

# 2007 CCRTS

## ADAPTING C2 TO THE 21<sup>st</sup> CENTURY

### Adaptivity Led Networked Force Capability

Topics: C2 Concepts, Theory and Policy, Networks and Networking

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#### **Abstract**

A significant fraction of the ten-year Defence Capability Program budget of the Australian Defence Force is focused on implementing an NCW-capable combat force. But what defines being NCW-capable? How do we network the force so as to develop significantly enhanced capability in increasingly complex and uncertain broad-spectrum operations?

In this paper, we will explore the hypothesis that engendering adaptivity in all its forms is the necessary key to enhanced capability for future operations, and that doing so should drive the networking of force capability. We will argue that this can be achieved through application of a previously developed conceptual framework for adaptation. All four classes and five levels of the conceptual framework will be addressed, at several scales of application. These will generate consequences for the topology and dynamic properties of the networks, for force organisation and C2 processes, and for how information is sought, managed and disseminated. Issues, opportunities and risks arising from this approach to implementing NCW will be identified and discussed.

#### **Paper Outline:**

The potential of modern information and networking technologies to deliver an integrated force with greater operational effectiveness is the promise of NCW. Measures of the increased effectiveness of the networked force must address the complexity of the operation, the degree of success achieved, the level of capability invested, and the risk to which it is exposed, for example:

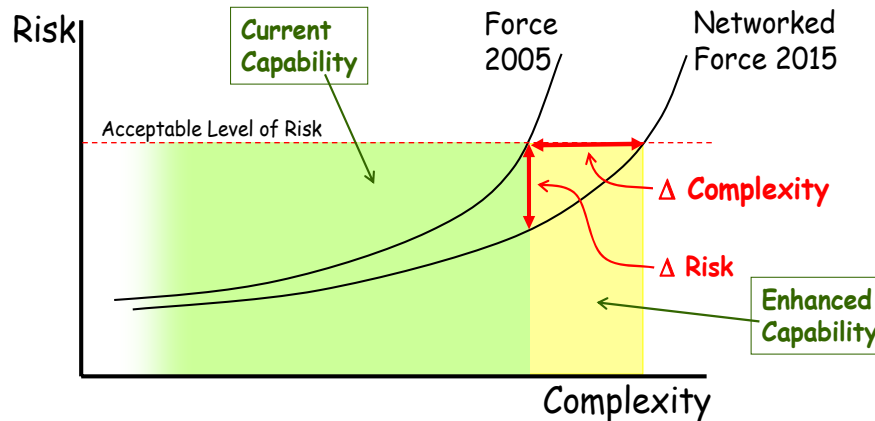
- the ability to undertake more complex operations than previously, with similar forces and with acceptable levels of success and risk,
- the ability to achieve a greater degree of success in the same operations as previously, with acceptable levels of risk, and
- the ability to achieve the same or more successful outcomes in current operations at lower levels of risk.

Two of these measures (increased complexity and reduced risk) are schematically illustrated in figure 1.

In other words, coping with increased levels of complexity such as we expect to find in urban operations, can be achieved in three ways: through reducing risk, through increasing the

level of complexity which can be successfully dealt with, and through increasing the degree of success that can be achieved.

We argue that these should be the central drivers of an NCW-capable force, and that enhanced force adaptiveness is the key to achieving each of them.



- **The 2015 Force can deal with greater Complexity at the same level of risk; or**
- **The 2015 Force can deal with the same level of complexity as the 2005 Force, but at lower levels of Risk.**

**Figure 1:** Networking advantage hypothesis.

Having established the case for enhanced force adaptiveness being the driver for creating an NCW-capable force, the paper then focuses on the implementation options and requirements for an adaptive networked force, utilising the previously published conceptual framework for adaptation<sup>1</sup>.

The approach begins with acknowledging the extent to which the current force already has a range of adaptive mechanisms, ranging from hierarchies of command addressing varying scales of force adaptation to mission command providing increase resilience and potential for local initiative. The conceptual framework for adaptation can then be used to identify opportunities to build and evolve these mechanisms to facilitate the development of a force that is adaptive by design. The paper outlines some of the insights that can be gained from applying each class of the CAS framework (responsiveness, resilience, agility and flexibility) to the issue of a networked force.

The paper also seeks to highlight that the primary advantages to force adaptivity occur at the higher orders of scale. This is in contrast to much of the discussion on NCW which focuses on the impact of networking on individual warfighting components. Although some advantages will occur at the component level, focusing at this level will tend towards solutions primarily based on local responsiveness. This will tend to limit the ability of the force to be shaped and led at higher orders of both physical scale and time. An example is the concept of 'swarming' applied to warfighting with it focus on informed local elements 'self-synchronising', rather than a teaming approach that uses a wider range of multi-scalar adaptive mechanisms.

<sup>1</sup> Grisogono .....