MINISTRY OF DEFENCE

MOD Architectural Framework

White Paper on Strategic View 3 (StV-3):
Capability Phasing

Version 1.0
2 March 2005

Prepared by:- MODAF partners

Approved by:-

RECORD OF CHANGES

This page will be updated and re-issued with each amendment. It provides an authorisation for the amendment and a checklist to the current amendment number.

Issue No.	Date	Revision Details
Draft 0.1	19 November 2004	First draft for review
Draft 0.2	26 November 2004	Changes to format, and edits following initial review
Draft 0.3	22 December 2004	Revised Data Model section
Draft 0.4	14 January 2005	Changes made following review meeting of 5 Jan 05
Draft 0.5	17 January 2005	Revised Data Model section
Draft 0.6	27 January 2005	Final revision prior to release
Version 1.0	2 March 2005	Updated to include linkage to MODAF meta model and finalised for publication

Introduction

The purpose of this paper is to describe the initial content and layout of the Capability Phasing (StV-3) view in a way, which would allow peer review from stakeholders. With the exception of this section, the rest of the paper follows the layout of the DODAF volume II document. The intention is that this format will be retained and used in the final MODAF documentation, currently scheduled for publication in July 2005.

The MOD Architecture Framework (MODAF) is being developed with the intention of providing a rigorous way to specify systems of systems, and is a key enabler to NEC[1]. The framework will predominantly be used for acquisition purposes, and a key driver for its adoption is the need to improve interoperability between systems. However, the MODAF could equally well be used to analyse existing, operational systems and better enable their integration with other systems (both new and existing).

An architectural framework defines a set of key business and technical information for describing a system of systems architecture. The purpose of an architectural framework is to define the operational context (organizations, locations, processes, information flows, etc.), the system architecture (interfaces, data specifications, protocols, etc.), and the supporting standards and documents that are necessary to describe the system of systems. The information presented in an architectural framework is split into logical groupings – usually known as views. The same system and business elements may be present in more than one view, but the purpose of each view is different and so each provides a different viewpoint on the information.

The most mature and widely adopted architectural framework in the defence industry is the US DoD Architectural Framework (DoDAF). This framework has its origins in the C4ISR community and is seen as a fundamental part of the DoD's drive towards Network Centric Warfare. The MODAF is to based on the DoDAF specification, and will use many of the aspects of DoDAF without alteration. MODAF will also add a number of new views needed to support MOD-specific processes and structures. In addition, other views will be modified, based on lessons learned by users of DoDAF.

The *Capability Phasing* (StV-3) view is one of the new strategic views that MODAF adds to the base DODAF standard. The purpose of the StV-3 view is to provide a view of available military capability at different points in time or during specific epochs.

---

[1] CM(IS) NEC Next Steps paper of April 2003

Capability Phasing (StV-3)

Capability Phasing (StV-3) – Product Description

Product Definition - The *Capability Phasing* (StV-3) view provides a representation of the available military capability at different points in time or during specific epochs.

Product Purpose - The StV-3 view is used to support the Capability Audit process; specifically providing a method to identify gaps or duplication in Capability provision.

Product Detailed Description - The StV-3 view is used to represent the planned availability of military capability at different points in time or during specific epochs. The view is created by analysing programmatic project data to determine when Systems providing elements of military capability are to be delivered, upgraded and/or withdrawn (this data may be provided in part by an *SoS Acquisition Programmes* (AcV-2) view). The Systems identified are structured according to the required Capability functions determined in the *Capability Functions* (StV-2) view and the timescales/epochs appropriate.

When created the StV-3 view can be used to assist in the identification of capability gaps/shortfalls (no fielded capability to fulfil a particular capability function) or capability duplication/overlap (multiple fielded capabilities for a single capability function). The identification of either a gap or duplication on the StV-3 view should be used as the start-point for a more in-depth analysis, to consider, for example, the different echelons that delivered Capability will be available to and the different performance characteristics delivered and required. In addition, it where a Capability cannot be equated on a one-to-one mapping with a particular System; further analysis can be assisted using the information provided in the *Capability to Systems Deployment Mapping* (StV-5) view

The StV-3 view is most easily presented in a tabular form – typically with the structured list of required capability functions (derived from the *Capability Functions* (StV-2) view) running in one direction and timescale/epochs running in the other. At each row-column intersection, the System that delivers the Capability within that epoch/time period is displayed - if the availability of the Capability span multiple epochs then this is indicated by an elongated colour-coded 'bar'. If there are no Systems that satisfy the Capability in that epoch then a blank space should be left.

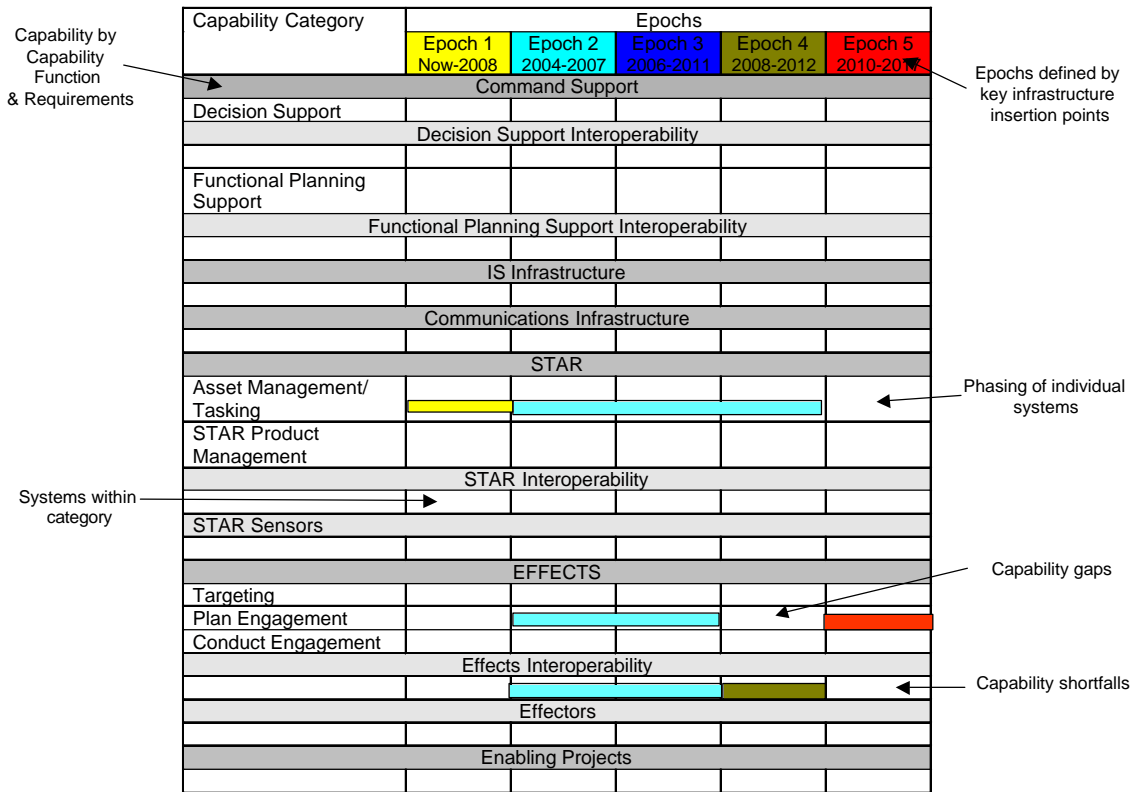One possible template for the StV-3 view is included below.

Capability by Capability Function & Requirements →

Epochs defined by key infrastructure insertion points →

Capability Category	Epochs				
	Epoch 1 Now-2008	Epoch 2 2004-2007	Epoch 3 2006-2011	Epoch 4 2008-2012	Epoch 5 2010-20??
Command Support					
Decision Support					
Decision Support Interoperability					
Functional Planning Support					
Functional Planning Support Interoperability					
IS Infrastructure					
Communications Infrastructure					
STAR					
Asset Management/ Tasking					
STAR Product Management					
STAR Interoperability					
STAR Sensors					
EFFECTS					
Targeting					
Plan Engagement					
Conduct Engagement					
Effects Interoperability					
Effectors					
Enabling Projects					

Phasing of individual systems →

Systems within category →

Capability gaps →

Capability shortfalls →

Figure 1: An example of the StV-3 view

Taxonomies

The MODAF Taxonomy is to be developed in a related project in conjunction with the communities of interest. The Integration Authority is coordinating current work and subsequent ownership will rest with DG Info.

UML Representation

There is no readily applicable representation of the StV-3 view in UML.

MODAF Meta-Model Support for StV-3

The MODAF Meta-Model defines a UML profile for exchanging information between MODAF tools using the XMI file format. For StV-3 the appropriate section of meta-model needed to exchange that view's information is shown in Figure 2. It should be noted that the classes shown for one view may be used in several other views.

The classes defined in the MODAF Meta-Model specify the allowable UML stereotypes that may be exchanged in an XMI file. As it is a meta-model, all relationships that feature in the view are also modelled as classes. Rather than define a class for every conceivable item that could appear in a view, the meta-model defines generic classes and allows references to the MODAF Taxonomy. For example, the MOD would be represented in XMI as an Organization stereotype, with a tagged value referring to the element in the taxonomy which says "Ministry of Defence".

For more information on the use of XMI in MODAF, refer to the document "XMI UML & MODAF", available from www.modaf.com
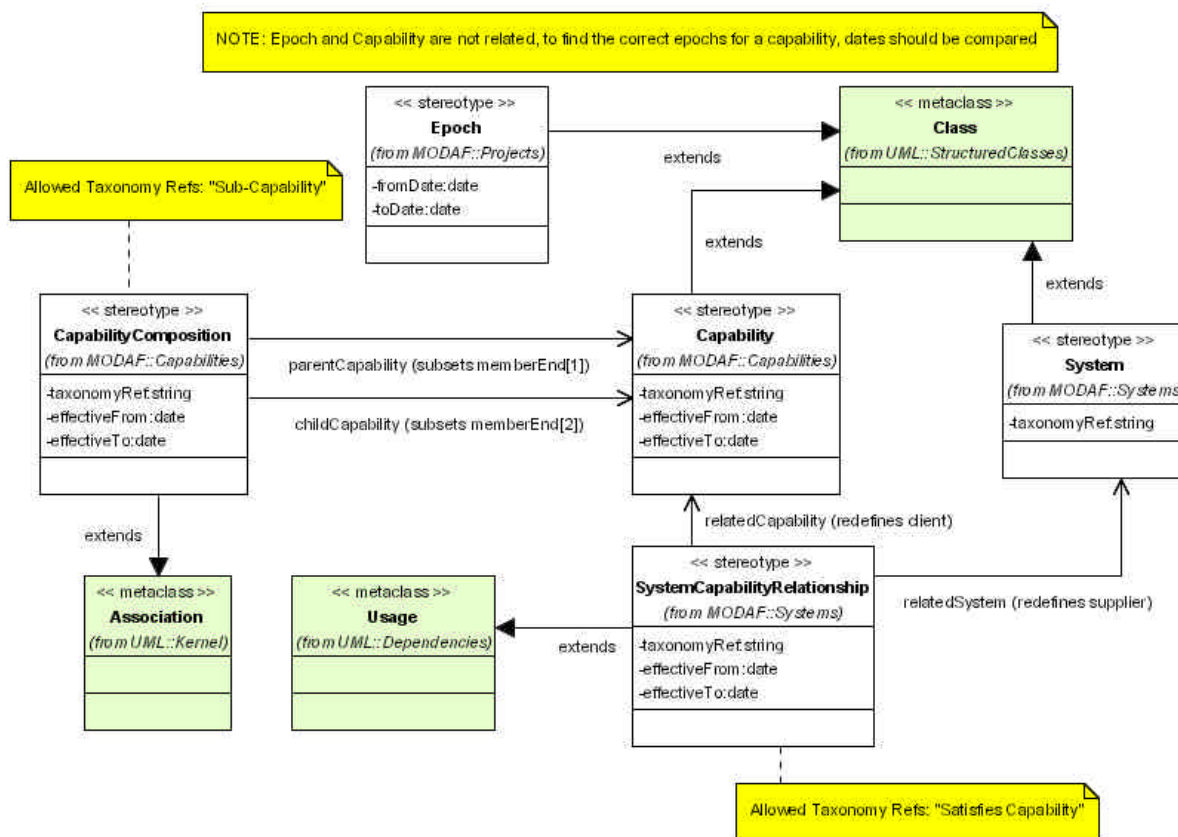

Figure 2 – MODAF Meta-Model Excerpt for StV-3

Model Element Definitions

Capability – A high level user requirement, usually functional.

CapabilityComposition – A parent-child relationship between two capabilities – i.e. the relationship indicates one capability (child) is a sub-capability of the other (parent).

Epoch – A period of time, defined by start and end dates. Epochs may overlap.

System – A coherent combination of physical artefacts, energy and information, assembled for a purpose.

SystemCapabilityRelationship – An assertion of a relationship between a capability and a system. In StV-4, the relationship is only used to assert that a system satisfies a capability.

MODAF Partners

This document has been prepared by MODAF partners with contributions from David Mawby (PA Consulting Group), Fariba Hozhabrafkan (Cornwell Associates), Ian Bailey (Cornwell Associates), and David Pile (PA Consulting Group)