

A METHODOLOGY FOR ANALYSIS OF AUSTRALIA'S FUTURE SOLDIER

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Abstract. This paper outlines the development of an analytical methodology for Australia's soldier modernisation program, Project LAND 125 – Soldier Combat System (Project WUNDURRA). The methodology utilises a combination of field studies and modelling in what has been termed the Soldier Combat System 'Battlelab'. Aspects of this methodology are discussed including the identification of system variables, development of a hierarchy of performance measures, and the investigation of modelling tools and field trial techniques. Initial impressions of technologies utilised by soldiers during field studies are also given. The paper concludes with a discussion of potential Soldier Combat System enhancement options and an outline of work to be conducted during the next Phase of the Project.

INTRODUCTION

The Australian Army's program in soldier modernisation, Project WUNDURRA, was initiated in late 1993. The aim of the program is to optimise the capability of the combat soldier and combat unit through the incorporation of appropriate technologies and the adoption of improved tactics, techniques and procedures. Phase 1 of this Project, a Capability Definition Study (CDS), has recently been completed.

A critical part of the acquisition of new technologies and their introduction into service with the Australian Army is the provision of quantitative analysis to support Defence Committee submissions. In the case of Project WUNDURRA a sound analytical methodology had to be developed that would allow a means of evaluating competing Soldier Combat System (SCS) options.

When the project was initiated, an examination of soldier modernisation efforts in other countries identified significant effort in investigating potential technologies but a poorly defined regime for analysing the impacts of these technologies on capability. Hence an enabling research program was begun by the Land Operations Division (LOD) of the Defence Science & Technology Organisation (DSTO) to develop the required analytical methodology.

BATTLELAB ANALYTICAL METHODOLOGY

The analytical methodology developed for evaluating the impact of new concepts and enhancements on the combat effectiveness of the SCS involved a 'Battlelab' approach comprising four main components:

- defining the system under investigation,
- deriving performance measures,

- an iterative model-test-model evaluation, and
- deriving conclusions from study results.

These steps are discussed in more detail below. In the analysis of new concepts and technologies using this methodology, it is fundamental that both the 'baseline' and 'enhanced' systems are considered. Currently there is insufficient confidence in model and field study results for absolute measurements to be considered reliable.

Defining The Soldier Combat System

Initial analysis of the SCS involved determining a set of generic activities for which measures of effectiveness could be defined. These activities include administration, ambush, assault, crowd control, defend, fire support, observation post, occupy harbour, orders, tactical movement and vehicle check point. These generic combat activities were derived from strategic guidance, rifle company doctrine, and workshops conducted with the sponsor and subject matter experts [1,2].

Each of these activities was further broken down to identify a series of six core skills. These skills include communication, engagement, movement, navigation, protection and surveillance. These skills describe the majority of individual soldier actions and enhancements to these skills add value to the capability of soldiers to perform the generic activities.

Characterisation of the SCS in terms of generic activities and core skills was successfully tested against observations made during attachments to infantry units during Army field training exercises as well as during field experiments [3,4]. It was possible to de-construct the observed operations into combinations of the above activities, for example, the conduct of a patrol task given in Figure 1.

System Variables

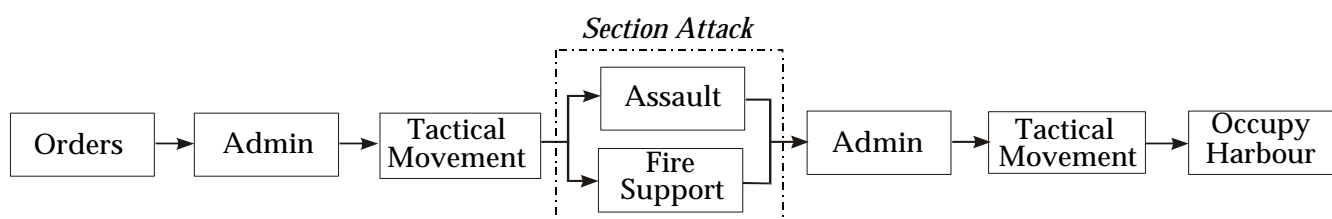


Figure 1. Combination of SCS activities to form a complete task.