. Since then the M&S organisation has been set up under the auspices of the RTO, as shown on the following drawing.

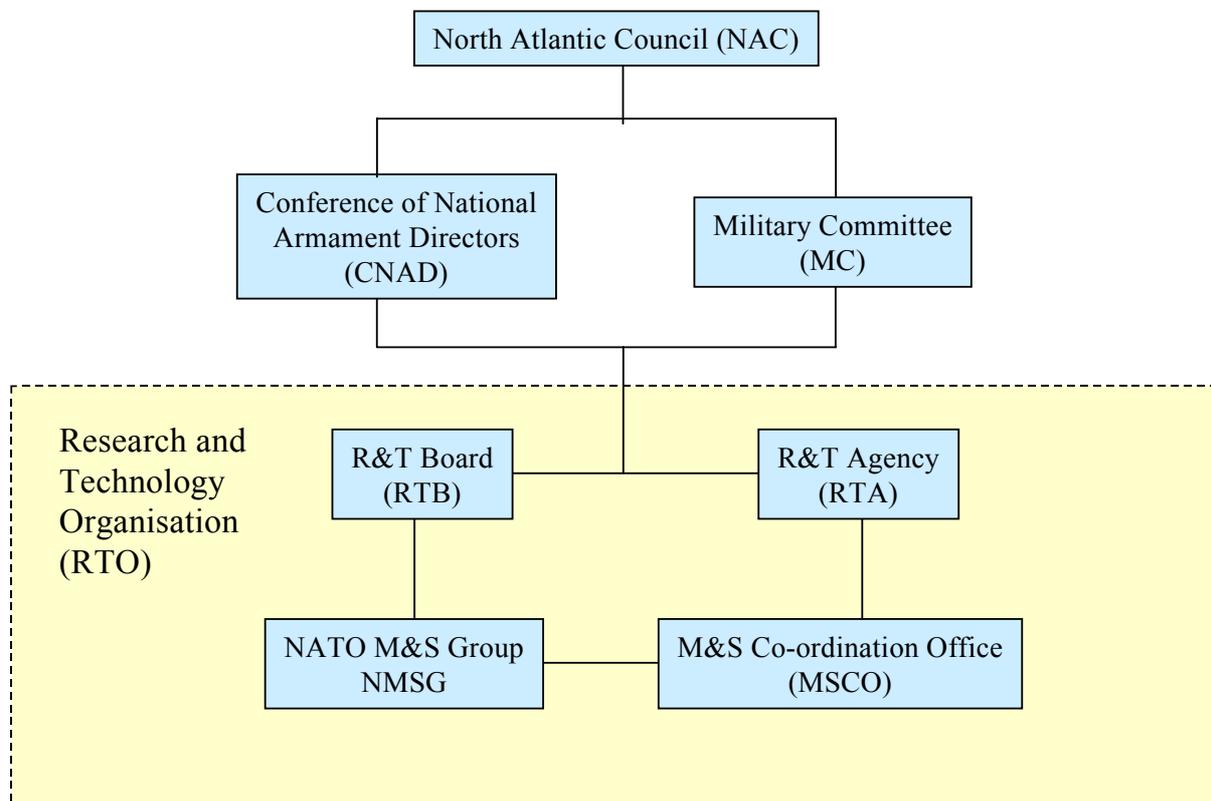


Figure 1: NATO M&S Organisation

This new organisation was actually set-up by the end of 2000 and the NATO M&S Group (NMSG) established its first programme of work in 2000. This programme of work was guided by a new document summarising the MSMP and called the M&S Action Plan (MSAP). The MSAP recognises the MSMP objectives as the leading objectives for NATO M&S activity.

1.1.2 The NATO M&S Action Plan Related Objectives

The five NATO MSAP objectives are.

Table 1: M&S Action Plan Objectives

Objective 1	Objective 2	Objective 3	Objective 4	Objective 5
Establish a Common Technical Framework	Provide Common Services in NATO M&S	Develop Simulations	Employ Simulations	Incorporate Technological Advances
<i>1.1 Adopt HLA¹</i>	<i>2.1 Compile M&S Information</i>	3.1 Identify & Prioritise Requirements	4.1 Plan Employment	5.1 Monitor M&S Related Advances
1.2 Establish Data Interchange Standards	2.2 Provide M&S Education	3.2 Identify Strategies	4.2 Provide Resources	5.2 Conduct R&D ²
	<i>2.3 Establish a Simulation Resource Library</i>	3.3 Allocate Resources	4.3 Provide Databases	<i>5.3 Share Information</i>
	<i>2.4 Establish a Help Desk</i>	3.4 Execute Strategy	4.4 Operate Simulations	5.4 Implement Advances
		<i>3.5 Provide feedback</i>	<i>4.5 Conduct Impact Assessment</i>	

As can be seen in the objective tables, the establishment of a Simulation Resources Library (SRL) is contained within objective 2 (sub-objective 2.3). The top-level objective 2 is the establishment of a set of services, which should be provided to the Alliance for the future development and use of models and simulation. Sub-objective 2.3 clearly relates to the establishment of a simulation resources library but some other sub-objectives are more or less closely linked to this activity such as: 1.1, 2.1, 2.4, 3.5, 4.5 and 5.3. These objectives will be more deeply discussed later in paragraph 3.1.

1.2 MAIN DEFINITIONS: LIBRARY, REPOSITORY AND CATALOGUE

According to the Harrap’s Webster thesaurus (2000 edition) there is little difference between a “library” and a “repository”:

- **A Library** is defined as “A collection of books, films, records, etc., [...] a collection of programs that can be accessed by a computer programmer when required”.
- **A Repository** is defined as “A place or a container where things may be stored especially a museum or warehouse [...], a trusted person to whom one can confide secrets!”

¹ HLA stands for the “High Level Architecture” the US DoD 1.3 and IEEE 1516 interoperability standards.

² R&D: Research and Development

It seems that the concept of a library suggests some organisational and administrative capability: collected items should be classified in categories and can be accessed easily when needed. In the repository definition this notion of accessibility seems absent, the capability of storage is emphasised. It does not seem that existing dictionaries give the current meaning of a repository in reference to a SRL. Therefore it should be noted that a repository should inspire confidence in the usability of its contents.

Another word, which could be used in this report, is “**catalogue**”. It normally refers to a list of ordered references that can be used to retrieve things to be acquired by some process. But a catalogue is only supposed to provide information on the referred objects and does not enable direct access to them.

In this report, both words “**library**” and “**repository**” are equally used for simplicity even if they are not exactly synonymous. They both define a place where resources are identified. In the best case, products can be directly accessed. When products are not directly available in the library, some relevant information should be given; a reference which allow users to acquire a better information about their nature, their capability, the constraints for accessing them and the best way to obtain them should be included. The term “catalogue” will not be used since producing a simple list of products without any relevant information attached to them seems to be of little utility.

In any case, the quality of products referenced in a library and the confidence that users can have in them should be a prerequisite before populating the library.

1.3 RATIONALE FOR DEVELOPING A NATO SRL

As can be seen in Chapter 2 of this report, many nations’ M&S organisations have already established or have projects to create a Simulation Resource Library (SRL). This emphasises that everybody is convinced that an SRL is the fundamental tool for monitoring and co-ordinating the development of M&S in a structured organisation. It is not surprising that the NATO MSAP clearly identifies the establishment of an SRL as an important objective. The high-level funding objective of the MSAP and the NATO supporting M&S organisation is to promote *interoperability* and *reuse* of M&S. Reuse is not possible without a specific knowledge of available M&S assets.

More specifically the MSAP Sub-objective 2.3 documents that the “**NATO Simulation Resource Library**” (NSRL), is a fundamental tool to promote interoperability and the sharing of M&S resources amongst Alliance Nations. In 2000 the NATO MSG-012 Task Group 009 was established for fulfilling this objective.

1.4 DESCRIPTION OF THE TECHNICAL ACTIVITY

This technical activity was undertaken under the hospices of the NMSG in accordance with the RTO procedures governing the RTO technical team activities. The terms of reference (TOR) of this SRL technical activity asked for “*improving the cost-effectiveness of NATO modelling and simulation (M&S) by satisfying common requirements by a common means*”. The Task Group (TG) TOR document explicitly refers to the NATO M&S Action Plan Sub-objective 2.3, “*Promote the sharing of M&S resources through a simulation resource library (SRL)*”.

The TOR recommend that “NATO establish an SRL, automated if possible, to promote the sharing of M&S resources efficiently and cost-effectively across the Alliance. This effort managed by the Modelling and Simulation Co-ordination Office (MSCO) relied initially on national contributions”.

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The initial objectives of this technical activity were to:

- Identify the types of resources to be shared among the Alliance,
- Perform an investment appraisal/benefit analysis for the SRL as a prelude to obtaining central NATO funding for SRL.

Based on these terms of reference, the task group proposed a possible short-term implementation for a future NATO SRL, taking into account the budget constraints and human resources as they are currently available within NATO and member nations. A vision of the future SRL was developed as a starting point to propose a technical implementation that will be capable of future improvements in respect to what can be envisaged for the mid and long-term technology evolution.

1.5 TASK GROUP PARTICIPATION AND ORGANISATION

Participating nations were:

- Canada,
- France,
- Germany,
- Norway,
- UK.

The US M&S Resources Repository (MSRR) was explicitly named as the referent example of an actual implementation of SRL. Unfortunately it was not possible for this nation to participate in the TG. Nevertheless the US NMSG delegation provided information required to the group.

The group had 5 working meetings rotating between nations. The Internet capability was also extensively used to support the TG work.

Due to the short time allocated to the group, drafting the final report was the leading activity.

Chapter 2 of the report provides national input: describing current and future national projects, wishes and hopes of nations for a NATO SRL. Chapter 3 is the evaluation of SRL requirements from a NATO and a more general perspective. Chapter 4 discusses possible implementations (distributed versus centralised solutions). Chapter 5 elaborates on a preferred solution taking into account various implementation constraints, security, costs and human resources issues. Chapter 6 discusses main conclusions and recommendations to be provided to NATO and national authorities.