Dependency analysis with MODAF

This article illustrates the use of MODAF with reference to dependency analysis. Examples of dependencies that are of interest to MOD include capability dependencies, programmatic dependencies, technology dependencies etc. Analysis of dependencies of this type is considered a key use of an enterprise architecture.

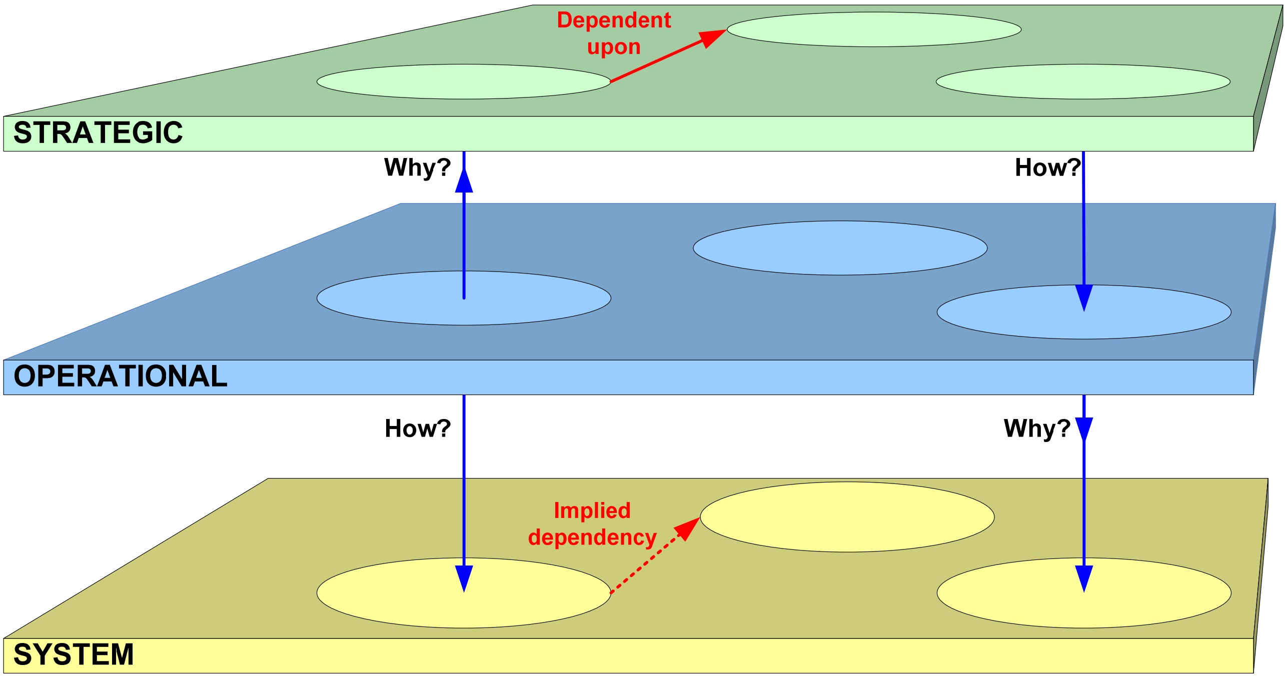
The following guidance depends upon the modelling layers and viewpoint linkages covered in other articles. The assumption is made that an enterprise architectural model has been created using MODAF.

Technical dependency analysis

This form of analysis relates to the investigation of dependencies between technical capabilities. In MODAF terms, these capabilities can be at the strategic, operational or system level. MODAF does not deal with dependencies at the technology component level.

The diagram below illustrates a situation in which a capability dependency has been identified in the strategic viewpoint (perhaps through modelling in support of a StV-4 view). By tracing through the operational and system 'layers', an analyst can identify a potential difficulty in the case of a system dependency, which is implied by the capability dependency but does not manifest itself. System-level dependencies might be reflected in system interactions shown on an SV-1 and / or might be reflected in functional linkages shown on an SV-4.

Assuming that the model is accurate, this analysis might be the cue for rectification action, for example, the introduction of an interface between the systems that support the dependent capabilities.

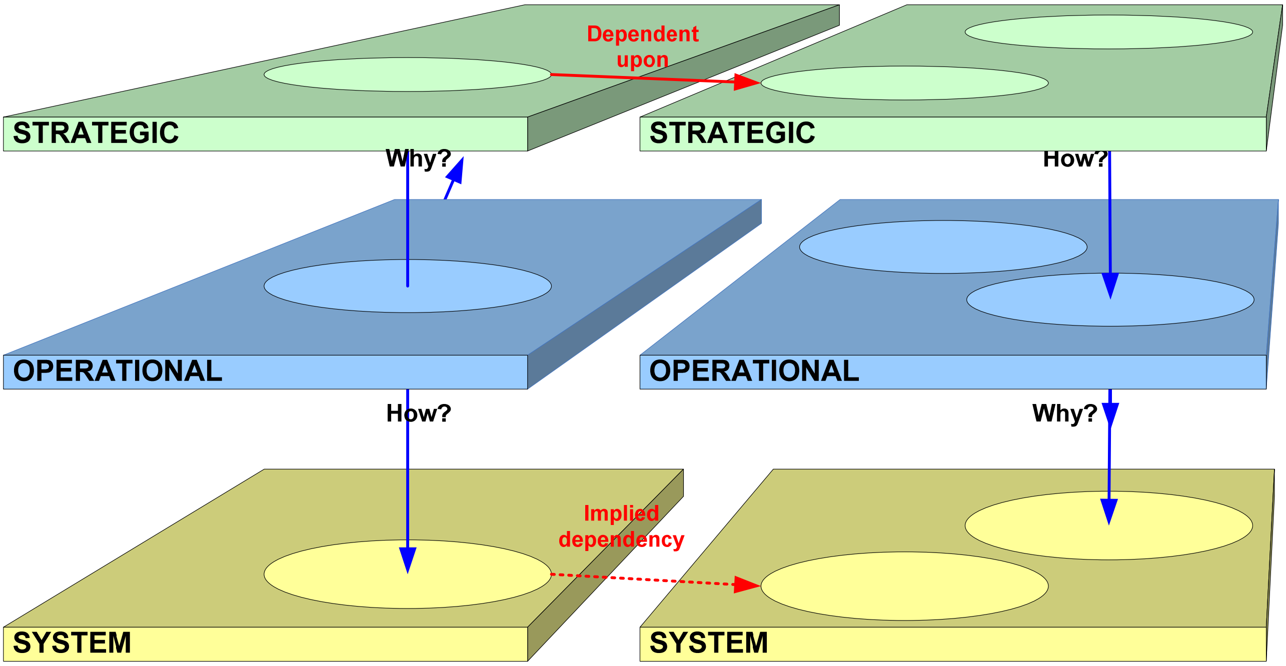


Programmatic dependency analysis

A similar situation occurs when two projects have been set up to address the capability needs of each of the two dependent capabilities. Analysis based on the MODAF architectural model might (as illustrated below) then determine that there should be a dependency between the projects that may not have been captured (project dependencies are addressed in the AcV-1 view and, from a timeline perspective, in the AcV-2 view).

This analysis might be a cue for rectification action in terms of setting up engagement between the projects concerned to investigate what the dependency actually is. This situation might easily occur where there are capability dependencies that cross Programme boundaries.

Projects might well have dependencies that reflect sub-system interactions in the system architecture, for instance, and may not always manifest themselves (going up through layers) in terms of capability dependencies. That is a different situation to the one represented here, but the principle is the same.



In general, the ability to conduct dependency-based analysis depends upon the coherence of the models generated using the framework. That in turn depends upon the coherence of the framework (between views, viewpoints and at the data modelling level). Considerable attention has been given, during the development of the framework, to achieving this coherence.

Use of MODAF in this way supports its role as an Enterprise Architecture framework. The ability to undertake this type of analysis is one benefit from wider use of the framework within MOD. Early identification of problems such as those illustrated above should reduce the degree of rework associated with lack of coherence in the equipment programme.