

## **CHAPTER 3**

### **GLOSSARY OF R&M RELATED TERMS**

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## 1. INTRODUCTION

**1.1** It is not intended to include a full set of definitions as part of this Manual. Comprehensive sets of definitions can be found for:

- a) quality and reliability terms in BS4778<sup>1</sup>;
- b) reliability and maintainability terms in R&MP-7<sup>2</sup> and Def Stan 00-49<sup>3</sup>; and
- c) statistical terms in BS ISO 3534<sup>4</sup>.

**1.2** The information below is therefore only a commentary on those terms whose definition is still developing and those that are used in several ways, often without clarity as to the actual meaning intended.

## 2. CONCEPTS

**2.1** Dependability is defined in BS47781 as the union of reliability and maintainability and BS5760, Part 145 addresses planning for its achievement using this definition. However more recent work applies a wider definition incorporating safety, availability, reliability, maintainability, security and integrity.

**2.1.1** At various times across the MOD different names have been given to Reliability and associated subjects. These names have been (among others); R&M, AR&M, RAM, ARM, RAM-T, RAM-D both as acronyms and in full, where:

- R – Reliability.
- A – Availability.
- M – Maintainability.
- T – Testability.
- D – Durability.

The problem with this proliferation of terms, was it was unclear if someone who used one of these terms, were they using it in the broad sense or the absolute sense as defined by the specific terms, i.e. was R&M the same as AR&M.

Some 10 years ago it was decided to fix on one common term – Reliability.

Within the international standardization arena – a similar problem was resolved by the introduction of an overarching term Dependability, this term is broader than the current MOD term Reliability, as it also includes additional aspects such as supportability and security.

Where MOD Reliability policy refers to international standards on dependability – these standards should be read considering the appropriate aspects of the dependability, not necessarily all aspects of dependability as these may be specified differently.

**2.2** A Safety Integrity Level (SIL) is assigned to a system where reliable performance is required in order to achieve a necessary level of safety. The use of SILs is most common in association with software systems. Further details can be found in IEC 615086.

### **3. SUBJECTS OF R&M ACTIVITIES**

**3.1** Off-The-Shelf Equipment (often referred to as Commercial Off The Shelf [COTS] Equipment) is defined in R&MP-7 as:

“Equipment that is available for acquisition and which requires little or no development effort in order to satisfy a military need.”

**3.2** Work is currently in progress to expand on this definition. The engineer should take note that COTS systems or system elements:

- a) have been designed and developed outside the current project;
- b) often do not meet all the general requirements for the system under development;
- c) are often difficult to put under configuration control; but
- d) are desirable from the points of view of development time and cost.



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### REFERENCES

- 1 BSi: *Quality Vocabulary*, BS 4778 (different parts have different issue dates, refer to latest).
- 2 NATO: *NATO R&M Terminology Applicable to R&MPs*, R&MP-7, Edition No 1. July 2001.
- 3 MOD: *Reliability & Maintainability, MoD Guide to Terminology Definitions*, Def Stan 00-49.
- 4 BSi: *Statistics - Vocabulary and Symbols - Part 1: Probability and General Statistical Terms*, BS ISO 3534-1 : 1993.
- 5 BSi: *Quality systems - Guide to dependability programme management*, BS 5750 part 14.
- 6 BSi: *Functional Safety of Electrical/Electronic/Programmable Electronic Safety-Related Systems*, IEC 61508, Draft for Public Comment. 19 June 1998.

