

## Potential PhD Project

The Australian Army is facing several key challenges in designing the future Land Force, particularly as it enters a period where the accepted view is that there will be fundamental changes in the character of warfare. These changes are due to factors including:

- Technological (e.g., cyber, robotics and autonomous systems, bionics)
- Geo-political (e.g., non-state actors, globalisation)
- Legal (e.g., ethics, international law)
- Social (e.g., urbanisation, demographic changes)
- Environmental (climate change, resource shortages)
- Military (e.g., Joint and Whole of Government integrated effects, precision munitions)

Iterative improvements to conventional capabilities are unlikely to be sufficient to design a force to meet these challenges. Novel research approaches will be required for each step in the force design process, including understanding the future operating environment, how the Land Force will need to operate and the subsequent design of future force options. The Defence Science and Technology Group (DST Group), in collaboration with Curtin University and Flinders University, is providing a scholarship with stipend to sponsor a PhD which will focus on one of the steps of the force design process. Potential research approaches are listed below<sup>1</sup>:

1. This PhD topic will develop an improved understanding and contextualisation of future Land operational environments, especially those relevant to the Australian Army. Methodological approaches could include one or more of:
  - a. *Risk-based approaches.* The project will build on the existing research in both probabilistic risk (Bedford and Cooke, 2001), systemic risk (Ackermann et al., 2014; Ackermann and Alexander 2016) and strategic risk frameworks (Nunes-Vaz et al., 2011; Nunes-Vaz et al., 2014; Rowe et al., 2017) to characterise the risks which the future Land Force must be shaped and adapted to mitigate. The intention is to strengthen one of the key elements in the logic chain from plausible future contexts and scenarios, through Land Force roles and tasks, to their implications for capability (i.e., new Army capability), and to use risk as a core performance measure in this process. The unique contribution of this research is the development of risk-informed methodologies to support holistic design of military force structures.

This topic is likely to be suitable for students with a background in Business/Management Science, Applied Mathematics or Engineering.

- b. *Scenario analysis approach.* Scenario methods are commonly used to develop a range of plausible futures for evaluation of alternative strategies to help organisations deal with

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<sup>1</sup> Each topic provides an indication of suitable student disciplines; however, any student with a particular interest in the topic is encouraged to apply.

an uncertain future (Wright, Cairns & Bradfield 2013; Wright & Cairns 2011). The project will explore the use of scenario methods to contextualise future Land Operations, including external factors (e.g., physical and geopolitical environment) and internal factors (culture, demographics). This will provide a novel methodology to develop a comprehensive range of scenarios that are linked to strategy against which future force options could be designed and assessed, thereby providing insights to avoid strategic shock.

This topic is likely to be suitable for students with a background in Strategy, Business/Management Science or International Relations.

2. This PhD topic will develop improved force design methodologies that are appropriate for unpredictable futures. The methodological approaches will focus on:

*Distinctive and core competences.* This approach will build on research on dynamic capabilities (Teece et al., 1997; Eisenhardt and Martin 2000; Helfat et al. 2009, Ambrosini and Bowman 2009) and distinctive competences (Eden and Ackermann 2010; Ackermann and Eden, 2011) which is mature in other contexts such as organisational strategy development. Causal mapping will be used to analyse the relationship between current/future capabilities and organisational goals and thereby provide a methodology that supports improved links between future force design and strategic direction.

This topic is likely to be suitable for students with a background in Business/Management Science.

The PhD is part of a collaborative arrangement between the Defence Science and Technology Group, Curtin Business School and Flinders University.

Candidates wishing to apply should ensure that they meet the relevant PhD requirements and **must be an Australian Citizen.**

The stipend will be at the base rate (approximately \$27000 p.a.) for 3 years subject to satisfactory progress. Alternatively, for those students already awarded a scholarship or are subsequently successful in attaining one, a DST-funded top-up of \$10000 p.a. to the student living allowance will be allocated. For outstanding candidates, support will be provided for scholarship applications under the Research Training Program (formerly APA) or other University-based scholarships for the 2018 mid-year intake. The student can be based in Adelaide or Perth.

Candidates should provide a short explanation why they are interested in the particular research approach (and which particular aspects) and also why they wish to do a PhD along with a short CV.

Closing date: 31st May 2018

For further information and to express interest, please contact Dr Ashley Stephens ([ashley.stephens@dst.defence.gov.au](mailto:ashley.stephens@dst.defence.gov.au))

## References:

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