A DESCRIPTION OF THE STRATEGY TO TASK TECHNIQUE AND EXAMPLE APPLICATIONS

Michael R. Bathe and Jeremy D. Smith[1]

Abstract. The Strategy to Task Technique (STT) is an approach used to develop low-level, often system-specific, requirements for a system or capability through a process of decomposition. The approach, which is often implemented by using the Quality Function Deployment technique as an enabler, begins by utilising high-level statements of requirement, typically national strategic goals, and then mapping responses against these requirements. The responses are generated by using authoritative sources such as doctrine publications. The STT approach has been used on a number of projects and in particular lends itself to capability analysis at a high level. The paper describes the STT technique, including several examples. Some pitfalls and guidelines for its application are also briefly discussed.

INTRODUCTION

The Strategy to Task Technique (STT) is an approach used to develop low-level, often system-specific, requirements for a system or capability through a process of decomposition. The technique originated with the US Air Force and the RAND Corporation and was first shared widely in a paper published in 1989 [1].

The approach is now widely used within the US, by government and industry. It has been employed on defence acquisition programmes; the Joint Strike Fighter is a notable and recent high profile example. STT is less widely employed (at least knowingly called STT) in the UK or Europe. Several applications of STT for defence systems analysis and capability analysis have been completed within the UK, within major defence contractors and by Cranfield University at the Royal Military College of Science. The Cranfield experience is based on industrial applications and research examples, as well as a recent MSc-level project.

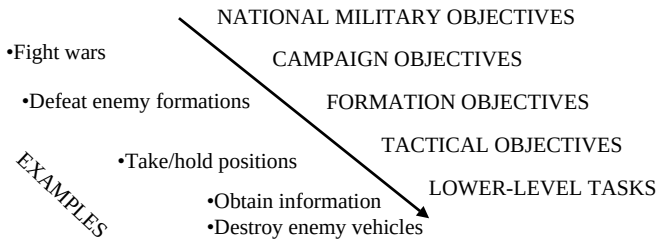

Figure 1. Overview of the STT approach.

STRATEGY TO TASK OUTLINE

The STT process, illustrated in Figure 1, is a method of deriving specific tasks from a set of high-level requirements, usually set at the level of national military/political goals. Starting from the high-level requirements the process cascades these down through several layers to arrive at the lower-level tasks. Authoritative sources, such as military doctrinal publications, are used to provide a response at each level as to how the requirements will be met and the process is followed until a level is reached appropriate to the particular problem being studied.

As an example, Figure 2 shows the decomposition process used for an artillery analysis completed using the Quality Function Deployment (QFD) technique. The figure includes the sources used (in this case UK Military Doctrine publications).

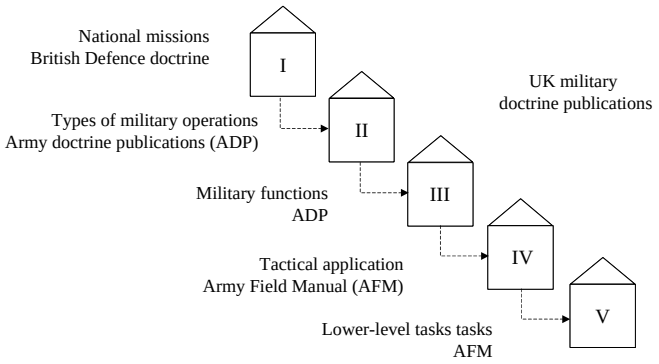

Figure 2. Example STT cascade used for an artillery analysis.

As shown in Figure 2, the process was initiated by evaluating the Military Missions of the UK Armed forces given in high-level publications outlining British Defence Doctrine. The next level set of activities (intended to meet the requirements of the top level missions) was obtained from parts of the British Army Doctrine Publications documents (this was used for two layers). The bottom two layers were created by using British Army Field Manuals as a source.

This process was followed to the level that was appropriate to the artillery systems in question; that is to the level that described the low-level tasks for artillery or indirect-fire elements. At this level the elements of the artillery systems themselves could be assessed against the requirements in order to determine their relative importance as implied by the cascade of assessments stemming from the very highest level.

The sources used to establish requirements and responses (at all but the lowest level) in the artillery example were UK Military Doctrine publications. However the approach may use any authoritative sources and those used to date by the authors include:

- UK Military Doctrine Publications;
  - Army Doctrine Publications,
  - Army Field Manuals, and

[1] Both authors are with Cranfield University, RMCS Shrivenham, Swindon, SN6 8LA, UK.