The integration of contractor’s knowledge and expertise as part of a complex project management organisation’s people capability; A case of an Australian defence acquisition organisation

A thesis submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy

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Disclaimer

The views expressed in this document are personal and are not official policy of the Department of Defence or the Defence Materiel Organisation.

Declaration

I certify that except where due acknowledgement has been made, the work is that of the author alone; the work has not been submitted previously, in whole or in part, to qualify for any other academic award; the content of thesis is the result of work which has been carried out since the official commencement date of approved research program; and, any editorial work, paid or unpaid, carried out by a third party is acknowledged.

David Taylor

December 2013
Acknowledgements

I do not regard myself as academic. However, my academic experience has shown me that constant learning and reflection can be a fulfilling and inspiring part of working life. My studies have challenged and inspired learning in multi-disciplinary and kaleidoscopic ways and this has provided me a deeper understanding of the reasons ‘why’ and therefore to ask better questions.

Like other deep personal life changing experiences the doctoral journey has been memorable on a personal level in the level of commitment and personal discipline. But this does not happen in isolation and I would like to thank these people who have companions on this journey:

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The leadership of the Land Systems Division who have supported my academic interest in project management.
Abstract

The way people contribute to group outcomes is a feature of management science. In the context of a complex project based organisation acquiring complex systems this provides insights into the way people and organisational capability is developed for the future.

Defence is being challenged to improve the business and deliver more cost efficient and effective outcomes for the Australian taxpayer. A challenge for the organisational culture in achieving these ends can be seen to be risk aversion and a lack of cost discipline. Cost is a proxy for value and particularly in the public sector the achievement of ‘value for money’.

An integral part of the organisation’s capability is people and the way it uses and develops competence. The question this thesis seeks to answer is then ‘How effective is the integration of contractor’s skills and expertise as part of the people capability of complex project based organisations?’

A qualitative approach based in action learning and implementing using Soft Systems Methodology has been chosen to address the question. The approach is based on a ‘liberation’ praxeological philosophy that seeks to give primacy to praxis or ‘action that is based on knowledge informed by theory and performed according to certain ethical and moral principles for political ends’ (Bredillet, 2013 p.60). This approach rooted in practice attempts to address the gap between theory and practice in that it provides opportunities for learning by doing and advocates ‘knowing as practicing’.

The results critically highlight issues with accountability, competence development, risk sharing along with others. These issues centralise the problem in the human resource or people capability space. Creative reasoning arising from a narrative based soft systems methodology led to theory about practice in an extension of the people capability framework (Bredin, 2008b). This framework considers the integration of contractors into complex project management based organisations and the development of a model of people management for application in a complex project management organisation setting. Also developed is a ‘theory for practice’ in the provision of a model for integrating contractors as part of a complex project management organisation and theory in practice in
the application of soft systems methodology as part of an action learning intervention in a complex project management organisation. A limitation of the research could be seen to be the extent to which the research which is based in a particular acquisition organisation can be regarded as generalisable.

Further, complementary research in people management and the capability of temporary project based organisations in governance, operations management, transitioning and the effectiveness of performance appraisals would provide a more rounded view of practice and theory in this area.

**Key words:** project based organisations, human resource management, people capability, project management, knowledge management, value, soft systems methodology,
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Chapter One - Introduction

1.1 Introduction

This research tackles the problem of integrating contractors into the project team. It draws upon literature principally from human resource management but also includes aspects of knowledge management, strategic management, leadership and supply chain management theory. The research is placed into the context of a large public sector organisation, the Land Systems Division (LSD) of the Defence Materiel Organisation (DMO), and the businesses that supply contractors into these types of project management organisations. Context issues raised could be applicable to a range of both public and private sector project management organisations.

This chapter provides an outline of the thesis. The research problem will be described and the research questions presented followed by a statement on the importance of the study. The research context and the applied research approach to be used in the research will be described. An outline of the literature themes that sketch out the current academic thinking on the subject is presented and this will be developed further in the literature review chapter. Finally an outline structure of the thesis concludes the chapter.

1.2 Problem Statement and Thesis Development

1.2.1 Why undertake this research

The LSD expends in the range of $50m annually on contractors that supply professional services to project teams. A contractor can either be an organisation or individual; engaged by the LSD as an alternative to a normal full time person and remunerated at an hourly rate, or a person providing specific out-tasked services and engaged through a standing support services contract. The efficiency and effectiveness of the contractors engagement including the task definition, engagement and integration of the contractor is a pressing and long neglected problem.

The integration of contractors into LSD project teams is problematic. The process to identify the need for contractors and the process to engage a contractor with the
appropriate skills and expertise is bureaucratic and slow. While the project planning process to some extent considers the use of skills and expertise available in the project organisation, the resourcing of the plan is poorly implemented. In addition, the approval and engagement process is slow particularly for routine out-tasked services. The planning and engagement process then often limits the value proposition and does not support project outcomes.

In addition, the knowledge of contractors appears not be valued or managed as an intangible organisational asset that contributes to the organisation’s competence. The selection of contractors against the task skills and expertise requirements is bureaucratic and often results in a sub optimal results. The contractor’s skills and expertise are often used in a specific context and the learning is not retained or exploited by the organisation. Again an important part of the value proposition is not exploited to the benefit of the organisation.

In the DMO context the efficiency and effectiveness of project management is an ongoing concern. A range of reviews into the DMO and more broadly into the Department of Defence support the view that performance of these organisations is below the public’s expectations. The particularly management related reviews are; the Defence Procurement Review (Kinnaird et al., 2003), the Defence Management Review (Proust et al., 2007) the Report of the Defence Procurement and Sustainment Review (Mortimer, 2008b), the response to the Mortimer Report (Department of Defence, 2009a), the Strategic Reform Program (Department of Defence, 2010b), Review of the Defence Accountability Framework (Black, 2011) and Pathways to Change (Department of Defence, 2012c). These reviews, while they address a wide range of management issues from an acquisition and sustainment efficiency, accountability and cultural change view point highlight a concern for the achievement of value for money in delivering defence capability. In particular, Proust et al. (2007) notes the significant strategic people issues for Defence which are inherited by the DMO. The efficient and effective use of the organisation’s people resource as a core business process is suggested to be a key factor in achieving the desired organisational outcomes.
1.2.2 Methodological view

This general aim of this research is to improve the capability of project management organisations to deliver successful project outcomes through the more effective and efficient use of contractors’ knowledge and expertise in project teams. However, as this is being undertaken by a single researcher the scope must be narrowed to accommodate the available resources. The researcher is employed in a large public sector organisation, the DMO and so it was logical that this context provide the focus for the research. This research then uses a praxeological approach as proposed by Bredillet (Bredillet et al., 2013, Bredillet, 2013). The approach is based on the Aristotelian philosophy and practice tradition that relates Theoria, Poiesis and Praxis forms of knowledge to different modes of practice. In summary Praxis’ end goal is practical wisdom and knowledge, action. Praxis is prudent action guided by phronesis which involves ‘ethics, politics, deliberation about values, pragmatic, variable, context dependent based on practical value rationality’ (Bredillet, 2013 p.59). Bredillet goes on to say that there is no preferred methodology to support a praxeological inquiry given the diversity of situations and human nature other than ‘ingenium’ intelligent action and moral reasoning.

‘Engaged Scholarship’ (Van de Ven, 2007) has also been proposed to reduce the growing gap between knowledge and practice. Bredillet (2013) notes the failure of the ‘hegemonic nature sciences’ and to some degree the way social sciences have developed to achieve a better world or the Aristotelian view of eudaimonia (well being and happiness). Engaged scholarship is another attempt to establish a methodological pre-eminence based on bridging the gap between practice and theory. Van de Ven’s (2007) approach highlights the transfer of knowledge problem between the domains of practice and theory and notes that knowledge is not often communicated in a manner that supports its transfer, interpretation and use. The approach emphasises the need to engage with the problem in the real world.

Winter et al. (2006) also proposed a framework to inform project management research as a result of ‘the growing critiques of project management theory and the need for new research in relation to the developing practice.’ The current focus on rational, universal and deterministic project management models or hard systems
has failed to deal with the front end of project and human issues that are often the most significant. Three categories of research models were proposed; ‘theory about practice’ or conceptualisation of projects and project management that help understand practice but do not have immediate practical application, ‘theory for practice’ which refers to concepts and approaches that do have practical application and alignment with contemporary thinking, and ‘theory in practice’ which is about how practitioners learn their craft. The proposed research direction particularly those that provided new concepts for practitioners or ‘theory for practice’ are seen as having a subjectivist ontological stance in dealing with social process and value creation.

Bredillet (2013) p.66-67 extends the Winter et al. (2006) categorisation to include ‘Theory from Practice’, ‘Theorising in Practice’ and ‘Theorising as Practice’. This highlights the role of practice knowledge, the practitioners role in knowing is inherent in their action and knowing as situated learning and practicing. This is supported by research conducted by Thomas et al. (2012) that recognised the practitioner’s role in knowing that gets ‘beyond the surface recitation of discourse to the underlying logic systems that influence practice’. This explanation at least goes someway to understanding the complexity of the project management as praxis and how current ‘simplifications such as duality as a means of theorising i.e. hard versus soft is neither useful nor reflected in expert practice’.

On reflection these approaches to praxeology would be well supported by action research. Action research focuses on knowledge in action and is ontologically based on praxis and is also based on an epistemological assumption that research ‘is not just to describe, understand and explain the world but to change it’ Reason and Torbert (in Coghlan and Brannick, 2005 p.7). The approach is suited to the unstructured nature of the problem as recognised in the real world. To this end a problem structuring method that could engage with the main actors, place some structure around the ‘swampy lowlands’ (Winter et al., 2006) and provide a ‘high degree of internal rigour that is based on solid theoretical and philosophical grounds’ (Mingers and Rosenhead, 2004) would be well suited to investigate the described phenomenon. A methodology such as soft systems methodology meets these
requirements and would be suitable to implement within the resources of the researcher.

1.2.3 Literature

The thesis research topic aim therefore is to develop an understanding of the dynamics of the knowledge exchange, use, and other value generating effects such as organisational capability associated with the employment of contractors as part of the project team. Having developed a model the aim is then to apply this to a real life situation in the LSD to identify the potential for improvements in the current contractor engagement process. Reports (outlined above and in Section 1.4.1 below) suggest that the DMO’s productivity needs to be significantly improved through a process of reform.

Two major doctoral level works have recently studied aspects of this issue. For instance, Bredin (2008a) has undertaken a multi-faceted doctoral research into the area of organisational human resource management particularly in the area of people capability in organisations. This research in part considers the integration of contractors as part of the organisation’s total human resource capability. Also, Ng (2012) investigated the impact on contingent IT workers in Hong Kong citing issues with organisational learning and career development and welfare of the IT workers. This research indicates a growing interest in the effectiveness of contractors as part of the organisational capability.

The capabilities of project based organisations has been suggested by Davies and Brady (2000) as a useful perspective for examining the ‘knowledge of the firm; the practiced routines and skills built into and organisation...’ (Bredin, 2008b p. 568). Project based organisations such as the DMO use a range of contractors, consultants and service providers to provide the skills and experience necessary to deliver projects. This reliance on people from outside the organisation for project delivery is an important part of the organisational capability and therefore the ability of projects embedded in the organisation to deliver successful outcomes.

It has been noted by Huemann et al. (2007) that discussion on HRM is framed primarily in terms of large stable organisations and not in terms of project based
firms. This has been addressed over the past few years by a number of authors who have applied HR issues in the context of the temporary project organisation (Bredin, 2008b, Bredin, 2008a, Turner et al., 2008, Hölzle, 2010, Bredin and Söderlund, 2011, Bredin and Söderlund, 2012). Particularly informative work has been published by Bredin (2008b) on people capabilities in organisations. In addition, Capability Maturity Models (Curtis et al., 2009) as a best practice or standard have described HR as an operational responsibility rather than focussing on HR capability and more particularly its applicability to the temporary and dynamic organisations that are projects.
**Core business process and literature area:**
Human Resource Management in temporary organisations
- People capability
- People management process
- Temporary project based organisations
- Knowledge Management
- Supply chain and value
- Strategy / Portfolio and Program Management
- Leadership

**Defence Reviews (Reform Agenda)**
- Kinnaird
- Mortimer
- Proust
- Black
- Pathways to change:
  - Strategic Reform Program
  - Cultural change

**Better outcomes from Defence**
- Improve the way Defence does things - transition
- Efficiencies – savings 3bn in past 2 years
- Businesslike – commercial
- Accountable and transparent
- ‘Cost conscious’

**Literature**

**Defence reviews**

**Problem Situation:**
Integration of contractors into the project team

**LSD - Workplace issues**
- Slow bureaucratic process
- Transactional engagement even for basic tasks
- No total view of contractors as part of the total project team – how do we track and allocate our people to tasks?
- Knowledge not properly valued or managed as an asset
- Limited value proposition in the engagement of contractors

**Government Expectations**

**Note:**
Only Proust and to and to a lesser extent Black identifies human resources need improvement

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Figure 1.1 - Problem identification
1.2.4 Thesis aim and objectives

The specific aim of the thesis is to improve the value proposition of the integration of contractor’s skills and expertise into the Land Systems Division (LSD) of DMO.

The objectives of this research are to:

* Identify and propose how to improve project performance through the effective integration of contractors in the DMO by the (practice contribution):
  
  o engagement of a wide range of stakeholders to establish a realistic picture of the current reality;
  
  o development of an agenda for change to address the issues;
  
  o development of a general model of contractor integration in a PBO; and
  
  o identification of a framework for change in the integration of contractors that will improve the outcomes for the DMO.

* Extend the people capability framework as proposed by Bredin (2008b) to include the integration of contractors (theory contribution).

1.2.5 Thesis propositions

The following propositions are based on the key premise that the current DMO policies and practices for the engagement of contractors do not support business-like outcomes, have high transaction costs and do not support project success.

- **The methods of engaging contractors or temporary staff to supplement project teams are not efficient and do not effectively support project outcomes.** The transaction costs involved in the engagement of contractors are high and the development of social capital and knowledge transfer is not well understood or managed. This leads to a poor value proposition for the engagement of contractors.

- **The make or buy proposition is not fully understood or implemented.** There should be a consideration as part of a cost benefits analysis, of whether it is in the DMO’s interest to maintain an internal capability to deliver the outcomes or outsource the capability.
• Knowledge development and transfer is not supported in the process and this leads to sub optimal outcomes. There are four sub-propositions to this aspect:
  
  o Relationships between DMO and contractors are transactional. This contributes to a lack of trust and commitment which leads to ineffective and inefficient outcomes.
  
  o Contractors are generally not well integrated into the project team and therefore opportunities for learning and sharing of knowledge is limited.
  
  o Knowledge and skills developed by contractors in delivering outcomes are not effectively transferred to the project team.
  
  o The organisation does not recognise the value of social capital as being important to organisational learning and project outcomes. As a result this leads to an ineffective use of knowledge resources.

1.2.6 Research questions

The research and supporting questions are firmly sited in the human resource management area of a project based organisation.

The primary question:

How effective is the integration of contractor’s skills and expertise as part of the people capability of complex project based organisations?

Supporting questions:

1. How effective are the procurement mechanisms in supporting the organisation’s people capability?

2. How well are people management systems integrated with the organisation’s strategic, functional and project capabilities and facilitated through practices that support knowledge and competence development?

3. Are there theoretic constructs and management models that can better inform and improve practice in the LSD?
The research questions are directed at a key part of the problem which is observed in reality and tackles the way in which LSD defines, seeks and uses contractors. Understanding how this phenomenon happens in reality from varying perspectives will improve the situation for the user and advance knowledge or competence of the user (Van de Ven, 2007 p.87-89).

While there is a growing store of literature which deals with people management in temporary organisations the literature that deals specifically with contractors, temporary or contingent workers in this context is thin. There is an amount of current literature that deals with human resources in large and stable organisations (Huemann et al., 2007p. 316). However, there is HR literature (Bredin, 2008b, Bredin, 2008a, Bredin and Söderlund, 2012, Bredin and Söderlund, 2011) based in temporary project based organisations that deals with the organisations ability to manage the relationship between people and the organisation. This includes the development of career management and people capabilities. This literature should provide a sound reference for the theory and practice developed in this thesis.

The perspective this study is taking is to investigate the use of individual or small groups of contractors within the project team for short or perhaps medium terms. The cohesiveness and functioning of the project team remains under management of the DMO line management and project management staff. Outsourcing would require a longer term arrangements and involve contracting ‘service delivery management responsibility’ (Walker et al., 2008b) to a sub-contractor under a detailed performance based service level agreement.

1.3 Research Context in Overview

The DMO’s primary purpose is to equip and sustain the Australian Defence Force. In this way the DMO provides a key input to Australian Defence Force (ADF) capability in the provision of equipment and support of that equipment. The DMO business strategy is enclosed as Attachment 1. It is a large public sector organisation delivering about $10bn in equipment and support annually for the ADF. DMO delivers and supports some of the most technical and complex projects in an increasingly budget restrained environment. In order to deliver these projects the LSD of DMO based in Melbourne spends about $50m annually
on contractors. The efficiency with which this is spent could be seen as a significant contributor to the skills and experience of the DMO workforce.

As a public sector agency DMO is provided an appropriation from parliament as part of the Defence Department’s budgetary process to provide forecasted equipment and services. This forecast is provided in the portfolio budget statements (Department of Defence, 2012b). Efficiency and value for money are paramount outcomes sought by Government and DMO’s performance is published in the Defence Annual Report and reviewed triannually by a Senate Committee.

DMO could be regarded as a ‘project oriented organisation’ as described by Huemann, Keegan, and Turner (2007) or ‘project based organisation’ (Bredin, 2008b, Whitley, 2006) as the organisation carries out its core operations mainly in project form. Bredin (2008b) notes that employees in project based organisations are affiliated to the organisation context rather than the project and this appears be the case with DMO as the major capital acquisition projects run for many years. Remarkably, project staff may turnover many times during a project as a result of the posting of military staff and promotion or career changes of Australian Public Service (APS) staff.

DMO as a public organisation is also hierarchical in structure unlike the ideal project organisation model which would have more ad hoc and flexible organisational structures that deal with the temporary and dynamic needs of projects. The DMO appears to view itself as being a ‘project oriented’ organisation and shapes its policies and practices, organisational structure and strategy toward managing projects (Huemann et al., 2007 p. 316). However, the hierarchical structure could be a factor in undermining its flexibility and competence in achieving its strategic goals.

DMO also appears to have a strong functional coordination within which relatively long term projects deliver the organisation’s outcomes. DMO’s main outputs are acquisition projects and sustainment activities. Sustainment activities provide the logistic support to equipment introduced into service by the acquisition projects. The functional part of the organisation provides line management, technical, financial, contracting and human resource competences which contribute to the organisation’s project and operational capability. Projects integrate across the functional parts of the organisation forming what could be
described as a weak matrix structure. The project matrix structure is weak as the functional areas retain significant control over project outcomes. This challenges project management leadership from a power and control perspective as the functional areas mostly retain control in reporting, performance appraisal and work location (Larson, 2004). This reduces the authority of the project manager.

Issues surrounding the development of knowledge and learning appear to be closely associated with project oriented organisations (Bredin, 2008b p.567). Lindkvist (in Bredin, 2008b p.567) notes that knowledge is distributed and resides in cross functional teams instead of being shared among a community of members and this has implications for learning across projects and organisational learning. This means that that learning and knowledge in DMO projects would not be easily shared and this impairs the development of individual and organisational learning and competence.

A key part of the DMO strategy is seeking to become ‘more business-like, accountable and outcome driven’. In the context of the Defence Procurement Review (Kinnaird et al., 2003) and the Mortimer Review (Mortimer, 2008b) business like is not specifically defined but appears to mean ‘imposing commercial discipline’ or a ‘focus’ or ‘independence and flexibility’. Business-like is defined in the Macquarie Dictionary as ‘conforming to the methods of business or trade; methodical; systematic’ (2005). In any case, a major part of any organisations success is the ability of the organisation to effectively deploy HR management to support the business outcomes. Models of HR management (Robbins et al., 1994) suggest that selection, development, reward and performance appraisal are the key elements of any HR strategy. A business like outcome in the HRM area would be to conform to commercial best practice and this is likely to be a challenge given the hierarchical structure and lack of direct performance based incentives.

Workforce planning within the DMO appears to be managed principally through the allocation of Full Time Entitlement (FTE) which is in effect a full time person of any work level which represents a salary. The allocation of FTE is cyclic and is heavily influenced by political imperatives to control the growth in public service costs and jobs rather than a business case to resource organisational outcomes. In this context the make or buy decision between external contractors and full time staff is difficult to establish.
The legislative basis for the engagement of contractors is the Financial Management Act, Defence Procurement and Policy Manual and Commonwealth Procurement Guidelines. Under these principle legislation and policy there is a raft of Department of Defence and DMO policy. The most recent policy for internal DMO management of contractors is contained in Defence Materiel Instruction (Finance) 0-01-25 dated 29 March 2012. This DMO policy appears to be a slight departure from previous instructions by defining more closely the categories of external service providers as; consultants, contractors, eminent persons and out tasked services. Land Systems Division (LSD) procedures require additional authority for these services to be approved at a senior executive level. The key categories dealt with in this research are contractors and out tasked services engaged by the project team as explained in section 1.2.1 above.

1.3.1 Major reviews of DMO

**Defence White Paper.** The 2013 Defence White Paper (Department of Defence, 2013) provides the Government’s strategic priorities and spending programs for the Australian Defence Force based on changing strategic circumstances. It continues the reform themes from the 2009 White Paper (Department of Defence, 2009b) particularly the need for Defence Management Reform that seeks to close the gap between defence aspirations and the resources available to implement them. The Strategic Reform Program (SRP) is one of these reforms that sets out to improve Defence’s performance in areas such as planning, capability development, procurement, and enterprise support services. The reform sought greater productivity from efficient and prudent use of resources to remove waste and achieve better economies of scale. In addition, to a range of management reforms the Paper has focussed on the need for cultural change which at its heart maximises the capability and performance of the defence workforce.

Some of the reviews that form part of the reform program and are relevant to this research are:

**The Kinnaird Review** (Kinnaird et al., 2003). Recommended that DMO be changed to a Prescribed Agency under the Financial Management Act but remain as part of the Department of Defence. Main theme that DMO become more business-like and outcome driven.
**Mortimer Report** (Mortimer, 2008b). ‘The Next Step’ is a report of the Defence Procurement and Sustainment Review 2008. This built on the Kinnaird Review and suggested DMO move to an Executive Agency model which would provide CEO with more powers to control staffing and place responsibility and resources with project managers.


The reforms seek to meet the Government’s expectation that Defence’s procurement and sustainment systems should demonstrate greater transparency and accountability, improved efficiency and effectiveness and better value for money for Defence capability (Department of Defence, 2013). The reforms seek to reduce the civilian workforce including contractors by around ten percent while maintaining an ambitious capital acquisition program. So these reforms continue with the characterisation of making the Defence Materiel Organisation more business-like and imposing commercial discipline on the defence procurement and sustainment processes. (Mortimer, 2008a). It has been noted that these reforms appear to have had a positive impact evidenced by improved schedule performance, benchmarks and budget overruns but these need to go further and a source of efficiency could be found in the use of contractors. While the Black Review (2011) considered a range of management improvements including skills development, human resource management has largely been ignored since the Proust Review (Proust et al. 2007).

### 1.3.2 Research Approach

I have approached this research using as a basis, study I have completed in the reflective study areas of the Doctorate of Project Management program that involved the employment of contractors in project teams. In the Defence context contractors if managed correctly should be able to contribute positively to project outcomes and in the best case become a ‘force multiplier’ and provide leverage in the ability of project teams to quickly muster skills and expertise to deliver complex outcomes.

The research approach is based on an exploratory case study focusing on the relevant work that is taking place in the programs and projects within Land Systems Division, DMO. Refer to Figure 1.2 below. The research uses a Soft Systems Methodology to collect data on the current situation (Checkland, 1999). This method aligns with a praxeological approach to
research and is judged to be suitable as it allows exploration of a purposeful activity in a practice context which seeks to determine how the integration of contractors is managed, the researcher has limited control over behavioural events and it focuses on contemporary rather than historical events (Yin 2009, p8).

1.3.3 Unit of analysis

The unit of analysis is the transaction, in particular the form of agreement between the DMO and the supplier of the contracted service. The contract with the supplier is standardised through prequalification of suppliers and standard forms of agreement which are prescribed under the DMO Support Services (DMOSS) panel.

Validation and triangulation of the data has been achieved through an analysis of data provided from firms which provide contractors to the DMO under the DMOSS panel and through other areas in DMO at the Divisional or LSD level which have responsibilities for engagement, administration or utilisation of contractors.

*Figure 1.2 - DMO outline organisation*
As discussed previously and as shown in Figure 1.2 the DMO structure is based on a weak matrix organisation. Projects are supported by engineering, contracting, finance and scheduling staff provided through a matrix arrangement. The projects own only the project management and integrated logistic support staff.

1.3.4 Logic linking the data to the propositions
The seven step Soft Systems Methodology (SSM), incorporating unstructured interviews, subject matter experts and the use of rich pictures (Checkland, 1999) is the principle means of collecting case study evidence.

The data collected in the SSM process includes qualitative data collected from interviews and workshops and qualitative data such as temporal data collected from project documentation also process documentation and maps. The data collected from the structured interviews is analysed using NVIVO 10 qualitative analysis software.

Use of the analytical technique of pattern matching and explanation building (Yin, 2009 p136-144) is used to analyse the data collected from the SSM technique. The coded data forms the basis for the rich picture which shows the problem situation processes, culture and values.

The research approach is described in more depth in Chapter Four.

1.3.5 Research Design Statement Overview
The research is expected to contribute to the project management body of knowledge by validating the theory and models of project management in the areas of human resources, leadership, strategy, knowledge and procurement.

A brief outline of how the research questions being answered makes a contribution is provided in Table 1.1 below.

**Table 1.1 - Research contribution**

<table>
<thead>
<tr>
<th>Contribution</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Theory ABOUT Practice</strong></td>
<td>Using the people capability framework developed for project based or oriented organisations as proposed by (Bredin, 2008b) extend the framework to include the</td>
</tr>
</tbody>
</table>
| Theory FOR Practice  
(concepts and models that do have practical application) | Develop and validate through theory a model for integrating contractor’s skills and expertise into the project team as part of an organisation wide people management process. |
| Theory IN Practice  
To the organisation (LSD)  
Practitioners as reflective | The research should provide on the job, work place learning for myself, the participants in the research and to those in the organisation who read the papers that are based on this research. |

Some of the areas in which praxeological learning may take place are the:

- implications of current DMO policy in the employment of contractors,
- contractual arrangements used to engage contractors
- use of project management tools such as scheduling and resource management software
- implications for trust and reputation in the workplace in terms of transitional arrangements

practice but which does not have immediate practical application) integration of contractors into the project team.

The use of this framework in the application of contractors should assist in verifying the broader application of the framework.
and career management

- process of knowledge creation, transfer and retention,
- place and content of workforce planning
- efficiencies that should arise from better people management,
- importance of performance management

**Theory IN Practice**

To me as the researcher

Provide me with a working level understanding of the concepts and applications of SSM based in a workplace that is applied by a practitioner. The provides me with a methodology for reflecting about project management practice that is based in the real word and that has a high degree of internal rigour and is based on solid theoretical and philosophical grounds – in this case praxeology.

1.4 Key areas of Literature Review

1.4.1 Overview

The literature will be reviewed to develop a deeper understanding of the theory and practice involved in the integration of contractors into the project team. I recognise that project management oriented organisations appear to have different human resource requirements in comparison to more conventional line management organisations. This view proposes that while the same areas of literature may apply such as leadership, strategic and knowledge management they are applied in the specific circumstance of the temporary organisation. While there is a range of literature dealing with human resource management in stable organisations and a growing amount of literature relating to temporary organisations the literature dealing specifically with contractors is fragmented.
The purpose of this literature review is to describe the literature landscape as it applies to contractors in the specific context of the research question.

The reviewed sources include relevant textbooks and research books, government and other research reports, journals and conference papers in the general literature fields identified.

The literature is reviewed under the areas of knowledge outlined in Table 1.2 below.

**Table 1.2 – Literature themes and their rationale**

<table>
<thead>
<tr>
<th>Literature Themes</th>
<th>Indicative Academic References</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Management</td>
<td></td>
<td>This theme motivates, integrates and develops competence in the PM team. The focal point of the study is the project team and the social arrangements formal and informal under which the team operates.</td>
</tr>
<tr>
<td>Leadership. Related themes include team dynamics, trust and distrust and project team culture.</td>
<td>(Kadefors, 2004) (Meyer and Herscovitch, 2001) (Katzenbach and Smith, 2005, Schein, 1996, Mayer et al., 1995, Lewicki et al., 1998) (Pinto et al., 2009) (Gersick and Hackman, 1990) (Gersick, 1991) (Cacioppe, 1999)</td>
<td>Social change in team environments has been shown to slow when teams adopt habitual routines reflective of incremental improvement and these periods are interspersed with relatively short periods of revolutionary change.</td>
</tr>
<tr>
<td>Project Management is important to the relationship with contractors in the project team as PM is responsible for team cohesion and development and this sets the basis for organisational learning. Developing a trusting, cooperative and innovative environment through a keen understanding of team culture, trust and team dynamics is the seed bed</td>
<td></td>
<td>The processes of trust and distrust in project team and stakeholder</td>
</tr>
</tbody>
</table>
Leadership not management is the quality most ascribed to getting the best out of people and groups. This research will not discuss leadership in any depth but clearly is an essential aspect to team performance.

**Supply Chain Management and Procurement.** Including themes of value management, transaction cost economics, make or buy decision and the contractual arrangements under which products or services are delivered.

This area of literature is important to the sourcing of contractors to meet defined project outcomes. This area seeks to address the need for contractors and place the business decision in a value context.


The cultural context of the project team is likely to affect team cohesiveness, trust and cooperation and therefore the team’s ability to learn.

The supply chain and procurement sources the human inputs effectively supplementing the human resource process.

The value management perspective breaks down the sourcing process into assessable value adding steps.

The procurement transaction establishes the rules and risk profile for the relationship.

The Transaction Cost Economics provides an insight into the most effective governance structures and agent principle relationship.

A consideration of the supply chain and procurement also provides criteria, such as value and governance requirements, to...
### Strategy, portfolio and program management.
Including themes of project success and the competence of project management and the delivery of program benefits and value to the competitiveness of the firm.

It is important that the engagement of contractors is aligned with the firm’s strategy to improve competitive advantage and ongoing profitability. This could be achieved through the recognition of the implications of a temporary organisation and the mechanisms of learning and innovation.

(Söderland et al 2005)  
(Crawford et al., 2006)  
(Cattani et al., 2011)  
(Davies and Brady, 2000)  
(Pitelis and Teece, 2009)  
(Sanchez, 2004) (Kurtz and Snowden, 2003) (Turner et al., 2013)

Strategy and project structure places the research in the business context by considering the competitive forces and its effect on value creation and profit. Arising from the resource based view of the firm dynamic capabilities are based on distinctive competencies that are supported by assets, skills and capabilities that arise from the coordinated activities of groups.

Contractors can contribute to the development of a firms dynamic capabilities by imparting competence in the form of unique skills, knowledge and learning.

The key characteristic of projects is their temporary nature and how the organizations temporary existence influences learning. The learning process is important as it can determine the firm’s capacity for innovation. The paradox in the learning process is how in a
temporary organization learning can be permanent and contribute to project management capability and innovation.

Strategies that move beyond the traditional bureaucratic single focus and allow ambidextrous and emergent strategies that explore and exploit the intellectual capital resources, including contractors, of an organization.

<table>
<thead>
<tr>
<th>Knowledge management</th>
<th>Contractor’s offer a professional knowledge based service to project teams. Contractors are engaged to meet a gap in the project team’s knowledge or expertise.</th>
</tr>
</thead>
</table>

The SECI cycles proposed by Nonaka and four ‘i’s as proposed by Crossan propose and individual an organisational learning process that is useful in understanding the contractor value proposition. Other areas of the knowledge management literature that support analysis of the contractor’s contribution are:

- the ‘stickiness’ of
<table>
<thead>
<tr>
<th>Human resource management in temporary organisations.</th>
<th>The human resource or people management process developed for stable organisations has been modified for the logic of temporary organisations. This should be a useful baseline for understanding the current situation. The people capability framework could be a useful theory to understand the current situation and its applicability to the engagement of contractors. This area analyses the motivation and interaction of the project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human resource management in temporary organisations. The themes arising from this emerging field are related to the development of an organisational capability to manage people who have fragmented and periodic exposure to many project teams. This represents challenges for project leadership and the knowledge processes that develop and retrain core project</td>
<td></td>
</tr>
<tr>
<td>(Bredin, 2008b) (Bredin, 2008a) (Huemann et al., 2007) (Cacioppe, 1999) (Huselid et al., 2005) (Turner and Müller, 2003) (Turner et al., 2008) (Crawford et al., 2013)</td>
<td>knowledge and how culture and knowledge transfer is linked. - Individual and organisational learning to learning organization - Communities of practice as powerful situational learning mechanisms. - Social capital and knowledge transfer - K-adv framework and Procurement Systems</td>
</tr>
</tbody>
</table>
knowledge.

Career management, including professional development, training and on the job experience, of people who increasingly work in projects should also be considered as a longer term investment. It could be expected that higher order skill sets will be required to work in these temporary project environments.

There is a growing body of research in the people aspects of temporary organisations. The needs, aspirations and contribution of the temporary workforce is important consideration in project performance.

1.5 Thesis Structure

The thesis is structured as outlined below.

Chapter 1 - Introduction

This chapter provides a general introduction in the research problem, why it is worth investigating, the thesis propositions and research questions. It also provides an outline of the context for the research in a large public sector organisation and a justification of the action research based praxeological approach to the thesis. An outline of the literature review and structure of the thesis concludes the chapter.

Chapter 2 - Context of the Study

This chapter places the research in context. The research is situated in a large public sector organisation which manages the acquisition and support of equipment for the Australian Defence Force. Organisational change and culture of the organisation are discussed. The origins and evolution of the study are also discussed.
Chapter 3 - The Literature Review

The literature review ascertains the major contributions from the areas of literature identified and the relevance of the literature to the research. The literature is evaluated to determine the current state of the art of the literature and identify major flaws or gaps in the literature. A conceptual model of the literature as it relates to this topic is proposed. Lastly the literature review identifies issues pertinent to future study.

Chapter 4 - The Research Method

The philosophy behind my research approach based on praxeology. The action research approach is described and justification for the choice of the soft systems method (SSM) and other techniques that have been used to implement the research.

Chapter 5 - The Problem Situation

In this chapter a rich picture is developed that describes the real world problem situation of the purposeful human activity under investigation. This includes an analysis of the researcher’s role, the issue owners, the social reality of the situation and the political and power disposition in the situation. The rich picture is then validated and a root definition of the system under investigation is developed. Based on the root definition a conceptual system model is developed and this provides the basis for a discussion with the participants on the gap between reality and an ideal system model.

Chapter 6 – The problem reality: Identify and implement change

In this chapter a comparison is made of the problem situation as shown in the rich picture with the conceptual model. This provides a list of feasible and desirable changes that are analysed and placed into a proposed LSD people process model which is developed from theory. The changes identified also provide data to extend the people capability model for the integration of contractors skills and expertise into the project team.

Chapter 7 - Conclusions

The concluding chapter summarises the key findings of the thesis. This includes theory about practice which extends the people capability framework (Bredin, 2008b) to include the integration of contractors and a people management process model. Theory for
practice presented in a model for integrating contractors into a complex organisation. Also, the application of knowledge management theory such as absorptive capacity and knowledge sharing in the workplace. Finally, theory in practice in the application of SSM combined with NVIVO 10 qualitative software analysis to investigate workplace issues using exposed theory and theory in use. Limitations of the study and areas for future research are identified. Recommendations are made as to the effectiveness of the research approach and its applicability to the research problem for those considering research in this area.

1.6 Chapter Summary

This thesis seeks to expand the project management body of knowledge by analysing the way contractors are integrated into the project team. This is a long standing problem associated with practice that is bureaucratic, slow and does not meet the management reform initiatives being pursued by Defence. These reforms are bound into the Pathway to Change doctrine being implemented by Defence (Department of Defence, 2012c). Contractors appear to be managed as discrete capability and are not well integrated in the people capability structures of the organisation. Improving the way contractors are employed by the organisation should provide benefits in organisational competence development and improved productivity of project teams.

The primary research question is to determine ‘how effective is Land Systems Division’s integration of contractors into the project team?’ This is primarily a human resource management question and other areas of project management literature that are judged to be relevant to this research are; project leadership, strategy, knowledge management and the supply chain. While there is a growing amount of relevant HRM and other literature it is fragmented and the application of this deep and qualitative research to this type of workplace is unique. Because of this the research should be able to validate and perhaps extend existing theory and provide useful models for workplace use and practitioner learning.

This research is carried out in the LSD of the DMO. It is philosophically founded on a praxeological approach using action research methodology and a problem structuring method referred to as Soft Systems Methodology. The significance of this research is
provided by extending existing people capability models to include contractors (theory ABOUT practice), provision of a model for integration of contractors into the organisation’s people management systems as ‘theory FOR practice’ and ‘theory IN practice’ involving practitioner learning to improve the current situation and the use of SSM as a tool to investigate real world problems.

This chapter introduced the thesis topic within the context of its setting in a large public sector acquisition organisation. The objectives of the research, a brief explanation of the research approach, the literature landscape that is to be considered to frame and analyse the research and an outline of the thesis structure was provided.

The next chapter will present a deeper discussion of the research situational context in the LSD. The problem context includes the key stakeholders in the situation namely; the project or program office in LSD, the senior executives in LSD and the Defence industry suppliers including Small and Medium Enterprises (SME) and Multi-National Companies (MNC) who supply people to LSD project teams. The chapter will also include a review of the recent Defence reports, a discussion of the culture of Defence and Defence industry and the contribution of the research.
Chapter Two - Context of the study

2.1 Introduction

This chapter provides the background and context to the problem situation that allows readers to better appreciate the issues addressed and the contribution made by this thesis.

The chapter is structured as follows. I will begin by discussing the background to the Doctorate of Project Management (DPM) and more recently the transition to a Doctor of Philosophy (PhD) as it fits in my career as a project manager in the Defence Materiel Organisation (DMO) which is a part of the Department of Defence (DOD) Refer to Figure 2.1. The DMO equips and supports the Australian Defence Force (ADF) and in financial year 2012/13 is budgeted to spend $9.1 billion or 0.6% of Australia’s Gross Domestic Product (Department of Defence, 2012b). I will then discuss the current reforms as they impact Defence management and the influence of ADF culture and issues surrounding accountability.

I will then describe recent reforms in the DMO and their impact on project management. Professionalisation, the development of a business like culture and a cost consciousness are hallmarks of the current management reforms. The ability of DMO to integrate contract staff into project teams in a cost efficient manner and achieve a value for money outcome is essential to the success of the organisation.

The relevance of my learning and practice will then be discussed in light of the project management context of integrating contractors into the project team.

2.2 Background

This research evolved from my experience with the Department of Defence and participation in the Doctorate of Project Management (DPM) program run by the Royal Melbourne Institute of Technology (RMIT) University. In the final stage of the DPM the degree was migrated to a PhD.

This research into the integration of contractors into project teams within the DMO should be situated in the context of the Department of Defence’s recent management development pathway. This has been characterised by management reviews and reforms in the Defence Department since the review by Sir Arthur Tange in 1973 (Tange, 1973) which consolidated the
individual Departments of Army, Navy and Air Force into a single Department. This has been accompanied by reforms in command and control of the Australian Defence Force (ADF) which has seen the integration of command and control arrangement of the three services into a unified joint force. Black (2011) discussed the evolving nature of the Department of Defence culture in this way:

‘The separate departments were born of a deep belief that military excellence and capability came through the distinctive practices and traditions and ethos of the separate Services and the question each department was solving was how to maximise the effectiveness of its Service. When the departments were merged, the questions being solved were around enhancing the ability to conduct joint operations and over time to capture the efficiencies of shared services. Answering these questions did not require a strong focus on accountability for the management of Defence or enterprise governance.’

The DMO was established in 2000 as part of the Department of Defence. It was formed from the then Defence Acquisition Organisation and Support Command Australia, bringing together the Department of Defence’s capital acquisition and logistics organisations into a single entity. In 2005, DMO became a prescribed agency of the Department of Defence which means its financial arrangements were separated from the Department of Defence budget but remained as an integral part of the Department whose outcomes are managed through a series of service provider agreements with the Australian Defence Force. Today, DMO is a prescribed agency and an integrated part of the Department of Defence. DMO’s role is to acquire and support the military equipment and supplies principally for the ADF as agreed by the Australian Government (Department of Defence, 2012b).

A priority for DMO is the development of workforce and skills and particularly the development of a stronger commercial focus. Under this theme DMO is piloting a new initiative to engage a supplier under ‘managing contractor’ arrangements to deliver projects on behalf of DMO (Defence Materiel Organisation, 2013). The managing contractor arrangements are planned to provide a flexible delivery model for delivering Defence capability projects. The arrangements have been used by private and public sector organisations in Australia in the delivery of
infrastructure projects and could align with the Construction Manager arrangements as outlined by Walker and Rowlinson (2008).

As a result of these changes and the drive to achieve efficiencies there have been a number of management initiatives implemented. Perhaps the most significant has been the outsourcing and consolidation of non-core business which began in the early 1980’s and has continued to be refined in the outsourcing of base and logistics support and the consolidation of shared services.

Key themes which have characterised a majority of these reports are inefficient outcomes and a lack of individual accountability. These issues are currently being tackled currently through the Pathways to Change (Department of Defence, 2012c) initiative which is the Department’s response to a range of reviews written over the past few years. This report seeks enduring change in Defence culture which has been highlighted by a number of unacceptable behavioural issues. The Pathway to Change initiative incorporates the Strategic Reform Program (Department of Defence, 2010b) that seeks to make savings in the order of a billion dollars a year for the next ten years. These savings are then returned to the Department to fund high priority work. The issue of accountability is being tackled through a review of the committee system and cultural change initiatives to increase personal accountability in the Defence Department’s leadership.

The DMO has been shaped by these management reforms and is a major group within the Department of Defence. The DMO spends over 30 per cent of the 24 billion dollar Defence budget. Also as a public organisation the DMO is subjected to a range of parliamentary review and audits. This level of public transparency is unrivalled in the private sector and therefore the organisation has attracted a range of adverse publicity from some high profile project failures that have been perceived to have impacted the ADF’s military capability and caused financial waste. While the media coverage is usually sensationalised and not always accurate there is a perception of waste and inefficiency within the DMO and this has initiated a range of reviews into the acquisition and sustainment of the ADF’s equipment. The drive for efficiencies and accountability are key themes in the professionalisation of the DMO which has placed emphasis on business skills and reinforcing the accountability of project managers.
The engagement of contractors to support the DMO projects should be seen in this context. It is suggested that the capacity of the organisation and the project manager to source the knowledge, skills and experience needed to achieve efficient outcomes is a significant contributor to project performance. Therefore, it is suggested that the process of selection and engagement of contractors by the DMO should be efficient and not unnecessarily hindered by bureaucracy, risk aversion and un-business like behaviour.

2.2.1 Personal context

I began the Doctorate of Project Management (DPM) program part time at RMIT University in 2007. At the same time I was running a program acquiring new capability. In the process of establishing project teams and delivering work it was clear to me that the full range of skills and experience were not available in house and that contractors were required to supplement the full time Australian Public Service (APS) staff available to the project. During the DPM I became aware of a range of knowledge management, procurement and human resource theory that would provide the necessary insights to providing a more efficient and business like process. I decided to pursue this idea in the course work and reflective learning papers of the DPM and later transitioned the subject matter to achieving PhD.

Therefore, the genesis of this research has its roots in my experience as a practicing program manager with the DMO and the framing of the research has been given life during my journey through the Doctorate of Project Management (DPM) program offered by RMIT University. In early 2013 the DPM was merged into the PhD program and so this thesis is submitted as fulfilling the requirement of a PhD.

2.3 Defence

The current organisation of the Australian Defence Organisation can be seen to have its genesis in the Tange (1973) Report. This report outlined a reorganisation of the Australian Defence Department from a collection of Ministerial Departments based on the Armed Services, namely; the Royal Australian Navy, the Australian Army and the Royal Australian Air Force to a unified Defence organisation.

Today the Australian Defence Organisation consists of:
• The Department of Defence is a department of state headed by the Secretary of the Department of Defence.

• The ADF which consists of the Navy, Army and Air Force and is collectively known as the armed services and commanded by the Chief of the Defence Force (CDF).

• The Defence Materiel Organisation (DMO) as a prescribed agency within the Department of Defence headed by its Chief Executive Officer (CEO) DMO.

In practice, these bodies work together closely and are broadly regarded as one organisation known as the Australian Defence Organisation (ADO). The ADO is essentially staffed by the ADF and Australian Public Service (APS) staff. The APS is a professional, non-partisan service dedicated to assisting the government of the day to provide services (Advisory Group on Reform of Australian Government Administration, 2010).

The ADO is run as a diarchy. The diarchy model provides for shared powers between the Secretary of the Department of Defence and Chief of the Defence Force. The diarchy structure as implemented by Tange (1973) is controversial. A best it is a cooperative and collegial structure and leads to diversity and contestability of thinking. On the other hand, criticisms of the two headed diarchy model include that it leads to ‘a diffusion of commitment to and compliance with the leadership visions and goals throughout the organisation’ (Proust et al., 2007 p.19). In either case the structure of the diarchy will remain with the Department into the future.

The ADO exists to provide military capability to the Government for the conduct of military operations. In delivering this outcome there are six real businesses; Navy, Army, Air Force, Operations, Intelligence and Strategy. These are supported by enabling agencies such as DMO, Defence Support Group, Chief Information Officer Group and Defence Science and Technology Organisation. A current Defence organisation chart is shown in Figure 2.1 below.

The note to the organisational structure highlights the role of CEO DMO in reporting directly to the Minister for DMO’s performance but remains directly accountable to the diarchy of Secretary and CDF. Perhaps the other significant issue for DMO as highlighted by the
organisation structure is the close working relationship with the Capability Development Group (CDG) as Defence capability is scoped and programmed by CDG and that acquisition customer/supplier agreements are struck between DMO and the CDG and co-signed by the relevant Service Head.
Figure 2.1 - Department of Defence Organisational Structure as at 26 June 2012
It is not proposed in this thesis to provide a strategic review of the evolution of the ADF’s command control arrangements but rather a summary of the key management issues that effected the Department from the time of the Tange Report in the early 1970’s post the Vietnam War. There have been a range of ‘management’ reviews of the Department of Defence since the early 1980’s and these appear to have become more frequent in the past ten years. These reviews have variously focused on seeking greater efficiencies and more accountability within the Department.

While there is some debate about the complexity of the Defence organisation there is no doubt that it is one of the largest Government Departments in terms of size and scale. In financial year 2012-13 Defence spending is around 1.56 per cent of Gross Domestic Product or $24bn. The DMO is forecast to spend about 9bn in financial year 2012-13 in the primary outcome of acquiring and supporting the Defence inventory (Department of Defence, 2012b). This level of expenditure combined with the diverse organisation as shown in Figure 2.1 would support the view that it is complex and focussed management is required to achieve the business outcomes for Government. Indeed Proust et al. (2007) notes that ‘Defence business processes are undoubtedly complex.’ So there most certainly is some advantage to be gained in simplifying business processes.

While there are issues with the management of the Department there have also been some achievements. Foremost amongst these would be the operations that the relatively dormant ADO has been able to mount since deploying to East Timor in 1999. Some of the achievements that support the recent operations include (Proust et al., 2007 p.7-8);

- During the 1980 and 1990 the organisation civilianised, outsourced and consolidated support functions into more streamlined service provider organisation and reduced the workforce from 70,000 ADF and 40,000 civilians to 52,400 ADF and 18,600 civilians while maintaining and in some cases expanding military capability.

- During the first decade of this century Defence embarked on the largest re-equipment exercise since the 1960’s. During this time significant changes were made to the DMO making it more disciplined in approach to acquisition and raising the professional standards of its staff.
• Establishing joint warfare doctrine and command and control structure which has embedded operational cooperation between the services. Also the integration of training at joint Defence colleges and schools.

• A major change to accounting standards and accounting procedures driven by the size and complexity of the Department. This has recently led to achievement of unqualified Departmental accounts.

The successes have not come without some friction and these issues were characterised in the Proust et al. (2007 p.4-5) Review as:

• The operational tempo causing organisational stress. The senior leadership of Defence is focussed overwhelmingly to operations.

• Accountabilities are confused, absent or accorded low priority. The size and hierarchy of Defence dilutes accountability.

• The comparative wealth of the organisation undermining respect for cost and efficiency. The relatively large budgets required to equip, staff, train and sustain the Defence Force requires fiscal discipline which is culturally difficult to enforce.

• Lack of confidence in corporate commitment at higher levels.

• In some areas a misalignment between the strategy and the business.

• Concern about the financial ability to acquire new equipment and the capability to sustain that equipment. The acquisition and sustainment budgets have been at historically high levels and the ability of Defence to manage complex acquisition projects in a transparent context is challenging.

The Australian Government’s concern for greater productivity is also a theme reflected in the overseas experience. The European countries are being experiencing a tightening fiscal environment and pressure to participate in multinational force contingencies and are seeking greater efficiencies and productivity gains in order to meet these challenges (Dowdy et al., 2013, McKinsey & Company, 2013). The United States is in a similar position as a result of growing national debt and reducing budgets threatening military capability that led the US Defence Secretary to note that ‘the joint force of the future will be smaller and
leaner’ (Neu et al., 2013, Defence Advisory Committee, 2012). Efficiencies and productivity in defence spending can be seen to be high on the agenda of Western countries.

The issues associated with the complex structure of the Department and the range of challenges associated with conducting business provide an insight into the project office environment in DMO. This has an impact on the thesis’ direction by highlighting the need for efficiency and effectiveness in management outcomes. It also emphasises the importance of improving the organisational capability of the DMO to achieve its objectives through insourcing the necessary skills and expertise. An improvement in the organisations people capability and a more commercial approach in the DMOs business should improve project performance and thereby address many of the issues cited above. A way of contributing to better performance is by in sourcing the skills and expertise needed to deliver projects. To better understand this impact it is relevant for me to outline the influence of several Defence Reports that has shaped the DMO.

2.3.1 Recent Defence Reports

The CDF and Secretary of Defence recently responded to a raft of reviews and investigations relating to sexual misconduct, alcohol abuse, personal conduct and treatment of women in the ADF and APS (Department of Defence, 2012c). This report entitled ‘Pathway to Change: Evolving Defence Culture’ was an umbrella document provided in response to those issues in the context of current reviews and reforms. The current reviews included the Black (2011) Review into accountability and governance arrangements and a report into the provision of shared services. The existing reform agenda was set out in the 2009 White Paper (Department of Defence, 2009b) and the Strategic Reform Program (Department of Defence, 2010b) which has since been updated in the 2013 White Paper (Department of Defence, 2013). In short the Pathways to Change report provided a comprehensive plan to address cultural change and address the shortcomings in behaviour.

The 2009 Defence White Paper (Department of Defence, 2009b) provides the Government’s strategic priorities and spending programs for the Australian Defence Force. In addition to outlining a proposed Australian Defence Force Structure out to 2030, the White Paper also emphasised the need for Defence Management Reform and savings through the Strategic Reform Program (SRP) (Department of Defence, 2010b). The SRP tackles fundamental
issues regarding Defence’s management performance. Specifically the SRP sets out to improve Defence’s performance in areas such as planning, capability development, procurement, and enterprise support services. Apart from improving the performance of Defence, the SRP is necessary to free-up the additional funds required to deliver on the proposed 2030 force structure. The savings under the SRP will be reinvested back into Defence on high priority outcomes.

The SRP in terms of DMO has three main reform streams, these are: Smart Sustainment, Inventory Reform and the Mortimer Review:

**Smart Sustainment including inventory reform.** The aim of smart sustainment is to create savings in maintenance and associated support costs and deliver increased equipment availability by eliminating inefficiencies in the way support is conducted. This is planned to be managed by addressing the three sustainment cost drivers of customer demand management, the buying organisation, and suppliers, and how they interact with each other. Inventory reform will be achieved through optimisation of inventory and adopting a risk management approach to inventory stockholdings.

**Mortimer Report.** ‘The Next Step’ (Mortimer, 2008b) a report of the Defence Procurement and Sustainment Review was sought by the Government to get better results for the ADF, greater transparency and accountability, improved efficiency and effectiveness and better value for money. This review built on the Kinnaird Review (Kinnaird et al., 2003), which is discussed in more depth later in this chapter, suggested that the DMO move to an Executive Agency model which would provide the CEO DMO with more powers to control staffing and place responsibility and resources with project managers. It is notable that Defence has not pursued this recommendation in preference to retaining DMO as a ‘Group’ within the Department.

Recent reviews into the Department (Proust et al., 2007, Black, 2011) have noted amongst other issues accountability and culture. These aspects are worthy of further discussion as they are likely to provide greater insight into the social world of the DMO.

### 2.3.2 Culture

The cultures of the Australian Defence Force and the Australian Defence Department are distinctive. Proust et al. (2007) p.8 notes that there are four distinct organisational cultures
that have developed through their historical development trajectory; Navy, Army, Air Force, the Australian Public Service (APS) and there are perhaps two others; DMO and Defence Science and Technology Organisation (DSTO). Table 2.3 illustrates summary features of each culture and its applicability to this thesis.

**Table 2.1 - The Defence subcultures**

<table>
<thead>
<tr>
<th>Culture</th>
<th>Key characteristics</th>
<th>Relevance to this thesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Navy</td>
<td>Independence, British Navy heritage, authoritarian, traditional, platform (maritime system) focus</td>
<td>Low relevance as study is focussed on Army or terrestrial based acquisition and sustainment.</td>
</tr>
<tr>
<td>Army</td>
<td>Warrior culture, historical light infantry battles, action and decision focus, leadership, people rather than equipment. Getting on and making do with what is at hand, not bureaucratic or cost focussed.</td>
<td>Tension between the warrior culture of the ‘need it now’, and changing requirements as opposed to the long lead times of acquisition projects. The need for DMO to respond in the most effective and efficient way to users is to have competent project teams. Low levels of business acumen and cost consciousness.</td>
</tr>
<tr>
<td>Air Force</td>
<td>Technical, critical air safety, cautious, detail, considered, platform (aerospace system) focus.</td>
<td>Low relevance as study is focussed on Army or terrestrial based acquisition and sustainment.</td>
</tr>
<tr>
<td><strong>Australian Public Service</strong></td>
<td><strong>DMO</strong></td>
<td><strong>Defence Science and Technology Organisation</strong></td>
</tr>
<tr>
<td>--------------------------------</td>
<td>---------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Bureaucratic, fear of making mistakes, risk adverse, compliance with regulations, security of tenure, value for money</td>
<td>Process, long lead times, technical competence, value for money</td>
<td>Academic, research as an end in itself, distant from Defence and has high level access.</td>
</tr>
<tr>
<td>Accountability and governance issues as DMO is a sub set of APS culture. Project teams influenced by this culture.</td>
<td>Integration of contractors into LSD project teams to provide skills, knowledge and effort to delivery against requirements. Need for accountability and business like outcomes.</td>
<td>Low relevance as study is focussed on land and Army acquisition and sustainment.</td>
</tr>
</tbody>
</table>

DMO is a joint service organisation that has representation from the three armed services. The armed services consist of around 20 per cent of the workforce the remainder being APS. The DMO can also be seen to consist of the three organisational cultures (Schein, 1996) that represent subcultures in the DMO namely executives, engineers and operators. These cultures are at best noted to be task focused, team oriented, self-confident and have a can do attitude and at their worst risk-averse, insensitive to cost, rule-bound and tribalistic. These cultures can be seen to have a profound influence on the nature of the parent organisations.

The ADFs culture has been long recognised as a key factor in discussions on the Australian national character and the legend of the ‘Bronzed Anzac’ (Adam-Smith, 1978). Values such as the ‘fair go’ and ‘looking after your mates’ appear to be values which are highly prized by the ADF having been born on the battlefields. As misleading as this general perception may be it is noted in Proust et al. (2007) by one interviewee that in the armed services the
warrior culture dominates while in the public service the culture of the policy bureaucrat tends to dominate. This is further accentuated by the diarchy structure of the Defence Department as noted again by Proust et al. (2007) that the culture of the [ADF and public service] is now profoundly different. This has implications for the DMO in so much as the workforce is around 20 per cent ADF.

Perception from outside Defence supports the perception of a bureaucratic culture that lacks accountability. Statements in the Proust et al. (2007) Review note these perceptions amongst other issues, an ‘absence of accountability, traditional, excessively rules based and lacks agility, trust and empowerment. The culture is also noted to ‘emphasise due process over timely responses’ and an ‘organisation culture and design that contribute[s] to poor external communication’. While these perceptions seen in isolation are damming it is suggested that there are explanations why this view of the Defence ‘office’ culture exists. Schein (2010) notes that culture is an organisational response to the particular questions it is trying to solve. It is suggested that the culture is rooted in the original single service or department structure and the move to a joint organisation although changing still retains the principal ‘warrior culture’ of the services blended by necessity with a Government bureaucratic culture. This can be seen in the ADOs approach to risk management and the perception of ‘risk aversion’ in the approach to ‘enduring’ and ‘residual’ risk (Black, 2011 p.104) or at least poor assessment of risk. The poor appreciation of risk may be a feature of the non ‘business like’ organisational culture that values risk aversion whereby an increased appetite for risk would provide the space for better outcomes. Another closely aligned feature is ‘a culture lacking in fiscal discipline’ (Black, 2011 p.100). I suggest that this aspect is also rooted in the ‘warrior culture’ and the political ideal and aversion to harm on the battlefield. The provision of the best possible support and equipment comes with a price tag and much of the equipment is unique or boutique in the sense that fleets of equipment are small and purpose designed. This equipment requires specialist design and integration and equipment support needs are likewise limited in scale and require bespoke support needs combining defence industry and military elements in the support system. These cultural and business imperatives drive costs up and lead to a perception of fiscal waste.

The issue of specifying developmental equipment versus and off the shelf alternative was canvassed in the Mortimer (2008b) Review. The risks and therefore cost of developmental
systems is significantly higher than off the shelf alternatives. The recommendation by Kinnaird et al. (2003) and Mortimer (2008b) has been to include an off the shelf alternative to any acquisition proposal put to Government.

The implementation of change has been difficult to achieve in the Department of Defence context. Proust et al. (2007) notes the change is more difficult because of its size, complexity and strong and differing cultures. The reasons that have been attributed to the performance of Defence have been accountability structures, business processes, the quality and availability of management information, the preparation of senior managers and prevailing attitudes.

The last theme of cultural importance is the issue of accountability. Accountability has been identified as an issue in the efficient operation of the Defence Department (Proust et al., 2007) and is the subject of the recent (Black, 2011) report into the Defence Accountability Framework. The Black (2011) Review highlighted more than ten major reviews since 1982 which had implications for accountability.

2.3.3 Accountability

Accountability is described in this context to be the decision making stability as a platform for operational and administrative agility. Accountability in the context of the ADO is either delivered individually or collectively through the Defence committee system. In either case it is supported by people in the organisation with a strong sense of personal ownership of outcomes for which they are responsible. It is perhaps a contradiction that the ‘warrior culture’ would support slow or poor decision making and low accountability for outcomes. Anecdotal evidence points to this being a source of frustration and friction between the uniform and civilian personnel. Notably the Black (2011) Review was specifically excluded from reviewing the military operational chain of command. Identifying a source of this lack of accountability is complex but it is suggested that it could have developed from earlier mechanistic organisational forms which have its roots in large Government Departments and which have failed to be effectively reformed from a structural and cultural sense since. Whatever the source the Black (2011) Review has taken the view that decision making and strategic direction setting, accountability system, culture and skills are the keys to making enduring change.
Accountability is important to understand in the context of DMO and the decision making processes. I contend that the processes and structure of the organisation supported by the organisational culture are designed to avoid risk and that the process including meeting the political objectives is more important than outcomes.

2.4 Defence Materiel Organisation

The DMO primary purpose is to equip and sustain the Australian Defence Force. In this way the DMO provides a key input to ADF capability in the provision of equipment and support of that equipment. The DMO strategic framework is enclosed as Appendix C. It is a large public sector organisation delivering about $9.2bn in equipment and support for the Australian Defence Force. DMO delivers and supports some of the most technical and complex projects in an increasingly budget restrained environment. In order to deliver these projects Land Systems Division of DMO based in Melbourne spends about $50m annually on contractors. The efficiency with which this is spent could be seen as a significant contributor to the skills and experience of the DMO workforce.

As a public sector agency DMO is provided an appropriation from parliament as part of the Defence Department’s budgetary process to provide forecasted equipment and services. This forecast is provided in the portfolio budget statements. Efficiency and value for money are paramount outcomes sought by Government and DMO’s performance is published in the Defence Annual Report and reviewed tri annually by a Senate Committee.

2.4.1 Major DMO reviews

While there have been a number of significant reviews into the Australian Defence Organisation over the past decade the most significant reviews that have influenced and shaped reform in the DMO business are as follows:

- **The Kinnaird Review** (Kinnaird et al., 2003) Recommended that DMO be changed to a Prescribed Agency under the Financial Management Act but remain as part of the Department of Defence. Main theme that DMO become more business-like and outcome driven. A Prescribed Agency means that funding for the DMO’s outputs of acquisition, sustainment, policy advice and management services are separated from the DOD’s accounts. This drives greater fiscal discipline within the DMO as full cost
of delivering the DMO’s output become more apparent rather than them being absorbed into the Department’s overheads.

- **Mortimer Report** - The Next Step a report of the Defence Procurement and Sustainment Review 2008. This built on the Kinnaird Review and suggested DMO move to an Executive Agency model which would provide the CEO DMO with more powers to manage staff and place responsibility and resources with project managers.

The proposed reforms within this report can be characterised under the themes of making the Defence Materiel Organisation more business-like and imposing commercial discipline on the defence procurement and sustainment processes. (Mortimer, 2008a)

2.4.2 Project management organisation

DMO could be regarded as a ‘project oriented organisation’ as described by Huemann, Keegan, and Turner (2007) or ‘project based organisation’ (Bredin, 2008b) as the organisation carries out its core operations mainly in project form. Bredin (2008b) notes that employees in project based organisations are affiliated to the organisation context rather than the project and this could be the case with DMO as the major capital acquisition projects run for many years. Remarkably, the average tenure in projects is about four years (Mortimer, 2008b p.67) so project staff may turnover many times during a project as a result of posting of military staff, promotion or career changes.

The DMO as a public organisation is also hierarchical in structure unlike the ideal project organisation model which would have more *ad hoc* and flexible organisational structures that deal with the temporary and dynamic needs of projects. The organisational structure of DMO is shown in Figure 1.2 in the previous chapter. The DMO appears to view itself as being a ‘project oriented’ organisation and shapes its policies and practices, organisational structure and strategy toward managing projects (Huemann et al., 2007 p. 316). However, its inflexibility undermines its aspirations.

The DMO also appears to have a strong functional coordination within which relatively long term projects deliver the organisations outcomes. DMO’s main outputs are acquisition projects and sustainment activities. Sustainment activities provide the logistic support to equipment introduced into service by the acquisition projects. The functional part of the
organisation provides line management, technical, financial, contracting and human resource competences which contribute to the organisation’s project and operational capability. Projects integrate across the functional parts of the organisation providing a weak matrix structure. The project matrix structure is weak as the functional areas retain significant control over project outcomes.

Issues surrounding the development of knowledge and learning appear to be closely associated with project-oriented organisations (Bredin, 2008b p.567). Lindkvist (in Bredin, 2008bp. 567) notes that knowledge is distributed and resides in cross-functional teams instead of being shared among a community of members and this has implications for learning across projects and organisational learning. This means that it could be expected that learning and knowledge in DMO projects would not be easily shared and the implication of this relevant to this thesis is that this impairs organisational learning.

A key part of the DMO strategy is seeking to become ‘more business-like, accountable and outcome driven’. Business-like is defined as ‘showing or having characteristics advantageous to or of use in business; methodical and systematic’. A major part of any organisation’s success is the ability of the organisation to effectively deploy HR management to support the business outcomes. Models of HR management suggest that selection, development, reward and performance appraisal are the key elements of any HR strategy.

Workforce planning within the public sector appears to be managed principally through the allocation of Full Time Entitlement (FTE) which is in effect a full time person of any level which represents a salary. The allocation of FTE is cyclic and is heavily influenced by political imperatives to control the growth in public service jobs rather than a business case to resource organisational outcomes. The acquisition outcomes in the DMO are delivered principally through project management methods.

Procurement practice was cited by Mortimer (2008b) as overly complex and inflexible with imposes considerable compliance costs on industry which are invariably passed back to the Commonwealth as overheads. To improve the situation Mortimer (2008b) p.37 suggested seven principles to improve practice. Upon reflection I consider that the key ones are; allocating risks to the party best able to manage them, industries need for commercially realistic terms while achieving a value for money outcome for the Commonwealth and the
terms and conditions should be reasonably capable of being agreed and administered without undue burden.

2.4.3 Professionalisation

The Kinnaird et al. (2003) Review highlighted the need for the DMO to develop an unique culture that would focus on performance and results. Kinnaird et al. (2003) p.58 sought to separate the DMO from the Department of Defence as a prescribed agency so the Chief Executive Officer of the DMO would have the ‘necessary accountability, authority, independence and control over inputs for it to be fully results driven and commercially driven and commercially oriented.’ It was observed by Mortimer (2008b) that critically Kinnaird’s recommendation to develop a unique performance based culture was the only recommendation not implemented by Defence. The conundrum is that a DMO removed from Defence would not be able to understand the needs of its customer while a closely integrated DMO would be unable to develop a commercial orientation or culture nor be able to provide the independent advice. Mortimer (2008b) p.59 noted that the argument to separate DMO from Defence remained relevant.

There are two main roles for DMO in supporting Defence acquisition and sustainment. These are to provide independent commercial advice particularly on cost and schedule and the other is to provide Defence with an effective and efficient acquisition and sustainment service (Mortimer, 2008b p.58).

Business like culture

The importance of business like behaviour in DMO is noted by Mortimer (2008b) p.16 in citing that permanent change will only endure if culture and behaviours are changed and commercial practices are embedded in DMO. This is reinforced by the Departments of Defence’s response to the Mortimer Report which highlighted the importance and agreed to develop a business-like culture (Department of Defence, 2009a).

Accountability

Accountability in the DMO context is being addressed through the establishment of charters for project managers. The Mortimer (2008b) Review recommended that for ‘complex and demanding projects, the authority, responsibility and accountability of the Project Manager
should be formally set out in a project charter... and to be held accountable for the non-financial and financial aspects of the project’. This was agreed by Defence (Department of Defence, 2009a) in the response to the report but there appears to have been little progress in this area. The key issues appear to be similar to that pointed to by Proust et al. (2007) in the description of the diarchy in that there is a ‘diffusion of accountability’. As shown in Figure 2.2 this probably occurs as a result of the culture, hierarchical structure and lack of incentive including financial incentives to fix the problem and accept the additional accountability.

![Diffusion of Accountability Diagram](image)

**Figure 2.2 - Diffusion of accountability**

The Mortimer (2008b) Review also noted that there were very strong arguments for DMO becoming an Executive Agency of Government. This arrangement would separate DMO from the financially from Defence as it would receive its own appropriation direct from Parliament and provide the Chief Executive Office more control of inputs and independent advice to Government on the cost, schedule and scope implications. The benefit cited by Mortimer (2008b) p.60 were:

- full accountability for performance;
better transparency of both financial and non-financial performance; and

full control of personnel.

So while Defence remained the sole customer DMO was provided more control and accountability over its destiny. This recommendation was rejected by Defence in favour of a model which held DMO as an intrinsic part of the Department of Defence.

2.4.4 Defence industry

The Defence industry market could be characterised as a monopsony or a buyer’s market. Many of the warfighting capabilities sought by Defence are unique to the Defence global market and in some cases for Australianised equipment the domestic Defence market. Australian Defence industry is significantly affected by the globalisation of the Defence supply chain (Thompson et al., 2011, Davies, 2012, Department of Defence, 2010a). To be competitive Defence industry companies need to accept and deal with the risks of this situation. In addition, some industry sectors in particularly important capability areas to the national interest will require subsidies to survive in the global market place.

The Defence market is concentrated in the eight global prime contractors who produce about 70 per cent of the total Defence materiel spend in Australia. Australian subcontractors to these primes earn about 30 per cent of that figure. (Department of Defence, 2010a). Interestingly, the Australian revenue accounts for less than four per cent of the parent’s total global revenue. It could be concluded that the Australian Defence industry is relatively small in global terms so it must offer reasonable returns on investment.

The part of Australian Defence industry which provides professional contractor services into project teams could be seen to be characterised differently to the market for prime contractors that provide equipment and maintenance services to Defence. The range of companies is more generally part of the civilian professional services market. Perhaps the better known of these companies are KPMG, Booz & Co, Aurecon, Deloitte Touche Tohmatsu, Kellogg, Sinclair Knight and Merz, GHD, Brown & Root and Price Waterhouse Coopers who are represented along with the global defence companies such as Jacobs, Raytheon, Lockheed Martin and a range of other specialist and small to medium sized Australia companies.
A trend that has occurred over the past few years is the conversion of contractor positions to full time APS positions. This has occurred to reign in the budget spent on contractors, particularly where contractors are on longer term, time and materials based contracts that carry low levels of risk for the contractor. Contractors can demand upward of $100 per hour for junior skills to $300 per hour for more seasoned assistance. These rates are much more expensive than the $391 per hour for junior skills to $692 per hour for experienced APS practitioners (Department of Defence, 2012a). The trend to convert contractor positions to full time Defence civilian employee positions has also occurred in the US (Department of Defence, 2010a).

2.4.5 Defence Materiel Organisation Support Services (DMOSS)

In 2005, the DMO rationalised, standardised and replaced the range of standing offer panels with one strategic support services standing offer panel. This panel is referred to as the DMO Support Services, or DMOSS panel. The DMOSS panel is based on an e-procurement process that has a range of pre-qualified companies offering a range of DMO specific services. This panel is refreshed periodically to update skills sets and contracting arrangements and the panel is accessed through a line management and financial delegate approval process.

There are fourteen discipline areas which include: project support, engineering, logistics, business support, training, capability and technical documents, information and communications technologies and flight services qualification.

The legislative basis for the engagement of contractors is the Financial Management Act, Defence Procurement and Policy Manual and Commonwealth Procurement Guidelines. Under these principle legislation and policy there is a raft of Department of Defence and DMO policy.

The most recent policy for internal DMO management of contractors is contained in Defence Materiel Instruction (Finance) 0-01-25 (DMI(FIN) 0-01-025) (Defence Materiel Organisation, 2012). This document defines the range of External Service Providers (ESP).

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1 This is based on an APS 5 annual standard pay on top scale of $72,518 for a 250 day working days at 7.5 hours per day. An APS 5 would fill Assistant Project Manager roles for low complexity projects in Land Systems Division.

2 Based on the top scale for and Executive Level 2 (EL2) working a 250 day year based on 7.5 hours a day. An EL2’s salary is not restricted to a 7.5 hour day.
roles such as consultants, contractors, eminent persons and an outsourced service. This research uses the term contractors in the same way that the DMI (FIN) 0-01-25 uses the term ESP generically to describe ‘an organisation or individual engaged by the DMO to provide services’. This definition would include the roles mentioned above.

The role of an outsourced service in the DMO sense is worth expanding as it refers to ‘a contract delivering specific services and supplies, usually against predefined milestones and deliverable requirements’. An outsourced service then is very similar in construct to a contract for goods and services although it is contracted through the DMOSS panel. This activity in the DMI (FIN) 0-01-25 should be classified as an ‘out tasking’ rather than ‘outsourcing’ as Walker and Rowlinson (2008) p.12-13 point out that out tasking is a short term operational decision that can be used to provide a service needed to continue operations or provide specialist skills that would not be required for long term operations’. To summarise, the term ‘contractor’ will be used in its broadest interpretation and ‘out tasking’ is a contractor role based on deliverables or packages of work rather than hourly or daily time and materials rates.

2.5 Research on and in practice

The Doctorate of Project Management program at the Royal Melbourne Institute of Technology University and now the PhD has built on a life time of learning and experience in project management and complimentary domain knowledge areas. In the past twenty years I have undertaken an undergraduate degree in humanities and two Masters level degrees in business innovation in which I completed a short research project in value management and the other in Defence acquisition and capability development. This has been complemented by work experience as a project manager in the DMO. Together this provides me with a deep, contextual and academic knowledge to apply to this research.

The DPM has provided me with a guided learning experience in core project management knowledge areas. Project management theory and practice, knowledge management, innovation, leadership, procurement and ethics have contributed to a broad understanding of the theory and literature in the project management knowledge areas. This knowledge along with validation and reflection, and deeper learning from practice on the job has
provided me with a foundation for investigation and research into project management issues in the workplace.

I have been assessed by the Australian Institute of Project Management as a Certified Practicing Project Director. From my previous experience in project management I understand that people are essential to project performance and success. Forming and developing a team with the required skills and knowledge is a key part of the people capability required to deliver projects on time, to budget and with the required quality. I have developed this theme during the reflective units provided under the DPM with personal advice and feedback. The reflective learning culminated in a peer reviewed paper delivered at the Australian Institute of Project Management in 2008 on the transaction costs involved in the engagement of contractors into the project team. The paper suggested a three dimensional model for transaction cost, project complexity and learning in projects.

2.5.1 Project Management context

Human resource capability in the context of a project team is an area of project management knowledge that is gaining more attention as the significance or people capability is more broadly recognised. The DPM has provided me with the basis for understanding the theory behind the dynamics of people capability working in the project team. This has broadly included leadership, knowledge management, strategy and supply chain and procurement.

The efficiency by which project staff are identified and integrated into the project team is perhaps one of the most important aspects of project success and involves a range of project management functions. There can be seen to be two main sources of human capital for project teams. They are the permanent or full time workforce of the project oriented company and contractors which can be seen to form the part time or flexible workforce. Notably, under modern labour relations the project oriented company may also allow the permanent workers to be employed on a part time basis.

However, my main concern is the issues surrounding the employment of contractors in part time or deliverable based contracts in the project team. The issues that require further development are the knowledge and learning processes surrounding the engagement of contractors, the make (full time APS employees) or buy (engage a contractor) decision and
the value proposition that would provide. In addition, are the leadership and team building challenges for the employment of contractors on relatively short and deliverable based contracts as effective members of the project team.

2.6 Summary

The context for the engagement of contractors in DMO acquisition project teams can be seen to be characterised by the Government’s expectations of accountability, efficiency and value for money. Reforms in DMO to professionalise the workforce and achieve greater accountability while achieving value for money appear to be challenging. The challenges are achieving cultural change and more business-like outcomes appear to be obstacles to achieving sound results in this area. Work to implement e-procurement processes in the engagement of contractors are counterbalanced against the organisational governance, hierarchal structure and risk adverse culture.

This chapter also has indicated that the organisational context for the thesis topic is highly complex with numerous stakeholders, an unusual market situation for the DMO with respect to acquiring skilled personnel who understand the unique organisational and cultural complexity to be found in this type of business. It presents a starkly different context to for example government procured construction infrastructure and so this applies a special layer of complexity to the acquisition of contractors and their integration into the DMO organisation.

My previous learning and practice in the project management field and more broadly have contributed to my deep understanding of the practice and contextual factors related to integrating contractors into the project team. I currently work in a project office and I have been assessed by the Australian Institute of Project Management as a Certified Practicing Project Director and within DMO as an Acquisition Category Three project manager. I have studied over an extended period of time at undergraduate and post graduate level to gain a broad understanding of business management issues and specifically those related to the Defence environment. I recognise people management as a core business process that is essential to business performance.

In the next chapter I will review the literature that is relevant to the phenomena that I have observed dealing with the integration of contractors into the project team. The issue is
principally related to people management and the application of people capability and management in the context of the project team and the broader organisation. Closely related to people management is knowledge management and it is through knowledge creation, integration, sharing and retention that learning occurs. This is a major part of individual and collective competence which contribute to the organisations people capability and performance. Firms develop capability through strategy establishing the goals and identifying the resources necessary to compete through maintaining a core competence and innovating. In the project based organisation strategy is delivered through projects and people capability is a mainstay of this process. Contractors can be seen to be sourced through a strategic decision to make or buy and contractual arrangements that could be understood as a supply chain. The terms, conditions and relationships agreed in the sourcing of contractors has implications for transaction costs, relational and learning capabilities. Finally, leadership is the ingredient that binds people to the organisations goals by such process as trust and distrust and recognising the valuable role of reputation in the careers to project managers.

The engagement of contractors in project teams is a multifaceted process that brings together in the context of project management, concepts of people capability, knowledge management, procurement including make or buy decisions, business strategy and leadership. This problem is fundamental to the capability of DMO to deliver on its mission to acquire and sustain the ADF’s capability.
Chapter Three – Literature Review

3.1 Introduction

The last chapter provided the context for this research. The DMO is in the process of reform to provide better outcomes in the delivery and support of ADF capability. This theme is reflected in the experience of Europe and the United States. The environment in which the DMO operates is complex. The organisation has a range of public and private stakeholders. This requires a level of transparency and governance which is arguably more complex than private organisations and this is overlaid by a culture which does not always support commercial outcomes or has the organic skills and experience to deliver what is being asked by Government.

The DMO has been the subject of a range of high level reviews that have sought to make the organisation more business-like, outcome driven and imposing commercial discipline (Mortimer, 2008b, Kinnaird et al., 2003). In particular Mortimer (2008b) p.66 noted ‘the need to engage expert external advisers when it is not efficient to grow and retain particular skills within the organisation’.

The decision on what literature to include in the review was based on my previous project management course work in the DPM and a consideration of the relevant literature that is related to the primary research question. The DPM course work included study and reflection in a range of project management literature categorised as project management leadership, knowledge management, ethics and procurement. These are quite broad areas and I have focused in the reflective study on themes within these areas associated with value management, the procurement transaction, transaction cost economics and people management. This ignited my interest in the way complex organisations engage and integrate contractors as part of the workforce mix.

The second aspect of literature relevance was determined through a review of the primary research question. The question is: *How effective is the integration of contractor’s skills and expertise as part of the people capability of complex project based organisations?* This review highlighted key words such as; integration,
contractors, skills and expertise, people capability, and project management organisation. I have found that the literature landscape relevant to the topic is shaped by a confluence of the following categories of literature; human resource or people management, knowledge and learning including concepts of competence, strategy, portfolio and program management including concepts of the nature of the firm, project based organisation, the procurement decision including value management and supply chains and project management leadership. These areas are outlined in more detail in Table 3.1.

Within the literature themes that have been identified there appear to be a number of important current concepts that underpin the literature review. These concepts are:

- If the convergent themes mentioned above can be seen to flow together to form the watershed of relevant literature then human resource or people management could be characterised as being the prevalent theme in the area of confluence or river delta where these convergent themes merge. People management is the management of the context between people and their organisation (Bredin, 2008b p.566). The premise as applied in this thesis includes the entire workforce including contractors, uniform and public service employees. The key mechanisms in the organisations people process are seen as; managing resource flows, performance, participation and communication, developing competencies and change (Bredin, 2008a p.45). Significant recent work in this area relating to project based organisations can be seen to be provided in a thesis and associated book and journal articles by Bredin (2008a) and journal articles by Crawford et al. (2013), Huemann et al. (2007) and (Turner et al., 2008). The research methodologies used are generally a combination of quantitative and qualitative although explorative case study based research appears to be favoured due to the (Pitelis and Teece, 2009) contextual understanding that is required particularly in complex organisational settings.

- The value proposition and its co-creation in the engagement and integration process of contractors. This concept is highlighted by the work of Grönroos
(Grönroos, 2011, Grönroos and Ravald, 2011) which takes a marketing perspective of value. This perspective views the supplier as a value facilitator that during the interaction with clients co-creates value on a reciprocal basis.

- The importance of seeking a balanced mix of workforce between full time employees, contractors and skills and experience. In terms of the DMO the main components of the workforce can be seen to be ADF uniform personnel, Australian public service and contractors and the acquisition skills and expertise required to deliver and support an equipment acquisition. The RAND Corporation (Asch and Winkler, 2013) studied the appropriate mix of uniform, civilian government staff and contractors in the provision of language training to the US military. They report the use of qualitative and quantitative methods to determine that the core of the capability should be provided by the civilian workforce supplemented with contractors. Other RAND Corporation research has also highlighted the issues with workforce mix and the importance of workforce planning (Rand Corporation, 2004, Gates et al., 2006).

- Competence development and knowledge intensification is seen by Bredin (2008a) as a challenge for project based organisations. Competence can be seen to be set in an individual knowledge management context and firm capability and be developed through the learning mechanisms of relating, reflecting and routinising. (Söderlund, 2005). These mechanisms expand the firm’s resource base. Relating can be seen to be based in the concept of social capital (Bartsch et al., 2013) and to a lesser degree reflecting which exploits and explores knowledge available to the project. On the other hand routinising is embedded in repeatability and learning (Davies and Brady, 2000) as an organisational memory that is subject to the absorptive capacity (Cohen and Levinthal, 1990) of the project.

- The view of the firm in terms of its knowledge assets and organisational capabilities (Pitelis and Teece, 2009). This capability based theoretic perspective can be seen to provide a basis for theorising on the way individual and organisational learning contributes to the development of
competence and dynamic capabilities in a project based organisation. This concept is extended by ambidexterity (Turner et al., 2013) which integrates intellectual capital including social and human capital to understand mechanisms for knowledge exploitation and exploration by the firm and in this context project based organisations.

The basis for the literature review is the proposition that the way in which DMO engages and uses contractors is sub optimal. Improvements to the current method for engaging contractors can be identified through an assessment of the key areas of literature that relate to the knowledge and project management processes such as people management, supply chain management, strategy and leadership. The themes are cited in Chapter one and a summary of the literature is provided in Table 1.1. The relationships between these prominent areas and the key issues are further developed in the Table 3.1 below.
### Table 3.1 - Literature review framework

<table>
<thead>
<tr>
<th>Section</th>
<th>Relates to Research Question / Proposition</th>
<th>Comments</th>
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<tbody>
<tr>
<td>3.5.1 People capability</td>
<td><strong>Research question</strong> How effective is the integration of contractor’s skills and expertise as part of the people capability of complex project based organisations?</td>
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<td></td>
<td><strong>Supporting question</strong> How well are people management systems integrated with the organisation’s strategic, functional and project capabilities and facilitated through practices that support knowledge and competence development?</td>
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<td></td>
<td><strong>Proposition</strong> Knowledge development and transfer is not supported in the process and this leads to sub optimal outcomes. There are four sub-propositions to this aspect:</td>
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<td></td>
<td>• Relationships between DMO and contractors are transactional. This contributes to a lack of trust and commitment which leads to ineffective and inefficient outcomes.</td>
<td>• People capability is an integrated part of the overall capability of a firm.</td>
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<tr>
<td></td>
<td>• Contractors are generally not well integrated into the project team and therefore opportunities for learning and sharing of knowledge is limited.</td>
<td>• Knowledge management is inherently a people processes and essential to competitive advantage.</td>
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<td></td>
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<td>• Temporary organisational forms and planning of the full time workforce</td>
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<td></td>
<td></td>
<td>• People management process to support the relationship between the organisation and its people.</td>
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<td>• Career development and management challenge in</td>
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<td>3.5.2 Make or buy decision</td>
<td>Proposition</td>
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<tr>
<td>Knowledge and skills developed by contractors in delivering outcomes is not effectively transferred to the project team. The organisation does not recognise the value of social capital as being important to organisational learning and project outcomes. As a result this leads to an ineffective use of knowledge resources.</td>
<td>The make or buy proposition is not fully understood or implemented. The determination, perhaps as part of a cost benefits analysis, of whether it is in the DMO interest to maintain an internal capability to deliver the outcomes or outsource the capability.</td>
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**Supporting research question.**
- How effective are the procurement mechanisms in supporting the organisation’s people capability?

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<td></td>
<td>The value proposition and creation should be supported by:</td>
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<td></td>
<td>- effective governance and low transaction costs through efficient and effective; contracting methods.</td>
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<td></td>
<td>- Improved social capital outcomes and organisation learning</td>
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<td></td>
<td>• Make or buy decision supports firm strategy and people capability.</td>
</tr>
</tbody>
</table>
| 3.5.3 Strategy, portfolio and program management | **Research question**  
How effective is the integration of contractor’s skills and expertise as part of the people capability of complex project based organisations?

**Research supporting question**  
How well are people management systems integrated with the organisation’s strategic, functional and project capabilities and facilitated through practices that support knowledge and competence development?

**Propositions**
- The methods of engaging contractors or temporary staff to supplement project teams are not efficient and do not effectively support project outcomes
- The make or buy proposition is not fully understood or implemented.

|  |  
|---|---|
|  | • The temporary project based organisation is a special case where organising and social phenomena are exacerbated.
|  | • Leveraging dynamic capabilities to achieve sustainable competitive advantage.
|  | • Firm’s capability to govern knowledge.
|  | • The project based organising to support the firm’s strategy and key capabilities.
|  | • The challenge of cross functional teams in project based organisations.
|  | • Selecting the appropriate
<table>
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<tr>
<th>3.5.4 Knowledge Research question</th>
<th>3.5.4 Knowledge Proposition</th>
<th>contractual relationship to support the development of core competence.</th>
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<tr>
<td><strong>Research question</strong></td>
<td>How well are people management systems integrated with the organisation’s strategic, functional and project capabilities and facilitated through practices that support knowledge and competence development?</td>
<td>Tacit and implicit dimensions of knowledge are the basis of non-routine practices of the TPBO.</td>
</tr>
<tr>
<td><strong>Proposition</strong></td>
<td>Knowledge development and transfer is not supported in the process and this leads to sub optimal outcomes. There are four sub-propositions to this aspect:</td>
<td>Social and intellectual capital capability to create and transfer knowledge is important to strategic advantage.</td>
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<td></td>
<td>Relationships between DMO and contractors are transactional. This contributes to a lack of trust and commitment which leads to ineffective and inefficient outcomes.</td>
<td>Firm’s strategy should support the knowledge needs of the firm such as structural, cognitive and relational dimensions of social capital.</td>
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<td>Contractors are generally not well integrated into the project team and therefore opportunities for learning and sharing of knowledge is limited.</td>
<td>Organisation learning as a performance driver in project</td>
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<td>3.5.5 Project management leadership</td>
<td>Proposition</td>
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<td>• The organisation does not recognise the value of social capital as being important to organisational learning and project outcomes. As a result this leads to an ineffective use of knowledge resources.</td>
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<tr>
<td>• The methods of engaging contractors or temporary staff to supplement project teams are not efficient and do not effectively support project outcomes. The transaction costs involved in the engagement of contractors are high and the development of social capital and knowledge transfer is not well understood or managed. This leads to a poor value proposition for the engagement of contractors.</td>
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<tr>
<td>• Relationships between DMO and contractors are transactional. This contributes to a lack of trust and commitment which leads to ineffective and</td>
<td>• The development of trust in the ‘black box of project relations.</td>
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<td></td>
<td>• Trust and distrust</td>
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<td></td>
<td>• The behaviours trust and commitment engender leads to more engaging leadership and longer term relationships</td>
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<td></td>
<td>• Governance and contractual arrangements are influence by</td>
<td>• The governance of knowledge.</td>
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<tr>
<td></td>
<td></td>
<td>• Communities of Practice as important structures for organisational learning and social capital.</td>
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<td>inefficient outcomes.</td>
<td>the levels of trust and identity.</td>
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The review will tackle the key literature areas and then the key themes which link the key bodies of literature to the issue of the management of contractor’s knowledge and expertise.

3.2 Outline of the literature landscape

The key themes of the literature review are people capability, the make or buy decision, strategy, knowledge and learning and project management leadership.

3.2.1 People capability

Human resource or people management is a main administrative process of organisations and one which should encompass the integration of contractors. The perspective of people capability relates to the process of integrating the temporary or contract worker into a complex project based organisation. Bredin (2008a) provides a succinct summary of the key issues from a project organisational perspective. There are also recent contributions from Turner et al. (2008) Huemann et al. (2007) Huemann et al. (2004) that use a process view of HR and a contribution by Koene and van Riemsdijk (2005) that reviews the temporary employment relationship.

The perspective of people capability is based in the resource and capabilities based approaches (Pitelis and Teece, 2009) of the firm as embodied in such concepts as dynamic capabilities (Teece and Pisano, 1994) and transaction cost economics (Williamson, 1991). These views of an organisation’s capability recognise the intangible asset of knowledge as central to organization performance and sustainable competitive advantage. People capability in this research is seen as an organisational capability and key to creation, transfer and protection of know how. People capability is the organisational capability to manage the relationship between the organisation and the people in it (Bredin, 2008b).

Perhaps a less well developed but growing awareness in project management and main stream human resource management literature is the impact of people on the outcomes of the temporary project based organisations (Huemann et al., 2007). It is argued that this is a key process to understanding project oriented organizing and
therefore of importance to the understanding of the interaction of contractors in project teams.

People capability is a central theme in which project leadership along with organisational strategy provides the motivation and context for people to relate to the organisation. Tacit and codified knowledge is developed, used and contributes to the organisation’s stock of intellectual capital. In addition, the sourcing of external knowledge can be seen through the perspective of the supply chain.

3.2.2 The make or buy decision

A central theme in the engagement of contractors or any procurement decision is the make or buy decision (Walker et al., 2008b). The decision to source the skills and experience from within the organisation or through a recruiting process to fill a full time equivalent position in the project - the make decision; as opposed to out-tasking the project team work by engaging a part time contractor to deliver a package of work or fill a project team role on a full time basis for a specific period of time – the buy decision. The way the make or buy decision is determined is a management decision based on the firm’s strategy and value perspective.

Analysis of the method and costs of out-tasking project team capacity is important to understanding the value proposition. Transaction Cost Economics (Winch, 2001) provides insights into the governance structures required to ensure efficiencies in the make or buy decision (Domberger, 1998) and the contracting method used to acquire the necessary skills. In addition, literature that describes the application of value management (Walters and Lancaster, 2000) provides another framework to analyse the make or buy decision.

The way contractors are engaged and managed in the context of the DMO supply chain and procurement should be complementary to the development of social capital and learning (Hartmann et al., 2010) and guided by the firm’s competitive advantage and value creation strategy.
3.2.3 Strategy, portfolio and program management

This theme assesses the way in which project management capability is developed and is aligned with corporate strategy (Mintzberg, 1987, Mintzberg et al., 2003, Porter, 1996, Jenner, 2010) to enhance project team’s knowledge capability and the probability of project and project management success. The nature of the organisation and reasons for its existence underpin a discussion of ‘the firm’, the various strategic approaches and how in practice these are delivered. The premise of this discussion is the central role that knowledge plays throughout this process.

The way in which contractors are employed in the project team should complement the value creation strategy supported by a clear understanding of the strategic circumstances of the firm. The realization of the benefits in practice (Jenner, 2010) in the employment of contractors is essential to the value proposition of the firm.

The link between learning and strategy is important because the project based organisations need for flexibility in a complex knowledge environment.

3.2.4 Knowledge and learning

Organisational learning can be seen to be a key success factor in the performance of projects. The absorptive capacity (Cohen and Levinthal, 1990), the stickiness of knowledge (Szulanski, 2003, Szulanski, 1995, Szulanski, 1996) and the development of social capital (Nahapiet and Ghoshal, 1998) are important processes that aid learning and retention of knowledge and provide a basis for innovation in organisations and more specifically in project teams. Therefore, it could be assumed that the development of organisational capacity for learning is essential to strategic success.

Learning has long been understood to be a key factor in a firm’s long term competitive advantage and innovation (Mintzberg et al., 2003, Walker and Rowlinson, 2008). Projects are seen as ‘arenas for learning’ (Söderlund et al., 2008) in which learning through the mechanisms of ‘relating and reflecting and routinising’ (Söderlund et al., 2008) or ‘repeatability’ (Davies and Brady, 2000) allow for the exploration and exploitation of the intellectual capital of the firm (Turner et al.,
The development of competence through learning using these mechanisms is essential project capability building.

Another useful lens to understanding the development of competence is the absorption (Cohen and Levinthal, 1990) and stickiness of knowledge (Szulanski, 2003, Szulanski, 1996, Szulanski and Jensen, 2004) which relates to the learning processes and development of intellectual capital of which social capital, human capital and organisational capital can be seen to be a part (Turner et al., 2013). The ability of projects to learn can also be seen to be influenced by the project team’s social capital to overcome barriers to learning (Bartsch et al., 2013). The sources of knowledge stickiness can be seen to be an integral part of the contractor relationship with the project team and in a broader context the temporal challenges for projects in transferring staff or working in cross functional areas.

Knowledge management is fundamental basis for viewing the effectiveness and efficiencies to the firm of using contractor knowledge and expertise to the benefits of the firm. A key knowledge management process is social capital (Nahapiet and Ghoshal, 1998, Walker and Rowlinson, 2008) which provides a useful perspective for viewing the contribution of contractors to the project team. The dimensions of social capital namely; structural, relational and cognitive provides a useful framework to consider the knowledge interaction of contractors in the project team and the project team itself in its institutional setting.

The view that knowledge is part of a social context and processes appears to explain the link between organisational and individual knowing and knowledge (Nahapiet and Ghoshal, 1998). Organisational knowledge is more than a collection of individual knowledge but is the outcome of complex and collaborative social practices. One such construct is a Community of Practice (COP). COP are nominally non formal groups of people bound together by shared expertise and passion for a joint exercise (Wenger and Snyder, 2000 p.139). These organisations have been seen to be effective as structures to support on the job learning and the development of social capital in an organisation.
3.2.5 Project management leadership

Leadership is the defining human quality that binds the team into a cohesive group and motivates the team to achieving objectives. Leadership recognizes the inherent knowledge (Nonaka et al., 2001) and social capital in the group and gaps in knowledge or learning that need to be created, introduced or managed in order achieve project success. Trust also provides an important perspective of analysing ‘… what goes on inside the black box or project relations’ (Kadefors, 2004). Perhaps the most effective mechanism for managing knowledge is through the human resource management process and recognizing the implications of the temporary project organisation. Also important is leadership’s grasp of the strategic business setting including the firm’s relative competitive advantage and value creation process and means such as the relational or formal contractual arrangements that supplement to knowledge process.

3.3 What literature is not included in the scope

The literature review will focus on the processes that influence the engagement and use of contractors in the project team. The review will not consider the outsourcing of business units or the use of part time workers. The research is focussed on individuals and small groups of contractors who are engaged to deliver specific packages of work over a given duration rather than the outsourcing of project management services to contractors. This is a significant distinction as contracting out the entire project management responsibility or disciplines within the project management team such as engineering and integrated logistic support would be a fundamental business reorganisation and while this may be considered as part of the DMO managing contractor pilot project this is considered to be outside the scope of this research.

Out-tasking rather than the outsourcing of strategic business functions is the focus of this study. Outsourcing is ‘a process of transferring service delivery management responsibility to a third party for providing services that are governed by service-level agreements’ (Gay and Essinger, 2000, Walker et al., 2008b). Walker et al. (2008b) goes on to identify that outsourcing can be seen as sub-contracting activities
when a firm is unable to absorb all the required work or it is undertaking part of a firm-internal activity or process. Outsourcing then is a structured and strategic business process to devolve specific areas of business to achieve certain strategic goals.

In a more fundamental form the decision to outsource is a strategic business decision based on the make or buy decision. The issues with outsourcing such as hollowing out of organisations skills and knowledge (Domberger, 1998) is fundamental to the long term performance of the organisation. The focus will be on out-tasking of skills and expertise to complement and build the competence of the project team rather than outsourcing of business capability such as the project management teams.

Other influences such as the leadership styles in project teams will also not be considered. Project Management leadership could be seen to be an important aspect of project management capability development and performance. There is a deep body of knowledge associated with leadership which could be considered as part of a follow on study.

Closely associated with project management leadership are the cross cultural implications of contractors working in project teams. Cross cultural influences could be seen to impact the development of project management of capability and performance in a pervasive way and therefore should be considered as part of a follow on study.

3.4 Definitions

There are three concepts used in discussion of the integration of contracto’s knowledge and skills as part of a complex project management organisation’s people capability which can be seen to provide a basis for further discussion. They are the concept of human resource management, capability and project based organising.

Human resource management is defined as ‘the dimension of management directed towards managing the relation between people and their organisational context. (Bredin, 2008b p.566). The approach taken in this paper is similar to that proposed
by Bredin (2008b) in that human resource is synonymous with people. So a human resource system is a people system or human resource capability is interchangeable with people capability. The use of the term people highlights the broader interpretation than human resource and aligns with the project management body of knowledge area section of people (Project Management Institute, 2013).

The other concept is related to that of capability. The concept of capability is used in two contexts in this paper. The first is the concept of ‘organisational capability’ (Davies and Brady, 2000) as it is used to describe strategic, functional and project capability in the capability framework. (Bredin, 2008b). Similarly, capability is used to describe in an abstract way an ‘ability’ to use physical facilities with human resources to supply goods and services (Davies and Brady, 2000). This concept can be seen to be related to the combination of resources, physical assets and intellectual capital, of an organisation to create an output.

The second meaning of the concept is based on ‘military capability’ to deliver a particular operational effect (Capability Development Group, 2012). The military capability is the combination of physical and human resources to achieve an effect along the operational continuum which is usually described in terms of ‘how, when, where and for how long’ (Capability Development Group, 2012 p.2). Operational or military capability is developed to address specific strategic risks that confront the nation. The meaning of capability in this context could be seen to be an outcome measure rather than an output as defined in an organisational capability.

In the context of this paper DMO is regarded as project based firm as either a craft or organisation type (Whitley, 2006). However, it is worth noting that DMO while it acquires materiel through project based methods also sustains this equipment using operations organising. The organisation in this sense is then ambidextrous in the acquisition thorough project based organising and support of equipment through operations organising. This supports a service based logic that allows the organisation to focus its business relationship towards engaging with the ADF customer’s business processes (Grönroos and Ravald, 2011). This business process aligns with the capability definition of the ADF. For instance, in LSD the mounted
combat capability is aligned with the equipment and support of the vehicle systems that support that capability.

People management, organisational capability as it relates to competence, military capability and DMO as a project based firm providing both project based acquisition and operational sustainment support are key concepts used in this research.

3.5 Themes in the literature

Each of the major themes in the literature which contribute to a deeper understanding of the knowledge landscape surrounding the integration of contractor’s knowledge and expertise into the project team will be discussed in turn. The structure of discussion of the themes is to firstly describe the theme and then its component parts. The theme will then be related the components of the engagement of contractors in DMO project teams. Finally, the theme will be related to other themes in the study. The first of these themes in no particular priori to be discussed is project management leadership.

3.5.1 People capability

People capability is the concept on which this research question pivots. The organisation’s ability to develop competence facilitated through a conducive learning environment can be seen to be critical to development of the organisation’s core competence and performance.

This theme reviews the human resource aspect of capability and the likely dynamics involved in sourcing contractors skills and experience in the project team. There is a growing body of research in the people aspects of temporary organisations. While there has been a wealth of research in human resource management in stable operations based companies only recently has there been more interest in human resource management in project oriented companies (Huemann et al., 2007). It is suggested that the needs, aspirations and contribution of the temporary workforce is an important consideration in project success.

People capability
Human resource capability in project based organisations can be seen to be a critical component of organizational and therefore project management success (Bredin, 2008b, Huemann et al., 2007, Kamoche, 1996). As discussed earlier the resource based view of strategy proposes that resources such as human resources are a potential source of competitive advantage (Kamoche, 1996 p.216, Teece, 2009). Human resources are the ‘accumulated stock of knowledge skills and the abilities that individuals possess.’ The human resource capability of the firm manages the relationship between the organization and the people in it (Bredin, 2008b p. 566). It includes the knowledge the organization has to perform human resource management.

The human resource or people capability (Bredin, 2008) of a firm is closely linked to strategy and structure. People capability is an integrated element of the organisation’s capability which is refined further by Davies and Brady (2000) into strategic, functional and project capability. The ability of the organisation to manage skilled employees is the basis for competitive advantage and therefore it is necessary for the organisation’s people management policy, processes and practices to support this outcome.

This view appears to be supported in the strategy space by Teece et al. (1997) proposed framework of dynamic capabilities. This sees competitive advantage being generated by the firm’s processes or ways of doing things, the firm’s asset position such as intellectual property, knowledge and customer base and the firm’s development path based on strategic choices. The people capability can be seen to be provided through the firms approach to the human resource process in the project oriented firm through the process of selection and employment in the firm, assignment, employment and dispersement within project teams and finally release from the firm (Huemann et al., 2007 p.319).

The firms ‘way of doing’ people routines is inherent in its structure and culture. The project oriented firm ‘manages by projects’ and this has implications for the integration of people processes both vertically and horizontally to support the way in which projects are managed in contrast to the classically managed operations based stable firm (Huemann et al., 2007). This appears to have implications for project and
career management, the program and portfolio structures and the nature of projects such as complexity and duration. Career management, including professional development, training and on the job experience, of people who increasingly work in projects should also be considered as a longer term investment. It could be expected that higher order skill sets will be required to work in these temporary project environments.

**Workforce management**

The dynamics of the temporary organisation should also be recognized in a discussion of people capability. Important themes appear to be the temporary organizational arrangement of projects (Turner et al., 2008, Huemann et al., 2004, Huemann et al., 2007, Bredin, 2008b) and the management of temporary workers (Koene and van Riemsdijk, 2005, Cacioppe, 1999, Jarvinen and Poikela, 2006). The people capability issues for temporary organizational structures such as projects include:

- The way in which the firm is organized to manage projects such as the portfolio and program management structure including multiple project roles and how project management is integrated with line management. In the DMO environment this will require greater understanding of the System Program Office and Branch (Portfolio) structure and the way in which particular capabilities are delivered. For instance, land platform configuration management is delivered through the new capability development process in projects and managed when the capability is in service through the sustainment areas. People capability would ideally require the new capability people asset and procedures transferred into the through life support work area. So contractors providing services in this space would require platform specific and broader terrestrial systems knowledge that could be applied in development or through life in the support of engineering changes, upgrades or modifications.

- The nature of projects such as complexity and longevity, which gives rise to increased uncertainty and potentially the need for more specialist
knowledge. DMO major projects could run for many years and involve the integration of a range of technologies such as communications, sensors and protection systems some of which are reliant on other projects to procure. The need for specific domain knowledge and the coordination and integration of skill sets increases project complexity and risk and requires more exacting project management skills. From the time of inception the larger projects could run for ten years or more. The implications for people capability include managing the project team as a more classically managed stable organization with high levels of specific knowledge and skills which take a mix of experience and skills to develop. It is interesting to note that the turnover of project staff is less than the duration of the project. So there could be a number of project team members over the project life. The human resource cycle in these circumstances resembles that of a classically managed company.

- The culture of the organization such as empowerment of employees, teamwork and organizational change (Gareis, 2005) including the reward and incentive structure to support the organizational culture. The DMO culture can be seen to be characterised by the public sector risk aversion and dilution of accountability supported by hierarchical structure. There are initiatives (Mortimer, 2008b) to address these issues though the development of a business-like approach and separation of DMO from the broader Department of Defence and providing a charter to the CEO DMO to provide independent cost and schedule advice to Government. While this change in culture is occurring contractors are likely to experience a risk adverse culture that could incur higher transaction costs and less emphasis on outcomes over process.

The nature of employment for temporary workers provides challenges through managing a differentiated workforce, the transactional nature of the relationship, work identity and operational management (Koene and van Riemsdijk, 2005). The nature of employment between the professional core of an organization and the peripheral workers has been based on the value of firm specific skills. The lower
value ascribed to temporary worker appear to be as a result of the commoditization of the labour which is characterised as being generally available from the market (Lepak and Snell, 2002). The commoditization of labour has resulted in transactional behaviours which focus on the economic outcomes rather than seeking to enhance the relational or psychological engagement to the firm.

The psychological relationship is seen by Koene and van Riemsdijk (2005) to be related to the duration of the relationship, specificity of this duration, whether the outcomes are substitutable or unique, whether the employee works for two employers at the same time and whether the workers had a choice in the selection and design of the task. Another aspect related to the last point which is mentioned by Koene and van Riemsdijk (2005) but not in the same context is whether the work is done on the premises or off site. Some of the problems that might arise from a poor psychological relationship include high turnover, high sick leave and unreliability.

There could be seen to be a range of work contracted from the DMO project office. On one hand there is the commoditized routine work which is characterised by low transaction costs and low psychological relationships. On the other there is the specialist work that requires highly specialist domain knowledge on subjective tasks for defined longer periods which is characterised by deeper mutual relationships, higher levels of work identity. The areas on either side of this continuum as shown in Figure 3.1 below are either high value short term niche products such as what might be found in crisis management. On the other hand there are routine predictable highly specified tasks for longer terms. Depending on the criticality of this work it may not be suitable for outsourcing due to the deleterious effects of commoditization of work. An option might be to allocate organizational resources to develop the psychological contract and identity.
### Psychological contract / work identity

<table>
<thead>
<tr>
<th>High value – crisis management, niche skills</th>
<th>Relational – Mutual Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transactional – Commoditisation of work</td>
<td>Low value - predictable workflow – suitable permanent staff</td>
</tr>
</tbody>
</table>

**Figure 3.1 – The flexible workforce**

#### 3.5.2 People capability related themes

The themes that are allied to the people capability of firms to engage contractors highlights the need for sophisticated knowledge management processes to enhance learning and share of knowledge, align people capability with firm strategy to improve firm competitiveness, define which competencies to seek from the market or develop in-house and improve firm identity and relationships through trust and commitment process and team development.

**Knowledge**

Knowledge management in terms of the people capability of firms could be described in terms of Teece et al. (1997) dynamic capabilities framework. This framework consists of the firm’s routines or ‘how things are done’, positions and paths. The firm’s knowledge routines relate to the way knowledge is shared, reframed and combined to enhance the core competencies by the firm.

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3 This diagram is derived from work published by Koene and van Riemsdijk (2005)
particular, this could be seen as the way the firm uses knowledge to source and task contractors.

People capability contributes to knowledge related position by contributing to such assets as the firm’s stock of social capital such as know-how. Intellectual property is also a position knowledge asset.

The firm also makes strategic choices or paths in relation to people capability. While strategic choices are dependent on history and the endowments already possessed by the firm there are strategic options to consider in deciding the way forward. One of these could be the make or buy as a strategic choice. The decision to develop a particular competency or purchase it from the market is such as choice and should be based on a clear understanding to the knowledge requirement of the business.

**Make or buy**

The make or buy theme considers value, transaction costs and procurement methods in relation to people capability. People capability can be seen to be a key part of the firm’s value chain. From a resource based view of the firm people capability inputs could include know-how including tacit and deeper self-transcending knowledge.

The people capability transaction costs can be seen to be related to the friction created in transferring knowledge in the context of the firm. Researchers in this area have failed to recognize the powerful institutional and culture force at play (Walker and Maqsood, 2008 p.265) in the institutionalization of knowledge. The cost of eliciting knowledge which is best governed through relational processes rather than formal governance (Pemsel and Müller, 2012 p.3) is an important consideration. This points to the issue of friction or cost in the knowledge transaction.

The contractual mechanisms through which the people are engaged by the firm provide another insight into the make or buy decision. For permanent staff this could be through an employment contract tailored to the specific engagement or through a more generic contract as evidenced in the public sector. Either way, the
incentives and rewards (Cacioppe, 1999) should be structured to support knowledge transfer and institutionalization and build social capital and in the firm.

In relation to contracting the needed skills and experience into the project team the contractual mechanism should reflect the risks and outcomes sought in the knowledge transaction. Carson et al. (2006) suggests that relational contracting will be more robust to volatility or changes in the environment and less to ambiguity or perceptions of change to the environmental state. While formal contracting arrangements are robust to ambiguity and less to volatility. This could be applied to contracting for skills and expertise in that routine tasks that are easily defined could be commoditized, standardised and competitively purchased from the market should be formally contracted. This is because the formal contracting mechanism will address ambiguity in terms of measureable outcomes that are applied to standardised tasks and the ‘embeddedness’ of suppliers expecting future work and spillovers will reduce opportunism.

On the other hand, non-routine tasks that require specialised domain knowledge and skills may require detailed statements of work, contractual terms and conditions. This should ideally support a longer term relational contract that will enhance knowledge transfer and build on the firm’s stock of social capital. These non-routine tasks would be suitable to contract under a relational contractual mechanism as this type of contract should address the future volatility in changes to the environment. Again, the embeddedness of Defence industry suppliers should mitigate against opportunism.

**Strategy, portfolio and program management**

The resource capability view of the firm provides a framework for discussing the strategic value of human resource management (Kamoche, 1996). Resources such as knowledge, skills and expertise applied with the firm’s routines and within this framework human resource policies and practices contribute to a firm’s core competencies. It is argued that the firm’s people capability as part of the firm’s core competences is central to competitive advantage and effect value creation and profit.
The project oriented company is structured to provide a relation between a stable line organization and the temporary project organisations (Gareis, 2004). This project structure is provided by portfolios, programs and perhaps a project management office embedded in a classic functionally based firm structure.

The DMO as an agency of the Department of Defence appears to be structured along the lines of a project oriented company. The structure appears to represent a combination of organizational features such as a ‘machine bureaucracy’ with a ‘weak’ functional matrix (Mintzberg et al., 2003), superimposed with domain like programs and projects. The implications for people management are that policy and practices are rigid and inefficiently managed as they appear not to reflect the needs of projects. The engagement of contractors into the project team is managed through a pre-selected pool of companies controlled by the corporate area in DMO. Although there have been efforts in recent years to make the engagement process more efficient it remains bureaucratic due to the senior levels of approvals and restriction on head count (Chief Finance Officer DMO, 2012).

Project management leadership

Leadership is about change and change management is a core areas in human resource management literature (Bredin, 2008a). Preparing for change with the skills ideas capabilities needed to continuously change rather than following the cyclical periods of gradual change interspersed by revolutionary upheaval - punctuated equilibrium model suggested by Gersick and Hackman (Gersick, 1991, Gersick and Hackman, 1990). Leadership can be seen to be a key ingredient in the change process and the achievement of effective change.

3.5.2 The make or buy decision

The make or buy decision is central to determining whether to grow and in house people capability or to contract in that capability. The make or buy decision is seen through the theoretic lens of the supply chain, procurement and value management. This has important consequences for organizational competence and learning.

The supply chain management and procurement theme is closely related to the strategy, portfolio and program management theme and knowledge management
theme. The strategy being pursued by the organization should be reflected in the make or buy decision and the procurement method chosen. The procurement decision is the medium through which a value assessment can be determined.

The make or buy decision lies in two strategic choices (Domberger, 1998 p.3). These are the location of the organisational boundary and the structure of the contractual relationship. The choice of the organisational boundary is about what the organisation produces itself and what it is prepared to seek from the market. This strategic choice should be driven by core competence decisions and the transaction cost economics (Walker et al., 2008b) of such strategies. The boundary of the firm should be ‘derived rather than taken as given’ (Williamson, 1996 p.133) and therefore the activities which a firm undertakes or the boundary of the firm should be determined from an analysis of the market and competitive positions of each firm within the industry.

The stated vision for the organisation is published as the desire to be ‘the premier program management and engineering services organisation in Australia’. In this vision it is apparent the program management can be seen to be a core competence of the organisation and one therefore which is within the organisational boundary and should not be routinely outsourced or purchased from the market.

This is confirmed by the resource based view of the organization (Walker and Rowlinson, 2008). The organisations tangible and intangible assets should be deployed strategically to stay ahead of the competition. Since the project management skill set is seen to be strategically important to the organisations effectiveness then outsourcing parts of it could be impede this aim.

Importantly, Conner and Prahalad (1996) note the importance of knowledge as a critical resource. The outsourcing parts of a key competence could have consequences for the creation and transfer of tacit knowledge within the organisation. Further, (Walker and Rowlinson, 2008 p.7) notes that ‘firms can internally view value as being their capacity to maintain or increase the most valuable of the stock of resources. Project management skills and techniques are
clearly part of the organisations competence and therefore any outsourcing of this competence should be managed closely.

So while the surge requirements for additional project management skills for short term requirements appears to meet the organisational objectives this has longer term implications. Choosing to engage contractors for medium and longer terms instead of engaging permanent employees appears to deny the organisation the benefits of organisational learning while increasing costs and presenting potential issues of probity and accountability. As Walker and Rowlinson (2008) p.9 notes ‘outsourcing should not be the strategic objective, but an option to achieve a strategic objective’. The strategic object remains the development of project management expertise.

Viewed from the core competence perspective the reasons for outsourcing the project management or other functional skill sets used for delivering the organisation’s acquisition outcomes can be seen to be quite limited. The organisation’s key role in acquisition requires the establishment of properly qualified and trained project teams. The longer term sustainment of these project teams requires people to be trained in the specific project management and contracting processes and methods.

A preferred option is to ‘out task’ (Walker and Rowlinson, 2008 p.9) project management work rather than outsource. Out tasking is seen as a short term operational decision rather than a routine way of supporting long term operations. The transaction costs in out tasking are significant (Treacy and Wiersema, 1993) and are only beneficial if an on-going relationship is developed with the supplier. Issues with on-going relationships in this situation are the sensitivities surrounding foreground and background intellectual property and the switching costs once a supplier becomes established in the organisation.

**The value chain**

The value chain for the organisation is outlined in Figure 3.2 below. The value chain highlights the DMO value proposition in the engagement of contractors into project management teams.
Figure 3.2 - The value chain for the integration of contractors in DMO
Value Proposition

Walters and Lancaster (2000 p.160) note that ‘the value proposition should be the firm’s single most important organizing principle.’ The value chain for the integration of contractors in DMO is shown in Figure 3.2 and is based on Walters and Lancaster (2000) value chain model which in turn is influenced by Porter’s (1985) value chain concept. The model is applied to the integration of contractors in DMO and was developed from the reflective learning assignments as part of the DPM. The value proposition is located near the centre left of the diagram. It is fed by an assessment of key success factors and corporate value from the customer left side and corporate value strategy and positioning from the business or right side of the value chain. The value perspective shows that it is important to have project management team roles filled and complete work packages at short notice with competent domain experts with specific skill sets. It is also part of the proposition to share risks with contractor and complement organisational learning. Other aspects of the equation to be considered are the benefits of the engagement as compared to the procurement and transaction costs.

The benefits of adopting a service perspective in a customer-supplier relationship can also be seen to be significant (Grönroos, 2011, Grönroos and Ravald, 2011). In this perspective only value can be extracted by the customer although the alignment of the customer and supplier value creation, purchasing, usage and marketing processes to the transaction of integrating contractors into complex organisations should provide the mutual creation of value. Facilitation of value by the supplier requires access to customers as this provides opportunities to identify and exploit value improvements in the customers supply chain. This appears to assume a relational contractual arrangement that provides opportunities for learning and competence development that can be shared between the DMO and contractor.

Transaction cost economics

The transaction cost approach is described by (Winch, 2001 p.800) as consisting of three elements. They are contingency, behavioural and environmental or atmospheric factors. The contingency factors are only an issue when they interact with each other and explain why the cost of transacting increases in different situations. For instance, the contingency
factors of asset specificity, uncertainty and frequency can interact to cause friction such as removing uncertainty then negotiations can take place even if asset specificity is high without opportunistic behaviour (Winch, 2001).

In this case, the contingency factors such as uncertainty and asset specificity particularly in time and materials style contracts is low. While the frequency of transaction remains high the ability of the buyer to minimise opportunistic behaviour is high. Therefore, detailed contracting methods are not required and there is perhaps an opportunity to reduce contractual conditions and market competition and still retain an effective contracting mechanism.

Transaction cost economics as noted previously is about the efficiency of market transactions compared with internally organised production (Domberger, 1998 p.15). In short the transaction costs associated with the make or buy decision.

The hidden costs associated with outsourcing contracts are noted by (Walker and Rowlinson, 2008 p.5) as searching and identification of a vendor, transitioning services, monitoring the contract and termination. These costs of contracting while not explicit are acknowledged as the procedures for engaging, monitoring and termination are well documented. The pre-qualified web based method could be expected to provide lower transaction costs than the open tender method although even the exact costs of this method are not well known in the organisation.

The procurement decision will create friction in the form of costs based on the governance structures of the organization (Muller and Turner, 2005). The principle agent theory of contracting provides some insight into the costs of monitoring a contract. Cost can arise from opportunistic behaviour by either party depending on the bargaining power and contracting hazards which arise once a contract is entered and unforecast events occur. Where the principle bares the risk as in a fixed price contract, such as the one being discussed then the requirement for monitoring is important. These issues increase the costs of contracting.
**Costs of Contracting**

The other costs of contracting are associated with the diminished opportunity to develop staff are hollowing out of the organisation, loss of skills, loss of corporate memory and weakened innovation capability.

**Value Adding Opportunities**

Value adding opportunities from the outsourcing of project management capability could be based on improving the deleterious effects of outsourcing knowledge development, reducing the transaction costs associated with contracting and improving the sharing risk in the contract with the agent. The eternal question is whether the cost of contracting outweighs the benefits.

The current restriction in the engagement of full time employees governs the effectiveness of measures to improve the level of organisational learning. If the level of full time employment was sufficient to meet the longer term resource requirements of projects then perhaps the development and contracting of short term task based contracts would more efficiently achieve the strategic objective to be the premiere program management organisation in Australia. This would require the refinement of project management tasks to specific tasks with predetermined inputs and a review and assessment of outputs or deliverables. While e-procurement methods and the use of a pre-qualified panel reduces the transaction costs the specification of work and monitoring of contracts would require significant work by the project office.

Currently the majority of risk is borne by the principal. A risk sharing arrangement based on relational contracting arrangements which encourages agents to innovate and create efficiencies would be much preferable to the current arrangement whereby agents are payed agreed rates which are almost divorced from quality and productivity. Transaction costs to achieve higher levels of specification and monitoring appear to be a barrier to the establishment of more equitable risk sharing arrangements. Perhaps the development of efficient procedures for monitoring and compliance would allow for risk to be shared more effectively.

In the DMO context the decision to make or buy the project team skills and experience is influenced by a number of factors.
Procurement forms

The procurement choice in the engagement of contractors is based on a number of factors which appear to reduce the transaction costs while retaining core competencies within the organisation. These factors include; human resource policy, development of core competencies within the organisation, the mature nature of the market and the use of e-procurement methods. It is suggested that these key factors provide the environment for the procurement choice.

The process for engaging contractors to meet the conditions of the Commonwealth Procurement Rules (CPR) adds to the transaction costs. There are two methods for engaging contractors they are: an open tender arrangement which is specification and contractually intensive and policy precludes the use of this method for skills available on DMOSS; and a pre-qualified panel of companies which have agreed Commonwealth standard terms and conditions.

The open tender method is more usual for time and resources based contracts and is based on a formal tender process. The basic process is as follows:

- Initial authorisation is sought from a one star or Senior Executive Service delegate in the form of a business case.
- A draft contract is then developed including standard Commonwealth terms and conditions and a statement of works which outlines the task requirements.
- The tender is advertised in newspapers and through the AusTender website https://www.tenders.gov.au/ and released to the Australian market.
- Responses to the tender are evaluated against specified criteria and a nominated financial delegate reviews and approved the source evaluation report.
- The successful tender is then engaged in negotiations to refine the offer and the unsuccessful bidders are formally advised of their performance and offered a debrief.

This process is a transactional fixed cost construct in that the cost risk / relationship risk is borne by the Commonwealth as seen in the construction cost continuum described by (Walker and Hampson, 2003 p.13). The cost of tendering is borne by the client although there is low risk for the client in delivery and minimal motivation for innovation.
On the other hand, the pre-qualified web based method reduces the transaction costs in terms of time and resources required to engage contractors. A pre-qualified tender panel has been established that complies with standard terms and conditions and categories of support for particular hourly rates. The process is similar to the open tender method although the statement of work is released and responded to electronically to the pre-qualified panel. This method is most effective for task based contracted services which define the outcomes and leave the implementation to the contractor.

While there are identifiable impacts from the contracting method there are other key factors which appear to influence the cost and risk relationships between agent and supplier. Perhaps the most significant of these other areas are organizational policy constraints. For instance, that restrict the amount of full time employees. This shapes the ‘make or buy’ decision in a particular way.

In this case it appears to impact the knowledge management process by restricting the opportunity for individual and organisational learning through the development and retention of full time staff. While the shift from ‘bureaucracies to enabling agencies’ (Domberger, 1998 p.25) meets in public sector management may have some benefits in introducing market discipline and flexibility in cases where the labour shortages are permanent, organisational learning, cost and probity and accountability issues should be considered.

The make or buy decision related themes

Knowledge and learning

The make or buy decision should support the development of individual competence and the building of organisational capability (Söderlund et al., 2008). This can be seen to be enacted through insourcing particular skills and expertise that are not in the current organization and the exploitation of this knowledge (Turner et al., 2013) in order to enhance organisational capability.

Learning is important to managing the organisation’s contractual capability and relational capability (Hartmann et al., 2010) and achieving the benefits of increased trust, decision making and therefore better organization outcomes.
Strategy, portfolio and program management

The sourcing of competence through insourcing versus growing the capability inhouse is suggested to be a strategic decision. The cost of training and developing organisational competencies could be at a basic level compared to the cost of recruiting and inducting appropriately skilled project managers. Other issues such as cultural alignment and rewards could also impact the benefits acquired under a recruiting strategy. Turner et al. (2013) p.324 notes the need to look outside the boundaries of the firm through the implementation of a ‘supply chain strategy … to offset internal weaknesses’ in the organisation’s ability to exploit or explore.

Another strategic option in LSD’s situation is to outsource project sized tasks.

People capability

The make or buy decision to develop in-house competence or contract in that competence can be seen to be a central part of the organisation’s people capability. It is a strategic decision based on considerations of the organisation’s core competence and other environmental influences such as the employment climate as to whether an in-house capability is grown or the competence is contracted in.

3.5.3 Strategy, portfolio and program management

Strategy, portfolio and program management covers the areas of strategy, the nature of the temporary organisation, organisational capability, project management competence. Strategic planning in people capability provides the overarching framework for considering the integration of contractor’s skills and expertise into a complex organisation.

The strategy, portfolio and program management theme includes the broader project management body of knowledge areas of strategy, project management capability including the competence of project managers and lastly, project success. Strategy is perhaps the fundamental aspect of this theme as the strategy is concerned with the competitiveness of the firm including defining the benefits and value that are delivered through project management. Project management capability including the competence of project managers is developed through the allocation of the firm’s resources to achieve benefits and value and ultimately project success. This theme provides the basis for understanding
the broader project management capability and specifically the capability of the project
team.

Strategy according to Mintzberg et al. (2003) ‘is the pattern or plan that integrates an
organisation’s major goals, policies and action sequences into a cohesive whole.’ It is the
process by which firms marshal such assets as their resources, process and knowledge to
achieve and sustain competitive advantage. Teece et al. (1997) presents a ‘dynamic
capabilities’ approach to describe the ‘firm’s ability to integrate, build and reconfigure
internal and external competences to address changing environments.’ Competitive forces
frameworks, game-theoretic models and resource-based perspectives provide different
views on how dynamic capabilities operate within the firm.

It is suggested the resource based perspective provides the best sight into that management
of internal and external resources. This perspective notes the importance of firm specific
factors in firm performance (Teece et al., 1997 p.514). This supports the notion of firm
capabilities such as learning and management routines as being of primary importance to
firm success. In the context of the resource based perspective the sourcing of external skills
and knowledge from the market to enhance the ‘… firms idiosyncratic and difficult to
imitate resources’ (Teece et al., 1997 p.513) can be seen to be a core competence of the
organisation.

The engagement of contractor’s skills and experience by the project team should be aligned
with the corporate strategy. The value proposition for engaging contractors should consider
the existing capabilities of the firm and the firm’s needs for future development of
competencies in the project teams and project management capability. Project
Management success should be measured against achievement of the firm’s strategy even
though project management failure may contribute in achieving strategy success as learning
and other indirect value and benefits may be realized. (Walker and Rowlinson, 2008 p. 140).

Organisational capabilities refer to particular forms of organisational knowledge that enable
an organization to perform its core operations (Dosi et al., 2000). In the context of this
study the organizational knowledge as embodied by the skills experience, processes and
policies of the firm that determine the firm’s specific capability and core competences.
Teece et al. (1997) proposes a dynamic capabilities framework that highlights the need for
firms to be responsive, rapid and flexible coupled with the ability to coordinate and redeploy internal and external competences. This serves to highlight the need for firms to be agile, flexible and continue to develop the firm’s competence. It is suggested by Kamoche (1996) that this contributes to the development of a firm’s unique core competence which leads to sustainable competitive advantage.

The open system perspective considers the important role that capabilities contribute to the management of internal and external resources. The engagement of contractors provides a source of skills and knowledge that can be used by the firm to develop core competence. The capability of the organisation to identify the need for external resources such as particular knowledge and skills and source the needed resources from the market is then a key capability.

**Strategy**

Organisations or firms in the public of private sector exist to create value by transforming the firm’s resources into outputs such as products, services or ideas (Walker and Rowlinson, 2008). The private sector is driven by competition to achieve efficiencies in the transaction and value creation based on an economic imperative.

On the other hand, the public sector can be seen to apply a similar strategic process but is perhaps more focused on delivering benefits and value to the community rather than seeking an economic return. Western governments in the past few decades have sought to encourage competition in the public sector through exposure to the markets using such mechanisms as contracting out or the privatisation of government services (Domberger, 1998 p. 25-29). The Australian Government’s Procurement Rules underscore this policy (Department of Finance and Deregulation, 2012a). Strategy can be seen to be set by government through the parliamentary process. Outputs and outcomes in the public sector sense are viewed, using the market as a benchmark, on a value for money perspective. The value for money principle requires ‘a comparative analysis of all relevant costs and benefits of each proposal throughout the whole procurement cycle.’ It is further enhanced by encouraging competition, promoting the efficient, effective and ethical use of resources and making decisions in an accountable and transparent manner (Department of Finance and Deregulation, 2012a p.10).
The DMO strategy

In DMO’s circumstance a Government authored Defence White Paper contains the business strategy. The strategy is delivered through an ‘outcome and programs framework’ that is used both as a means of structuring corporate governance and management arrangements and reporting on planned and actual performance (Department of Finance and Deregulation, 2012b). The outcomes describe what Government wants to achieve and programs are the ‘how’ and the ‘what’ is being achieved and performance reporting identifies if it is succeeding.

In the outcome and programs framework DMO has one outcome and three programs. The outcome is ‘contributing to the preparedness and Australian Defence Organisation through efficient and effective acquisition and though life support of military equipment and supplies.’ The programs through which the outcome is delivered are:

- Management of Capability Acquisition;
- Management of Capability Sustainment; and
- Provision of Policy Advice and Management Services.

The capability acquisition program is the area in DMO which is principally managed through project management practice and in which the contractors are engaged.

DMO is primarily funded through purchaser-provider arrangements which are underpinned by Materiel Acquisition and Sustainment Agreements. The portfolio budget statements tendered to Government in the annual budget session of Parliament provides the performance and funding required to deliver on this white paper strategy.

The DMO operates in a monopsony market in Australia. It is a sole buyer and there are no other buyers in the domestic market for Government defence requirements in goods and services. On the supply side there are a variety of firms that are multi nationals such as Thales Australia, Raytheon and British Aerospace. There are also firms whose business depends on supply and support of an in-service fleet such as the Australian Submarine Corporation and General Dynamics Land Systems.

There are also a wide range of firms that contract into DMO project teams. Some maintain a consulting arm to their business which has other business units selling equipment or
support services such as the multi-nationals mentioned above. Other consulting firms such as KPMG and Price Waterhouse operate principally outside Defence and have a consulting business unit that spins off this experience to provide management consultants and contractors into DMO project teams.

The Government strategy for engaging contractors from this is aligned principally with Government legislation such as the Financial Management and Accountability Act and the CPRs. The strategy generally, seeks to encourage competition and gain a value for money outcome while maintaining ethics and probity standards.

**Project management capability**

The literature on firm capabilities and competence is based on the work of Prahalad and Hamel (1990) in core competencies, (Chandler and Hikino, 1994) in functional and strategic capabilities and (Teece et al., 1997) with dynamic capabilities. This work has been developed further into the project-led, project-dependent and project based firms (Söderlund, 2005). The key literature in this area is Söderlund et al. (2008) on the development of competence, Cattani et al. (2011) on capabilities in project based organisations, and Davies and Brady (2000) on the importance of ‘economies of repetition’ in building capabilities in complex product systems. The theme is closely aligned with how the project organisations learn to develop competencies and capabilities.

Strategy is very much about assigning the right skills and competencies to the project and ensuring the projects which have the best strategic fit are done. Crawford et al. (2006) describes this as doing the right projects in the right way. Söderlund (2005) p.455 describes this strategic fit in terms of project competence in ‘the firm’s ability to generate / select and implement / execute projects skillfully’. So successful projects are selected through a process of deciding what projects to do and how to pursue them. This means that strategic choices need to be made to determine how best to deploy the resources of the firm and what competencies are required to be developed to deliver the project outcome. The competencies not only need to be identified and developed but an optimal portfolio and program structure needs to support the development and delivery of these competencies. In summary, the firm’s strategy determines the mix of capability required to maintain a competitive advantage.
This framework can be applied to the engagement of contractors into the project team. Morris and Jamieson (2004) suggest a model for linking strategy to competencies, roles, responsibilities and accountabilities. This involves establishing a competency framework for all key jobs in an organization. This includes behavioural and project management functional competencies that support project capability and corporate strategy. A project capability gap analysis could then be used to identify capability deficiencies that could then be satisfied through the application of the firm’s existing resources or through engaging contractors or recruiting people with the required competencies in the form of skills and experience from the market.

**Complexity**

Complexity in projects has been characterised by Shenhar and Dvir (2004) as consisting of Novelty, Uncertainty, Technology and Pace. These features increase the complexity of projects and require more highly developed approaches to project management. Indicative of these approaches is the emergent strategy (Kurtz and Snowden, 2003) and the management of the ambidexterity (Turner et al., 2013) in organisations. Emergent strategy recognised that order, rational choice and intentionality are underlying assumptions which are not borne out in reality. Approaches such as the Cynefin framework (Kurtz and Snowden, 2003) which relax these assumptions have the potential to be more successful.

On the other hand, mechanisms for managing ambidexterity are viewed through an intellectual capital lens that shows how organisations can exploit and explore knowledge to achieve sustainable competitive advantage. The perspective can be seen to show how contractor’s skills and expertise could be used to balance an organisation’s exploration (creating new knowledge) and exploitation (refine existing knowledge). Important to this approach is the use of an organisation’s people capability to support organisational ambidexterity.

**Competency**

In the context of this discussion competency and capability are not interchangeable terms. The term capability is described in the Macquarie Dictionary as ‘the quality of being capable; capacity; ability or a quality, ability, etc., that can be developed or used.’ This is a holistic term applied to individuals or organisations to describe a system of different
elements that forms a certain capacity for action. For the purposes of this study the term capability is used to describe the organisations resources in the forms of people, organisation, structure, training, education, development and facilities. The sum of these elements when used in combination provides the determined and notional organisation or project outcomes.

Competency on the other hand, and in this study is seen to relate to an individual rather than an organizational quality. The term is described in the Macquarie Dictionary as a ‘competency in skills such as communicating ideas, problem-solving, using mathematical ideas and techniques, etc., which can be measured and assessed.’ So the term is used to apply to an individual’s abilities to perform tasks as part of a project management team. The capability term is applied to an organisations ability to apply a range of resources to achieve desired outcomes.

**Building project management capability in DMO**

DMO seeks to support the Government strategy by requiring projects to seek appropriate contractors through the DMO Support Services (DMOSS) panel. The DMOSS panel is the principle way DMO sources the skills and knowledge required to supplement project teams.

The DMOSS panel consists of a prequalified group of companies who offer their services to at least one of the skill sets listed on the panel. DMO projects are required to advertise the requirement to all companies with the skills set available on DMOSS and complete a detailed evaluation of responses against predetermined criteria for all tasks. Engagements are approved by Defence Executives and are required to consider how the contractor’s performance will be evaluated and whether the contractor’s skills and knowledge will be transferred across to DMO staff.

**Project performance**

The concept of project success has evolved over time (Walker and Rowlinson, 2008). The evolution has occurred through the determination of success from the project management ‘iron triangle’ view of cost, schedule and quality to considerations of the intangible benefits of projects (Cooke-Davies, 2002). The intangible benefits of projects could be defined by the assessment of ‘outcomes’ which includes a consideration of the deliverable (outputs) and intangibles such as ‘soft’ values of ‘relationships, knowledge, processes and systems,
leadership and communication, culture and values, reputation and trust, skills and competencies’ (Nogeste and Walker, 2005).

In the assessment of intangibles benefits to projects such as skills and competencies is important to the value proposition when discussing the contractor’s contributions to the project team. In the context of DMO’s projects the development of knowledge appears to be given a lower priority to the harder data iron triangle data related to cost and schedule.

Some project success protagonists such as (de Wit, 1988, Cooke-Davies, 2002, Munns and Bjeirmi, 1996) have recognised the difference between project management and project success. The suggestion is that project management could be successful while the project could be viewed as a failure as it has not delivered against the project business case. As noted by Walker and Rowlinson (2008) ‘project management success cannot compensate for an organisation choosing the wrong problem to solve or for poor project definition and design’. It is suggested that ‘attractiveness and achievability’ aspects of a project are not given enough weight in assessing a projects suitability and strategic fit (Jenner, 2010).

Incidental benefits that are realised well after project delivery can be seen to be a result of project management expertly executing a project. The Sydney Opera House project is a case in point (Walker and Rowlinson, 2008 p. 140-141). The project was described as an ‘unmitigated failure’ at the time of construction due to cost and time overruns. The construction of a national icon was masked at the time by more functional criteria. Another example of this phenomenon in the Defence context is the design and production of the Bushmaster Protected Mobility Vehicle (The Auditor-General, 2004). The vehicles were conceived under the Defence of Australia doctrine in the 1980’s to move infantry long distances in Northern Australia. The routes in Northern Australia were seen to be particularly vulnerable to interdiction from small groups of enemy combatants who may place mines and other explosive devices on the route. When the vehicle was ready for issue to units in 2000 the vehicle was viewed as being unsuitable for current Army operations in the tropic terrain of East Timor. After September 11, the need for the Army to fight in the Middle East in arid terrain and with a mine and improvised explosive device threat the attitude to the vehicles utility changed and has been used with particular success in this threat environment. These examples highlight the difficulty in ascribing project success or failure in the short term.
It is proposed that an assessment of the intangible criteria of project management capability could provide an improved likelihood of projects success. This means ensuring the project team has the requisite intangible capabilities required for project success such as knowledge, process and systems, leadership and communication, culture and values, skills and competence. Build a competent team with access to the required resources and a sound governance structure and success is more likely. In terms of engaging contractors into the project team it is important that the intangibles benefits contribute the development and performance of the team.

The importance of project management tools and methods to successful projects is highlighted in the work of Jugdev et al, (2013). An interesting aspect of this research is the impact of certification as an indicator of competence or project manager’s maturity level (Jugdev et al, 2013, p.544-545). More skilled project managers adapt and modify tools and methods rather than use multiple tools. This highlights the importance of a skilled and competent project management teams to achieving project success.

Another perspective of project success is provided by Morris and Jamieson (2004) who note the complex task of translating business strategy into projects outcomes and the need to define the roles, responsibilities and accountabilities (RAA) for the wide range of project management processes and translate these into job competence levels. It is suggested that the project team RAA are important component of the total project management team’s capability. The RAA define the competencies required to deliver the project outcome and form a key part of the human resource capability. The competencies required then need to be sourced or developed from the firms current stock of skills and experience, recruited or contracted from the broader market.

Therefore, DMO’S measures of project success can be seen to be derived from Government strategy delivered by projects through the outcomes and programs framework. Often the project success measures do not adequately address the intangible needs or benefits and usually rely on more traditional output measures such as quantity, quality, timeliness, cost and price. In this context project management capability and in particular the skills and competence of the project team can be seen to be aligned to the traditional measures of success rather than the intangible measures and benefits. Then the link between strategy and competence is as Morris and Jamieson (2004) suggest a complex task. Clearly, the
benefits in understanding the link between project competencies and strategy is one worth further investigation.

**Strategy portfolio and program management related themes**

This strategy, portfolio and program management theme is nestled in a group of closely related themes which are described in this study.

**People capability**

Strategic management can be seen to be supported by a range of the firm’s dynamic capabilities. One of the capability areas that contribute to the core competence of the firm is human resource or people capability (Bredin, 2008b, Söderlund, 2005). The capability is described by Teece et al. (1997) as managerial and organizational processes, positions and paths. Managerial and organizational processes are routines, postions are the firm’s assets such as intellectual property, customer base and external relations with suppliers and paths are the strategic alternatives or choices of the firms in preparing for the future.

The managerial and organisational routines are suggested to be paramount in this analysis and they provide the patterns of learning and practice. These routines provide the ‘way things are done’. Taking the example of knowledge as a strategic tool then the knowledge routine would include the process and practices of developing, diffusing and using the organisations knowledge capability. To follow this framework further, positions would include the firm knowledge embodied in the individuals and organization and paths are the strategic choices organization make to establish knowledge as a core competence.

Teece et al. (1997) applies this framework generically to the larger stable organization. However, it could be also used to discuss the people capability in terms of the project oriented organisations (Gareis, 2004). In this context it is about the way the people asset is selected and employed in the project-oriented organisation, then assigned, employed and dispersed from a project or projects, and finally released from the project oriented organization (Huemann et al., 2007 p.319).

People capability is an integrated element of the organisation’s capability which is refined further by Davies and Brady (2000) framework into strategic, functional and project capability. The ability of the organisation to managed skilled employees is the basis for
competitive advantage and therefore it is necessary for the organisation’s people management policy, processes and practices to support this outcome.

A strategic choice is the sourcing of the people capability. In simplistic terms people’s knowledge and skills can be recruited into the organization on a full time basis or it can be engaged for limited periods for specific tasks. Teece et al. (1997) p.518-519 notes that strategic advantage requires the integration of external activities and technologies and therefore the importance of external integration and sourcing. This is open systems view and while not specifically a people capability issue it can be seen to apply to this perspective. For instance, if a particular capability is required to develop a firm’s core competence then the knowledge and skills to underpin that competence could be sourced from an outside agency which maintains the ‘state of the art’ in that competence. Professional services firms that provide services in change management, accountancy practices such as audits or business performance or information technology.

Another feature of the people capability and organizational strategy is the capability of the project oriented organisation to source externally for particular project skill sets and experience. Research has found that coordinative routines and capabilities such as embodied in ‘the way things are done’ have a significant impact on performance variables such as development cost, development lead times and quality (Teece et al., 1997). Therefore, it could be expected that the performance of organizational routines to source external people skills and experience could be influenced by the organization dynamic capabilities and strategic management.

**Knowledge management**

The theme is related to knowledge processes as it is from knowledge and learning that individual skills and experience are applied to develop organisational capabilities. These competencies form part of the firm’s core competencies and influence the way firm’s develop and deploy these competencies are at the heart of competitive advantage. Cattani et al. (2011) support this view as ‘... it is the dynamic interaction between capabilities, learning and the relational context that ultimately determines whether firm success is long lasting or short lived’.
The key characteristic of projects is their temporary nature and how the organizations' temporary existence influences learning. The learning process is important as it can determine the firm's capacity for innovation. The paradox in the learning process is how in a temporary organization learning can be permanent and contribute to project management capability and innovation.

The firm's strategy and the project management organisation can be seen acting at the individual level in the development of project management competence and organizationally in the development of organizational competence.

Overlaying these concepts is project or project management success criteria.

Viewed from the perspective of employing contractors as part of the project teams is their contribution to improving project management and firm's competitive advantage.

Another perspective of an organisation's competitive advantage is to view the firm's dynamic capabilities or the capacity of a firm to marshal its resources to compete. In private enterprise this is reflected in the firm's ability to increase revenues, physical and intellectual property and organisational competence or skills and knowledge (Walker et al., 2008b).

In the public sector this is more difficult to determine. Jenner (2010) suggests that it is about benefits and so the focus should be on value rather than cost. Soft metrics and assessment of benefits can be problematic when considering the business case for a range of projects. In the DMO context equipment projects are assessed on their basis of contribution to Defence capability and alignment with Government policy. The high cost of fighter aircraft against warships and armoured vehicles in the Government context need to be balanced against other Government spending programs. While the engagement of contractors for tasks in the project team delivering some of these larger projects is clearly not a Government level decision the outcomes should be measured against the DMO capability to deliver on the capital budget.

**The make or buy decision**

So this leads as in the private sector to decisions about the transactions costs and the opportunity cost of foregone opportunities in making strategic choices. In DMO for instance, the opportunity cost of an underperforming project which fails to achieve spend is
tying up funds that could have been deployed in public sector infrastructure such as hospitals or schools.

Also the tendency is to under estimate transaction costs. The effort to establish and manage a contract that reflects and organisationally suitable risk profile needs to be considered. The contractual process for engaging contractors in DMO is time consuming and bureaucratic. It is suggested that this reflects the risk aversion of the Department and political requirement to be seen and perceived to be even handed in the allocation of work to the private sector.

3.5.4 Knowledge management

Knowledge management is a central process in the integration of contractors in complex organisation. An organisation’s knowledge resides in its memory which is located in its routines and procedures and its absorptive capacity to recognize the value of new external knowledge assimilate it and apply it (Cohen and Levinthal, 1990). Contractors are a valuable resource that can provide the project based organization access to knowledge resources outside the firm’s boundaries (Bartsch et al., 2013).

Knowledge management is a key theme for integrating contractor’s expertise and knowledge into the project team and understanding the value proposition. This theme is intertwined in the literature but can be seen to be closely related to the strategy, portfolio and program and the people capability themes. Knowledge management is noted by Cattani et al. (2011) as pertinent to temporary structure and permanent learning. In project based organisations the retention of experience and learning is a challenge as the locus of learning shifts continuously across boundaries while more permanent organizational structures allow for the conservation of organization experience even when there is a loss of individuals (Cattani et al., 2011). The knowledge perspective is discussed to further understand the interaction of contractors with the project based organisation.

An understanding of the knowledge processes is important to the understanding of the value and transaction costs associated with the integration of contractor’s expertise into the project team environment. Davenport and Prusak (1998) define knowledge simply as that which ‘derives from minds at work’. Knowledge has been defined (Alavi and Leidner, 2001 p.10) in terms of: state of mind: an object: a process: a condition of having access to
information: and a capability. Knowledge is a complex process but it is generally uniquely human (acknowledging the work in expert systems and artificial intelligence); social, intuitive, unpredictable and not always concrete in its form. Knowledge can be seen to be derived from data and information which is created in the minds of individuals, is closely related to action and involves components such as experience, truth, judgment and rule of thumb (Davenport and Prusak, 1998 p.5-12).

In addition, there are considerations about the collective and individual nature of knowledge and its organisational or collective knowledge different from that of individuals in the same collective. Discussions about the sum of individual knowledge being greater than the whole or group and the conditions under which this might not be so such as in dysfunctional groups or where the conditions of resource exchange may inhibit the creation or transfer of knowledge. Collective blindness or groupthink (Nahapiet and Ghoshal, 1998 p.248) are examples of this phenomena which can have disastrous consequences. On the other hand, the importance of collaboration in the creation of knowledge learning experiences embedded in shared experience is support for the view that new knowledge creation occurs through social interaction and coactivity. The view expressed here is that learning and therefore knowledge creation and transfer occurs in complex, collaborative social practices.

Recent challenges have been recognised in transferring knowledge from an ageing workforce (Pollack, 2012). The methods and processes for transferring the tacit knowledge of contractors is not unlike that for experienced workers. The importance of trust, emergent strategies and informal arrangements in knowledge management programs can be seen to be more successful.

It is generally recognised that firms provide an efficient mechanism for the creation and transfer of knowledge (Kogut and Zander, 1997, Nahapiet and Ghoshal, 1998). This concept is further defined in discussions on the resource based view, capabilities and strategic advantage in firms. Further, Nahapiet and Ghoshal (1998) note that ‘organisations have some particular capabilities for creating and sharing knowledge’. This contrasts with the market which is not bounded and therefore is not as effective as firms in creating the conditions for resource exchange. This supports this view that social and intellectual capability of a firm creates its particular competitive advantage. It is suggest that the
implications for firms when engaging contractors is that while people are able to be introduced and excluded from the firm it is difficult to transfer collective knowledge as it is specific to the socio cultural and firm specific advantage.

An important aspect of knowledge is that it can be tacit or codified and this can drive a firm’s strategy. By way of an example, Hansen et al. (1999) explains how professional service firms use tacit knowledge which is embedded and unspoken through a strategy of supporting the creation, sharing and transfer of knowledge as part of a rich social process that invests in people as opposed to a codified strategy in which knowledge is recorded explicitly in protocols, routines and manuals with less experienced staff and a standard commoditised approach to delivering outputs. A further knowledge type is described by Walker and Rowlinson (2008) p.264 as ‘self-transcending knowledge’ that could be seen to be a higher order of tacit knowledge which is liberated in the creative process. An example of such knowledge is that displayed by an artesian or professional who intuitively understands the creative potential of materials.

The metaphor of ‘explicit islands in a tacit sea’ describes a multidimensional image of a number of key knowledge processes (Hicks et al., 2007). The islands, bridges between island, sea, shore and beaches are key elements of the image which relate to specific knowledge processes and concepts. The metaphor could be taken further to explain waves of revolutionary change and the establishment of knowledge infrastructure on the islands. The metaphor integrates a number of knowledge concepts by providing:

- more dimensions to the knowledge hierarchy in the transformation of knowledge though the flows of data, information and knowledge;
- behavioural, organisational learning and strategic knowledge management concepts; and
- the interaction of tacit and explicit knowledge

It also accounts for the views of knowledge as existing only in the human mind, as an object which can be stored and manipulated, as a process or application, as accessible and able to be disseminated and the capacity to use information.
It is suggested (Söderlund et al., 2008, Söderlund, 2005, Cattani et al., 2011, Davies and Brady, 2000, Cooke-Davies et al., 2007) that a ‘core competence’ of the project team is to develop learning capacity through creating and sharing knowledge and this leads to individual competence and long term retention of the knowledge transaction with the contractor. In particular, the project based organisations ability to nurture idiosyncratic capability including learning is noted by Cattani et al. (2011) to be tightly linked to their longevity and these distinctive capabilities can provide a basis for competitive advantage.

It can be seen that the issue of learning and retention of knowledge is relevant to contractors in two significant ways. First is the transitioning and integration of contractors into the project team. Setting the conditions at the start of the engagement to facilitate an environment where knowledge transfer and creation can occur. The second is capturing knowledge and learning brought to the task by the contractor and also that knowledge developed during the task. In the language of intellectual property the issue is related to ‘background’ and ‘foreground’ intellectual property. Background intellectual property is the knowhow brought to or contributed by the contractor to the task the ownership of which is undoubtedly the contractors and purchased as part of the task by the client. On the other hand, foreground intellectual property is that knowhow developed during the task in which ownership could be claimed by the client.

The issue of managing the intellectual property is an often overlooked transaction cost involved outsourcing (Walker et al., 2008b p. 16) and in this case would apply to placing contractors into the project team. There are also other issues with the management of knowledge by the project team which a contractor may have access. This includes commercially sensitive information such as cost and contractual agreements as well as access to third party intellectual property and the Government security classifications.

Organisational learning

The SECI cycles proposed by Nonaka and Takeuchi (1995) which is explained through the spiral of sharing (S) tacit knowledge which is made explicit (E) through discussion, combined (C) with existing knowledge and finally institutionalized (I) and the four ‘I’s of Intuiting, Interpreting, Integrating and Institutionalising as proposed by Crossan et al. (1999) propose
an individual and organisational learning process that is useful in understanding the contractor value proposition.

While the SECI and four ‘I’s model explain the cycles or flow of knowledge it does not accurately reflect the characteristic that knowledge is not easy to transfer and that it tends to stick to the person or group transferring it (Walker and Maqsood, 2008). Szulanski (2003) has proposed seven sources of knowledge stickiness. These are:

- Source lacks motivation.
- Source lacks credibility.
- Recipient lacks motivation.
- Recipient lacks absorptive capacity.
- Recipient lacks retentive capacity.
- Barren organizational context.
- Arduous relationship between the source and recipient.

Nonaka’s knowledge management model is not without its critics. Gourlay (2006) p.1416 highlights the conceptual weakness of the model such as the omission of inherently tacit knowledge and it lacks an explanation of how new ideas are produced and how depth of understanding which is necessary for expertise develops. Taking a practice based view of knowledge and competence development, tacit knowledge is contextual, personal and practice based and according to cannot be made explicit. This is counter to Nonaka’s SECI cycle view of explicit knowledge being able to be converted back and forth (Bredillet et al., 2013 p.11).

Irrespective of the view expressed of tacit knowledge its importance in the relationship between practice, knowledge and competence development can be seen to be an important one. Therefore the epistemological view taken in this research is that knowledge and competence development is inherently practice based and active in praxis (doing), poiesis (making) and khresis (using) in relation to the knower (Ladkin, 2010)
Social capital

As mentioned earlier knowledge is a complex process but it is generally uniquely human; social, intuitive, unpredictable and not always concrete in its form. Knowledge creation and transfer can be described as part of a social context. Therefore, it is not surprising that concepts such as social capital and intellectual capital are prevalent in the literature (Nahapiet and Ghoshal, 1998, Kogut and Zander, 1997, Kogut and Zander, 1992, Conner and Prahalad, 1996, Borgelt and Falk, 2007). The concepts of social capital are based on the significance of relationships as a resource for social action. So the basis for this discussion will be on the nature of organisations as social communities rather than the transactional and value appropriation view of knowledge provided by Williamson (1975).

Social capital is the engine of knowledge management indeed a ‘lock and key mechanism’ (Walker et al., 2004 p. 98). Broadly it consists of a network and structure, cognitive aspects such as shared codes, language and narrative and a relational dimension which includes trust, norms, obligations and identification (Nahapiet and Ghoshal, 1998). The last two areas could be seen to be embedded in the socio-cultural organisational values and norms while the first is organisational structure and knowledge networks. The model as proposed by Manu and Walker in (Walker and Rowlinson, 2008 p.268) provides an integrated view of the knowledge processes of social capital and knowledge transfer by considering the stickiness and absorptive capacity of firms in the transfer of knowledge.

If leadership can be seen as the interaction and motivation of people then social capital is the vehicle in which this interaction takes place. The K-Adv provides a model through which to view the generation and sustainment of social capital (Walker et al., 2004 Chap 6). Key to this process appears to be the interlinked notion of learning, problem solving, experimentation, knowledge creation, sharing and transfer. This concept is taken further by Borgelt and Falk (2007) who hypothesise that ‘leadership’ as opposed to ‘leaders’ have an important role in the development of knowledge capital and firm innovation. This points to the need for appropriate organisational leadership to integrate contractors into the project team and achieve optimal performance outcomes.

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such as shared codes, language and narrative and a relational dimension which includes trust, norms, obligations and identification (Nahapiet and Ghoshal, 1998). The last two areas could be seen to be embedded in the socio-cultural organisational values and norms.

Moreover, it could be seen that learning is the primary function of social capital and directly linked to knowledge creation, sharing and transfer as embodied in the knowledge hierarchy.

The process of knowledge creation as outlined by (Walker et al., 2004 p.95) can be seen in the delivery of a project. Nonaka (1995) describe four lessons in knowledge creation, these are:

- Shock administered to dislocate people from a sense of complacency. The project requirement driving urgency or an innovative project team design.
- Creative and positive response. Project management leadership’s development of potential solutions and gathering of a multi skilled team to problem solve.
- Variety of knowledge skills and ideas. The range of stakeholders which contributed to development, trialling and integration of the solution.
- Individual and group intention. The motivation of the stakeholder groups to address the issue.

The social capital environment is shaped primarily by leadership and management’s ability to create trust and commitment. Without which it is unlikely that social capital will be sustained. Trust and commitment reduces defensive behaviours (Borgelt and Falk, 2007) and allows people to interact freely to solve problems thereby creating, sharing and using knowledge. In the context of the project this was achieved through project management leadership taking a lead role and accepting the risks associated with the development of the modification. Risk taking by the project team and commitment to the stakeholders through constant meetings and the provision of hard resources such as funds, allowed the stakeholders to contribute to the process of developing a prototype, trialing and integrating the solution.

Experimenting is closely related to the problem solving and learning aspects of knowledge creation as shown in the K-Adv Model (Walker et al., 2004). The project leadership experimenting with the various design solutions could be seen to increase the inherent risk
and probability of failure (Walker et al., 2004 p.119). As an example, in a developmental project undertaken by the author one of the science and technology group commented ‘you might not get the answer you are looking for’ inferring that the solution may be unpalatable in terms of cost or time. Project leadership allowed for the trialling or experimentation of two solutions. The learning which developed from this trial sought to improve the collective understanding and knowledge of how the solution performed. These trials were undertaken even though there was a risk that the solution may not have been within the resources of the project to deliver.

Sense (Sense and Antoni, 2003, Sense, 2007a) provides some insight into the nature of learning and political influences with the projects. The project’s external political influences as it affects learning were driven by the need to provide a safe solution and mitigate the effects of shock on ride. The clients were adamant that safety could not be compromised and the science and technology stakeholders were not about to force a solution that was not going to provide a sound long term solution. Given this learning situation the project leadership was placed at some risk by ‘pursuing a communal and critically reflective assessment’ (Sense, 2007a p.411) of the solution.

Further, it can be seen that the project leadership had a key role in coordinating the external stakeholders within a learning context. (Sense, 2003) provides a framework for considering the informal learning situation and the use of influencing and accommodation skills in learning during the design and trials period. The informal learning situation was most appropriate although it carried considerable risk and relied heavily upon the political skill of the project leadership to guide a solution.

On the other hand, (Nahapiet and Ghoshal, 1998 p.100) provides a model which outlines the role of social capital in the creation of intellectual capital. This model provides four elements:

- **Access to a social network.** The exchange of knowledge between the project stakeholders. This was enabled through the project office and using common communications technology and meetings. There were several meetings both unilaterally between the parties and collectively during the project.
• **Anticipation of value.** The value to the client through additional benefits to passengers and compliance with health and safety policy. Each stakeholder group could be seen to identify value through participation. For example the science and technology group through the creation of new knowledge and industry through additional functionality of the system which could be on sold at a profit.

• **Motivation.** Perhaps this concept could be seen through Maslow’s hierarchy of needs as a motivational theory (Robbins et al., 1994 p.243). The needs could be seen to apply differently to each stakeholder group for instance the client is probably motivated by the lower order deficiency needs and the science and technology group by the higher order growth needs such as esteem and self-actualisation to be part of a solution. Another perspective is provided by Quinn et al. (1996) that describes the importance of motivational creativity or the ‘care why’ in the creation of value through leveraging intellect.

• **Combination capability.** The ‘absorptive capacity’ of an organisation to understand and use new ideas. The elements of organisational capability such as science and technology and industry were knitted by the project to produce a solution.

It is suggested that all these aspects are developed through leadership and its notion of social interactivity (Borgelt and Falk, 2007). The intellectual capital created as a result of the project could only have been possible though project management leadership and the application of primarily coordination knowledge.

Another aspect of intellectual property creation as noted by Walker et al. (2004) p.101 is the tolerance of mistakes. Given the lack of standards associated with shock limits in this situation and relative uncertain outcome from such a development the risk of failure could be seen to be uncomfortably high for a conservative organisation. This is supported by a comment from a member of the science and technology organisation which commented that ‘you might not get the answer you are looking for’. Project Management leadership should have a high tolerance for failure as it is only through this tolerance that innovations are possible.

Closely related to the role of Project Management leadership in developing a vision is the people infrastructure involving social and process capital. (Walker et al., 2004 chap 6) has
identified sensemaking and the use of knowledge as an element of social capital. In the context of this paper it appears to be difficult to separate the envisioning process and the social capital elements such as sensemaking and problem solving which can be seen as key elements in the leader’s vision development.

While problem solving is perhaps best undertaken as a collective activity the individual skills of sensemaking and framing need to be placed in an organisational context through the application of coordinating knowledge and leadership. In this way leadership provides a vision or focus for the project or change intervention.

This is not to ignore the environmental context of sense making. Leadership’s role is to frame and reframe as necessary taking into account changes to the project environment. Once the scope of the problem is established and a process put in place to develop a solution project management leadership is required to modify the original objectives and vision to account for the created or discovered knowledge. This occurred in the early stages of the project when initial prototypes were being investigated. An early solution which appeared to be an effective solution was discounted based on a human factors assessment.

**Communities of practice**

The situated learning concepts surrounding the idea of a ‘Community of Practice’ as described by (Sense, 2007b, Sense, 2007a). ‘The situated dimension of learning is concerned with the practical and social aspects of learning within a context and a ‘community of practice’ involves a group of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis (Wenger et al., 2002a, Wenger et al., 2002b, Wenger, 1999). Powell and Young (2004) p.955 note that COP should develop as ‘self-nominating groups’.

The social context and I would argue the informality of COP are important aspects of effective COP in which knowledge and competence are developed from practice. Communities are the first layer of embeddedness which is the lowest layer of context within which the COP is situated. Other layers which may exist are historical, social and cultural and institutional (Wenger, 1998). An extension of this thinking might view organisations as ‘communities or communities’ (Blomquist et al., 2010 p.10). Not only through the contextual setting of the COP but as Wenger (1998) proposes relevant COP are formed.
around three concepts; a need for mutual engagement of participants, a joint enterprise where specific content is negotiated and a shared repertoire of concepts models, roles and rules to perform specific activities. These concepts could be seen to be applied to an organisational setting and combined with ideas such as pure spontaneous emergence or the concept of autopoeisis create a practice environment that develops knowledge and competence.

However, creating the environment for spontaneous emergence of COP may be difficult in practice and incentives may need to be provided to encourage membership and to formally establish some groups. This opinion is supported in a way by the contention that learning happens (Wheatley, 2001) that is learning is a natural human activity and requires only the situation such as a Community of Practice to enhance the learning experience. Wheatley (2001) six principles of knowledge management facilitation in that ‘people choose to share their knowledge’. This infers that the quality and breadth of existing knowledge will determine the ability to develop new knowledge and this sharing process can be enhanced through the targeted use of incentives.

**Communities of Practice in DMO**

Evidence of Communities of Practice (COP) particularly formal groups is difficult to identify. Situated learning theory is based on the idea that most learning occurs on the job and is based on the interaction of people and their collective sense making activities within a community of domain of practice (Sense, 2007b). While projects could be seen a COP in themselves, the existence of informal COP would perhaps indicate the health and richness of the learning environment.

Wheatley (2001) also considers that it is natural for people to create and share knowledge. This is an interesting point in regards to COP in that these could be seen to be a knowledge phenomenon and representative of a healthy knowledge environment. This being so the number of informal groups present in an organisation could indicate a supportive knowledge culture.

Interestingly, there does not appear to be any formal COP in the project management domain. The opportunities for project management professionals to interact are probably base on:
Informal networks exist based on personal networks formed in social settings either based in the workplace or domestic communities. During formal courses. During the monthly central lessons learnt presentation which sometimes deals with project management issues.

In addition, COP do not appear to be supported by the organisation in any form. It could be expected that COP would emerge in a self-organising fashion however there does not appear to be any evidence of this occurring. Being such a large organisation there would benefits accruing from networks of people who are in different parts of the organisation and have the same work interests. Wenger et al. (2002b) recognises that these should emerge and ‘learning happens, design or not designed’.

This could be seen to have some far reaching implications for organisation learning. The concept of the COP originated from the organisational learning movement (Morris and Pinto, 2004) and these organisations are involved in the socialisation and externalisation stages of knowledge creation spiral. It could be expected from this observation that the knowledge creation capability would be significantly impeded. However, this may be compensated for in other forums or networks which have not been identified.

An important question for the organisation is how to support the development of COP given their informal nature. (Peansupap and Walker, 2005) compares team and COP structures and notes the formality of the team and its ability to engender trust. This same environment should be created for COP and Wenger et al. (2002a) provides seven guiding principles for cultivating COPs. These principles should be considered by the organisation in cultivating COP.

**Knowledge management related themes**

**The make or buy decision**

Contractual risk or the transaction cost, the capability gap between internal and external expertise and institutional alignment with the sought capabilities (Capron and Mitchell, 2004) appear to determine a firm’s decision to source internally or externally new capability. Capabilities tend to be internally developed when the organisation faces high
contractual hazards, narrow capability gaps or there is high level of competition, resistance and obsolescence to the firms existing capabilities. So the make or buy decision can be seen to be context determined insofar as these variables will change between organisations and be dependent on the types of skills and expertise being sought.

Nevertheless, there appears to be benefits in introducing new skills and expertise through the engagement of new actors such as contractors in the project organisation. This triggers a ‘generative dance’ of knowledge integration that works to extend the resource base of projects and provide new meaning and insights (Söderlund et al., 2008). Therefore, knowledge creation, transfer, retention and use appears to be positively associated with the buy or external source decision but this would be contextually determined through the contractual hazards, capability gap and internal legitimacy.

**Strategy, portfolio and program management**

Projects provide mechanisms for experimentation and learning that should be transferred through repetition and exploration to build project capabilities that create, extend or modify its resource base (Söderlund et al., 2008). In this way dynamic capabilities of the organisation can be seen to develop through a process of integration and reconfiguration of internal and external competencies. Contractors contribute to this process by providing a source or skills and expertise not available to the project.

**People capability**

From a people capability perspective the project based organisations ability to access, maintain and develop a highly skilled and motivated workforce overtime is perhaps more important than retention and development of skills and competence within the organisation (Bredin, 2008b). The trend to the individualisation of work and the emergence of project based organisation appear to be changing the organisations sources of skills and competence and the organisational ability to quickly and efficiently externally source and integrated skills and expertise appears to be growing in importance.

3.5.5 Project management leadership

Leadership is important to the relationship with contractors in the project team as the project manager is responsible for team cohesion and development and this is seen to
condition the environment for organisational learning. It is suggested that the development of a trusting, cooperative, positive and hopeful team culture as proposed by Avolio et al. (2004), will improve follower attitudes and behaviours and lead to superior project team performance. The authentic leadership framework presented by (Avolio et al., 2004) is broader in concept than success of the firm or project team but includes leadership in the broader society. This framework while is supported by other significant literature such as that dealing with Emotional Intelligence (Dulewicz and Higgs, 2000, Cacioppe, 1996)

It is also argued that leadership is not management. As stated by (Robbins et al., 1994 p.471) ‘Leaders and managers are different’. Leadership is proposed to be the quality most ascribed to getting the best out of people and groups and coping with change while management is about coordinating, controlling and communicating. Leadership is more important in an environment of change. The project as a temporary organization is seen by Turner and Müller (2003) ‘...as an agency for assigning resources to the management of change ... and as an agency for managing uncertainty’. Then projects as change agents can be seen to require highly competent leadership to be successful. The distinction between leadership and management is an important one as it should be recognized that success is more than mechanically following procedures it is a social skill to encourage and motivate team members to achieve.

While there is an extensive body of knowledge in leadership (Christensen and Walker, 2004) and it is clearly an essential aspect to team performance it is not proposed to review particular leadership styles in any depth. The leadership styles area includes authentic and transformation leadership styles (Bass and Avolio, 1994, Avolio et al., 1991, Avolio and Gardner, 2005, Avolio et al., 2004, Keegan and Den Hartog, 2004) and emotional intelligence (Dulewicz and Higgs, 2000, Goleman, 1995, Salovey and Mayer, 1990) The focus will be on those aspects of leadership that are significant in the engagement of contractors in the project team such as the interface between leadership and learning which includes aspects such as team dynamics, trust and distrust and project team culture. This theme will also focus on the leadership effect on project success and failure, and understanding of strategy and PM governance forms.

Projects are about change (Turner and Müller, 2003). ‘In almost all cases projects are initiated to create change to develop new products, establish new manufacturing processes,
or create a new organization’ (Shenhar et al., 2001 p.699). The transition from an initial state to an improved state through the focus of a project to meet a particular business case is a central idea to project management. It is suggested that this transitioning activity can only be managed by leaders. Leaders create the environment in which social capital can be harnessed and directed toward the achievement of organizational goals.

The definition of leadership as applied in this dissertation is summarized as ‘effective leadership ...is not reliant on attributes possessed by a single leader but the collective leadership intervention required in purposeful events in order for them to be accomplished.’ (Borgelt and Falk, 2007 p.125). Thus, leadership is not the domain of a single heroic leader but can be seen to be a shared quality particularly in team environments which are required to create, share and use knowledge. Leadership is viewed from the competency school as described by Turner and Muller (2005). A fundamental assumption of this school is that leaders can be made and are not necessarily born. The competency school views combinations of competencies producing different leadership styles producing transformation leadership in circumstances of high complexity and transactional in situations of low complexity. Complexity in this relational and leadership context is determined by the organisational structure and project duration. This definition may not hold for all project situations and contexts but it is suggested that this does apply to most complex acquisitions that occur within DMO.

Leadership should also be seen in the context of culture. Walker (2004 p. 66) notes that there are two forces at work in developing an effective organisational response that supports the development of knowledge namely; leadership and culture. These two forces appear to be complementary and should be developed in harmony.

**Trust and commitment**

Trust and commitment has been identified as a crucial element in the effectiveness of leader’s factors (Avolio et al., 2004 p.804, Bass and Stogdill, 1990). Using the model proposed by Mayer et al. (1995) and Avolio et al. (2004) it is possible to develop a sense of the importance of trust and commitment and the factors which influence its development and the positive attitudes, behaviours that may develop. Trust is defined as a ‘psychological state comprising the intention to accept vulnerability based upon positive expectations of
the intentions or behaviour of another’ (Avolio et al., 2004 p.810) while commitment as work attitude that develops from trust is defined as ‘a force that binds an individual to a course of action of relevance to one or more targets.’ (Mayer et al., 1995 p.310).

Identification with the organisation and the project including ability, benevolence and integrity (Mayer et al., 1995) of leadership are important precursors to the development of trust and effective ‘informing’ and ‘engaging’ styles of leadership. These attributes are usually developed through long term relationships between the leader and follower and as suggested by Keegan and Den Hartog (2004) p.612 ‘identification and trust building involved in transformational leadership may be less likely to occur or less easy to achieve in such temporary, shifting relationships.’ Maurer (2010) and Pinto et al. (2009) also support the contention that a lack of time and continuity reduces the formation of trust in relationships. The implications for identification and the development of trust for the integration of contractors into the project team are likely to be significant.

The ability of the contractor and project team to quickly establish trust and identity will be crucial to achievement of the contract outcomes as noted by (Kadefors, 2004). This could be moderated by the establishment of contractual rules which legitimate behaviours as to how trustworthy and cooperative exchange should occur. However, the application of contractual incentives and close monitoring of contractor performance could induce opportunism and force behaviours at odds with the contract outcomes. The theories of Transaction Cost Economics (Winch, 2001) would support this outcome.

Measures which could moderate the effects of opportunism (Kadefors, 2004) include; developing economic incentives including risk reward schemes but these would need to be carefully implemented as economic reward systems could induce ‘work to rule’ behavior rather than open ended benevolent and cooperative behavior, formalised team building for introducing contractors into the project management team and the development of joint relational goals early in the engagement to set the behavioural norms and expectations, systems for problem solving and continuous improvement to establish routines for communicating and developing trust. This discussion of leadership tends to support the view that tasks with low levels of complexity and of short duration would be more efficiently delivered principally through transactional arrangements while longer term contracts would benefit from more relational contractual or partnering arrangements.
**Project team culture**

The cultural context of the project team is likely to affect team cohesiveness, trust and cooperation and therefore the team’s ability to learn and innovate. A culture is a ‘set of basic tacit assumptions about how the world is and ought to be that a group of people share and that determines their perceptions, thought, feelings and to some degree their overt behaviour’ (Schein, 1996). Often inconsistencies arise from differences in behaviour which do not align with the basic tacit assumptions in groups. Schein (1996) points out the dysfunctional interactions in the cultures of executives, engineers and operators when these basic tacit assumptions held by the groups do not align and this misalignment causes issues for learning. The challenge is integrating people from outside the project team such as contractors into the project team which potentially has a number of different sub cultures.

**Project management leadership related themes**

The leadership theme appears to be most closely aligned to the knowledge, strategy, portfolio and program and people capability themes.

**Knowledge and Learning**

The leadership theme is also linked to the knowledge management theme through early theories such as the SECI spiral (Nonaka et al., 2001) which is explained through the spiral of sharing (S) tacit knowledge which is made explicit (E) through discussion, combined (C) with existing knowledge and finally institutionalized (I). This model is more relevant to individuals and groups where the ‘4Is’ model (Intuiting, Interpreting, Integrating and Institutionalising) proposed by (Crossan et al., 1999) could be applied more broadly to the larger organization. Walker and Rowlinson (2008 p.265) also note that the ‘4Is’ does not recognize the institutional and cultural forces at play including the ‘group norms and leadership styles similarly affect the feedback and feed forward flows at the group level on individuals.’

Therefore, knowledge management can be seen to operate in a social environment where leadership (Schein, 1996) is important the way the organisation learns through the process of interpreting, integrating and institutionalising knowledge. Leadership has a key role in facilitating learning in the project environment. Productive leadership recognises and works
within the bounds of organisational culture and contributes to the learning environment. In short, leadership acts as oil on the cogs of learning.

**The make or buy decision**

Formation of trust reduces the transaction cost of monitoring and controlling. Contracting is not a substitute for trust although the form of the contract provides and insight into the nature of relationships between the parties (Pinto et al., 2009 p.639). Also, the increased value from forming relationships is highlighted by (Walker and Maqsood, 2008 p.250-251). Transactional contractual arrangements for riskier and more complex tasks have arguably increased transaction costs and therefore better outcomes would accrue from increased trust and relational contractual arrangements supported by authentic leadership.

**Strategy, portfolio and program management**

Leadership is closely aligned with the strategy, portfolio and program theme in factors that support project success as Christensen and Walker (2004 p.39) suggest ‘a significant driver of project management success is effective and intelligent leadership … ’. Leadership provides the mechanism to design and implement organisational strategy.

**People capability**

There appears to be little written on the way in which leadership influences the people capability of a firm. Leadership is arguably a key ingredient to the organisation’s people capability as leadership is recognized to influence follower attitudes, behaviours and performance (Avolio et al., 2004). The people capability of a firm is more than the sum of its parts and processes.

### 3.6 Conceptual model of theory

Based on the literature discussed in the sections above a conceptual model is proposed in Figure 3.3. The conceptual model draws together the main literature themes to show how theory relates the integration of contractors and in turn develops competence and organisational capability.
Figure 3.3 - Conceptual model of relevant theory

The conceptual model is based on the heart of the research question in the integration of contractors. The key theory areas of knowledge management and procurement systems contribute to the development of people capability through the sourcing of contractors to complement the project’s requirement for skills and expertise. This leads to improved firm capability through competence development and the ambidextrous ability to exploit and explore knowledge available to the firm. The context is provided by the temporary project based organisation which provides the ‘project as practice’ environment in which competence and people capability is developed.

The literature themes are aligned at the bottom of the figure with the key areas of the conceptual model.

The highlighted area in the centre of the model is the theoretical concept that is developed later and extends the concept of people capability to the integration of contractors into the project team.

The model in Figure 3.3 provides a conceptual foundation of this research and relates the literature themes to the key elements of the model.

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4 The blue triangular section in the diagram is the People Capability Model proposed by Bredin (2008a and b)
The next chapter explains the philosophy underpinning the research method and how the selected research method is suitable to explore the research question set in the context of the workplace.

3.7 Chapter summary

The major contributions to the literature which is most relevant to the research of integrating contractors into complex organisations are:

- People management in project based organisations and career management, managing temporary workers and workforce planning.
- Strategy, portfolio and program management in project organising and capability, ambidexterity, emergent strategy, value and competence development.
- Knowledge management, learning and transfer of knowledge including stickiness and absorptive capacity, social capital and learning and project based learning as separate from competence development.
- The governance of PBO and knowledge.
- Project management leadership; and
- Supply chain, procurement and external capability.

The current state of the art as it relates to the research question is highlighted in the concepts of:

- People capability which is based in the capability perspective of the firm and provides a contextual base in complex project management organisations. The work of (Bredin, 2008a) is central to this area of literature.
- Ambidexterity mechanisms in organisations and their ability to explore and exploit the intellectual capital assets of the firm (Turner et al., 2013).
- Governance of knowledge including the benefits of informal mechanism such as COP and mentoring to create, use, share and transfer knowledge (Pollack, 2012, Pemsel and Müller, 2012).
• The firm’s ability to leverage knowledge assets such as intellectual, social and human capital to achieve sustainable competitive advantage (Pitelis and Teece, 2009).

• Value creation in the facilitation and co-creation of value as suppliers and customers integrate supply chains and leverage off opportunities to improve the value proposition and share the dividends (Grönroos, 2011, Grönroos and Ravald, 2011).

• Competence development through the development of relational based contractual capabilities and to deliver project outcomes (Hartmann et al., 2010, Capron and Mitchell, 2004).

In terms of people capability there is a scarcity of literature that applies to contextual settings of people management in organisations. This is provided by the people capability framework proposed by (Bredin, 2008b). However, as Bredin (2008b) points out the framework requires further work to validate the conceptual and empirical basis on the framework and further comparative studies across different types of project based organisations to inform further development of the framework.
Chapter Four – Research methodology

4.1 Introduction

I have presented the research problem and placed it in context of the Australian defence acquisition organisation which is the focus of this research. The preceding literature review outlined the areas of interest in people capability, the make or buy decision, strategy, knowledge management and leadership and related them to the practical problem of integrating the skills and experience of contractors into complex organisations.

The literature landscape can be seen as that relating to the problem content (c) and that related to the problem solving method (p). The literature review focussed on problem content and the methodology chapter is concerned more with the problem solving literature. Current literature concepts relevant to the problem content of integrating contractors skills and expertise can be seen to be; the people capability framework proposed by (Bredin, 2008b) ambidexterity to exploit and explore the intellectual capital assets of the firm, governance of knowledge which highlights informal mechanisms to manage knowledge, value co-creation and facilitation in supply and customer relationships and the capabilities based perspective of competence development.

A key theme in the problem solving literature is that of the growing divide in the theory – practice gap. Some critics see the gap to be caused by the inadequacy of positivist science based approaches to management research which fails to grasp the contextual issues surrounding complex situations. Responses to this issue have been provided by the concept of engaged scholarship (Van de Ven, 2007) and research frameworks which recognise the contribution of practice in the development of theory and vice versa. Another perspective is praxeological philosophy which seeks to explain the science of human actions and conduct including praxis (activity) and phronesis (practical wisdom) (Bredillet, 2013) and move beyond the theory – practice divide.

This chapter will outline the methodology used to make sense of the research problem. The nature of the work place based problem situation as described in Chapter One drives one to consider a qualitative approach that examines the deep and rich characteristic of human interactions and relationships of ‘aesthetics and ethics, of language and meaning’ (Corbin
and Strauss, 2008 p.5). In selecting a method or approach that is appropriate for a messy and unstructured problem situation as outlined it is important to establish validity or what philosophers call truth. In establishing the validity of the research it is necessary to establish the researcher’s world view so interpretations can be verified or at least ‘recovered’ by anyone interested in scrutinising or challenging the research.

Quite appropriately, given the messy and unstructured nature of the situation and a world view based in the interpretive and constructionist tradition and using an action research approach could feasibly be adopted. To some, ‘objectivity’ founded on positivism and traditional scientific approach is compromised when researching the social sciences. However, in any human situation ‘...what is discovered about reality cannot be divorced from the operative perspective of the knower...’ (Corbin and Strauss, 2008 p.4) even for those who interpret the objective data it would be difficult to isolate the human and interpretive bias so as to remain a detached observer. A challenge for any approach to research is the role of the researcher and validity of the research if the researcher is close to or immersed in the natural research situation. Validity then is as much about the knowledge to be produced or method used to gather the data as it is about ‘who decides the research agenda and who benefits directly from it’ (Checkland, 1999). So objectivity is a lofty goal in human situations and challenging to achieve. In this case as a qualitative approach is considered it is important to establish the philosophical basis of the method and worldview of the author so it can be made clear the perspective taken and the means that data is obtained and analysed.

This Chapter will discuss the philosophical basis and worldview of the researcher. Then discuss an appropriate action research based design that is compatible with the researcher’s worldview and nature of the problem situation. Finally, the techniques and procedures for data collection and analysis will be outlined.

4.2 Perspectives of Truth

4.2.1 Philosophical view

The researcher’s view of truth can be seen to describe a paradigm or world view that considers the philosophical basis of ontology, epistemology and axiology. These terms are used in research to describe the nature of the philosophical assumptions of the researcher.
Ontology concerns the nature of the real world and concerns what entities exist or can be said to exist and how they can be categorised. Epistemology is the grounds for knowledge and is concerned with new models or theories that are better than competing models or theories or in other words what is valid and the scope of the validity. Axiology is about the values that are important to the researcher and what is valued and considered good. These philosophical aspects provide a view of the researcher’s world view that is important to selecting and validating research.

Praxeology is suggested to provide a useful philosophy to understand current research in the science of human actions and conduct. Praxeology provides a style of reasoning and mode of inquiry that proposes an approach to the development of knowledge in ‘theorising as practicing’ and knowing as situated learning and practicing (Bredillet, 2013). It consists of praxis (activity), practices and phronesis (practical wisdom and prudence) (Bredillet, 2013).

It has been argued that there is a growing divide between researchers and practitioners (Bredillet, 2013, Van de Ven, 2007). A part of this argument is that the western heritage of natural science based research methods has failed particularly in management research to provide an adequate conceptual base and relevance to practice. Further, standards, best practices and bodies of knowledge developed for the positivist, classical natural science methods restrict practitioners in interpretation of action and do not recognise the project manager as a competent social actor often in complex social settings (Bredillet, 2013, Hodgson and Cicmil, 2006).

Fundamentally, there are two distinct approaches to research; one is based in the natural sciences is generally objective, quantitative and is referred to as positivism the other is based in the social sciences is more subjective, interpretive and is referred to as constructivist. Quantitative and qualitative research could be seen to be located on a continuum. On each end of the continuum are the extreme or doctrinaire approaches and in between a range of combinations and permutations of each approach.

An ontological objectivist view assumes that a social and natural reality are independent of human intervention and therefore facts and data can be discovered through measurement and observation. A constructivist on the other hand understands that reality is created in the mind and is therefore interpreted by the observer.
An epistemologic objectivist view accepts that there is the possibility of a theory neutral language, aligned with scientific methods that explains a total world theory. An example of this is the scientific search for the ‘god particle’. Subjectivists on the other hand, do not accept that a theory neutral language exists, is based in the social science tradition (Lewin, 1947, Argyris and Schön, 1996) and contends that theories evolve.

An axiological objectivist perspective may see elegance in formulae or statistical methods while a subjectivist may value the contextual perspective of problems and the socio-political variations.

4.2.2 My research paradigm

The predominant paradigm or ‘world view’ applied in this research is an amalgam of philosophy including the hermeneutic and critical realism view as proposed by Coghlan and Brannick (2005 p.5). This paradigm is grounded in the ontological perspective that there is no one reality and while physical entities can exist independent of the human cognitive process, external events occur and it is possible to observe and measure the phenomena under scrutiny while understanding that the act of observation and measurement will affect the outcome. The ‘Hawthorne effect’ is an example of this phenomenon. This term is used to describe the effect that workers improve their performance when they are being studied, regardless of any type of experimental protocol (Passmore and Can tore, 2012). So it is not the event that is the subject rather it is the human understanding and participation of the event under investigation.

Each individual will interpret and give meaning to occurrences based on his or her experience which includes such aspects as race, gender, religion, place and time. This view is also highlighted by the quantum physics premise that the act of observing changes or influences the observed reality and therefore it is not possible to fully isolate the researcher from events. This view supports the subjectivist epistemology that grounded theory is changeable similar to the hermeneutic tradition, so nothing can be measured without changing it.

This view can be approached from a ‘being’ and ‘becoming’ perspective (Winter et al., 2006 p.643). The ‘being’ ontology views project organisations as entities or systems with functions, parts, structure and relationships while the ‘becoming’ view emphases process,
verbs and activity which require that categories and boundaries which are human constructions are continually questioned.

The epistemology of what evidence constitutes truth is based on the view that knowledge evolves and is interpreted by humans using a conceptual language. Meaning is constructed through words and people construct their own meaning based on understanding and culture, values, beliefs and therefore their understanding of reality. What is discovered about reality cannot be divorced from the operative perspective of the knower (Corbin and Strauss, 2008).

Also from an epistemological perspective theory is not generalisable to the real world. The natural science search for a unified theory of the physical world is framed by history and the Aristotelian and Newtonian interpretations of the real world. The search for an explanation of quantum level phenomena is indicative of the complexity of the physical world and the human interpretation of the quantum phenomena. The social world is similar from the perspective that it is the interpretation of the knower that sets the preconditions for understanding and the theories and concepts of this world perspective are unlikely to be broadly applicable as they are contextually oriented.

The world is complex and there is randomness in the way events occur. Even systems have delays and feedback loops which affect the outcome of events. Knowledge and action are closely linked through reflection and thought and this is the means through which theory is developed. Knowledge accumulates and therefore evolves as understandings change. Also, knowledge is based in processes of social relations and is created through this interaction rather than solely being transactional based and appropriated.

Reflexivity is (Coghlan and Brannick, 2005, Van de Ven, 2007) an important part of the research paradigm. Reflexivity is the research method or the way data is gathered. It is the social sciences’ concept that is used to explore and deal with the relationship between the researcher and the object of the research. Reflection and sense making is essential to learning and so an acknowledgement by the researcher of the theoretical, cultural and political context is important to the rigour of social research. So the constant analysis of the researcher’s theoretical and methodological views and to acknowledge other people’s definitions and understanding of theirs is important contextual information to validate the
research and ensure the research methodology is repeatable. Epistemic reflexivity (Coghlan and Brannick, 2005) focuses on researcher’s belief system and is the process for analysing and challenging our meta-theoretical assumptions. It is therefore essential to this investigation that my views and assumptions are explicit.

Table 4.1 below shows a possible range of philosophical stances within which an individual researcher might locate or describe their view. The foundations have been discussed above. My view is principally based in the interpretive and constructivist perspective but not exclusively. This view recognises that by background such as my personal cultural and historical experiences might shape my interpretation of a social setting. This view suggests a particular style of inquiry. The goal of the inquiry is to rely on the participant’s view and interpretation of the problem situation. Also rather than starting with a theory as characterised in quantitative research, interpret the meanings and make sense of other’s views of the situation and develop a theory or pattern of meaning.

Far from being tied to only one description or category of philosophy this could vary depending on the situation. On either side of the interpretive perspective column is action research on one hand and positivism on the other. There may be situations that suit adopting a classical positivist stance to look further into a specific aspect of the research uncovered through qualitative means. On the other hand, action research could enhance the learning situation or ‘theorising as practicing’ (Bredillet, 2013) in an attempt to resolve a problem situation or understand further the issues surrounding the research. Therefore my perspective is highlighted in grey and is inclined toward an interpretivist and action research perspective.

Table 4.1 - Research Paradigms and Action Research adapted from (Coghlan and Brannick, 2005) and (Waring, 1996)

<table>
<thead>
<tr>
<th>Philosophical foundations</th>
<th>Positivism</th>
<th>Hermeneutic and Post Modernism – Interpretive and Constructionist</th>
<th>Critical Realism, and Action Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ontology</td>
<td>Objectivist</td>
<td>Subjectivist</td>
<td>Objectivist</td>
</tr>
<tr>
<td>Epistemology</td>
<td>Objectivist</td>
<td>Subjectivist</td>
<td>Subjectivist</td>
</tr>
</tbody>
</table>
My world view

While I can subscribe to the philosophical categories of determining an individual’s understanding of the world I find it difficult to be able to apply a simple range of Likert scale options in each category or perspective. I realise there are many perspectives of events and that there is no one reality that would provide a unifying explanation of reality. There is a physical natural world and a human social world and studies into these worlds require different methodologies. For instance, the natural sciences search for a ‘god particle’ that would provide an overarching theory of physics requires an objective, distant and scientific approach as opposed to the investigation of a social situation where the causes and effects are not clear and influenced by many different factors and where the researcher needs to be immersed in the situation to understand the cultural nuances of human action.

Nevertheless, the concept or idea of the god particle is a social concept that is influenced by human thought and experience. Concepts and ideas are invented rather than discovered as a result of human thought influenced by individual circumstance and meaning. Meaning is developed through such significant human exposure to experience, language and culture. So individual responses to situations can widely vary and are based on the individuals understanding of meaning.

For instance, I live and work in the practical world and deal daily with practical issues and I can perceive how my experiences have changed over time. I have viewed land forms in the physical world for its productive capacity and earning potential and also from a perspective
of the way various vehicle technologies can be used to traverse landforms. These different perceptions of the landscape can be seen to apply to other areas of human perception as humans place meaning and values on objects that are perceived in the real world in a cognitive sense to help rationalise, make sense and learn of our surroundings.

So to me knowledge that guides practice is important. Enduring solutions that improve human productivity and capacity bring general benefits to the nation and have positive social benefits for all.

This leads me to two final aspects of research that are important to understanding my approach to this problem. Firstly, the importance of concepts to determining action. Concepts and ideas are a fundamental focal point for discussions that are supported by a common language and culture. Secondly, analysis of qualitative research should not be prescriptive. The tools and procedures are not ends in themselves. The methods should be flexible and guided by the insights gained during the process. An example of the use of such a method is Pollack (2012) who researched an industry knowledge management case using the interpretive framework of Complexity Theory. So while qualitative methods are predominantly used in this research there could be occasions where quantitative methods or a mix of qualitative and quantitative methods are used to validate or extend understanding in certain areas under investigation.

4.3 Research Design

The choice of research methodology and design of the research is framed on the basis of my declared world view based in an ontological and epistemological position outlined earlier. In order to determine an appropriate research method and design, the research problem will be reviewed, research options will be discussed and finally a research method will be proposed.

4.3.1 Background to the research problem

The journey to deciding on the topic of this thesis has been shaped through my experiences and studies. Most of my working life has been involved in large government organisations and so I have been challenged to achieve efficient and effective outcomes without the direct influence of the market and profit motive. The use of the term ‘outcomes’ is important as it
describes the delivery of benefits and concepts of value rather than deliverables. The concept of outcomes is well accepted in the public sector (Jenner, 2010).

Along with my working experience I have undertaken a number of courses of study mainly in the arts. I undertook an undergraduate degree based on sociology which introduced me to the world systems view and social theories of Marx and Webber. I followed this study with a master in innovation and enterprise which was completed with a master’s level thesis in the delivery of value. Lately, I completed a job specific master course in Defence acquisition and capability development that involved study in technology and systems engineering.

The Doctorate of Project Management course has been structured to develop thinking around the key areas of project management literature. Early papers in the course focussed on job related experiences and covered leadership, knowledge management, project management practice and project management procurement and ethics. The reflective papers provided an opportunity to focus in on the research problem and explore the literature more deeply. I presented a peer reviewed paper in 2008 to the Australian Institute of Project Management conference. This paper focused on the transaction costs and governance of engaging contractors into project teams and presented a model of contract and project complexity based on governance. The theme of this paper has been continued into this dissertation.

My experience and study has developed a keen interest in the nature of knowledge and the ways it is created and transferred a perspective I have applied in practice to the acquisition project management environment in DMO. The interaction of project teams in the bureaucratic and hierarchical DMO structures is a source of interest. A number of strategic independent reports have been challenged by the performance of DMO (Mortimer, 2008, Kinnaird, 2003). These have led to a number of initiatives to make DMO more ‘business-like’. A particular slice of this issue is how project teams source the skills and knowledge required to execute acquisition projects to deliver and sustain equipment systems. Project teams have two generic sources of expertise they are: the make option, recruiting and training full time employees or the buy option, using project funds to engage contractors on short term tasks.
While both options could be worthy of further research the latter is particularly intriguing. This is because the process is so burdened with process that it takes significant effort to engage a contractor to complete a relatively minor but specialised task. The issue appears to be that the transaction is so risk adverse and bureaucratic that any benefit that might accrue from the arrangement is overshadowed by compliance and process. So how can the contractor engagement process be improved to provide a more business-like to the benefit of the project and broader defence capability?

4.3.2 Research problem and questions

The problem is embedded in the structure and process of DMO and firms which supply contractors to DMO project teams. The socio-political environment of the organisations across government, the public and private sector indicates a complex set of circumstances where ‘events are the result of multiple factors coming together and interacting in complex and often unanticipated ways’ (Corbin and Strauss, 2008 p.8). The primary question is:

*What drivers and barriers impact the effectiveness of integrating contractors as part of the people capability of complex project based organisations?*

The supporting questions that flesh out the main issues and themes of this research are:

- *How effective are the procurement mechanisms in supporting the organisation’s people capability?*
- *How well are people management systems integrated with the organisation’s strategic, functional and project capabilities and facilitated through practices that support knowledge and competence development?*
- *Are there theoretic constructs and management models that can better inform and improve practice?*

4.3.3 Research design

There are a variety of basic and applied research methods that could be applied to answer the research questions posed above. The research onion shown in Figure 4.1 below shows a range of these options. The generic design interpreted from the diagram below moving from the outer layer; a style of reasoning based in praxeology, interpretivism and
constructivism, using a deductive, inductive and abductive (Van de Ven, 2007 p.101) reasoning in a cross sectional organisational case study using a single integrated method that applies Soft Systems Methodology (SSM) which is a form of action research. The narrative data collected through an initial unstructured interview will be coded to identify the key themes.

Figure 4.1 - The research onion (Saunders et al., 2011)

In short, this research is based on a praxeological and interpretive philosophy underpinned by a hermeneutic and critical reality using a single, cross sectional case study. The research is implemented using SSM (Checkland, 1999, Checkland and Poulter, 2006, Checkland and Scholes, 1990).

The method used to synthesise the elements of the research was based on Creswell’s (2002) framework for research design. This framework provides three elements namely;
knowledge claims, strategies of inquiry and methods that provide the basis for determining the approach.

**Elements of Inquiry**

- Alternative Knowledge Claims
- Strategies of Inquiry
- Research Methods

**Approaches to Research**

- Qualitative
- Quantitative
- Mixed Methods

**Design of Processes of Research**

- Questions
- Theoretical Lens
- Data Collection
- Data Analysis
- Write-up
- Validation

**Figure 4.2 - Framework for research design (Creswell, 2002)**

### 4.3.4 Elements Inquiry

The areas of inquiry are; alternative knowledge claims, strategies of inquiry and research methods. These lead to an approach to research and translation of the approach into a practical methodology.

**Alternative knowledge claims**

The knowledge claim or philosophical nature of what constitutes truth has been outlined above. My philosophical view is based but not exclusively in the social constructivist approach. This view lends itself to a qualitative approach to the investigation. However, this does not rule out the use of quantitative approaches to parts of the investigation if this is deemed to be the most effective way of determining the truth or its use in validation or triangulation of qualitative data.

**Strategies for inquiry**

Seeking to pursue a praxeological methodology that aligns with my philosophical stance and requirements of the question of engaged scholarship as presented by Van de Ven (2007) considered four common forms of practical research that would address the theory and practice gap. These are basic science, collaborative research, design/evaluation and action research. These can be seen to lie on a continuum from the positivist tradition of basic
science research to the interpretivist and hermeneutic based action research. My ontological and epistemological views support the use of a research method based in action research although the use of more objectivist methods may be required in the course of the intervention.

**Methods**

The general types of research are exploratory, descriptive, causal and correlation and evaluation. The characteristic of each of these approaches are:

* Exploratory – This approach seeks to make sense of a situation or phenomena in comparison with what is expected in theory. This is suited to action research methodologies.
* Descriptive – This approach maps or describes the variable in the situation under investigation. A type of descriptive research is a history which allows events to be sequenced and mapped to identify patterns or themes. This approach uses mapping tools such as block diagrams or network diagrams.
* Causal and Correlation – This approach uses a quantitative research techniques in order to get sufficient data to understand what is happening at the general level. Cause and effect maps or influence maps.
* Evaluation – A generally qualitative method used to diagnose a problem or conduct a post project evaluation. This approach may use action research to implement and test solutions.

The research strategy and supporting method chosen to investigate the phenomena should align with the researchers world view. The researcher’s world view will influence the way in which the research problem is viewed and the way in which questions are framed (Corbin and Strauss, 2008 p.24). So it is suggested that the way in which the researcher understands the problem and the method used to investigate the problem will be determined to a large extent by the way the researchers appreciate or make sense of the world and their relationship to it.

**4.3.5 Approaches to research**

**Quantitative research**
Quantitative research is suited to a positivist philosophical stance. It uses data as the basis for analysis using for instance numerical or ranking scales to measure quantities which can be applied to statistical analysis. What is measured is determined by the researcher based on the level of accuracy required and the statistical reliability needed to test hypothesis. Quantitative research generally used to develop models to test hypothesis, predict or explain something about a phenomenon.

**Qualitative research**

Qualitative research is linked to positivist and constructivist approaches. The data collected by researchers using this approach provides context or descriptive data to construct or interpret reality. The data is used to illuminate or make sense of a phenomenon and to provide a level of credibility to a proposition. As Walker & Lloyd-Walker (2015) point out while positivist quantitative studies consider data a proof to test a hypothesis, qualitative data is considered as a chain of evidence to a proposition.

The context within which qualitative researchers work is complex. As Corbin and Strauss (2008) note qualitative research phenomena consist of multiple concepts existing in multiple relationships that are often difficult to tease out of the data.

**Mixed methods**

The discussion on quantitative and qualitative methods shows that either approach could be used to support the other. A pragmatist could argue that either approach could be used depending on the context of the research problem. For instance, in the course of collecting qualitative data through such methods of interviews on a particular research problem there may need to be resolution in critical areas of disagreement that could be solved or informed more expediently by an experiment or survey. Mixed methods are being increasing used in research (Heyvaert et al, 2013) and often provide for multiple perspectives to be considered, integrated and critically appraised. This method favours larger research teams (Freshwater & Fisher 2014) although Pollack (2012) has shown how this method can be successfully applied to smaller scale research.
4.3.6 Research methods

There are suggested to be five research methods used to support research. Yin (2008) suggests there are three conditions which determine which of the five research methods to use. These are outlined in the table below.

*Table 4.2 - Research methods*

<table>
<thead>
<tr>
<th>Method</th>
<th>Form of Research Question</th>
<th>Require Control of Behavioural Events</th>
<th>Focuses on Contemporary Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment</td>
<td>How, why?</td>
<td>yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Survey</td>
<td>Who, what, where, how many, how much?</td>
<td>No</td>
<td>yes</td>
</tr>
<tr>
<td>Archival Analysis</td>
<td>Who, what, where, how many, how much?</td>
<td>no</td>
<td>Yes/no</td>
</tr>
<tr>
<td>History</td>
<td>How, why?</td>
<td>no</td>
<td>No</td>
</tr>
<tr>
<td>Case Study</td>
<td>How, why?</td>
<td>no</td>
<td>yes</td>
</tr>
</tbody>
</table>

The approaches I considered applying to the problem associated with the integration of contractors in the project teams are; case study, action research, soft systems methodology and the Delphi method.

**Case study**

Case studies are defined by Yin (2008) p.17-18 in two parts as:

1. A case study is an empirical inquiry that:
   - Investigates a contemporary phenomenon in depth and within its real life context, especially when
   - The boundaries between the phenomenon and context are not clearly evident.

So a case study seeks to study a current real life problem in depth and in its context. This is different to experimentation that would seek to isolate one or maybe two variables.
2. The case study inquiry:

- Copes with the technical distinctive situation in which there will be many more variables of interest that data points and as one result

- Relies on multiple sources of evidence and data needing to converge in a triangulating fashion, and as another result

- Benefits from the prior development of theoretical propositions to guide data collection and analysis.

Some criticisms of the case study method include; a lack of rigour, the difficulty in generalisation from a single case, they take too long and confusion when case study method is used to establish casual relationships.

**Action Research and how it applies**

Action research is about knowledge in action. Action research is a collaborative problem solving relationship between researcher and client with aims of both solving a problem and generating new knowledge. It is different from the traditional scientific approach to research in that the researcher is immersed in the context and social setting engaging with the audiences of research; for me, for us and for them. (Reason and Marshall, 1987: 112-13 in Coghlan and Brannick, 2005).
Figure 4.3 - Outcome of dual action research (McKay and Marshall, 2001)

Problem situation – A. The problem situation is described in the primary research question being the integration of contractor’s skills and expertise as part of the people capability of complex project based organisations.

Real World situation of A – P. While the ownership of A is retained by the researcher, P by contrast remains in the ownership of the participants and stakeholders. This allows separate reflection on the research and the real world situation.

Method – M. There are two methods identified in the research process these are Research (R) and Problem Solving (PS). M_R is the use of Action Research which is implemented through the use of SSM as M_PS.

Theoretical Framework – F. The lens through which to frame the problem situation is provided in Figure 3.3 as the conceptual model of relevant theory.

The application of systems thinking to action research is a valid method for understanding ‘dynamic complexity’ in open systems such as organisations (Coghlan and Brannick, 2005
Dynamic complexity describes a situation in which there are multiple cause and effects over time (Senge, 1990). Systems thinking goes beyond linear thinking to recognise patterns, draw analogies and potentially solve problems.

It is suggested that a useful way of showing and learning from the interaction of complex problems in organisations is through diagrammatic representation such as that provided in the Soft Systems Methodology. Anderson and Johnson (1997) note that the act of drawing the system’s diagram is a learning process of explanation formulation and testing.

**Soft Systems Methodology**

The seven stage SSM process (Checkland, 1999; Checkland & Poulter, 2006) is based in systems thinking. A system is defined as a concept or idea rather than an object or thing and is regarded as an open system that acknowledges external influences from a total system perspective. Systems thinking is a way of learning that acknowledges the view of the participant in the process that is what part of level of the system is being considered and the human appreciation (Checkland, 1999 p.A41) of the system under investigation.

SSM is used to depict complicated situations and to graphically depict a real life situation through such tools as ‘rich pictures’. Rich pictures graphically represent the real life situation including connections, relationships, influences, cause and effect. The graphics also include subjective elements such as character, points of view and prejudices.

SSM aims to bring about improvements in areas of social concern through learning cycles using system concepts to reflect upon, take action in the real world, then further reflecting, debating effects and further action. This cyclical and holistic systems process is ongoing. SSM has two streams of thinking; a logic based stream and a cultural stream. Both of the streams are graphically presented together to achieve a neutral display as possible.

SSM is a useful approach when investigating complex systems where the problem is ill defined and multiple world views exist. It can be used for developing a robust understanding of an organisation’s Knowledge Advantage (Walker 2005) to bring about improvement, through facilitating the identification of individual stakeholders, instigating mapping processes and making sense of entire situations rather than isolated components. SSM is most useful as an approach in “fuzzy ill-defined situations involving human beings and cultural considerations” (Checkland, 1999 p.10).
The seven-stage model of SSM based on Checkland’s (1999; Checkland & Poulter, 2006) framework, will be followed, recognizing that the seven steps are not necessarily sequential and that the model should be cyclic, thus relevant particularly for continuous quality improvement processes.

- **Stage 1 & 2.** Identification of the problem(s) situation through unstructured interviews with all relevant stakeholders and development of a rich picture which reflects explicit knowledge unearthed. This includes: Analysis One which is thinking about the intervention itself which consists of identifying the roles of client and practitioner and who could be included in the role of issue owner; Analysis Two understanding the human context of the situation including roles values and norm; and Analysis Three which identifies the power and politics in the situation (Checkland and Poulter, 2006).

- **Stage 3.** Interpretation of the picture and formulation of a set of root definitions to underpin a conceptual model. A root definition is well-formulated if it aligns explicitly with the mnemonic Checkland (1999) proposed CATWOE:
  - **Customer** – beneficiaries or victims of the situation
  - **Actors** – those directly involved or affecting the situation
  - **Transformation** – what is happening in terms of inputs
  - **Weltanschauung** – worldview of participants
  - **Owner** – the entity most affected by the situation
  - **Environment** – what lies outside the situation

- **Stage 4** Development of a conceptual model as described in the root definition. Involves a formal system concept and thinking. Stages three and four are undertaken by the researcher while Stage one, five, six and seven are informed by the research participants.

- **Stage 5** Comparison of perceptions with the conceptual model developed to reveal questions to be addressed, assumptions to be re-visited and behaviours/actions to be identified and possibly remedied.
• **Stage 6** Specific recommendations, cultural feasibility, desirable and possible changes suggested. Outcomes usually recommend change to structure, procedures, or organisational culture.

• **Stage 7** Action to instigate changes or re-visit Stage 1 to use feedback loops to test and monitor changes. Evaluation framework required to ascertain effectiveness of change. At this stage the outcomes will be validated by the senior executive management to probe the findings from Stage 6 and to comment on the feasibility and the driver/inhibitors that would be present in trying to action recommendations. This will therefore form a ‘simulated’ action phase because of the difficulty in timing to actually implement Stage 6 recommendations within the DPM elapsed time.

**The Delphi method**

This method seeks to select people who have particular expertise in or related to the field under study (Skulmoski et al, 2007). The method is designed around four steps to; identify the propositions through an in depth literature review and select a few experts; provide a first round of questions with relevant material which are summarised and feed back to the participants providing them areas of agreement, disagreement, additional questions, feedback and comment; the second round provides more probing questions allowing the researcher to delve into more depth and the expert to refine their position. This loop of analysing the responses and issuing questions to clarify and seek further information should be continued until a strong consensus emerges.

This method would apply where an appropriately skilled and rounded group of expertise is available to the researcher. In this case the availability of a few experts would be a challenging requirement as most of the subject matter experts are senior executives whose time and availability would preclude any lengthy and ongoing research activity. So while this method was considered to implement the action research or to complement SSM it was discounted.

**Summary**

The research methodology should complement the underlying philosophy of the researcher, the nature of the problem and research questions. In this case a qualitative method is used that analyses an unstructured workplace problem situation. The method is a cross sectional
organisational case study using a single integrated method that applies Soft Systems Methodology (SSM) which is a form of action research. Narrative data collected through initial unstructured interviews and coded over iterative discourses with the participant through the application of SSM. It seeks to understand the issues through uncovering the social and political issues surrounding the integration of contractors.

4.4 Selected research methodology

This section will elaborate on the selected design related to the context of problem.

4.4.1 Detailed research methodology

The research method is principally a qualitative approach based on action learning cycles using soft systems methodology. This method uses systems thinking as its basis and applies reflection and sense making. Checkland (1999) notes that methodology is a mosaic of activities which are related to each other rather than a sequence of activities.

![Figure 4.4 - Soft Systems Methodology as applied](image.png)
The methodology outlined above shows how soft systems methodology will be implemented. The emphasis is on feeding back to the participants work on the rich picture, comparisons and recommendations. This feedback might not be structured as it occurs in a workplace and the researcher is an actor in this area of research. Therefore, it is important to maintain a diary during the field research phase to ensure that interactions with research participants are captured.

**Research participants**

The research participants are from within the DMO and from supplier organisations. In order to establish a viable population of respondents to optimise the validity and reliability of the problem situation it is planned to source research participants from different management areas in DMO, at least three different supplier organisations from multinationals and Australian based small and medium enterprises.

In order to achieve the data reliability the following people will be interviewed:

- Three people from DMO who hold project and line management positions; and
- Two people from each of the three supplier organisations.

**4.5 Validity and Reliability**

Rigour is essential to the validity of qualitative research. In the positivist science tradition the ontology and epistemology is based in the objectivist approach requiring the researcher to be distant from phenomena being studied and requiring that the observations be repeatable. The natural sciences is characterised by a reductionism that seeks generalisability of observations and repeatability is seen as a strong criterion.

However, this is difficult to achieve in the study of the social sciences and human situation using action research (Coghlan and Brannick, 2005) as the basis for investigation. This is because the interpretation of human situations is not static and action research is ‘concerned with the myths and meanings which individuals and groups attribute to their world and make sense of it’ (Checkland, 1999).

Therefore, the epistemology of action research is based in the criterion of recoverability. This requires the explicit declaration of the intellectual frameworks, methodologies and process by which observations are defined as knowledge. This allows researchers to
consider the research and inform debate. Validity of the action research based on SSM can be seen to be based on a number of considerations as follows (Checkland, 1999 chap 7):

- The importance of the ‘weltanschauung’ or worldview of the researcher. I have stated my worldview in section 4.2.2.

- The identification of primary task and issue-based root definitions. Issue based root definitions and models provide cross functional descriptions and analysis which can be more thought provoking, richer and more informative that purely primary task definitions that focus within the organisation’s boundaries. Nevertheless, it has been found that a combination of each is preferable (Checkland and Poulter, 2006).

- The structure of the root definition. The root definition has a defined structure which is principally shaped around the mnemonic CATWOE. A properly formed root definition on which the conceptual model is developed should identify the elements of CATWOE (Checkland and Poulter, 2006 P.38-45).

- The whats and hows. The recognition of the hierarchical order of the whats and the hows in the comparison stage 5 of the SSM process is important to the clarification of actions. Determining what is to be done is required before a determination of how it is to be implemented.

- Gathering and enriching the initial impressions. This is planned in the application of SSM in that the rich picture constructed from the initial interviews are represented to the participants to validate the content of the rich picture as a complete representation of the problem situation from the participant’s view.

- Methodological laws. There are two recognised methodological laws developed through experience with SSM. They are not based on empirical research but embedded in experience and are as a result of the generality of systems concepts summaries of the logic systems rather than empirical laws (Checkland, 1999 p.234). The first law identified in the implementation of SSM is the conceptualisation of models, in that system served by another system cannot be defined until the system served is defined. In this case the system is defined through analysing the system layers as described by (Checkland, 1999 p.A24) and shown in Figure 5.6 in Chapter Five. The second law is simpler to enact requiring that models must consist of
structured sets of verbs specifying activities which actors could directly carry out. These laws relate to and are planned to be implemented in stage four of the methodology.

- Problem content and problem solving. The problem content (c) is the real life situation in which a researcher is taking action and problem solving is the process (p) use to take the action (Checkland and Winter, 2006). This recognises two ways in which SSM can be used. In this application SSM(c) will be applied recognising that the roles of problem owner and problem solver can be undertaken by the researcher.

Further to the use of SSM (p) as described above, the use of pattern matching and explanation building as described by Yin (1994) can be seen to be useful in interpreting and analysing data associated with the problem situation (c). In this application of SSM interviews will be analysed in qualitative analysis software NVIVO Version 10. The power of narrative as a research source is highlighted by (Bredillet, 2013 p.77) as an approach that can integrate the general and particular through stories and history. This software provides a technique for coding narrative in word processing programs such as Microsoft Word. Coding of the narrative provides the researcher the ability to categorise, compare and graphically display data for analysis. Interpretation of the data through explanation building can be seen to support SSM (p) in the development of the rich picture of the problem situation in stage one and two and analysis of actions following the comparison stage six interviews.

Validity of the research is also supported in the ‘conscious and deliberate enactment of the action research cycle’ (Coghlan and Brannick, 2005 p.7). The action research cycle as shown in Figure 4.3 requires conscious reflection on the problem situation, research method and intellectual framework. Reflection on the problem situation in which the research intervention is occurring should lead to experiential learning or learning from doing (McKay and Marshall, 2001). The implementation of the research method being employed is SSM and the intellectual framework epistemology described as based in praxeology and critical realism has been outlined above.
In addition, action research seeks to enable a dual cycle that involves problem solving and research problem being applied in unison as shown below in Figure 4.5. This is similar to the SSM approach to the problem content (c) and problem process (p) as described above.

![Figure 4.5 - Action research as a dual cycle (McKay and Marshall, 2001)](image)

It has been suggest by Coghlan and Brannick (2005) p.127 that rigour is developed in research by the actions listed in the left column of the Table 4.3 below. The right hand column provides the actions associated with this research.

**Table 4.3 - Application of rigour in research**

<table>
<thead>
<tr>
<th>Rigour Introduced By</th>
<th>Applied in the Research Framework</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Use of action learning cycles.</td>
<td>• The use of soft systems methodology and the learning loops to refine the messy problem and define outcomes and recommendations.</td>
</tr>
<tr>
<td></td>
<td>• On-going questioning of interviewees perceptions and clarification of views.</td>
</tr>
</tbody>
</table>
• Access multiple data sources to provide contradictory and confirming interpretations.
• Interview people from a range of backgrounds and positions in LSD.
• Interview at least three people in at least supplier organisations.
• Review and compare organisational policy explicit knowledge with what is said.

• Evidence of how you have challenged and tested your own assumptions and interpretations continuously throughout the project.
• Development of the rich pictures throughout the research period.
• Be aware of the socio-political bias in each organisation.

• How your interpretations and outcomes are challenged supported or disconfirmed from the existing literature.
• Rigour in the literature review.
• Early identification and ongoing assessment of applicable theory.

4.5.1 The practice theory gap

There are a range of criticisms of the usefulness of the rationalist research paradigm in its application to project management (Bredillet, 2013, Winter et al., 2006, Van de Ven, 2007). The use of traditional positivist research approaches in a social science based discipline such as project management has not met expectations of a practice discipline growing in importance. It appears that project management’s intellectual foundations need to be connected more closely to the challenges of contemporary project management practice.

The phenomena could be seen to one of knowledge transfer. Knowledge and practice can be seen to be distinct forms of knowledge. Academic research seeks to advance scientific knowledge albeit inadequately in the field of management (Van de Ven, 2007 p. 2-3) while practitioners are not implementing this abstract knowledge.

A framework for categorising the types of project management research required to further the knowledge and practice of project management and address the theory practice gap is provided by Winter et al. (2006). Theory About Practice furthers an understanding of
practice but does not have immediate practical application, Theory For Practice relates to concepts and approaches that do have practical application and Theory In Practice considers how practitioners learn their craft. This concept is elaborated further by (Bredillet, 2013) who suggests approaching research from a practice perspective categorising Theory From Practice or knowledge from practice and Theorising In Practice highlighting the practitioners knowing and Theorising As Practice knowing as practice. From these examples the value of practice as a basis for theory should provide a rich source of applications and practical wisdom for practitioners.

A methodology that aligns with this thinking is action research which will be implemented through the use of Soft Systems Methodology (SSM). SSM is a learning methodology closely aligned with the aims of action research (Checkland, 1999) and provides learning in the act and outcomes of the research.

Further, Van de Ven (2007) p.295-300 proposes a number of considerations in making a choice between the research alternatives which are worth exploring. These considerations are discussed against the proposed action research methodology.

**The research problem and question**

The foundation of research is based in the research question ‘It's about the problem stupid!’(Van de Ven, 2007 p.268). The ‘what’ question supported by the ‘how questions’ that further define and develop the research requires further definition.

**Mode of inquiry**

Different modes of inquiry produce different kinds of knowledge. This inquiry based on action research uses data from a range of stakeholders involved in the problem situation to produce situation specific and practical knowledge.

**Triangulation strategy**

The engagement of a diverse range of stakeholders, models and sources of data provides a range of contradictory information about the problem being investigated which need to be resolved by the researcher. The methodology used in this research engaged a range of industry, program and senior executive level stakeholders through interviews. The
immersive strategy expands the traditional explanation of triangulation. In addition, data from stakeholders was compared to relevant theory and models.

**Researcher- stakeholder relationships**

The SSM allows the researcher to engage in rich conversations with the research participants to uncover the cultural, political and processes associated with the problem situation. This relationship is further developed in the stages five and six in the comparisons between the ideal system and reality and defining feasible and desirable solutions.

**Researcher’s reflexive perspective**

The research strategy and methodology should make explicit whose interests and perspectives are served in the study. This occurs in the development of the rich picture which shows the cultural, political and processes at work in the problem situation. Reflexivity is socially and historically conditioned and to facilitate change in an action research setting needs to be ‘guided by the principles of democratic engagement and a commitment to change’ (Coghlan and Brannick, 2005 p.7).

**Temporal duration of the study**

The time horizon in the study can be either cross sectional or longitudinal. This study is cross sectional because of the resource available to the researcher and the researcher’s familiarity with the problem situation. Action research strategy seeks to learn from the situation in multiple learning loops and therefore a longitudinal study may enhance the learning experience over time.

**Limits of engagement**

The deep level of engagement required by the SSM process does not imply a loss of control but it does require a deeper level of accountability to the study participants. This is because there is an expectation by participants that concerns raised during interviews or other interaction will be addressed. Of course this is not always the case but the negotiation between conflicting interests and creative tension that might be developed requires some skill on the part of the researcher as in this case the researcher is a stakeholder in the problem situation and some of the participants were suppliers or in line management positions.
Study size and scope

The costs and resources required to engage a range of stakeholders in the SSM process can be prohibitive. The need to balance the costs with the probably benefits is an important decision. In this case a cross section of the stakeholders representing small and large industry firms, line and program managers was kept manageable to enable deep and rich conversations with each participant involved in the research.

Summary

The shortcomings in project management research methods should be addressed through the design of this research providing a bottom up social science action based research. This should provide multiple learning opportunities and practical outcomes that will improve project management knowledge and practice.

4.6 Chapter Summary

This chapter has outlined my philosophical stance which is essential to an understanding of my world view and validity of the chosen action research implemented through the use of SSM in an action learning context. The method aligns with the messy and unstructured nature of the problem, deals with some observed deficiencies in the theory practice gap and my philosophical interpretive and constructional views. The problem which is based in practice and will be investigated though conscious reflection on the problem situation, the research method and intellectual framework provided in the underlying worldview and philosophy. The framework supports the research methods and outcomes validity.

Validity of the action research approach based on SSM is based on recoverability. SSM validity is enhanced through declaring a worldview, the identification of issue based and primary task based root definition, a comprehensive root definition, clarifying the whats and hows in the comparison in stage six, gathering and enriching initial problem expression, applying the methodological laws and identification of problem content (c) and problem solving (p). More broadly action research validity is further reinforced by the use of action learning cycles and reflection, access to multiple data sources to provide contradictory and confirming interpretations, challenge and test the researcher’s assumptions and
interpretations and how your interpretations and outcomes are challenged supported or disconfirmed from the existing literature.

There is perceived to be a gap between theory and practice. It is perhaps an issue of knowledge transfer between the academic research and practitioner communities. Philosophical discussion around the issue suggests that the recognition of project management as practice, practitioner wisdom and learning and the difference in the types of academic and practitioner knowledge could hold solutions for furthering the project management research agenda.

The next chapter will describe the implementation of the methodology. The problem situation will be established through the use of unstructured interviews and displayed in a rich picture. Conceptual systems thinking in development of a root definition that describes the conceptual system will be developed into a high level system concept. In a later chapter this conceptual system will then be compared with the problem situation through interviews with the participants.
Chapter Five – Problem expression

5.1 Introduction
In the last chapter the choice of soft systems methodology as the preferred research methodology was justified based on the unstructured nature of the problem, my experiences and world view. This world view is based in the praxeological and hermeneutic tradition that are interpretive and constructionist. This perspective is based in an understanding of culture, value, beliefs and views that are interpretive, dynamic and will change over time based on a person’s understanding of reality. The influence of the individual’s world view on the collective view of groups is important to understanding the influences of power and culture in the change process in organisations.

The perception of reality of the social world by individuals and groups is important to understanding the beliefs and actions of change. The research method is a qualitative approach using action learning cycles and the soft systems methodology as proposed by Checkland (1999). The SSM as applied is a seven stage process that uses learning loops to establish and analyse the situation, develop a conceptual model of the essential system, compare the model system with ‘what is’ and determine recommendations for change. The essence of this action research based approach is the iteration that occurs between stages as the analysis progresses that continually validates learning and revisits each stage to refresh understanding.

This chapter describes the method used in defining and analysing the problem situation and develop a conceptual model of the essential parts of a system.

5.2 Case study description
The case study is set in the Defence Materiel Organisation’s (DMO) Land Systems Division (LSD) based in Melbourne, Victoria. The LSD acquires and sustains terrestrial equipment for the Australian Defence Force (ADF). Acquisition of equipment is managed through projects and programs which are based on particular equipment types. For instance, the Mounted Combat System Program Office is based on three programs which each acquire and sustain an armoured vehicle platform operated by the ADF. The structure is capability based
around the ADF capability elements and aims to align the user community with the acquisition and sustainment organisation.

Projects teams in these programs are provided from the Australian Public Service (APS) and the Australian Defence Force (ADF). The project teams can be supplemented from time to time based on work effort and skills sets required for the delivery by contractors. The principle contractual framework for engaging contractors is though a standing offer panel referred to as the DMO Support Service (DMOSS) panel. A standing offer is a contract for the repetitive supply of goods and or services for a period of time at an agreed price, such as a spare parts catalogue. Approval to use the DMOSS panel is gained through an approvals process which presents the scope of work and business case for the engagement. The approvals process can be time consuming, bureaucratic and does not always provide the outcome sought by the project office. This leads to poor outcomes such as tasks not being achieved on time which reflects poorly on the project office and contractors.

The contractors are generally provided by a range of companies that provide professional services. The industry is characterised by large accounting firms and multinational defence corporations which offer a broad range of services and smaller domestic single competence firms that provide services for technical documentation or specific engineering services. All of the companies appear to recognise the unique ADF culture (refer to Black, 2011, Proust et al., 2007) and are aligned to it. There is also evidence of informal networks linking senior defence and defence industry people. Defence industry is generally politically aware and lobby members of the Federal Parliament and use personal networks within the DMO to influence decisions in their favour.

A boundary was established around the problem situation to focus analysis on the primary tasks for acquiring and sustaining equipment for the Australian Defence Force. Areas relevant to the primary task were further enhanced by superimposing the processes and structures used to engage contractors by the project team.
5.2.1 Unstructured interviews

There were 15 in depth interviews\(^5\) undertaken with nine participants to explore, analyse and confirm the problem situation. Boundaries were placed around the major areas of the problem situation see Figure 5.1.

\[\text{Figure 5.1 - Rich picture developed from participant interviews}\]

The areas defined were based on Analysis One (Checkland, 1999 p.A19, Checkland and Poulter, 2006 p.29) which analyses the possible and plausible problem owners. Based on this analysis the stakeholders in the problem situation could be seen to be generally made up of the following:

The DMO project or program area

The DMO project and program area is the principal focus of this study. This area consists of the project offices that are tasked through customer supplier agreements referred to as Material Acquisition Agreements (MAA) and project manager or director charters to deliver

\[^5\] The 15 interviews include nine initial interviews shown in Table 5.1 and six follow up interviews shown in Table 5.2.
products and services to the Australian Defence Force. The matrix organisation that supports the project managers are includes engineering, finance and contracting. These functional areas generally report and their work is prioritised by the matrix organisation.

The DMO line management

The DMO line management are the people in the hierarchy of the DMO that are directly responsible for the delivery the products and services. The DMO line managers are employed as either assistants or deputies to senior managers such as the Director of the System Program Office and the Branch Heads. Line management will scrutinise the business case provided by project managers for contractor support and limit that numbers and activities of contractors in accordance with the DMO business strategy.

Defence industry

Defence industry consists of those private sector organisations that conduct business with the Department of Defence. The companies chosen to participate in this study were those that are listed on the DMOSS standing offer panel as a company offering services. These companies are prequalified as meeting the terms and conditions of the DMOSS panel in the various skill sets.

The culture of the Defence Industry is recognised and understood by the customer and many of those employed as contractors have previous military experience. For instance, participant Romeo a senior industry executive explained as part of the company strategy ‘we have people who can swim through the defence culture’. The people who work in the Defence Industry are very aware of the need to navigate the Defence culture.

People who work in Defence industry are generally well connected with people who work in the Australian Defence Organisation. The senior managers understand the value of political lobbying and their companies are generally represented in Canberra with access to the Defence Headquarters and politicians.

5.2.2 Demographic data

A summary of the demographical data applicable to the participants of the study are listed in the table below. The participants were selected to provide a spread of views across the problem situation landscape using criteria such as the type of organisation, time in
employment, position in the organisation, the level of commercial and military experience. The unstructured interviews were conducted with each of the participants by the author.

**Table 5.1 - Summary of Demographics of Interview Participants**

<table>
<thead>
<tr>
<th>Interviewee</th>
<th>Date of interview</th>
<th>Organisation</th>
<th>Time in current</th>
<th>Commercial experience</th>
<th>Position in organisation</th>
<th>Military experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant ALPHA</td>
<td>12/7/2012</td>
<td>DMO</td>
<td>5 to 10 years</td>
<td>Yes</td>
<td>Project or Program Manager</td>
<td>Yes</td>
</tr>
<tr>
<td>Participant BRAVO</td>
<td>13/9/2012</td>
<td>DMO</td>
<td>0 to 5 years</td>
<td>Yes</td>
<td>Line Manager</td>
<td>Yes</td>
</tr>
<tr>
<td>Participant CHARLIE</td>
<td>30/10/2012</td>
<td>DMO</td>
<td>10 to 15 years</td>
<td>No</td>
<td>Senior Manager</td>
<td>No</td>
</tr>
<tr>
<td>Participant DELTA</td>
<td>2/11/2012</td>
<td>DMO</td>
<td>10 to 15 years</td>
<td>No</td>
<td>Senior Manager</td>
<td>Yes</td>
</tr>
<tr>
<td>Participant MIKE</td>
<td>14/9/2012</td>
<td>Small Service Provider</td>
<td>5 to 10 years</td>
<td>Yes</td>
<td>Partner or General Manager</td>
<td>Yes</td>
</tr>
<tr>
<td>Participant NOVEMBER</td>
<td>14/9/2012</td>
<td>Small Service Provider</td>
<td>5 to 10 years</td>
<td>Yes</td>
<td>Lead Consultant</td>
<td>Yes</td>
</tr>
<tr>
<td>Participant OSCAR</td>
<td>26/9/2012</td>
<td>Major Service Provider</td>
<td>5 to 10 years</td>
<td>Yes</td>
<td>Lead Consultant</td>
<td>Yes</td>
</tr>
<tr>
<td>Participant ROMEO</td>
<td>12/10/2012</td>
<td>Major Service Provider</td>
<td>5 to 10 years</td>
<td>Yes</td>
<td>Partner or General Manager</td>
<td>Yes</td>
</tr>
<tr>
<td>Participant SIERRA</td>
<td>25/10/2012</td>
<td>Major Service Provider</td>
<td>5 to 10 years</td>
<td>Yes</td>
<td>Lead Consultant</td>
<td>No</td>
</tr>
</tbody>
</table>
The interviews were conducted over five month period from July to November 2012.

5.3 Expression of the problem situation

5.3.1 The rich picture

An expression of the problem situation was developed through the unstructured interviews and the relevant cultural, structural and process areas were described in a rich picture. See Figure 5.1. This is the first and second stage of the SSM. The aim of this activity is to display the situation so that a range of possible and hopefully relevant choices can be made (Checkland, 1999 p.166). Analysis Two and Three (Checkland, 1999 A20-21, Checkland and Poulter, 2006 p. 31-38, Checkland and Scholes, 1990 p.48-51) provides a framework of the social and political analysis of the problem situation. In particular the distribution of power in the social situation noting that ‘social reality’ (Checkland and Poulter, 2006 p.31) as embodied in culture, roles, norms and values vary over time and the perspective of the Practitioner of SSM. The social reality of the situation will also impact the feasibility of any identified solutions.

The unstructured interviews provided a source of data that was analysed through coding in the NVIVO 10 software. The software assists in qualitative research by providing a semi-automated method of analysing, coding sources such as the interviews and displaying the results. The software provides a pattern based coding of large volumes of text and this data can be presented in a range of graphical and spreadsheet options. The interviews were recorded and a transcript of the interview typed on a Microsoft Word document. This document was sent to the interviewee for validation and comments were incorporated. The document was then imported into NVIVO. The document was then coded by highlighting the text which was identified in the Analysis one two and three, outlined above.

In this way the problem situation was defined using three key areas:

1. Identification of a complex set of attitudes, beliefs values opinions and perception

2. Structural components or things that are relatively stable in the problem setting such as the people who are the main players in the engagement process.

3. Process or activities which are part of the situation that include transient relationships and connections of some kind.
The rich picture can be described using the analysis one, two and three as described by Checkland and Poulter (2006) p. 27-38. The problem situation is broken into three major areas; namely the DMO senior executive, DMO projects and programs and Defence industry. The key stakeholders are the DMO senior executives who have the power to stop the activity, the project and program managers who integrate contractors into project teams in order to deliver a program of work and Defence Industry owners and executives who are engaged by DMO to deliver outsourced work. Key processes are the engagement of contractors through the DMOSS standing offer panel and the bureaucratic process to gain approval to use the DMOSS panel, the DMO acquisition of equipment and the people capability system. While the culture and values associated with the problem situation are interwoven into the symbols and dialogue in the rich picture there are explicit values shown in the clouds representing Defence and Defence industry culture.

Also, there are other intricacies of the problem situation. These are shown as the areas of conflict, shown by cross swords, between project management and matrix staff in DMO, the competition between the multi-national companies and the SMEs and the close relationships between the project and program managers and Defence industry key staff.

5.3.2 Description of the rich picture

The expression of the problem situation has been divided into three main perspectives and two external relationships. The rich picture is a visual summary of the human activity situation not a systems diagram (Waring, 1996 p.83). The perspectives and external relationships are separated by solid and dotted lines. The lines denote the context boundary related to the problem situation. It is not necessarily a systems boundary. The solid line denotes the problem area and outside this line are two areas of influence that of the Government higher Defence Department and the broader industry areas in which Defence industry operates. These areas are related to but not immediate to the problem situation. Within the context boundary are the three perspectives of the DMO project or program manager, the senior executive area of DMO and Defence industry. These perspective or context areas are separated by dotted lines. The perspectives which are highlighted in the figure below are the:
• **DMO project manager.** The area in the rich picture which this perspective is presented is highlighted in a green shade. The DMO program and project managers are characterised as working in a public sector project oriented organisation based on a weak matrix structure. There are a broad range of stakeholders including; Government, the ADF user community and other Departmental agencies such as the Defence Science and Technology Organisation and Chief Information Officer Group. Transactions with industry are contractually based and in the case of the supply of professional services or contractors this is though the DMOSS arrangements.

• **DMO senior executive or corporate view.** The area in the rich picture which this perspective is presented is highlighted in a red shade. The DMO executive as part of the Department of Defence develops business plans and strategies to deliver on the Defence Capability Plan. This area owns the DMOSS arrangements through which skills and expertise are supplied to the DMO.

• **Defence industry view.** The area in the rich picture which this perspective is presented is highlighted in a purple shade. Defence industry consists of the large multi-national companies such as the ‘big four’ accounting firms and large defence companies such as Thales and British Aerospace. It also consists of the small to medium enterprises that which specialise in niche markets such as technical data or sub contract their skills and expertise to the multi nationals.

The two external relationships that are seen as key to the problem situations portrayed in the rich picture are:

• **Government and higher Defence Department.** Government is the owner and main stakeholder of defence acquisition highlighted in the yellow shade. Resources are allocated by Government against outcomes as approved in the annual budget session. Portfolio budget statements provide the details of the resource allocations (Department of Defence, 2012b).

• **Private and public sectors.** This external relationship as shaded in light blue highlights the broader skill base that Defence industry companies operate. Skills and expertise that are marketed by Defence companies are often able to be
marketed into other industries such as mining, construction or state government areas.

**Figure 5.2 - Rich picture perspectives**

**Organisational Culture**

The orange coloured clouds in the DMO and Defence industry areas show the influence of cultures to the problem situation. The defined culture of Defence which DMO is a part has been canvassed in a number of recent reviews (Black, 2011, Department of Defence, 2012c, Proust et al., 2007). While there can be seen to be positive and negative aspects of organisational cultures the negative aspects of this culture are seen as risk aversion, insensitivity to cost, rule bound and tribalistic. On the other hand, Defence industry culture while it could be seen to be influenced by Defence culture as a result of the numbers of ex Defence personnel being employed in this area can be seen to be dominated by the profit motive and the development of relations with people in Defence.

**The DMO project manager**
The DMO project or program manager is at the heart of the problem situation as shown in the rich picture in Figure 5.1. Project managers are situated in the centre of the problem situation and are responsive to line management and accountable through a charter to deliver projects against a Material Acquisition Agreement. The MAA includes the key milestones, budget, measures of effectiveness and scope / supplies to be delivered. The project manager supported by the project team are responsible and accountable for the achievement of the MAA.

The principle issues facing the project manager related to the integration of contractor’s skills and expertise into the project team is the slowness in approval of the business case for the engagement of contractors. This issue is highlighted on the right hand side of the project manager’s area in the rich picture. The project manager is working in an organisational structure known as a weak matrix. Therefore, the functional areas such as the senior executive’s staff, finance and contracting need to approve any business case to engage contractors irrespective of the length or complexity of the task. The functional areas are shown by the stove pipe vertical lines which are dotted with gate keepers. At the top of the stove pipe is the senior executive or ‘one star’ that approves the business case. Metaphorically this approval process could be seen to be like ‘snakes and ladders’ as each person in the approvals ladder could reject the proposal. This is a bureaucratic and slow process.

Defence industry is a key stakeholder in most projects. Hence the relationship with industry is important to the delivery of projects and achievement of the MAA. The formal method of engaging industry is through the DMOSS standing offer process. However, there is a range of interactions with industry such as ongoing contracted work, marketing activities and social contact through relationships that have been established over time. These relationships assist in defining the task and gaining a greater understanding of the business context of each party. Foremost in the project manager’s mind is getting to job done for a reasonable price and issues such as risk sharing and the commercial arrangements.

Another issue facing project managers is the scrutiny and reduction in dedicated project staff. Staff cuts appear to be a highly visible and effective way of reducing expenditure. The apparent method by which this is done is based on an across the board reduction in head count. The areas which are cut are usually left to line management to determine. This can
be arbitrary and not related to previously agreed project plans. Hence the justification of full time staff is as ongoing issue.

**DMO senior executive or corporate view**

The DMO senior executive is focussed on achieving the goals and objectives set by the most senior Defence and DMO leadership and hence the Government. The purpose of DMO is to equip and sustain Defence’s materiel capabilities to meet Australia’s needs in an effective, efficient, economical and safe manner (Chief Executive Officer DMO, 2013). In addition, Government is pursuing a number of reforms which are directing the strategic direction of the DMO as contained in the DMO Strategic Framework 2013-2015 (Chief Executive Officer DMO, 2013). Cultural change to Defence is being pursued under the Pathways to Change (Department of Defence, 2012c) and Strategic Reform Program (Department of Defence, 2009b) reforms. There appears to be a range of reviews that have focussed on the way DMO and the Capability Development Group do business and the most influential of these could be seen to be the Kinnaird et al. (2003), (Mortimer, 2008b) and (Black, 2011) reviews. Centrally these reviews have focussed on making the organisation more accountable and business like. These themes are captured in the rich picture as an external influence on the way contractor’s skills and expertise are integrated into project teams.

The DMO senior executive is the owner of the current process and the basis of the problem situation. The DMOSS panel is the formal contractual arrangement to procure skills and expertise of contractors for DMO project teams. During Financial Year 2011-12 there was about $120m contracted through the DMOSS panel by about 4,000 users.  

**Defence industry view**

Defence industry is a broad market and includes at least 400 or so firms which are listed on the DMOSS panel. The firms range from small to medium enterprises of between one to 200 employees and multinational firms that compete in the defence materiel market and have professional services capabilities in Australia. The defence industry is dominated by multinational companies that are based in North America or Europe (Department of Defence, 2010a p.7). The Government has adopted an industry policy that seeks to support

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6 Interview with the DMOSS Deed Manager on 25 Sep 12  
7 Interview with the DMOSS Deed Manager on 25 Sep 12
certain strategic industry capabilities in Australia (Department of Defence, 2010a). This includes supporting Australia firms particularly the SME in the global supply chain of the large multinationals. About a third of materiel acquisition by the multinational firms is subcontracted to SME’s.

The issues for defence industry appear to be:

- The costs to industry in responding to Requests for Quote issues through the DMOSS standing offer. These costs appear to involve the costs of trawling the RFQ issued by the DMOSS panel and responding. In addition, the costs associated with understanding and in some cases translating the requirement to practical deliverables to properly skilled people.

- While defence industry appears to be reasonably positive about the DMOSS arrangements the recent retendering of the panel allowed a range of addition firms onto the panel. This had the effect of making tendering more competitive but increased the transaction costs as a result of managing and evaluating additional tenders.

- Often the scope of work is incomplete or poorly described. Work can be tendered through the DMOSS standing offer panel which because of such reasons as the lack of skills and expertise of the project manager or engagement with related disciplines such as engineering or integrated logistic support there are better ways of delivering or achieving an outcome. The contractor in this case could factor in additional risk to the task or needs to work with the project to develop a better scope of work. Clearly, probity and ethical considerations need to be considered in the latter option to ensure one company is not favoured over another by privileged access Commonwealth tender documentation which is not freely available to the market.

- The skills sets which are sought through the DMOSS standing offer panel to deliver work can be understated. The DMOSS Deed describes the level of skills and expertise of contractors as practitioner, qualified practitioner, experienced practitioner, discipline specialist and pre-eminent consultant. The project office can under estimate the skill level required for a task and therefore the contractor’s hourly rates. This means that if more complex tasks are tendered on the basis of a
lower skilled person the contract cost could be less but the quality of the outcome might not be assured.

- There is conflict between the SME and multinational firms over the transaction costs. This is highlighted by the use of the term ‘single shingle’ which is seen to be a derisive term that refers to a small contractor with a single competence that has a niche market or competence in part of the defence industry supply chain. These smaller firms appear to be competitive with the multinationals as their transaction costs and overheads are lower. It was often noted during the interviews with the larger firms that the forty percent margins to pay for overheads such as insurances were often overlooked by the small firms.

- The nature of tasks sought by SME and multinational firms were also different. While the SME focused on tasks within their competence the multinational firms were more competitive with larger packages of work that would utilise the range of skills and expertise. The higher overhead charges of multinational firms also provides a depth of related skills and expertise and risk mitigation that would not be available to SME. The use of the multinational firm’s range of professional services and assurance in the delivery of complete packages of work may lead to better outcomes in the sharing of risk.

- Informal networks are seen to exist between the project office and defence industry contractors. Personal relationships developed by past employees of the Department of Defence at all levels can be seen to be used in establishing an understanding of tasks. On one hand this is clearly a probity and ethical issue which is regulated by a range of Commonwealth policy and on the other this relationship is one about trust and confidence to deliver in a value for money way. Nevertheless, these informal networks exist and can be seen to be exploited by industry.

- There is also the perception by Departmental employees of the higher wages and salaries paid in the private sector. The marked up cost of contractor’s hourly rates even when the higher margins are considered could be seen to be considerably more than that paid to Departmental employees. Indeed internal DMO data shows that the Return on Equity of many Defence industry firms is higher than many other
industries. This may well be a reflection of the higher risks experienced in Defence materiel acquisition and support. Nevertheless, this creates tension and could be seen on occasions particularly in a monopolistic situation to lead to more conflict and scrutiny of outcomes.

The rich picture shows a range of cultural, process and structural issues associated with the integration of contractor’s skills and expertise into the project team. The problem context boundary is drawn around the DMO and Defence industry and there are external influence on the problem situation from Government as DMO’s owner and the broader private sector. Key issues regarding the DMOSS panel as the formal contractual arrangement for procuring contractor’s skills and expertise the bureaucracy involved in using the DMOSS process and the interaction between industry and DMO project managers are key themes of this research.

Further analysis of the problem situation is undertaken in the definition of the primary task of the organisation and issues related to this task.

5.3.3 Primary task

The issues and tasks form the basis of the problem. Waring (1996) p.90-91 highlights that ‘two types of wrongness may be discernible’ in the messy problem situation. The first type of wrongness could be embedded in the primary task of the organisation or the overall objective of the human activity system. The outputs of the DMO are to acquire and sustain equipment for the Australian Defence Force and if the organisation was not able to acquire equipment then it would cease to be able to fulfil its primary output. The primary task could be further dissected into sub systems which may be required for DMO to fulfil its primary task that are;

- Project and program management
- Integrated Logistics Support
- Contracting
- Finance
- Engineering
A focus on the primary task could be misleading as Waring (1996) p.91 notes ‘primary tasks tend to avoid the underlying causes of the mess’ when a primary task system may be affected by unresolved issues. This is the second type of ‘wrongness’ are issues defined as ‘something which evokes an emotional response such as frustration, anger, despair ... (Waring, 1996)’.

5.3.4 Issues
The issues that were uncovered as part of the unstructured interview process have been analysed and coded in the qualitative analysis tool, NVIVO. The issues, presented in no particular order, were:

**Accountability**
Accountability is the means by which the decisions that are made about an organisation direction are translated into action. The accountability system in an organisation is made up of the structures, processes and culture. It can be seen to be a driver for organisational capacity and is the backbone or organisational governance (Black, 2011 p.13). In terms of the engagement of contractors, accountability is about the appropriate individual or organisation (either in the DMO or industry) taking on the personal responsibility and ownership of the task or issue.

Typical of the comments related to accountability were ‘...everyone is so reliant on process because the want to cover their ass... “I followed the dotted line; you can’t accuse me of things that have gone wrong” ’ (Oscar). Also, ‘There is an accountability component and some people would prefer not to have this visibility’. (Romeo) These comments highlight the unwillingness of people to accept risk as Mortimer (2008b) notes ‘a fear of making mistakes’. It is suggested that this could be caused by a lack of knowledge and experience or a lack of support from experienced and trusted senior personnel. Either way and as suggested by Kinnaird and Mortimer the importance of a trusted performance management system, remuneration and rewards that could be implemented by an executive agency structure that that provided the CEO DMO with full control over personnel inputs would achieve a better performance culture and personal accountability outcomes.

**Excessive Bureaucracy**
Excessive bureaucracy is described by Mintzberg et al. (2003) as a barrier to innovation. Excessive bureaucracy is caused by such influences as hierarchical structures, elaborate policy, detailed written justification and approvals. This is observed where the amount of effort or levels of approval are disproportionate to the risks associated with the decision and the outcome sought. Bureaucracy delays the decision making mechanisms particularly in areas where speed and agility are important to achieve quality outcomes.

This appears to be the case with the engagement of contractors in DMO. Comments from DMO project managers such as ‘it is a laborious process by the time you have to go through the DMOSS panel then you have got delegate approval and then you have to report back to the panel it has a gestation period of an elephant it is laborious it is time consuming and it does not provide you the autonomy that you need to get an outcome.’ (Bravo) And from industry ‘there are so many stove pipes along the value chain were the contractor gets involved were they have to stop and wait for some input from the Commonwealth … for us to continue along the path …’ (November)

The transaction to engage a contractor under the current arrangements does not appear to serve DMO or industry well. The issue can be seen in two parts consisting of the bureaucratic process to seek approvals and the transaction governed by the procedures and terms and conditions of the support services standing offer. The policy governing the entire process is contained in the Defence Materiel Instruction (Finance) 01-0-25 (Chief Finance Officer DMO, 2012). While the policy contained in the document is parsimonious and allows a sufficient range of action so it can be flexibly implemented to an efficient outcome the LSD policy is more restrictive. For instance, all contractor engagements are required to be approved at Branch Head of Director General level. This requires the development of a business case and seeking a range of approvals from functional and line management. It is a time consuming task for routine well defined tasks. It is suggested that the delegation of this task to project managers would provide more efficient outcomes.

The later issue concerning the transaction is related to the procurement strategy. The support services panel is governed by a deed which established the process and terms and conditions of the transaction. While the panel arrangements appear to be generally well received as typified by this comment from a senior LSD executive ‘I think the DMOSS panel works well, once you have the approval to use it.’ (Delta) There appears to be excessive
bureaucracy required from industry to respond to each task that is issued through the panel. It was suggested by an industry manager that ‘the approach to market process changing and being web based’ (Oscar) and that would allow contractors to select which task they wish to respond to instead of being required to respond to each task published under the support services panel arrangements. Again an industry senior executive noted that ‘the instrument [DMOSS panel] is fine but how it is applied is not so fine ... [a Defence Group] wanted a cost model for a vehicle project they put [it] out to 50 companies it took them four months to assess it for a $100,000 to $150,000 job’ (Romeo). It appears that bureaucracy associated with the tendering process and evaluation of tenders is not meeting industry expectations.

In addition, the contractual relationship is established by the panel arrangements appear to be transactional. This could be driven by the need to maintain an open and competitive environment. While transactional arrangements may support the shorter term, repeatable and well defined tasks such as writing a project management plan it is not optimal for more unique and longer term tasks where a relational arrangements would be more suitable in reducing transaction costs and increasing learning (Hartmann et al., 2010). It is suggested that establishing one standard set of terms and conditions under the DMOSS panel for all contracts regardless of complexity and duration is not efficient and a more relational approach should be pursued for the larger outsourced tasks.

Commercial or business-like approach

Business like is defined in the Macquarie Dictionary as ‘conforming to the methods of business or trade; methodical; systematic’ (2005). The term has also been used extensively in the Kinnaird et al. (2003) and Mortimer (2008b) reviews and while it is an undefined term in these reviews Mortimer uses the term alongside the explanation of ‘imposing commercial discipline on the defence procurement and sustainment processes.’ It is noted that public organisations have different goals and objectives to private sector organisations and this reflects in different governance arrangement and behaviours. Public enterprises provide a ‘public good’ including being transparent and accountable to the government of the day while private sector organisations are principally driven by the profit motive. This tension between public and private organisations is highlighted between in this case as DMO is
conducting what is essentially a commercial activity and directly engages with industry to deliver goods and services.

In terms of the integration of contractors this issue is defined then as the use of commercial discipline that drives superior performance and outcomes in the process to integrate contractors. This includes understanding the benefits against the cost and risks of a decision rather than seeking to completely satisfy the DMO’s customer. The themes relevant to this issue could be seen to be the need for private sector experience and the importance of communication. Other themes such as the cost benefit of using in house full time employees versus contractors, the use of contractor knowledge and risk transfer are issues that are dealt with later.

The need for private sector experience in the DMO has been a widely canvassed issue (Kinnaird et al., 2003; Mortimer, 2008b). There was a view expressed that there should be more people in LSD ‘that would have an outward looking focus on the big picture rather than the defence … that would look at adopting practices that are commonplace in the commercial scene’ (Bravo). Recruiting from industry is a way of buying in private sector experience the other could be to professionalise the workforce and this is discussed in a later section. This commercial behaviour can also be seen in the DMO Strategic Framework that seeks to encourage an outcome focus, cost self-awareness, accountability and business acumen (Chief Executive Officer DMO, 2013). It is noted that although this is a stated aim of the organisation senior management positions is LSD are mostly military.

The importance of open and direct communication is also a key factor in this issue. This is supported by LSD and highlighted by a participant that cited a commodity based System Project Office that had put its forecast online and was proactive in discussing its problems “here’s our problems, this is what I want solved” that cat and mouse game you sometimes have to play with people just goes away and then I can actually have a conversation with someone…” (Sierra).

This issue is closely linked to bureaucracy and accountability in that efficient and effective outcomes are central to success in the DMO’s primary task of acquiring and sustaining Defence equipment.

Workforce mix
Throughout the 1980’s and 1990’s there was a range of government services outsourced as a result of a decision by the Australian Government to market test and divest non-core assets to the private sector. The Australia Defence Organisation outsourcing program was known as the Commercial Support Program. The Strategic Reform Program appears to be a continuation of ongoing reform in the Department of Defence with a much broader focus. Nevertheless, reducing the numbers of full time Australian Public Service staff appears to be a politically acceptable to the Australian electorate as a means of reform and seeking government efficiencies. Whether the outsourcing of government services delivers the sought efficiencies and effectiveness along with probity and accountability is an ongoing controversy (Domberger, 1998 p.29). The issue of reducing head count through the mechanism of engaging contractors is a step in the outsourcing process.

A systems view of outsourcing or reduction in head count programs driven by the Government’s need to cut budgets can be seen through the Figure 5.3 below.

Figure 5.3 - Shifting the burden from full time staff to contractors

In this system archetype (Senge, 1990 p.380 - 381) referred to as ‘shifting the burden’ the need to cut budgets is accompanied by a reduction in head count. The level of effort required to deliver work often does not change in step with the reduction in head count leading to a gap between the work required to deliver work programs and the full time
people available to deliver to work. The symptomatic solution is to increase the use of contractors to compensate for the lower availability of full time employees. The side effect is reducing in house capacity from a knowledge and expertise perspective to deliver work which in a booming part of the economic cycles would require a significant increase in the skills and expertise of the full time ‘in house’ staff to deliver. This assessment could lead to the conclusion that it would take some time to re-establish an in house capability to deliver programs in times of national emergency or growing destabilisation in the security environment.

This view was summed up by an LSD senior executive ‘when the budgetary situation is becoming more and more acute then we can’t recruit, head count is being cut back and outsourcing is seen as a way to deliver the services that we can’t deliver because we do not have the resources...we should be looking at our bottom line...of the cost basis for hiring in contractors’ (Charlie). It appears to be necessary to have a mechanism for establishing a workforce mix of contractors, APS staff and military that is aligned to the future work in terms of competence and skill sets and building capability in the organisation to meet these future work needs. The issue of development of organisation capability will be extended in the next section.

**Competence development**

A stated benefit of the transaction to engage contractors is knowledge transfer. Taking a resource or capabilities view of the firm if knowledge is managed successfully it can lead to increased organisational capability and innovation. Knowledge mechanisms in the literature that describe the absorption and stickiness of knowledge, the governance of knowledge, intellectual and social capital can contribute to an understanding of the improving the competence of the organisation to achieve its future goals and objectives. The mechanisms and perspectives of knowledge transfer and creation during the contracting activity.

The support services contract for the engagement of contractors includes provisions for knowledge transfer. The approach to knowledge transfer from defence industry small to medium enterprises (SME) and multi-national companies (MNC) appears to vary. SME are likely to consider the financial and opportunity costs associated with knowledge transfer during a particular contract. Comments like ‘how can you define train and mentor as a task
and put a timeframe on it’ highlights the concern for cost and also if SME train their own people to qualify for a contract then it is ‘a no win situation for anybody for me it is a double edges sword not only do I have to folk out for the training I lose productivity whilst that person is out undergoing training.’ On the other hand, MNC have the management overhead to be able to train their people or have trained people on their staff.

Defence industry MNC quite firmly recognise the benefits in knowledge transfer. Firstly, it is ‘an exchange both ways’, ‘it is a two way street’ contractors and LSD benefit from the learning available during the transaction particularly in tasked based contracts rather than time and materials. Typical of the comments from industry supporting the need for knowledge transfer is to get people to ‘understand the problem better and ... write the requirement better, then that’s for the good’. ‘Don’t just give the fish, teach them to fish’ (Mike). Secondly, implementing contractual arrangements that support knowledge transfer can also be challenging. During extended tasks there is sometimes a requirement to recontest even though the initial task is not complete. On one occasion a project retendered a number of engineering positions which had been in the project for a number of years with the result that for a $10 an hour saving they were replaced by more junior engineers from a different contractor. The intellectual capital that had been built up over the year was consequently lost. Clearly flexibility is required in the application of policy and relational contracting arrangements would likely provide better competence building outcomes over the longer term.

LSD appears to be experiencing a competence gap, particularly in the through life support areas. Two senior industry executives noted the outsourcing of centres of excellence in engineering, maintenance and contracting over the past fifteen years. While efforts have been made to maintain the project management and engineering expertise there has been a reduction of skills and expertise in related logistics support such as life cycle costing, logistics support analysis, maintenance engineering and through life support. One senior industry executive noted that ‘your centre of excellence had gone and your centre of mass to generate these people had gone and I think its one of the real issues facing DMO with the SPO [System Program Office] model is how do you generate your logistics, maintenance and engineering expertise?’... ‘The reality is now its been outsourced’ and ‘commercial entities are generating it’. LSD has recognised this deficiency and is developing
competencies and training to fill the gap but this is a long term solution and these specialist skills take a long time to develop and are in demand by industry. This clearly highlights the need for the development of through life support competencies in LSD.

The ability of the organisation to achieve its goals is very much aligned with its ability to learn and develop organisational competences that are aligned with future capabilities. It can be seen then that learning through the integration of contractors is a key capability to the success of LSD and defence industry. This should be achieved through strategic human resource policies that seek to develop future organisational capabilities and contractual mechanisms that allow contractors to be integrated in a fashion that allows the transfer, retention, development and creation new knowledge.

**Industry capability**

The competitive defence industry market forces create tensions between the larger companies on the DMOSS panel. The defence industry companies can been seen to be divided between the four big accounting houses or multinational defence companies. These companies are characterised by operating in a number of adjacent industries and who bring broad experience and resources to the contracting value proposition. On the other hand, there are the small to medium enterprises (SME) that are usually Australian companies who operate in a specific area of expertise, have generally lower overheads and work in a collegial manner with other SME and MNC. The SME’s are known colloquially as ‘the single shingle and small local companies that have a role but are quite limited’ (Sierra).

The issues between the SME and MNC appear to revolve around cost and capacity. MNC have greater reach back to a range of competencies that assist in completing tasks while providing added value. The MNC typically will have a core of ex-military who can ‘swim through the culture’ (Romeo) and young graduates who are highly valued by big industry generally. The issues associated with the young graduates are ‘they are pretty well paid and we need to get the rates that give us a return and the second there is an expectation they undertake challenging and difficult work because they are young and want to learn’ (Romeo). In addition, the larger companies will have better quality systems and these cost. As a manager from a larger defence company put it:
‘Defense wants us to have a certain degree of quality – we have to have quality system, we have AEO and are Defence accredited, we have to have this and we have to have that. That has a certain price associated with it, Defence want all that but Defence are not always prepared to pay for that when you go through DMOSS and when you find yourself up against the single shingles or the small companies. What might be barely viable for us at $1200 to $1300 a day for another company they can make a good profit at $1000 a day, for example. Because they do not have the any of the quality systems. So it is hard to compete with those putting a bum on a seat…’

(Sierra)

So while MNC have increased capacity there are also increased costs and this creates tension between the companies. It could be said then that generally larger companies can make better profits from larger task based contracts rather than time and material contracts which might be more appealing to the smaller companies. Certainly the larger tasked based contracts have more scope for risk sharing and having ‘skin in the game’.

**Requirements determination.**

The discipline of planning tasks and defining the scope of work provides a basis for contracting out specific packages of work. This work is key to communicating the outcome of a task to a provider and being able to measure and share the risks involved in outsourcing work. When this is done poorly this creates tension as expectations are not met, profit margins and reputations can be threatened. This aspect is not as significant for time and materials contracts as there is generally no requirement to be specific about deliverables.

There appears to be two aspects of requirements determination which are inextricably linked. The first is having the competence or skills and knowledge in the capability acquisition task to write good requirements which are then translated into fully resourced project schedules that provide the costs, schedule and skills required to deliver the project. The second is having the competence or skills and knowledge to write a sound tasking statement for the standing offer panel to engage a contractor. Clearly the project team primarily requires the competence to define the acquisition task. This will enable the contractor’s tasks to be completely defined.
Leading on from the earlier discussion on knowledge management and the current skills gap in through life support it is apparent that this is leading to poor requirement determination. An executive of a smaller defence industry company describes the issue as ‘you don’t know what you don’t know’ (Mike) citing poor tasking requirements ‘a lot of people in the ILS and the engineering world are putting out RFQ [Requests for Quote] with motherhood statements and are not understanding exactly what the skill set and/or services that they are to deliver to support the project.’ (Mike) This point of view is supported by an LSD senior executive ‘I believe that our primary problem is that we do not know what we want from the outset. So the first and primary problem is actually the scope of what we want the contractor to do’ (Charlie).

A key part of capability development process and reform is based on the development of sound requirements (Capability Development Group, 2012 p.iv). It is suggested that good requirements provide a sound basis for planning but demonstrate a complete knowledge of the capability and critically the development, solicitation and support requirements. Sound requirements allow the project and through life support resourcing to be defined and contracted where necessary. There are perhaps two issues relating to the production of poor requirements. Firstly, the people charges with writing the requirements have inadequate knowledge and experience to explain and communicate the task ‘you don’t know what you don’t know’ (Mike). The second could be inadequate planning processes and tools which to support the planning and control processes associated with the task. Either way, individual, collective skills and experience play a major part in developing and communicating good requirements for acquisition tasks and the employment of contractors. The organisation’s people capability then is directly related to the issue.

**Risk sharing**

A key benefit to the value proposition is an equitable sharing of risk associated with the completion of a package of work. Risk sharing is closely aligned with accountability and ownership of the task and its outcomes. The importance of risk in the acquisition of capability is widely acknowledged (Capability Development Group, 2012, Kinnaird et al., 2003, Mortimer, 2008b). The diagram below shows in concept the increasing risk profile of requirements for ‘off the shelf versus’, modified or development designs. If the risks involved in undertaking a task is not shared or accepted by the party best able to control the
risk then outcomes will most likely be sub optimal. So when tasks are outsourced to contractors the expectation is that the risk associated with the tasks will be shared. This is reinforced by an LSD senior executive:

‘If the contractor is responsible for running everything with respect to a package of work... then you might say well we are outsourcing that risk and they are responsible, we will be able to say the if anything goes wrong they are the ones that are to fix it, but if that risk is not transferred properly and if the Commonwealth is still being held to account then the value proposition is not there.’ (Charlie)

This also highlights the need to task out discrete packages of work for which the contractor has control of the inputs and outputs of any deliverable.

**Legend:**

**OTS** - Off the Shelf. Goods that are purchased from an Original Equipment Manufacturer (OEM) without modification.

**Australianisation.** Goods that are purchased from an OEM that are modified usually by the OEM to meet Australian requirements.

*Figure 5.4 - Concept diagram - Impact of cost, schedule and risk of volume of requirements. (Mortimer, 2008b p.18)*
A recent initiative by DMO is to contract out an entire acquisition project under what is called the ‘managing contractor model’. A pilot of this approach to delivering projects is being currently undertaken. A key component of the model is transferring the project management risk to the contractor an aspect which the larger defence industry companies appear to welcome ‘[the CEO DMO] wants contractor’s to have ‘skin in the game’ and be responsible for the outcome and actually have revenue at risk, if we are underperformers. That makes a lot of sense to us and we are quite happy to do that because you have to back yourself’ (Romeo). The managing contractor model allows the larger defence industry companies to leverage off its existing competence and draw on a range of skills required to deliver an acquisition project.

This risk sharing arrangement should also apply to other packages of work. Providing the task is well defined and the inputs are known then the contractor has control of the final product. In the case of time and material contracts it is not so easy to transfer risk and consequently the DMO accepts much of the performance risk. For this reason time and materials contracts do not appear to be the preferred way of contracting tasks. However, the competence of project staff to define the requirement for task based contracts is then more important.

**Performance reporting**

‘Experience changes ideas about what should happen into knowledge of what does happen.’ (Davenport and Prusak, 1998 p.8). In this way performance evaluation that identifies learning from the contracting experience can add to the participant’s practical knowledge. An industry manager noted that ‘it would be nice to actually get some feedback’ (November). There appears to be no formal mechanism for evaluating contractor performance other than an annual scorecard assessment that DMO undertakes for contractors over $20m. So only the largest companies may come under this feedback process. Performance assessment is an important part of any human resource process and this could be extended to contractor performance. Evaluation of the outcomes of tasks is important to understanding the benefits and value proposition.

**Professionalisation**
Professionalisation of the DMO workforce particularly in the project management job family has been a corporate priority. ‘DMO has invested significantly in the professionalisation and training of project managers, and is developing similar programs for logistics, engineering, and technical personnel, as well as commercial and business managers.’ (Mortimer, 2008b). Nevertheless, Defence has been criticised in the past for having ‘little appetite to make reference to external practices [e.g., benchmarking]’ (Black, 2011 p.100). Certification of job families in DMO is one way to address this deficiency.

There was a criticism of the professionalisation agenda by an industry executive ‘there was a whole lot of work being done on the competence of professionalisation of the project managers and the engineering personnel that is not necessarily represented in the financial and commercial space’ (Romeo). It is suggested that the cost associated with certification of the workforce is justified on the basis of establishing a benchmark qualification and certainly it needs to be integrated with job performance and ongoing professional development activities. A competent military and APS workforce is required irrespective whether contractors are provided a larger slice of the work through outsourcing.

**Value for Money**

Value for money is a core policy requirement of the Commonwealth of Australia described in the Commonwealth Procurement Rules (CPR) (Department of Finance and Deregulation, 2012a) as required under the Financial Management and Accountability Act 1997 (Attorney General's Department, 2005). Value for money requires the consideration of the financial and non-financial costs and benefits associated with procurement. Value for money is further defined in the CPR as:

- Encouraging competitive and non-discriminatory processes such as against small and medium enterprises\(^8\) which do not have the resources of larger companies;
- Using Commonwealth resources in an efficient, effective, economical and ethical manner;
- Making decisions in an accountable and transparent manner;

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\(^8\) Small and Medium Enterprises (SMEs) are an Australian or New Zealand firm with fewer than 200 full time equivalent employees.
• Considering the risks; and
• Conducting a process commensurate with the scale and scope of the procurement.

Criticisms of the way in which value for money is being applied in the engagement of contractors were voiced by industry:

‘One of the frustrations for some of us is price versus value and DMO tenders to be very price focussed instead of value focussed so in terms of assessment of the DMOSS. So what we are going to be more expensive, you might take this as a bit of a whinge from our perspective, we do no mind losing to price if the value proposition makes sense. If we have put something together and it is a real goer and the words we get like ‘yours was by far the best proposal and people but price was a bit high so we did not go with you’. So we might be able to do it two or three times faster. So how does the value quotient come in, in the assessment phase probably what all of us would like to see and they say the real criteria is best value for money but how does that value quotient stack up’. (Romeo)

This perhaps shows a lack of business acumen, skills and experience in the evaluation process.

Another example of creating a competitive environment also has other implications for value particularly when contractor’s margins are eroded:

‘When they throw out an RFT to three or four people they are undercutting, undercutting. The DMOSS rates that are applied now are bare bones for companies as it is... flat rating and getting people out there and I suppose this is the whole model... I am not saying the ones in there are not but the one that are in there have really got to fight to win jobs and it gets down to and I think it creates and engenders a value for money equals who is cheapest which really is not what you are trying to achieve.’ and ‘I actually think that there is a fundamental floor in DMO understanding value for money versus risk.’ (November)

The associated transaction costs for industry to tender are not always taken into consideration when creating a competitive environment. There are two examples of the cost of competing. The first example is related to the use of the support services panel:
‘So let’s say it takes three days to do that in total. If you assume you are billing at $1200 a day it costs about $3600, so when you first take a look at it, if the value of the contract is less than $36000, if you assume you are making ten per cent profit on revenue then it is an instant no bid decision. As much as you would like to do the work you can’t make money on it as the bid costs are higher than the value of the contract.’ (Sierra)

The standard process established in the standing offer panel does not appear to allow for smaller perhaps standard tasks which could be commoditised.

Another example highlights the costs for responding to a larger acquisition contract:

‘we had a company that we assisted with recently tender for a project in DMO and I think around the procurement value of the project was about six million dollars that DMO wanted to spend and we helped and assisted with this company with the tender and I think the company would have outlaid about 150, 000 dollars for the tender costs on a six million dollars project that is a lot of money for something that [inaudible] did not need to be in there to allow assurity for the Commonwealth.’ (November)

While these costs may not always be avoided in establishing a competitive environment these costs would be absorbed by business in other ways.

Other sources of value which are not always considered in the value for money consideration is the knowledge transfer and competence building potential of the work. ‘The value proposition is firstly what I mentioned before in terms of inculcating appropriate skills that are not resident within the Commonwealth.’ (Charlie). The value of knowledge transfer can be difficult to quantify and it is made more difficult when the organisation is not clear on what competencies are required to be developed to deliver future capability.

While the aspiration of what value for money should deliver is clearly laid out in the policy the reality is somewhat different. There appears to be issues with the significance of cost in value for money assessments, transaction costs are not always considered in established a competitive environment and the valuation of knowledge transfer and competence building
is difficult to establish when there is little strategic guidance on the future people capability of the organisation.

**Summary of the themes**

This section has outlined the main themes identified in an analysis of the problem situation through the unstructured interviews. There can be a number of theoretic perspectives that could lead to a deeper understanding of the situation and actions that could be undertaken to address the issues.

The situation could be interpreted one based in a knowledge context. Resource or competency based theories of the firm see knowledge embedded in the routines and practices that the firms share, transfer, retain and use to develop distinctive competencies and firm capabilities (Bartsch et al., 2013, Pitelis and Teece, 2009, Söderlund et al., 2008). So contractors can be seen to be knowledge workers supplying firms with knowledge based professional services to complement existing firm capabilities. Contractors should be seen as one source of skills and experience that complements the permanent core of the organisation. It is suggested that the workforce mix should be viewed holistically and managed to achieve the desired future capability. Theories surrounding the development of the firm’s knowledge capabilities provides rich insights for learning and understanding practice.

Furthermore, the development and integration of the human resources available to the firm can be seen to be central to the development of the firm’s dynamic capabilities. The people capability framework proposed by (Bredin, 2008b) provides insights into the interaction of the strategic, function and project capabilities of the firm. Issues associated with the commercial approach, workforce mix, competence development, requirements determination and professionalisation are themes that can be seen to be strongly related to the people capability framework as the shortcomings in these issues could be solved through the development of relevant people skills and experience.

Another theoretic framework is provided by the core people management processes of recruitment, selection, appraisal, development and reward (Robbins et al., 1994). This framework as adapted by Huemann et al. (2007) to the context of the project based organisation and provides useful insights into the mechanism for project based
organisations to relate to its employees. It is suggested that contractors should be managed within the context of the people management process as part of the workforce mix.

The strategic workforce planning process also provides a mechanism for the development of people capability in the firm. Studies of the United States of America Department of Defense (Gates et al., 2006, Rand Corporation, 2004) have provided insights into the workforce mix, balancing of skills and experience and blue prints for complex organisations. It is suggested that an integrated strategic workforce planning is essential to the development of an organisation's people capability.

The themes identified during the analysis of the problem situation appear to be based in the organisation’s response to human resource management. The contractor’s role in contributing to the people capability of complex organisations should be considered from an open systems and holistic perspective that is informed by grounded theory in human resource management.

5.4 Validation of the problem situation

In order to validate the data collected in defining the problem situation and the heuristic nature of the methodology it was determined that further interviews would be undertaken to confirm the views captured in the rich picture.
The validation process of the rich picture highlighted some aspects of the rich picture that could enhance the portrayal of the problem situation. Key areas of focus were; the use of ‘the bench’ by contracting companies to hold contractors while not on task, the executive line management chain in DMO, the role of Defence nurseries to train and develop staff in particularly the technical skills required to deliver large equipment projects and the recent initiative to task out what has been core project management activity to Defence industry.

It would have been preferable to assemble as many of the participants as possible to collectively review the rich picture. Unfortunately, it was not possible to get the participants in one room due to work commitments and there appeared to be a certain reticence perhaps to discuss this collectively. The review of the rich picture was undertaken by the researcher with a cross section of participants representing DMO, small and major service providers. The salient features of the problem situation as shown in the rich picture and as developed from the initial unstructured interviews was described by the researcher. The interviews lasted between 45 minutes and two hours. The participants provided rich descriptive feedback and this was documented and loaded into NVIVO the qualitative...
analysis program for analysis. Table 5.2 shows the demographic of the participants who were interviewed to confirm the rich picture.

**Table 5.2 - Participants interviewed to validate the rich picture**

<table>
<thead>
<tr>
<th>Interviewee</th>
<th>Date of interview</th>
<th>Organisation</th>
<th>Time in current</th>
<th>Commercial experience</th>
<th>Position in organisation</th>
<th>Military experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant ALPHA</td>
<td>12/7/2012</td>
<td>DMO</td>
<td>5 to 10 years</td>
<td>Yes</td>
<td>Project or Program Manager</td>
<td>Yes</td>
</tr>
<tr>
<td>Participant BRAVO</td>
<td>13/9/2012</td>
<td>DMO</td>
<td>0 to 5 years</td>
<td>Yes</td>
<td>Line Manager</td>
<td>Yes</td>
</tr>
<tr>
<td>Participant DELTA</td>
<td>2/11/2012</td>
<td>DMO</td>
<td>10 to 15 years</td>
<td>No</td>
<td>Senior Manager</td>
<td>Yes</td>
</tr>
<tr>
<td>Participant MIKE</td>
<td>14/9/2012</td>
<td>Small Service Provider</td>
<td>5 to 10 years</td>
<td>Yes</td>
<td>Partner or General Manager</td>
<td>Yes</td>
</tr>
<tr>
<td>Participant NOVEMBER</td>
<td>14/9/2012</td>
<td>Small Service Provider</td>
<td>5 to 10 years</td>
<td>Yes</td>
<td>Lead Consultant</td>
<td>Yes</td>
</tr>
<tr>
<td>Participant SIERRA</td>
<td>25/10/2012</td>
<td>Major Service Provider</td>
<td>5 to 10 years</td>
<td>Yes</td>
<td>Lead Consultant</td>
<td>No</td>
</tr>
</tbody>
</table>

5.4.1 Additional issues raised or issues reinforced

There were a number of aspects which were missed in the Researcher’s interpretation of the initial unstructured interview data. The significant aspects that were omitted in the initial rich picture development were:

- ‘The bench’. This is a term used by contracting organisations to describe people who are not on task attracting billable hours. The size of ‘the bench’ is a performance
indicator of firm efficiency. The more employees on the bench not earning revenue for the firm the greater the firm’s overhead.

- The conflict between the larger usually multi-national companies and the smaller usually local Australian firms with narrower competences. While this had been acknowledged the depth of resentment in the interview responses was underestimated.

- The importance of skill development in technical and integrated logistic support which has underpinned competence in LSD up until the late 1980’s and 1990’s at which time the agencies which employed these skills sets usually from the mechanical trades were disbanded. The competence of Land Systems Division is slowly being eroded in this area with the more recent lateral recruiting inducting people through a series of short courses. This area is targeted by contracting firms. However, the in house competence to develop good requirements, plan and accept deliverables is being eroded.

- A layer of bureaucracy in line management between the project manager and business case approver.

- There was also a range of issues that while present in the initial rich picture required further enhancement to more accurately portray the problem situation. These areas were:
  - Budget cuts which are driving headcount reductions.
  - The relationship between the DMO line management and executives in Defence industry.
  - The role of the multi-national companies which operate in both the broader commercial world and Defence industry.

The validation of the problem expressed in the rich picture, Figure 5.5, has led to deeper understanding of the problem. This highlights the action learning process of SSM and the ability to iteratively enhance the understanding of the problem situation as expressed in the rich picture which improves the opportunity for learning when faced with new perspectives related to the problem situation.
5.5 Systems thinking

The expression stages of soft systems methodology results in a rich picture of the problem situation. The rich picture has been developed and validated through a series of interviews with a representative sample of people who are exposed to the DMO process of integrating contractor’s into the project team. SSM is an action learning process so there may be a necessity to revisit the rich picture as systems thinking is applied to the definition and development of a conceptual model of the situation. The next step is to define a root definition of the relevant systems at work in the problem situation of integrating contractor’s skills and expertise into project teams. In this stage the root definition is informed by an identification and analysis of the layers of relevant systems from the wider holistic systems relevant to the problem, analysis of the situation through an identification of Customers, Actors, Transformation, World View, Owners and Environment (CATWOE) and finally establishing measures of performance to determine if the right task is being done with minimum resources. Once this is complete a formulated root definition can be determined and validated. The root definition is then used to formulae relevant conceptual models in the next stage.

5.5.1 Root definition

Once the primary task and issues are identified then a definition of a theoretical and abstract world is developed as a start to developing a conceptual model of the problem situation. In order to define the problem and build a purposeful model some fundamental analysis needs to be completed on the candidate systems. These are described by Checkland (1999) p.A21-A28 as root definitions, CATWOE and multilevel thinking.

By using the expression of the problem situation as provided in the unstructured interviews and rich picture a multi-level diagram of the systems was developed and is shown in Figure 5.1. In this multi-level system diagram the focus is on the engagement of contractors as shown by the eye symbol or perspective of the researcher. As the engagement of contractors by the DMO is the system level focus of this research then the wider system involves the Government and higher Defence Department process that approve the Defence Capital Program. The lower level sub-systems involve the procurement tasks such as developing business cases and contractual documentation which support the acquisition task. The wider system, system and sub systems are relative terms. Checkland (1999 p.
A24) notes that it is the observer who is important in determining the applicable levels to the problem. The importance of clarity of thought about the purposeful activity and understanding systems in terms of levels or layers is noted by Checkland (1999 p.A23) as being ‘absolutely fundamental to systems thinking’.

The layers of the Defence acquisition system as it applies to the engagement of contractors is described as follows:

- **The wider system.** The wider systems in relation to the engaging systems level is the provision of Australian Defence Force capability, the acquisition of military equipment, project management and the human resource aspect of project management. The human resource system is the immediate wider system. The people capability system provides the skills and experience necessary to acquire the equipment approved by Government in the Defence Capability Program. The people required to deliver the program are sourced from the Australian Public Service (APS), Australian Defence Force (ADF) and contractors. The APS and ADF people usually are full time and temporary effort were approved is provided by contractors.

- **The engagement of contractors system.** The system under investigation is the process of engaging contractors as outlined in the Defence Materiel Instruction Finance (Chief Finance Officer DMO, 2012). This policy describes the engagement of external service providers or contractors by the DMO. This system is identified as the transformation process or the purposeful activity of acquiring equipment described by this study. The root definition is built around this transformation process. In essence, the process involves the transformation of skills and expertise of contractors in conjunction with the permanent project team into the deliverables such as documentation and services, required to deliver equipment to the ADF.

- **Subsystems.** The subsystems are activities which enable the contractor engagement system to operate. These activities could be seen to be the various tasks which allow the contractors to work. These are seen to be activities such as:
  - The contractual mechanisms to engage contractors under the DMOSS standing offer arrangements.
The business case approval process. This activity identifies the scope of work, provides the cost benefit analysis and contracting mechanism for engaging contractors.

The finance activities to forecast and fund scheduled payments.

The project management activity to plan and manage the engagement.

Further to understanding the layers or level of systems associated with the problem situation the why, what and how aspects assist in casting the root definition. The ‘what to do’, ‘how to do it’ and ‘why to do it’ are related to the layers in the wider system. The wider system provides the ‘why to do it’, the system level which is the focus of the analysis is the ‘what to do’ and sub system in the ‘how to do it’. This is superimposed on the DMO systems model in Figure 5.1. So the rudimentary root definition of the system could be seen to be ‘integrate contractors by forecasting through the DMOSS panel standing offer arrangements to supplement the human resource effort to delivery ADF capability.’

![Contractor’s Systems Model](image)

*Figure 5.6 - The research perspective of the DMO systems model*
The root definition of the model showing the layers of system in relation to the perspective of this research is ‘an expression of a purposeful activity as a transformation process’.

Another consideration in developing the root definition is to define ‘P’, ‘Q’ and ‘R’ as a formula of ‘do ‘P’ by ‘Q’ in order to help achieve ‘R’’. (Checkland, 1999 A22-23, Checkland and Poulter, 2006 p.39-40, Checkland and Scholes, 1990 p.36). The elements in this situation could be seen to be defined as:

- The what, ‘P’ – to acquire and field Defence capability.
- The how, ‘Q’ – by improving the organisation’s human resource capability to solicit the skills and expertise of professional service providers from industry.
- The why, ‘R’ - to ensure that the project team has sufficient skills and expertise, either from the organisation’s full time human resources or from part time human resources at the right place and time to deliver the project outcome.

Before a root definition could be shaped and following the multi-level and PQR analysis of the problem situation an understanding of the transformation process (Checkland, 1999, Checkland and Poulter, 2006) is needed. This is later expanded in the CATWOE analysis following development of the root definition. The transformation process is the combination of skills and expertise in the organisational human resource capability from full time APS and ADF staff in combination with the part time professional service providers to acquire and field equipment that forms part of the ADF’s capability.

The CATWOE mnemonic is a test of the comprehensiveness of the root definition. The criteria are as follows (Checkland, 1999 p.255):

- **Customers.** The system beneficiaries or victims affected by the system’s activities. The customer referred to in the definition is the project management team. In particular it is the project manager who is accountable for delivery of the project. The outcomes provided by the contractor are integrated into the project output.

- **Actors.** The agents who carry out the main activities of the system. The DMO actors could be seen as the senior executive who sets the policy and the contracting environment and the Land Systems Division leadership and project teams which establish and manage the contracts and are the main beneficiary of the outcomes.
Defence industry which responds to offers from DMO and supplies the people to fulfil the contracts.

- **Transformation.** This is the means by which defined inputs are transformed into defined outputs. The inputs are the skills and expertise of the contractors as part of the project team. The outputs are specified outcomes such as documentation or services required to acquire military equipment. So the transformation process can be seen to be the defining of the acquisition project and acquiring skills and expertise in order to deliver the equipment.

- **Weltanschauung or world view of the actors.** The element is seldom explicit in the root definition but should not be excluded from the definition. There is likely to be more than one world view expressed in the nature of the human systems being investigated. For coherence a single world view is established and the others are contained in the problem situation as expressed in the rich picture. It is proposed that the dominant world view is the underlying value in protecting the Nation its way of life and the lives of the soldiers, sailors, airmen and airwomen who are an integral part of the Defence capability. It is suggested that this world view would be shared by the actors. However, another competing perspective is present in the problem situation and that is the world view of industry and expectation of the Government that resources are used efficiently and effectively to gain a ‘value for money’ outcome. The economic perspective of competition which drives the efficient use of resources and profit. This is recognised in the rich picture.

- **Owners.** The power figures or agencies not necessarily the owners of the company who have prime concern for the system and the ultimate power to cause the problem to cease to exist. The owners of the system to engage contractor is the DMO senior leadership. Other owners are the Secretary of Defence and the Minister for Defence. The minister is directly responsible to the Australian parliament.

- **Environment.** Environmental constraints on the system, features of the system’s environment or wider systems which it has to take as ‘given’. The significant environmental constraints can be seen to be the culture of the Australian Defence Organisation (ADO), the need to achieve ‘value for money’ as enshrined in the
Financial Management Act (Department of Finance and Deregulation, 2012a) and security as the primary role of the ADF. This is partially acknowledged in the achievement of timely and cost effective acquisition of Defence equipment.

A root definition of the problem can now be stated and validated. A root definition of the problem can been seen to be as stated in Table 5.3 below.

Table 5.3 - Root definition

A system that provides a range of skills and expertise from industry to supplement the DMO’s full time project management teams by efficiently soliciting from industry in order for the project team to have the necessary competence to achieve the timely and the value for money acquisition of equipment to support Australia’s defence capability.

5.5.2 Measures of Performance.

The purposeful activity as described in the root definition requires a measurement of performance to establish whether the transformation process is doing what is desired to achieve an organisational aim. Performance can be measured by validating the outcome against the following criteria (Checkland, 1999 p. A25, Checkland and Poulter, 2006 p.42-43):

- the output that is produced;
- whether minimum resources are used to obtain it; and
- at a higher level that the transformation is worth doing as it satisfies some longer term aim.

The criteria for measuring this performance are the three E’s of efficacy, efficiency and effectiveness. Ethicality and elegance can also be included to broaden the level of systems thinking to a situation.

The measures of performance for the system to meet the criteria listed above are seen to be:
• Efficacy – Judgement by DMO line management with input from DMO Gate Review Boards and Project Management Stakeholder Group meetings that Projects are meeting agreed deliverables to stated quality.

• Efficiency – Transaction costs and cost for services are independently verified by audit and financial investigation against the industry standard.

• Effectiveness – Judgement by DMO line management with input from DMO Gate Review Boards that contractors are positively contributing to project outcomes as assessed at Gate Review Boards and Project Management Stakeholder Group meetings.

Further the outcomes are ethical and elegant:

• Ethical – The DMO’s stated ethics and probity standards in such areas as conflict of interest and hospitality are achieved.

• Elegance – The solution is agreed by industry, is business like, is simple to implement and encourages competition.

Now that the root definition and measures of performance are considered the next activity is to build a conceptual model of what the system should consist of in order for it to work in a theoretical sense.

5.6 Development of a model of purposeful activity

5.6.1 Conceptual models

The use of conceptual models provides a perspective of seemingly chaotic and complex situations. The conceptual model provides a method to view ‘the complexity of interacting and overlapping relationships’ (Checkland, 1999 p.A24). These relationships are nested in systems that provide a perspective of the entity which can adapt and survive in a changing environment. The basis of the conceptual model is the formal system paradigm as suggested by Checkland (Waring, 1996, Checkland, 1999 p.314) which serves to validate the adequacy of any developed conceptual model. The formal system paradigm requires the following components:

• A control or decision making subsystem;
• One or more operational or executive subsystems; and
• A performance monitoring system.

The conceptual model is the next step in soft systems modelling after the expression of the problem situation in the rich picture. The conceptual model is developed from a series of ‘system thinking’ (Checkland, 1999 p.163) activities such as the definition and elucidation of the root definition, CATWOE and measures of efficiency. This thinking forms the basis of development of the conceptual models. The conceptual model is validated by the Formal Systems Concept and other systems thinking such as system archetypes (Senge, 1990). There were a number of iterations of the conceptual model developed to support definition of the problem situation. These models have not been included for brevity. The conceptual model developed from the analysis of the problem situation is shown in the figure below.

**Figure 5.7 - A high level conceptual model of contractor integration**

The transformation around which the model is built is associated with the definition of the acquisition project and a determination of the acquisition skills and expertise needed by the project team to deliver the equipment.

The core of the model is the transformation activities described in activities; five, six and seven. In the model above it is the activities in the area which is highlighted in orange.
Activity five is the appreciation with the sponsors and key stakeholders of the product, technology and business environment. In activity six projects are able to be defined in terms of requirements, system boundaries and competencies required to operate, manage and acquire the equipment. Activity seven highlights the world view of the system owners who consider value for money and timeliness as key quality outcomes in equipment acquisition. This activity highlights the life cycle view of the operation and disposal of the equipment during its service life.

Activities two, three and four enable the core activities to occur. These activities are highlighted in the light green area of the diagram.

The model is integrated with a ‘hard systems’ or systems engineering view that considers the acquisition life cycle (Faulconbridge, 2001, Air Force Space Command, 2005). The systems engineering model has been adapted by the Capability Development Group (2012) in its description of the capability life cycle as shown below.

**Figure 5.8 - Department of Defence Capability Life Cycle (Capability Development Group, 2012)**

The figure above shows the five stages of the capability life cycle and the responsibilities of the various areas of the Department of Defence in each stage. The acquisition and sustainment agencies area listed on the left is undertaken by the DMO.
The table below maps the relationship between the conceptual model and the capability life cycle stages.

Table 5.4 - The capability life cycle mapped to the conceptual model

<table>
<thead>
<tr>
<th>Activity No</th>
<th>Activity description (Figure 5.7)</th>
<th>Life Cycle Stage (Figure 5.8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Appreciate capability and project needs</td>
<td>Needs phase</td>
</tr>
<tr>
<td>2</td>
<td>Appreciate external or market:</td>
<td>Requirements phase – translate needs to functional requirements</td>
</tr>
<tr>
<td></td>
<td>- equipment solutions,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- technologies, and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Industry capability</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Define project people competencies</td>
<td>Requirements phase</td>
</tr>
<tr>
<td>4</td>
<td>Acquire skills and expertise</td>
<td>Requirements and acquisition phase</td>
</tr>
<tr>
<td>5</td>
<td>Appreciate with sponsors relevant equipment solutions, technologies and project management</td>
<td>Requirements phase – functional to product specification</td>
</tr>
<tr>
<td>6</td>
<td>Define project requirements, boundaries and competencies</td>
<td>Requirements phase</td>
</tr>
<tr>
<td>7</td>
<td>Acquire and support equipment in a timely manner and achieving Value for Money</td>
<td>Acquisition phase</td>
</tr>
</tbody>
</table>

Note that the requirements stage of the life cycle spans much of the conceptual model activities. The requirements stage includes development of functional requirement and the synthesis of the requirements to products. Each of the activities in the conceptual model will be described.

Knowledge sharing between and within the organisations is fundamental to achieving a successful outcome. The critical issue appears to be the handover of responsibilities from the Capability Development Group who develop the business case and project proposal at the end of the requirements phase to the DMO for the acquisition phase. To overcome some of the knowledge sharing issues Integrated Project Teams (IPT) are established.
throughout the needs and requirements stage to facilitate communication and coordination of activities. The IPT consist of a range of Department of Defence stakeholders such as the Capability Manager who is usually the Service Head and Defence Science and Technology Organisation. The competence and continuity of people representing organisations on the IPT and within each organisation’s project team is important to project success.

**Activity one – Appreciate capability and project needs**

This ongoing activity defines the project needs from constant scans of capability requirements undertaken by the armed services and capability development group within the Department of Defence. The need for new capability is a strategic consideration which balances Government’s decisions such as contained in the Defence White Paper (Department of Defence, 2013) and the Strategic Reform Program (Department of Defence, 2010b). This analysis provides the concepts and needs to define capability.

**Activity two – Appreciate external environment or market for equipment solutions, technologies and industry capability**

The core activities highlighted in orange of the transformation process are dependent on the overall appreciation of the externally available equipment solutions, technologies and industries capability to deliver the solutions which is activity two.

Activity two and activity five are important activities that define the requirements stage. The main difference between the activities is that activity two validates the equipment solutions and technologies available from the market and the industry capability to deliver the solutions and has a principally functional focus while activity five is focussed on the actual product or range of products and the capability of DMO to deliver the solution.

**Activity three – Define project people competencies**

The appreciation of the functional requirement, technologies and capacities of industry to deliver leads to activity three which is an assessment of the people competencies that the organisation should possess to acquire equipment.

**Activity four – Acquire the skills and expertise**
Activity four is the consideration of the total requirement of skills and expertise needed to acquire the equipment in a knowledgeable and business-like manner. Options to establish this base of skills and expertise could include:

- The availability of competent in house APS and military personnel.
- Training or up skilling of the people already in full time employment by DMO
- Contracting out discrete tasks or packages of work.
- Outsourcing the skills and expertise required to run a project.

Activity five – **Appreciate with sponsors the equipment solutions, technologies and project management.**

Activity five in a systems engineering sense is a synthesis of functional requirements to a product. Whether this product is developed through the application of system engineering or purchased ‘off the shelf’ is an acquisition strategy matter. The strategy would be based on an assessment of risks involved in the acquisition and development process versus the capability benefit derived from developing and fielding a new generation product. From an understanding of the product, technologies and complexity of development the skills and expertise needed to acquire and field the product can be determined. This activity should display and increasing amount of acquisition maturity to the point where the work breakdown structure would be supported by something approaching tender quality costs and schedule.

**Activity six – Define project requirements, boundaries and people competencies**

Activity six is an interim activity between activity five and activity seven that defines in detail from the project requirements and boundaries of the project the specific people competencies that are required to acquire and field products. This activity is a further refinement of the definition of competencies and acquisition of skills and expertise that occurs during functional definition of the project.

**Activity seven – Acquire and support equipment in a timely manner and achieve value for money**
Activity seven is the acquisition of equipment using the skills and expertise identified and acquired during the requirements definition stage of project development. The skills and expertise acquired during the requirements definition stage and learning that occurs during the acquisition stage is transitioned into the in-service or support stage.

**Measures of performance**

The measures of performance of the conceptual systems are defined as efficacy, efficiency and effectiveness as outlined by Checkland (1999)p. A24-25. Checkland (1999) notes that measures of performance can be expressed through checking that the output is produced, that minimum resources are used to obtain it and the transformation is worth doing. In terms of the integration of contractors efficacy and effectiveness is assessed through governance arrangements such as Gate Reviews and Project Management Stakeholders Group meetings. These forums assure that the basis of the business case and in particularly that capability that was sought in the needs stage is delivered and is integrated into the broader capability. Efficiency is assured through the acquisition strategy based on risk. Costs are reviewed and audited as necessary by internal and independent cost analysis.

Checkland (1999 p. A25) suggests that measures of performance could be extended further by considering ‘ethicality’ and ‘elegance’. It is suggested that the moral correctness of the system being procured is a judgement for Government as the system owner. On the other hand, elegance or the aesthetic of the transformation could be assessed through the simplicity of the system. Simplicity because the system is inherently complex involving a range of Government, Departmental and industry stakeholders.

5.7 Conclusion

The objective of this chapter was to investigate and express the problem situation. This was achieved through the development of a rich picture and some system models that in concept could portray an ideal situation that integrates contractors into the project team.

The problem of integrating contractors into the project team was approached by describing the case study setting and undertaking structured interviews. These interviews provided the basis for a deeper analysis of the situation through Checkland and Poulter (2006) p. 27-38 analysis one, two and three. These analysis recognise my role as the Practitioner
interpreting the problem situation. The stakeholders or issues owners were identified as in three groups as:

- The DMO project and program areas – people who use the system
- The DMO senior executive – People who had the power to stop the issue
- Defence industry divided into small and medium enterprises and larger multi-national companies who derive income from participation in the system.

Participants were identified from these principle groups and were interviewed. The unstructured interviews were analysed in the NVIVO quantitative analysis tool and an example of this analysis is attached in Appendix E, F and G. The following issues were uncovered:

- Accountability
- Bureaucracy
- Business-like approach
- Knowledge
- Head count and use of contractors
- Requirements determination
- Risk sharing
- Performance reporting
- The multinational company versus the SME
- Professionalisation of DMO staff
- Task based or time and materials based contracts
- Value for money

Further analysis was undertaken to place the system in perspective and define the system elements through the mnemonic CATWOE. The integration of contractor’s skills and expertise into the project team is seen to be part of wider systems such as the DMO
capability development, project management, people capability and equipment acquisition systems. The perspective is clearly that of integrating contractors into the project team.

From this analysis a root definition of the problem situation was derived. The root definition is a system that provides a range of skills and expertise from industry to supplement the DMO’s full time project management teams by efficiently soliciting from industry in order for the project team to have the necessary competence to achieve the timely and the value for money acquisition of equipment to support Australia’s defence white paper (Department of Defence, 2013). This definition was validated against the CATWOE elements and measures of performance defined.

The next step in SSM is to establish a conceptual model from which a discussion can be structured against the real world problem situation. There were four conceptual models developed that provided separated perspectives of an ideal world. Three were based from the work provided by Waring (1996) p.93-95. The conceptual model selected as a basis for discussion is based on Checkland and Poulter (2006) p.47 logical process. This conceptual model shown in Figure 5.7 lists seven activities and three measures of performance. A discussion can now be structured with the participants to compare the ideal world as shown in the conceptual model with the problem situation expressed in the rich picture.
Chapter Six – Conceptualising, comparing and implementing change

6.1 Introduction

In the previous chapter the problem situation was expressed and system based conceptual models developed to further analyse the problem situation. The problem situation was expressed in a rich picture which pictorially showed the structure, process and values embedded in the situation as represented by the researcher from interviews of participants associated with the situation. This data was then used to identify issues associated with the skills and expertise of contractors and develop a root definition of the situation. With a definition of the situation and accompanied by an assessment of the Customers, Actors, Transformation, World view, Owners and Environment (CATWOE) conceptual models were developed of the situation to enable the identification of possible changes to improve the problem situation.

The conceptual model was then developed using the process of modelling in SSM (Checkland, 1999p. A26-27). This process was informed by the formal systems paradigm (Waring, 1996) and other systems thinking such as ‘system archetypes’ (Senge, 1990). The conceptual model consists of the core transformation process as described in the root definition and validated through an assessment of the CATWOE elements of the situation. The core transformation process is described as acquiring and fielding Defence capability by acquiring and integrating the skills and expertise of current LSD staff and contractors into the project team so the right capability can be fielded in a timely manner and achieve value for money.

6.2 Comparison of conceptual models with reality

The fifth stage of Checkland (1999) soft systems methodology is to compare the conceptual models with the reality of the problem situation. This stage of the analysis returns thinking from the abstract world of the conceptual model to a comparison between the conceptual model developed in Figure 6.1 and the rich picture. While this analysis could be undertaken in a number of ways (Checkland, 1999p. 177 - 180) each activity of the conceptual model will be compared with the real world picture to determine the extent to which each conceptual activity occurs.
6.2.1 Concept model

The core of the conceptual model is based on the transformation process and the stated worldview of the practitioner. In brief, the transformation process is shown in activities five, six and seven and outlines the delivery of equipment based on an appreciation with the sponsors the equipment solution, technologies and business environment. These activities could not occur without the supporting activities two, three and four. In particular, activities two and three directly relate to the definition and acquisition of skills and expertise to support the core function of acquiring and support equipment. The system as described is made possible by an external activity which considers the capability requirement and user needs as the basis for any acquisition activity. Finally, the system is measured and monitoring and control action taken in order to achieve a system which can be validated against the principles of a formal system paradigm (Checkland, 1999 p.173-176).

![Concept model of a system to provide skills and expertise to project teams](image)

**Measures of Performance**

**Efficacy** – Judgement by DMO line management with input from DMO Gate Review Boards and Project Management Stakeholder Group meetings that Projects are meeting agreed deliverables to stated quality.

**Efficiency** – Transaction costs and cost for services are independently verified by audit and financial investigation against the industry standard.

**Effectiveness** – Judgement by DMO line management with input from DMO Gate Review Boards that contractors are positively contributing to project outcomes as assessed at Gate Review Boards and Project Management Stakeholder Group meetings.

**Figure 6.1 - Concept model of a system to provide skills and expertise to project teams**

The conceptual model was developed by the researcher using the method described in Section 5.6.1 above. The approach taken to compare the problem situation with the abstract system was to present and describe the rich picture and then conceptual model to the participants. This process was done individually and once that was complete the participants were asked a range of questions about the difference or gap between the
reality and concept. Once this overview was completed the researcher then reviewed each activity in the conceptual model. The following questions were used to elicit insights for each activity into the differences in the situation:

- Does this activity exist? Is the activity actually undertaken?
- How is it done? Where does this activity exist?
- Who does it? What part of the organisation does this activity or is it done externally to the organisation? Who is responsible for the activity?
- When is it done? What is the sequence of this activity as part of the acquisition process?
- How is it judged? What measures of success are there and how is this judged?
- Are there other activities or sub activities?

The people interviewed from the group of participants selected in Table 5.1 are shown in Table 6.1 below.

*Table 6.1 – Demographic of the comparison interviews*

<table>
<thead>
<tr>
<th>Interviewee</th>
<th>Date of interview</th>
<th>Organisation</th>
<th>Time in current</th>
<th>Commercial experience</th>
<th>Position in organisation</th>
<th>Military experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant ALPHA</td>
<td>17/5/2013</td>
<td>DMO</td>
<td>5 to 10 years</td>
<td>Yes</td>
<td>Project or Program Manager</td>
<td>Yes</td>
</tr>
<tr>
<td>Participant BRAVO</td>
<td>17/5/2013</td>
<td>DMO</td>
<td>0 to 5 years</td>
<td>Yes</td>
<td>Line Manager</td>
<td>Yes</td>
</tr>
<tr>
<td>Participant CHARLIE</td>
<td>6/6/2013</td>
<td>DMO</td>
<td>10 to 15 years</td>
<td>No</td>
<td>Senior Manager</td>
<td>No</td>
</tr>
<tr>
<td>Participant DELTA</td>
<td>17/5/2013</td>
<td>DMO</td>
<td>10 to 15 years</td>
<td>No</td>
<td>Senior Manager</td>
<td>Yes</td>
</tr>
<tr>
<td>Participant MIKE</td>
<td>17/5/2013</td>
<td>Small Service Provider</td>
<td>5 to 10 years</td>
<td>Yes</td>
<td>Partner or General Manager</td>
<td>Yes</td>
</tr>
</tbody>
</table>
The interviews were recorded by the researcher in note form of a table enclosed as Appendix H. The outcomes of the interviews were then analysed in the quantitative analysis software NVIVO 10 by categorising the comments into summary topics. This was done by importing each participant comments in NVIVO and establishing nodes for each category. These nodes formed summary topics that could then be used as agenda points as a basis for discussion with senior executives to determine appropriate actions for change. An NVIVO report on the analysis of participant comments categorised into themes is attached as Appendix I. A complete summary of the interviews with a synopsis of the issues and actions to improve the problem situation is attached as Appendix J.

6.2.2 Comparing ‘what might be’ with ‘what is’

The comparison interviews highlighted the delta between ‘what might be’ with ‘what is’. The identified delta is the gap between reality and the conceptual model. This includes functional deficiencies. The issues identified in the gap forms an agenda for discussion and is summarised in Appendix J and Table 6.2 as a synopsis of the issues. These issues were discussed with senior industry and DMO executives as to the feasibility and desirability of changes to improve the situation.

In order to properly consider the problem situation it became obvious from the analysis of the conceptual systems view that the total project team requirement for skills and expertise and people assets available to the project team needed to be considered. This means that all the people assets employed by LSD and the broader DMO along with the people assets external to DMO and residing in industry needed to be considered. Not surprisingly then discussions with the participants pointed to a number of issues that related to the effectiveness and efficiency of the full time and in-house people asset.
Table 6.2 - Summary of comparison interviews and issues

<table>
<thead>
<tr>
<th>No</th>
<th>Activity</th>
<th>Summary of Participant Comments</th>
<th>Synopsis of Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Appreciate capability and project needs.</td>
<td>Alpha: Capability Development Group does this activity. Mike: The model should not be viewed as linear and the ‘appreciate capability and project needs’ activity should be iterative. Charlie: Capability Life Cycle is the charter of Capability Development Group. Charlie: Scan of the environment and needs leads to requirements that are agreed by Government. Charlie: Government decisions are based on funding. Policy considerations such as the White Paper and funding of the Defence Capability Plan.</td>
<td>• This activity is undertaken by CDG and supported by DMO and other services and agencies in the Department of Defence. • Strategic people capability needed to support early project definition and to ensure project is feasible. • Consideration of skills and expertise needed to operate and support the capability but insufficient consideration of skills and expertise needed to deliver the capability.</td>
</tr>
<tr>
<td>2</td>
<td>Appreciate external or military or commercial off the shelf (MOTS/COTS) or it is a development solution.</td>
<td>Bravo: Need to understand the acquisition concept whether the purchase is military or commercial off the shelf (MOTS/COTS) or it is a development solution.</td>
<td>• Workforce planning should be integral to the capability.</td>
</tr>
</tbody>
</table>
| market equipment solutions, technologies and project management | The skill sets required to deliver these projects are different.  
Oscar: Governance arrangements do not include people with experience and competence.  
Oscar: There is no program or portfolio level management.  
Oscar: It is not done quickly enough too much indecision.  
Charlie: Proposals are reviewed and refined several times.  
Charlie: The danger is when someone gets a fixed view on the outcome this distorts the outcome.  
Charlie: This activity is predicated on the skills and expertise that CDG has in developing the business case.  
Charlie: CDG lead this activity with DMO input.  
Charlie: Measure of success is if the capability is delivered and sustained. Not really measured but vetted through the committee process. | development process and reflect the risk profile of the project.  
- Insufficient skills and expertise applied to governance arrangements. |
|---|---|---|
| 3 | Define project people competencies | Alpha: The system to define people competencies is a reactive system instead of a proactive system.  
Alpha: Between First and Second Pass this is determined so when the Material Acquisition Agreement is signed at Second Pass the task is well known and then it needs to be executed against the plan.  
Alpha: Performance is judged by sticking to schedule agreed in the MAA. So indirectly if there is a lack of appropriate competence or skill sets then this will be |  
- Consideration of skills and expertise required in projects is very broad and is usually characterised as being reactive and crisis managed.  
- Workforce planning should be integrated into the project |
| Bravo: LSD uses the resources available either Australian Public Service or uniform. |
| Bravo: It is usually left to the project to determine what skills sets are needed. |
| Bravo: The way projects are introduced to LSD is through the emerging projects area and these decisions are usually made there. |
| Delta: This activity is implied through the project definition process. So as the project business case is developed the staffing needs are considered then. |
| Delta: Job families are needed to manage groups of competencies. This provides a critical mass of people to train and smooth the peak and troughs of demand. |
| Delta: There is an assumption of competence when a person from a skills set is provided. So there is sometimes a gap between requirement and competence which would be bridged by on the job and formal training |
| Delta: Project Management certification is an example of where a job family is being managed and certification provides a validated method of ensuring there is consistent standards in competence. |
| Delta: Apart from industry certification it is difficult to be assured that people competent. |
| Delta: The people you get ‘are who they are’ and it is the projects job to up skill and manage their performance. |

planning and approval process and be ongoing.

- Job families should be centrally managed to support priorities, professional development and career management.
- Performance should be closely managed to ensure job competence.
- There are significant resource saving benefits in the early delivery of capability so incentives should be provided for the early delivery of projects.
- Resources appear to be horded rather than being allocated to the highest priorities and shared. There
Delta: The need for people and competence are not static in projects and this will vary over the project stages and activities.
Delta: Better in most cases to have ‘warm bodies’ in the set than no one performing a required role in a project.
Delta: The standard of the competencies reflects often in the outcome and success of projects.
Delta: Inflation of job levels to reduce the risk of incompetence. Projects will seek to recruit the next higher level in order to reduce the risk of getting less competent people.
Delta: A bureau service is a way of establishing a centre of expertise that can be uniformly trained, make use of lessons learnt and allocate the skills and expertise to where it is needed.
Delta: There is no altruism between SPO in LSD and this leads to hording of people with skills and expertise. Often people in line management positions will release only the under performers when required to meet other priorities in LSD. There is no incentive to lose the performers.
Delta: There are no management systems to assess workload.
Delta: Managers need to manage competencies needed for projects and be held accountable for that activity.
Delta: How to develop a sharing culture between the SPO? It is noticeable that should be incentives for sharing resources.

- The workforce planning model should be explicit.
- Management and software tools to support workforce planning is not user friendly.
- Requirements development and planning is not sufficiently robust as a result of poor estimation and use of project management tools. This leads to poor definition of the people capability.
- Informal and formal job family training is delivered in projects so project managers should be incentivised and assessed on their performance in this area.
there is little incentive for SPO’s to share resources and allocate resources to priority areas when it means losing competent people. This issue is not restricted to people competencies.

Delta: Matrix management provides an amount of cross levelling of competencies between areas in LSD. Engineering has been done well as there are lots of them (40 percent of the LSD staff are engineers). Also occurs in the scheduling area. Management by job families is evident in these areas and actively assists in meeting demands in priority areas.

Mike: This process is not done well.

Mike: There is no model that defines how this activity takes place.

Mike: A robust work breakdown structure would identify the people skills and competencies that are required to deliver a project.

Mike: More can be done in this area.

Mike: Need to focus on skills rather than process

Mike: Is there the capacity in DMO and industry to run projects – a rigorous understanding of the competencies required to run a project would highlight the project risk profile and lead to a better understanding of the likelihood of project success.

Oscar: Issue with competencies at the program level.

Oscar: Need quality at the program management level so they can coach the
Oscar: Different skills for project management and sustainment managers.
Oscar: Defining and estimating skills in developing project work breakdown structures is important to success.
Oscar: There should be a broader search for who is available and who has the skills sets within DMO. This management and authority does not appear to be exercised. Projects need to get by with who they have.
Oscar: Finance and work breakdown structures defined to third level and used to forecast needs in this MNC.
Oscar: Need to price major tasks and get good as estimating and forecasting effort.
Charlie: Very broad bush.
Charlie: Not done well.
Charlie: Certain skills sets and levels determined but not further defined.
Charlie: Process relies on gap plugging rather than a detailed process to determine skills and expertise.
Charlie: This activity is only done to high fidelity when there is a problem at any time along the capability life cycle. So it ends up being part of a crisis management issue or process.
Charlie: Measured by gate or executive reviews and based on perception of the
|   | Acquire skills and expertise | Alpha: There is a need to specifically target the skills needed to deliver a project. Specifically, targeting means knowing who is around and actively seeking individuals to be part of the project team. Alpha: Recruiting is a major way of getting the skills and expertise. Alpha: Funds need to be available and also time to use the DMOSS panel to get the competencies you need. This method is more work than getting people internally reallocated Alpha: The allocation of skills and expertise is very much dependent on the priorities of the LSD decision makers, which is line management. Alpha: Need to actively manage poor performance. Managers will give up poor performers more readily so they do no need to manage poor performance themselves. Managing poor performance is viewed as a time consuming task. Alpha: Mixed teams of uniforms, APS and contractors can cause disharmony. This is caused due to the diversity in remuneration and contractors poaching competent staff. Alpha: You also need to leverage off suppliers. Suppliers know the equipment well and have a wealth of knowledge. This issue with suppliers in the contractual hazards and knowing whether they are acting in the buyers or project team’s best interests. | • Need to consider all available sources of competence to deliver projects. This includes full time staff (APS and ADF), contractors and suppliers. • DMOSS panel process is bureaucratic and slow and does not always delivery timely outcomes. • Need to actively manage poor performance. • Central role of project management in selecting and developing competences used in projects. • Requirement for skills and expertise in the project team varies overtime so planning should be ongoing. |
| Bravo: | SPO usually acquire the skills and needed to run a projects.  
Bravo: The project manager as the leader of the team solicits the necessary competencies needed to deliver the project.  
Bravo: At the strategic level the Human Resource process guides recruitment, selection and training process but this is implemented in the project team.  
Bravo: Need to use the in-house resources that are available.  
Bravo: Success of the skills acquisition process is judged through PMSG.  
Bravo: Project Managers are responsible for removing road blocks to achieving project goals.  
Bravo: There may need to be some retraining of existing people in the organisation to get the right skills and expertise mix.  
Delta: The higher level view is that skills and expertise are recruited in advance to anticipate future requirements.  
Delta: Centralisation of skills and expertise allows the organisation to smooth the demand and develop people. The MEA model although it is costly.  
Delta: Need to grow your own skills and expertise. DMO runs a graduate engineering and scheduling program.  
Delta: Project management needs to be core as these people are accountable for outcomes.  
Delta: Key is to matrix the enabling services and this allows skills and expertise to | • Business case for skills and expertise to deliver projects is not fully costed.  
• Skills and expertise of the project manager important to project definition, planning and estimation of all project resources.  
• No incentive to deliver project early – this would have significant cost savings for workforce.  
• Centralisation of skills and expertise is important to efficient use of scarce resources. |
be allocated to the priority areas.
Delta: Priorities are important and the allocation of specific skills to meet the need.
Delta: The core is project manager and sustainment managers who are accountable to line management for outcomes.
Mike: There is no formal system to acquire skills and expertise in DMO
Mike: Consideration of the skills of the project director capacity to identify the skills and expertise needed to deliver a project
Mike: Timing of when certain skills are required is key to delivering a project
Mike: Have the right skills and expertise leads to a greater understanding of the project risk profile – ‘you don’t know what you don’t know’.
Mike: Particularly important for engineering skills sets as this skill set is central to delivery of projects
Mike: Resource implications for DMO and contractors
Mike: Scheduling (project controls) is not done well in LSD.
Mike: Projects should include the full cost of resources in the project business case.
Mike: There are peaks and troughs of effort required at certain times in the project life cycle.
Mike: Need access to HR to resource support and review skills and expertise
needed in the project.

Mike: Project skills and expertise is not necessarily transferrable to Sustainment.
Mike: Project Management is not necessarily a core competence of Defence.
This could be better done by contractors. Contractors would deliver earlier and this could generate other problems such as synchronising support and budgeting.
Contractors are incentivised to deliver outcome better than Defence employees.
Mike: There is no reward for early delivery of projects.
Mike: Employment incentives would allow projects to better deal with project risks.
Mike: Potential to incentivise APS on contract.

Oscar: More planning, rigour and governance oversight needed to build work breakdown structures
Oscar: Define the requirements for the project and the liability or need for personnel.
Oscar: Three ways to get things; buy, build or steal.
Oscar: Project managers need; project management skills, general management skills and domain knowledge. The intersection of these spheres is where experience is needed.
Oscar: Project managers should know their own skills and shortfalls
Oscar: PM BOK is a good way to analyse tasks. Usually develop a matrix using
Charlie: Done worse than the preceding step. Poorly done.
Charlie: Worse in the current environment of staff cuts.
Charlie: What will probably happen is that there will be a revision to outsource work.
Charlie: Contractors are brought in and there will be no transfer of knowledge.
Charlie: The skills and expertise that are approved to deliver the project in the business case should be allocated to the projects. Its more of get by with what staff resources you have and take it out of hide rather than projects being allocated the resources required to deliver a capability.
Charlie: Measured by outcomes that are assessed as part of gate and executive reviews.

<table>
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<tr>
<th>5</th>
<th>Appreciate with sponsors the relevant equipment solutions, technologies and business</th>
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<tbody>
<tr>
<td></td>
<td>Bravo: This is done with the PMSG and the key stakeholders.</td>
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<tr>
<td></td>
<td>Oscar: Project assessments take too long in DMO. This company usually spends two weeks to do project assessments of projects work $200m or so.</td>
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<td></td>
<td>Oscar: Project management skills need to be grown in Army Minor Projects. This provides project managers with a total experience of project management within LSD and a base level to develop project management practice.</td>
</tr>
<tr>
<td></td>
<td>Oscar: Building skills in areas where there is shortages such as tech spares</td>
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<tr>
<td></td>
<td>• Project assessments and decision on acquisition take too long.</td>
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<tr>
<td></td>
<td>• Need to support the authority of project managers to develop staff.</td>
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<td>• Project teams need to engage</td>
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</table>
assessors is important to the future.

Oscar: Requests for Quotes for Services (under the DMOSS panel) need to be issued to all suppliers not restricted as have seen in Newcastle recently where an RFQTS was only issued to Newcastle based suppliers.

Oscar: Authority needs to be devolved to project managers so they can control the decisions related to their project.

Oscar: A process like the Rapid Prototyping and Development Establishment (RPDE) needs to be introduced for all Request For Quotation and Tasking Statement (RFQTS).

(extract from the initial interview: If you look at the way RPDE run their panel arrangements. You are a member and you are accepted and you have a login to their website and when an opportunity comes up, they just broadcast email advising that there is an opportunity sitting in the' hopper’ and it’s a one or two liner that describes the broad role.. You login as a member of the panel and you have a look at it in detail and if you want to have a crack at it or explore it and then you can download it yourself prepare your response and send it in.

Intent: The RPDE RFQTS model is effective and more efficient – DMO should consider it. It will also support the Whole of Government procurement initiatives emerging from Department of Finance and Deregulation so that other Departments can more easily use it. There are not many skill sets on the DMOSS closely with suppliers to understand competence of supplier teams.
Oscar: Need to meet the project team before contracts are signed. Do not hire on the basis of a CV in a tender response.

Charlie: Yes this activity is done.

Charlie: Competencies to do this work in CDG vary depending on the part of the capability development process. Sometimes the user requirement is outsourced by CDG.

Charlie: The committee process and inter agency reviews of the business case agree on the requirements.

Charlie: Measured by the completeness of the documentation suite. The Operational Requirements Document through to the requirements and statement of work need to be agreed by the capability approval process.

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<tr>
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<th>Define project requirements, boundaries and competencies.</th>
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<tr>
<td>6</td>
<td>Oscar: project assessments take too long.</td>
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<tr>
<td></td>
<td>Charlie: Yes. This activity is a clear DMO responsibility based on the prior capability inputs.</td>
</tr>
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<td>Charlie: Need competencies to delivery from first pass through second pass to commence delivery.</td>
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<td>Charlie: The preferred capability option is what is delivered.</td>
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<td>Charlie: Understand success of a project about half way through and measure of success is agreement from the stakeholders.</td>
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<td>• Competence of project managers to present the source selection decision and line management to approve or reject expeditiously.</td>
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<td>#</td>
<td>Activity Description</td>
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<tr>
<td>7</td>
<td>Acquire and support equipment in a timely manner achieving value for money.</td>
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</table>
6.3 Agenda for change

The agenda developed for discussion of the gap between the reality of the situation and the conceptual system model is discussed in the following section.

6.3.1 The strategic people capability

The strategic people or Human Resource capability in LSD can be seen to be central to success of the organisation. The importance of a strategic people capability is supported by the findings summarised in the synopsis of issues in Table 6.2 above. The permanent core of the organisation is provided by Australian Public Service and Australian Defence Force staff and the management of this asset is perhaps the most significant contributor to organisational success while external skills and expertise provided by contractors is engaged temporarily to meet skill and expertise shortages. Bredin (2008b p.570) notes that access to skills and expertise is perhaps more important than retaining permanent staff and suggests that the capacity to access, maintain and develop a highly skilled and motivated workforce over time as people come and go is more central to organisational success. This points to an organisational people capability in having a readily accessible, flexible and dynamic market for skills and expertise.

An important part of the strategic people capability is workforce planning. Workforce planning could be seen to be ‘The process of matching workforce capability with business needs by planning the workforce activities required to meet current and future business needs at both the organizational and unit levels’ (Curtis et al., 2009 p.529). Workforce planning is a strategic activity which involves all levels of the business. It is suggested that the workforce planning process should be highly integrated into business process and overseen by the business’s governance arrangements.

Central management of skills and expertise

LSD currently manages technical, contracting, finance and scheduling staff as a central pool that is allocated to projects based on priorities. This organisational structure is known as a weak matrix (Larson, 2004). Larson (2004) notes that the matrix structure has advantages in the efficient use of resources, access to a reservoir of technology and expertise. On the downside while the matrix is predicated on creative tension between functional and project managers it can be dysfunctional, cause infighting, stress and be slow in responding. In addition, workplace cultural issues between technical and project managers (Schein, 1996) could also inhibit teamwork, cooperation and knowledge sharing. Solutions that could mollify the negative aspects of the matrix organisation are incentives, professional rewards, involvement in workplace decisions and communication.
Workforce planning is inflexible and not linked directly to project outcomes

The timely allocation of APS and ADF personnel with the appropriate skills and expertise is important to project success. There is little evidence of a robust workforce planning process that meets the needs of the LSD business to acquire and support equipment for the ADF. Workforce forecasts for major projects appear to be arbitrary, ad hoc and not aligned to the business needs of the Division.

It is suggested that a program of continuous workforce development that that is integrated with LSD process improvement and business planning is a central issue. Without a clear understanding of the people competencies and capabilities required to support LSD business it would be difficult to understand where the competency deficiencies are and how they can be fixed. Remedies could include recruiting, training and development or contracting the skills and expertise needed.

An indicator of the adhoc and arbitrary management of workforce is the use of the mandated project scheduling tool. The project scheduling software tool is Open Plan Professional. While the software has the ability to forecast a range of resources including people, in combination with a data miner Welcomehome it is able to timesheet and track actual usage. Unfortunately, the system is poorly implemented, slow and cumbersome to use and the data is rarely used as a decision tool by the executive. It is suggested that more timely and accurate scheduling data would improve workforce planning and LSD people capability.

Incentivise early delivery and sharing of resources

LSD people resources are hierarchically managed by Branch and System Program Office structures. In addition, the functional areas of the matrix structure are generally established at DMO corporate or LSD level. These structures are generally self-interested and there is little incentive for sharing of resources such as people or knowledge. This could be addressed through the establishment of key result areas in performance appraisals that support the development of resource sharing. Cultural change of this type could be difficult to establish and would need senior leadership support.

There are significant benefits to the organisation to early delivery of projects that does not appear to be considered in the business case. There is significant importance placed on delivery in accordance with the customer supplier agreement but early delivery is not seen as an important outcome. The benefits in early delivery could be the release of skilled personnel to other important work and the early availability of the equipment to the user community. The
early availability of equipment could be overlooked as a benefit as this is only one part of the fielded capability and there could be planning difficulties in synchronising other elements of capability such as maintenance support or training that is required to field the capability.

**Internal market for skills and expertise**

The people resource in LSD could be seen to be a free good. There is no pricing mechanism for the allocation or use of the ongoing labour force other than justifying the effort. This leads to behaviours that horde skilled staff and not give up surplus staff unless there was no other option. There is no incentive to share resources particularly skilled staff.

An internal market for skills and expertise which supports business priorities could be key to the effective and efficient utilisation including the sharing of skills and expertise. The internal market should be structured to align with existing power structures in line and functional management areas, align with existing business planning arrangements, employ a governance structure and incentivise managers within LSD to meet business goals and objectives.

**Performance management**

Performance appraisal and management is key to supporting the right behaviours and cultural issues associated with integration of contractors in the project team. The Key Performance Measures that could be included in performance agreements for line management and project managers are:

- Sharing of resources particularly skills and expertise within the division.
- The creation of knowledge. This includes the sharing of knowledge and codifying knowledge for use within the division.
- Development of social capital within project teams such as communities of practice.

**6.3.2 Empowerment of Project Managers**

Competent project managers with the skills and expertise to deliver projects can be seen to be a key contributor to project success. Assurance of competent project managers is established through certification, ongoing professional training and knowledge networks. The DMO is pursuing project management professionalisation by certification through the DMO Standardisation Office and this should enhance the prospects of better results. Properly qualified and certified of project managers who are given the authority and resources to deliver project outcomes as agreed in the materiel acquisition agreement can been seen to be best place to achieve the agreed project outcomes.
The approvals required to use the DMOSS process are lengthy. Low risk routine or short duration task approvals should be delegated to project managers. More complex higher risk or longer term packages of work should be reviewed by an EL2 level board that includes subject matter experts, contracting and finance representatives.

6.3.3 Poor requirements determination

Requirements are not well developed leading to misunderstandings and delays. The deficiency highlighted through the comparison interviews is the incomplete description of the task and therefore determination of the skills and expertise needed to delivery projects. A consistent theme highlighted by industry is the poor standard of requirements that are contained in the Statement of Work for contractor tasks. Incomplete requirements and inaccurate estimating is likely to lead to sub-standard contractor integration outcomes. Robust statements of work and understanding of the resources required to deliver the outcomes should lead to better performance.

The project team requires a relevant and balanced mix of skills and expertise to be successful as it leads to a greater understanding of the risk profile of the project. Often ‘you do not know what you do not know’, and this leads to poor decision making and poor project outcomes. So the ability of the project team to define the competencies required to deliver a project and be able to accurately estimate the financial and time requirements is key achieving project outcomes.

In addition, the observed deficiency in project planning also relates the poor use of project management tools such as work breakdown structures causing estimates of resources and time to be inaccurate. The issue in this situation could be seen to be related to inadequate project management skills and oversight by the governance processes employed by LSD.

6.3.4 Collaboration with suppliers

Suppliers have a deal of skill and expertise in the development and support of their product. This skill and expertise could be used by the project team to advantage in delivering and fielding equipment solutions. Collaboration with suppliers needs to be handled with skill. For instance, Transaction Cost Economics provides some insight into the morale hazard that could occur when agents act on behalf of owners and their interests are not properly aligned. The agent in this case a supplier may take advantage of the situation when they know the costs or risk will not be attributable to them.

It is suggested that the literature concerning relational based procurement choices (Walker and Rowlinson, 2008) may provide some practical insights into how the organisation may collaborate with suppliers. Procurement choices can be plotted against a continuum of relationship-based to
transactional. Lowest tendered prices are located on the transactional end of the continuum and are indicative of the DMOSS standing offer panel for skills and expertise from industry. Joint ventures, partnering and alliances provide increasingly more relationship based procurement choices. Some of the benefits of this contractual form are risk sharing, individual and organisational learning, innovation and a reduction in transaction costs. Therefore it can be seen that there are distinct advantages in procurement arrangements for engaging contractor’s skills and expertise in this way and still maintain effective competition and probity as required by the Commonwealth Procurement Rules (Department of Finance and Deregulation, 2012a).

6.4 Implementing feasible and desirable changes

The analysis of the interviews conducted with the participants has identified a range of issues which have been discussed above. These issues provide a basis for determining cultural, process and structural changes that could occur to improve the problem situation.

The Table 6.3 below is a summary of the comments made by the participants during the one on one interviews conducted on the gap between the problem situation provided in the rich picture and the conceptual model of the system that integrates the skills and expertise of the contractors.

These issues have provided an agenda for change that was used to engage the senior leadership to determine feasible and desirable actions to improve. Two senior executives from LSD and a senior executive from a multi-national defence industry firm were interviewed to review the suggested actions and decide whether they are feasible and desirable.
**Table 6.3 - Summary of comparison interviews and actions to change**

<table>
<thead>
<tr>
<th>Conceptual Model Activity (Figure 6.1)</th>
<th>Relevant problem situation themes (Rich Picture: Figure 5.5)</th>
<th>Synopsis of Issues (Table 6.1)</th>
<th>Desirable and Feasible Actions</th>
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<tbody>
<tr>
<td>No</td>
<td>Description</td>
<td></td>
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<tr>
<td>1</td>
<td>Appreciate capability and project needs.</td>
<td><strong>Accountability</strong> – single point of accountability in the capability development process. <strong>Excessive bureaucracy</strong> – clear accountabilities. <strong>Commercial approach</strong> – establish the business case. <strong>Workforce mix</strong> – workforce planning established to ensure capability can be acquired, supported and operated. <strong>Competence development</strong> – sources of knowledge of capability identified. <strong>Industry capability</strong> – industry base is able to deliver the capability.</td>
<td>• This activity is undertaken by CDG and supported by DMO and other services and agencies in the Department of Defence. • Strategic people capability needed to support early project definition and to ensure project is feasible. • Consideration of skills and expertise needed to operate and support the capability but insufficient consideration of skills and expertise needed to deliver the capability.</td>
</tr>
<tr>
<td>Conceptual Model Activity (Figure 6.1)</td>
<td>Relevant problem situation themes (Rich Picture: Figure 5.5)</td>
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<tr>
<td>No</td>
<td>Description</td>
<td>Requirements determination – needs are realistic and achievable. Risk sharing – risks profile is acceptable and are able to be shared. Performance reporting – performance needs identified Professionalisation – Sufficient skills and experience in-house to oversee delivery and support. Value for Money – clear business case for the new capability.</td>
<td></td>
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<tr>
<td>2</td>
<td>Appreciate external or market equipment solutions, Accountability – single point of accountability for decisions. Excessive bureaucracy – clear accountabilities. Commercial approach – develop the</td>
<td>• Workforce planning should be linked to project outcomes • Insufficient skills and expertise applied to governance arrangements</td>
<td>• Project workforce requirement is progressively refined through the capability development process. • Establish an LSD panel or virtual network of people with requisite</td>
</tr>
<tr>
<td>No</td>
<td>Description</td>
<td>Relevant problem situation themes (Rich Picture: Figure 5.5)</td>
<td>Synopsis of Issues (Table 6.1)</td>
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<td></td>
<td>technologies and project management.</td>
<td>business case and assess commercial feasibility.</td>
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<td></td>
<td></td>
<td><strong>Workforce mix</strong> – sources of competence to ensure capability can be acquired, supported and operated.</td>
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<td></td>
<td><strong>Competence development</strong> – identify sources of knowledge and access to intellectual property.</td>
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<td></td>
<td></td>
<td><strong>Industry capability</strong> – assess industry capability to deliver solution.</td>
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<td></td>
<td></td>
<td><strong>Requirements determination</strong> – functional requirements derived from needs</td>
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<td></td>
<td></td>
<td><strong>Risk sharing</strong> – risk profile is acceptable and are able to be shared.</td>
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<tr>
<td>No</td>
<td>Description</td>
<td>Relevant problem situation themes</td>
<td>Synopsis of Issues</td>
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<td>(Rich Picture: Figure 5.5)</td>
<td>(Table 6.1)</td>
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</tbody>
</table>
| 3  | Define project people competencies. | **Performance reporting** – performance criteria established  
**Professionalisation** – Job family skills profiles sufficient to address project complexity.  
**Value for Money** – clear business case and capability is achievable. | | **Workforce planning should be integrated into the project planning and approval process and be ongoing**  
**Job families should be centrally managed**  
**Performance should be managed to ensure job competence**  
**Incentives for early delivery and sharing of resources**  
**Establish a group of appropriately skilled people to implement an LSD workforce and people management model to support project delivery – ensure that competent staff are available to support new projects.**  
**Establish incentives for early delivery of projects**  
**Establish incentives in** |
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<th>No</th>
<th>Description</th>
<th>Conceptual Model Activity (Figure 6.1)</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>competence gap and development needs identified.</td>
<td>Industry capability – industry able to supply competencies.</td>
<td>• Workforce planning model should be explicit.</td>
<td>performance appraisals for resource sharing, workforce and cost estimation</td>
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<tr>
<td></td>
<td></td>
<td>Requirements determination – requirements are matched to competencies.</td>
<td>Requirements determination – requirements are matched to competencies.</td>
<td>• Management and software tools to support workforce planning is not user friendly.</td>
<td>• Provide a user friendly workforce reporting and planning tool that is available to project managers.</td>
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<td></td>
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<td>Risk sharing – workforce risk profile is acceptable and can be attributed to the party best placed to deal with risk.</td>
<td>Risk sharing – workforce risk profile is acceptable and can be attributed to the party best placed to deal with risk.</td>
<td>• Requirements development and planning is not sufficiently robust as a result identification of in the people capability area as a result of poor estimation and use of project management tools.</td>
<td>• Replace the current scheduling tool (Open Plan Professional) with simpler scheduling and resource management tool that can forecast and track staff. ie. Microsoft Project.</td>
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<td>Performance reporting – job standards and quality criteria established.</td>
<td>Performance reporting – job standards and quality criteria established.</td>
<td>• Performance reporting for resource sharing, workforce and cost estimation</td>
<td>• Executive and governance reviews of projects to routinely include scrutiny of project requirements and work breakdown structures including</td>
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<td></td>
<td>Professionalisation – Certification level equated to project competence requirement.</td>
<td>Professionalisation – Certification level equated to project competence requirement.</td>
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### Conceptual Model Activity (Figure 6.1)

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<td>4</td>
<td>Acquire skills and expertise.</td>
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<tr>
<th>Relevant problem situation themes (Rich Picture: Figure 5.5)</th>
<th>Synopsis of Issues (Table 6.1)</th>
<th>Desirable and Feasible Actions</th>
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</thead>
</table>
| **Value for Money** – clear business case for acquiring or developing in-house the required competencies. | • Need to consider all available sources of competence to deliver projects. This includes full time staff (APS and ADF), contractors and suppliers  
• DMOSS panel process is bureaucratic and slow and does not always delivery timely outcomes  
• Need to actively manage poor performance  
• Central role of the project | • Project Managers provided the authority to contract commodity type tasks of less than say four months.  
• Review the DMOSS panel standing offer to establish relationship based arrangements for low risk tasks to reduce the transaction costs.  
• Emphasis on developing the skills and expertise of project |
| **Accountability** – workforce managed by accountable competence manager.  
**Excessive bureaucracy** - single point of accountability and reduce transaction costs.  
**Commercial approach** – use of relational contracting arrangements and terms and conditions to suit.  
**Workforce mix** – workforce planning ensures capability can be | | |

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<tr>
<td>No</td>
<td>Description</td>
<td>acquired, supported and operated.</td>
<td>management in selecting and developing competences used in projects</td>
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<td></td>
<td></td>
<td>Competence development – development needs of internal and external workforce identified.</td>
<td>• Requirement for skills and expertise in the project team varies overtime so planning should be ongoing.</td>
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<tr>
<td></td>
<td></td>
<td>Industry capability – Industry able to supply required competencies.</td>
<td>• Business case for skills and expertise to deliver projects is not fully costed.</td>
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<td>Requirements determination – needs are achievable.</td>
<td>• Skills and expertise of the project manager important to project definition, planning and estimation of all project resources.</td>
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<td>Risk sharing – workforce risks are shared.</td>
<td>• No incentive to deliver project early – this would have significant cost savings for workforce.</td>
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<td>Performance reporting – quality of human resource management.</td>
<td>• Centralisation of skills and expertise</td>
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<td></td>
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<td>Professionalisation – Individual and organisational learning objectives established.</td>
<td>managers including:</td>
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<td></td>
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<td>Value for Money – The value of individual and organisational</td>
<td>o Structured and ongoing professional development</td>
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<td>o Uniform performance management standards</td>
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<td>• Support informal communities of practice throughout the organisation</td>
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<td>• Support the close interaction with suppliers and customers</td>
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<td>• Establish a one star forum to prioritise, share resources and redistribute effort accordingly.</td>
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<td>Appreciate with sponsors the relevant equipment solutions, technologies and business environment.</td>
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<td></td>
<td><strong>Accountability</strong> – Competent single point of accountability. Authority and responsibility defined.</td>
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<td></td>
<td><strong>Excessive bureaucracy</strong> – Clear project goals and accountabilities.</td>
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<td></td>
<td><strong>Commercial approach</strong> – Business case is aligned with product specifications.</td>
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<td><strong>Workforce mix</strong> – workforce planning supports product to be acquired, supported and operated.</td>
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<td><strong>Competence development</strong> – Sources of knowledge contracted</td>
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<td>is important to efficient use of scarce resources.</td>
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<td>• Project assessments and decision on acquisition take too long</td>
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<td>• Need to support the authority of project managers to develop staff.</td>
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<td>• Project teams need to engage closely with suppliers to understand competence of supplier teams.</td>
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<td>• Continual assessment of the competencies needed to deliver projects.</td>
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<td>• Support a close working relationship with suppliers and customers.</td>
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<td>Conceptual Model Activity (Figure 6.1)</td>
<td>Relevant problem situation themes (Rich Picture: Figure 5.5)</td>
<td>Synopsis of Issues (Table 6.1)</td>
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<td><strong>Industry capability</strong> – Industry capable of providing product to achieve business case objectives.</td>
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<td><strong>Requirements determination</strong> – Product specifications developed and traceable to requirements.</td>
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<td><strong>Risk sharing</strong> – risk profile is acceptable and are able to be shared and contracted.</td>
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<td><strong>Performance reporting</strong> – Delivery quality criteria established.</td>
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<td><strong>Professionalisation</strong> – Individual and organisational learning objectives known.</td>
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<td><strong>Value for Money</strong> – clear business case to support product and non-</td>
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<td>Conceptual Model Activity (Figure 6.1)</td>
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| **6** | **Define project requirements, boundaries and competencies.** | **Accountability** – defined single point of accountability. Authority and responsibilities identified and resources allocated.  
**Excessive bureaucracy** – Accountabilities established.  
**Commercial approach** – business case benefits achievable.  
**Workforce mix** – workforce planning defined and providing people with competence to ensure capability can be acquired, supported and operated | • Competence of project managers and line management to decide quickly.  
• Workforce planning process that supports project outcomes. |
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<tr>
<th>Conceptual Model Activity (Figure 6.1)</th>
<th>Relevant problem situation themes (Rich Picture: Figure 5.5)</th>
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<td>Competence development – Competence development known and resources allocated.</td>
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<td>Industry capability – Industry able to leverage capabilities to support acquisition.</td>
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<td>Requirements determination – Requirements are described in product specification and delivery is scheduled and resourced.</td>
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<td>Risk sharing – risks profile is acceptable and are able to be shared or contracted and treated.</td>
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<td>Performance reporting – Clearly defined criteria for delivery.</td>
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<td>Professionalisation – Individual and organisational learning objectives</td>
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<td>Conceptual Model Activity (Figure 6.1)</td>
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| No Description | tasked.  
Value for Money – clear business case to deliver benefits. | | |
| 7 | Acquire and support equipment in a timely manner achieving value for money.  
Accountability – defined single point of accountability. Authority and responsibilities tasked and resources allocated.  
Excessive bureaucracy – Accountabilities established.  
Commercial approach – business case benefits achievable.  
Workforce mix – workforce planning defining ongoing people capability to acquire, support and operate capability.  
Competence development – | • No significant issues raise on this activity. | • Ongoing learning and workforce planning to transition staff to new projects as needed. |
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<th>Conceptual Model Activity (Figure 6.1)</th>
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<td>Learning by doing developing competence for the future.</td>
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<td><strong>Industry capability</strong> – Industry able to leveraging and developing new capabilities to support acquisition and sustainment.</td>
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<td><strong>Requirements determination</strong> – Product meeting required capability and needs. Benefits being realised.</td>
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<td><strong>Risk sharing</strong> – risks profile is acceptable and are able to be shared or contracted, treated and retired.</td>
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<td></td>
<td><strong>Performance reporting</strong> – Performance feedback, learning and reward.</td>
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<td><strong>Professionalisation</strong> – Individual and</td>
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<td>organisational learning objectives achieved. <strong>Value for Money</strong> – business case benefits being delivered.</td>
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The actions that could improve the situation can be seen to be categorised as follows:

- The development of a strategic people capability through the development of an integrated people management and workforce planning model
- Improved knowledge and people governance arrangements
- Project people planning discipline
- Relationship based procurement of skills and expertise
- Empowerment of project managers

These actions will be placed in a management framework for implementation.

6.5 A model of contractor integration

The last section discussed the significant outcomes from the interviews conducted with the participants. This section deals with those changes that are feasible and desirable to implement.

The empirical findings of this study point toward a model of contractor integration into the project team. The main theoretic themes in the model are based on that presented by Keenan and Aggestam (2001) in the convergence of human resource management and knowledge governance. Pemsel and Müller (2012) note that this treatment of knowledge together with work by Turner and Keegan (2000) and Whitley (2006) highlights the need to view knowledge as ‘dynamic and localised’. This model of contractor integration into the project team is set in the broader organisational view.
6.5.1 Sourcing the project team

There are two main sources of skills and expertise available to the project team and these are shown at the top of the model feeding the people and workforce into the project knowledge environment. These sources are determined by the organisation’s make or buy decision and the governance and ethical considerations that accompany that decision (Walker and Rowlinson, 2008 Chap 1 & 10).

The first is the outsourced portion which is engaged through the DMOSS panel standing offer arrangement or through tenders for equipment and / or supplies. This transaction costs in using this market can be seen to be dominated by the contingency factors of specificity of the asset (intellectual capital) the frequency of the transaction and bounded rationality or understanding of the task (Winch, 2001). Transactions are largely governed by the terms and conditions of the tender and the processes around the tender process such as probity and risk management.

An improvement to this situation is likely to be the use of relationship based procurement arrangements. Under these arrangements firms could be engaged for extended periods to provide low risk packages of work. The benefits of relationship based procurement arrangements and providing project managers with the authority to access these

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**Figure 6.2 – Contractor integration model**

1. Outsource
2. External market (relationship based sourcing)
3. Sourced in-house
4. Internal market assignment or recruitment
5. The make or buy decision
6. Capability to acquire and support
7. Acquire best team with right competence and motivation
8. Workplace environment culture
9. Project delivery - performance and learning
10. LSD workforce plan
11. LSD people planning model
12. LSD corporate and knowledge governance environment

Influenced by contracted terms and conditions
Beg, borrow or steal
Project Requirements
Trust, reputation and professional ethos

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Walker and Rowlinson, 2008 Chap 1 & 10.
arrangements without referring to a higher authority particularly for low risk tasks should provide a range of benefits.

The benefits would be a reduction in transaction costs to LSD and industry, risk sharing, individual and organisational learning. Transaction costs would be reduced as the cost of tendering and the assessment of tenders would be reduced. This could be trialled on short term and standardised tasks such as the provision of technical documentation. Risk sharing could be improved through the establishment of longer term contracts and performance based arrangements. Learning would be improved through the transfer of knowledge over successive short term contracts.

On the downside, firms which missed out on longer term arrangements might contest the source selection decision. Also there is a performance risk for arrangements with firms for longer periods of time. These disadvantages may be risk managed and this would provide net improvement to the current situation.

The ‘sourced in-house’ activity does not appear to be a well-defined internal labour market in LSD for existing staff. In a project based organisation this would involve the dispersement or reassignment of people at the end of a project. This activity is noted by (Huemann et al., 2007 p.321) as not being widely recognised in the literature on projects or HRM and is not a formal process in LSD.

On the other hand, the recruiting process is a well-defined Departmental activity but it is bureaucratic and it can take months from the decision to recruit to engagement. Much of the skills and expertise sourcing for projects appears to be reliant on dealing with issues as they arise which indicates an emergent or crisis management approach. In addition, sharing of resources including skills and expertise between System Project Offices is not a routine activity. The ‘beg, borrow or steal’ title appears to be an apt description for the sourcing and management of in-sources staff.

6.5.2 Assembling the skills and expertise

Acquiring the best team with the right motivation should match the agreed project requirement with the appropriate skills and expertise which is in-sourced or out-sourced and managed in accordance with a people management and workforce plan. The project skills and expertise is approved in the business case. The basis of the estimate for skills and
expertise is a well-defined requirement from which a detailed work breakdown structure is developed and fully resourced schedule is developed.

The remaining element in assembling the skills and expertise in the project team is a management process to assign, employ and disperse people against a workforce plan that projects the current and future requirement for the organisation's skills and expertise.

6.5.3 People planning

It is suggested that the integration of contractors into the project team be enhanced through acknowledgement and investment in a strategic people capability that manages the total workforce of which the skills and expertise of contractors is a significant part. The people capability should be supported by improved governance arrangements, project planning and the empowerment of project managers. The people model below is an adaption from Robbins et al. (1994) simplistic human resource model and Huemann et al. (2007) human resource model based on the Michigan model of HRM in Fombrun et al. (1984). The model provides an integrated view of the people process in a project-based organisation. Using the example of LSD, skills and expertise is recruited or selected from the in-house labour force or outsourced from contractors.

Figure 6.3 - Proposed Land Systems Division people management model
The perspective of the model is based on the resource capability view of the firm which highlights the interaction between the knowledge, skill and expertise or resources of the firm and the organisational routines and people resource policies and practices which are capabilities (Kamoche, 1996). The conceptual model in Figure 6.3 above shows the key role of defining and acquiring skills and expertise to deliver outcomes.

The development of strategic goals and objectives, people planning, recruitment and/or selection and separately the reassignment part of the model are highlighted. These activities are suggested to be activities that are important to the consideration of a project based organisation and are perhaps differentiating features. The area highlighted on the left of the figure can be seen to be related to the acquisition of skills and expertise are of the conceptual model, Figure 6.1. It also highlights the need to align the development of organisational competence with strategic goal and objectives and decide on the way the organisation will source and develop the needed skills and expertise. The reassignment activity on the right hand side of the figure highlights the temporality of project organisations and the need to recombine people with project competence into the front end of the people planning process.

The relationship between the people capability framework (Bredin, 2008b) and the people management process is also highlighted above the figure. This will be discussed in the section dealing with the incorporation of contractors into the people capability framework in Section 6.6. It should be noted that strategic activity is significant at the front end of the process.

The people management systems should be complemented with a strategic workforce planning process. Workforce planning should be integrated into the business planning and governance arrangements to provide the business with a forecast of the skills and expertise needed into the future. Provided with this information decisions can be made in terms of investment in the development of the organisations human capital.

6.5.4 Workplace culture

A key feature of the problem situation is the culture of the organisations. The view taken of culture in this model is that workplace culture of the LSD project is impacted by national, industry and organisational norms and values. It is perhaps a tautology to state that the
norms and culture of DMO and defence industry are different across the industry, workplace and organisational level environments. The expression of the problem situation in the rich picture shows the negative effects of the Defence culture being; risk adverse, rule bound, insensitive to cost and tribalistic. There is culture change initiative called ‘pathway to change’ (Department of Defence, 2012c) that is seeking to address people issues associated with accountability, shared services and strategic reform savings program. These reviews in addition to the DMO procurement reviews seeking more business-like outcomes and accountability (Black, 2011), are seeking to change the Defence culture at an organisational level.

Checkland and Poulter (2006) challenge us to think richly about changes in human situation in terms of structures, process or procedures and changing attitudes. Changes to structures and process is perhaps easier to make that those which attempt to change attitudes or culture of the organisation. The usual way of changing attitudes is to use a carrot and stick mechanism usually supported by incentives and sanctions. Incentives in terms of financial reward or other material support is difficult to provide in the public sector context so the importance of career management and the application of non-materiel rewards such as professional recognition is all the more important to the individuals value proposition.

Trust and commitment is perhaps worthy of consideration due to its impact on organisation learning and the basis for relational procurement choices. Trust is said to reduce transaction costs, makes possible the sharing of information, allows relationship based projects and provides a basis for expanded moral relations in a business (Walker and Rowlinson, 2008). A powerful way to engender staff commitment is empowerment of staff as this provides greater influence over outcomes and encourages increased cooperation amongst staff. On the other hand, trust is proposed to be developed through the ability, benevolence and integrity (Mayer et al., 1995). This model has been further refined to show that the initial factor determining trust is integrity followed by benevolence and then later in the project life cycle ability (Rousseau et al., 1998). The implications for LSD is that the desired culture could be developed to support relationship procurement and learning by empowering project managers, performance appraisal to consider integrity, resource sharing, non-material rewards and career management.
6.5.5 Project delivery and learning

The project interacts with the organisation’s governance arrangements to ensure and support delivery of the benefits decided at project conception. Governance also involves structures, capacity and accountability to support the delivery of projects. A part of the capacity is the resources particularly the know what, how and why knowledge of the organisation (Walker et al., 2008a; Davies and Brady, 2000). The project as a social organisation also learns throughout the delivery process at the individual and group level. The regulation of knowledge transfer as a result of the difficulty or ‘stickiness’ (Szulanski, 2003) creates an environment where knowledge is created, integrated, shared and applied.

6.5.6 LSD Governance and knowledge environment

The LSD governance and knowledge environment should be closely linked to business planning processes. The simple model of governance provided by Walker et al. (2008a) p.128 highlights the central role that business planning has in the implementation of an effective governance arrangement. It is suggested that there are two strands of theory which are applicable in relation to the integration of the skills and expertise of contractors into the project team (Pemsel and Müller, 2012). They are corporate governance of the project that is often based on the transaction cost economics (Williamson, 1991) as cited by such authorities as Muller and Turner (2005), Turner (2006) and Winch (2001) and specifically the governance of knowledge which is tied to the resource-based view of the firm by such authorities as Nahapiet and Ghoshal (1998), Pemsel and Müller (2012), Grabher (2004) and Keenan and Aggestam (2001). The capabilities perspective of the firms shows that informal knowledge mechanisms such as culture, networks and communities of practice are most effective in knowledge creating processes (Pemsel and Müller, 2012).

So it is suggested that the governance of the general knowledge environment could be seen to be important to the project team’s capacity for skills and expertise and is therefore central to the achievement of project outcomes. Also the ability to create, share, integrate and apply knowledge in the pursuit of project aims is fundamental to the project team’s capacity to deal with risks (Walker et al., 2008a p.129). In summary, knowledge creation based on informal governance mechanisms and a capacity to use knowledge to recognise and treat project risks is important to project success.
6.5.7 Summary

The contractor integration model has provided framework for viewing the feasible and desirable actions to improve the integration of contractor skills and expertise into the project team. The model shows how the skills and expertise can be sourced through a ‘make or buy’ decision that considers the competence required. Competence development is considered against the strategic requirement to deliver current and future defence capability through projects. Project delivery is supported by a workforce culture that is based on trust, reputation and a professional ethos which supports a performance and learning environment that develops competence through relating, reflecting and doing. Strategic processes that support the relationship between the organisation and its people and define future workforce competence assist in developing the organisations core competencies and preparing it for the future. The corporate knowledge and governance environment ensure knowledge is shared, integrated and applied within a corporate context that manages risk.

The next section will consider the application of the research to the people capability framework. This framework considers the organisations capability in terms of strategic, functional and project terms and extends the concept to the integration of contractors as part of the organisations people capability.

6.6 Extension of the people capability framework

The people capability conceptual framework as proposed by Bredin (2008a & b) shows how the concept of ‘people capability’ and organisational capabilities and learning in complex product systems (Davies and Brady, 2000) is extended into a conceptual framework for people capability in project based organisations. Bredin’s (2008b) conceptualisation of the framework sees it contributing to a people management system that ‘integrates people capability with functional, strategic and project capabilities.’ The people management system used in this conceptualisation provides the basis for the contractor’s integration model in Figure 6.2 above. Each of the three sets of activities or faces of the tetrahedron will be discussed in turn and is outlined in Figure 6.4 below.
Figure 6.4 – Contractor people capability in project based organisations (adapted from Bredin (2008))

6.6.1 Strategic and functional capabilities

The integration of contractors into the people capability process with strategic and functional capabilities shows the contractors contribution to the ‘development of technologies and disciplinary competencies that are needed to exploit business opportunities’ (Bredin, 2008b p.571). In terms of the DMO it is the development of competencies that assist in the development of requirements to deliver current and future defence capability. The functional disciplines integrated into the project team are principally engineering, finance and contracting. These areas provide the skills and expertise to the project team to enable capability to be acquired and supported. These competencies are defined principally in activity six of the contractor integration model which defines the capability required to be acquired and supported and develops the project requirements. The requirements are contained in project documents and tools such as specifications and work breakdown structures.

The people planning model shown in Figure 6.3 and workforce plan, activities ten and eleven, establish the process and method for sourcing the competencies. The competencies are suggested to be sourced through the ‘make or buy decision’ involving activities one to
five in the contractor integration matrix. The ‘make or buy decision’ activity six determines the most effective means of developing the competencies and these are further developed through learning by doing in activity nine which is project delivery.

Organisations operate as open systems and therefore it is important for organisations to have access to sources of knowledge and networks that provide the complementary skills and expertise to allow the organisation to share integrate, use and retain knowledge that is vital to the firm’s success. Bredin (2008b) notes that ‘project based organisations tend to rely to a higher extent on temporary workforce and short term contracts for completion of projects, and keep a smaller more permanent workforce.’ This is not the case with DMO whose permanent workforce is much larger than those who are contracted into the organisation. Nevertheless, the role of external sources of skills and expertise in contributing to organisational capability is a valuable resource which is perhaps under exploited by DMO. On the other hand, the positive is that the organisation has a large pool of permanent employees that contribute to the longer term competence development. The integration of contractors and the temporary workforce highlights the importance of knowledge sharing and development. That is the active integration of the permanent and temporary workforce using formal and informal knowledge sharing mechanisms. Informal mechanisms such as culture, networks and communities of practice (Pemsel and Müller, 2012) have been shown to be more effective in project based organisations.

The activities which can be seen to support the development of an organisation’s people capability when integrating contractors on the strategic and functional set are:

Developing key relationships with suppliers of skills and expertise and critical knowledge bases. Firms who supply niche expertise to the functional areas in such expertise as logistics engineering, accountancy or contracting are engaged under relational procurement arrangements such as partnering (Pemsel and Müller, 2012).

**Retention (absorption) of contractor knowledge.** Codification of knowledge through the development of standard procedures, integration of new knowledge in training courses or knowledge bases such as lessons learnt that capture the new knowledge that is developed through the interaction of contractors with functional areas.
Contractors develop particular long term functional skills and expertise. Developing long term relationships with particular firms to provide the organisation with skills and expertise that is not able to be readily developed and retained in DMO. This can be seen to be occurring in the contracting area where legal panels or standing offers are used to provide niche advice in such areas of commercial contracts and intellectual property.

Encouraging social networks with contractors in functional areas. The development ‘strong ties’ and ‘dense social relationships’ (Turner et al., 2013) between functional group and contractors by integrating contractors through existing informal Communities of Practice (COP) or supporting the establishment of new networks and COP.

The activities that support the strategic and functional face of the contractor aspect of people capability can be seen to be based in the development of the organisations social capital. This supports the organisation learning across boundaries and the retention or absorption of knowledge needed for the development of future core competencies.

6.6.2 Functional and project capabilities

The integration of contractors with functional and project capabilities relates to ‘the integration of disciplinary competencies in projects and project teams’ (Bredin, 2008b p.572). The core activities suggested by Bredin (2008b) are; integrating resource allocation and effective working relationships, trustworthy appraisals and supporting worker well-being. In terms of the DMO this applies to activity seven in the engagement of contractor skills and expertise that complement the project’s competence requirement and are motivated through the team dynamics and career management to contribute positively to project outcomes. Contractor compatibility with the workplace environment, activity eight, which enhances trust, reputation and a professional ethos supported by an effective performance appraisal process, activity eleven, contribute to project performance and delivery. It is suggested that integration of the contractor into the project team will lead to superior performance and learning outcomes.

In practice there appears to be unevenness in the allocation of the appropriate skills and expertise through temporality ie. insufficient expertise and experience being available to the project team when required. This was highlighted by a senior executive of DMO:
So for example, if we note that [the engineering function] are stretched thin with systems engineering resources at the outset of the project, and we have certainly seen that it really can cause some heartache downstream - for example: [Project x] and with [Project y] not necessarily in the management of the contract but at the outset before the contract is let (ie. the misunderstanding of the level of technical risk and engineering required to deliver the outcome). If we say OK, [the engineering function] do not have the resources to support us, we need to buy in systems engineering skills then that is useful and we need to make the call early. It’s almost a time factor as well really, we just need to make that call early. (Charlie)

The importance of providing functional expertise from the organisations matrix is a success factor. The skills and expertise of contractors are able to supplement the organisations workforce in such cases. Excessive bureaucracy, commercial approach, workforce mix, competence development and industry capability are themes related to the integration of contractors.

The activities which can be seen to support the development of an organisations people capability when integrating contractors on the functional and project set are:

- Identification of competence shortfalls and sourcing skills and expertise. Activity six of the contractor integration model provides for the identification of the functional area competence requirements to support the acquisition and ongoing support of capability. This along with workforce planning provides a basis for planning the development of functional area competence for the future.

- Appraisal of contractor performance. Trustworthy performance appraisals are suggested to be key to project performance and learning. Contractors should be provided feedback and appraisals as part of the engagement. Performance reporting was recognised as a theme in the analysis of the problem situation.

- Use of contractor’s short term to supplement project team to enhance individual well-being and performance. Some of the negative effects of project based work is the potential for work overload from compressed timeframes and insufficient
recuperation time and resources. Contractors provide a means of relieving this overload and allowing permanent staff time to manage overload.

- Project manager appraises functional area performance. Along with contractor performance reporting the project manager should report on the performance of people allocated to the project from functional areas.

The activities that support the functional and project face of the contractor aspect of people capability can be seen to be based in the development of the identification of competence shortfalls, trustworthy performance appraisals and individual well-being. This supports the creation of a competent and motivated team environment that supports project delivery and learning needed for the development of future core competencies.

6.6.3 Strategic and project capabilities

The last face relates to the integration of contractors with strategic and project capabilities. This relates to the creation and exploitation of business opportunities through the generation and execution of projects (Bredin, 2008b p.573). There can be seen to be two features that make DMO distinctive with regard to strategic and project capabilities. The first is that the requirement for skills and expertise is driven by the need to introduce certain defence capability not by the inherent competencies of the DMO. It is not driven by the markets need for products and services as such but determined as part of the Government’s defence strategy. In this way the need for competencies is derived from the technologies and disciplines required to acquire and support capability and this relates to activity six of the contractor integration model. The second is related to strategy as DMO has determined that project management is a core competence. This determines the make or buy decision, activity five, as one that is sourced and developed in-house, activities three and four. The use of contractors in DMO project teams is then limited to project support activities and functional disciplines. The strategy to source project managers in-house is supported by a professionalisation program that aligns project management competencies with industry and an internal program that certifies project managers based on project complexity.

In the DMO setting the workplace environment and culture should be familiar to the civilian and military staff who are recruited or posted to roles in the DMO. The issue of career
management and establishing a trusted performance appraisal systems and is more important to project delivery and learning, activity nine. Activity eleven and twelve are focussed on identification, recruiting and development of project management competencies to delivery to forward project portfolio. This includes transitioning project managers internally from one project to the next in the context of career management. The need to access people from outside the organisation with critical project management competencies appears to be a flaw in the current approach. This could be addressed through more comprehensive professional development and engagement with industry networks and COP’s.

Themes related to the integration of contractors into project teams appears to be accountability, competence development, performance reporting and professionalisation. That is providing the project manager with the accountabilities required to deliver to project, the development of project management competencies needed to delivery future capability, trusted performance reporting and professionalisation including career management and professional development. These themes should be addressed in the contractor integration into the people capability model.

The activities which can be seen to support the development of an organisations people capability when integrating contractors on the functional and project set are:

- **Identification with Capability Development Group the project management competence shortfalls to deliver and support future capability.** This strategic activity which should be interwoven in the capability development process is supported by the LSD workforce plan and a people management model that sources and develops internal project management competencies.

- **Sourcing project team skills and expertise.** Project management is a core competence of the DMO and project management competencies are sourced or recruited and developed by the organisation.

- **Transfer and retention of contractor skills and expertise to develop portfolio competencies.** There is a need for the organisation to elicit critical project management competencies external to the organisation. This could be achieved through recruiting given the limited incentive and reward structures available to the
DMO, established through more comprehensive professionalisation training, developed through professional networks external to the organisation or sourced from contractors acting as coaches or mentors.

- **Line management’s role as competence manager.** The HR structure relies on career management and transitioning project manager from one project to another. Career management is not limited to the project management discipline. Line management should take a leading role in the implementation of career management supported by the people planning model, activity eleven, which manages the relationship between the organisation and its people, the workforce plan, activity ten, competence development and performance appraisals. In this way the project portfolio competencies would be implemented in a holistic way and related to business outcomes.

The activities that support the project and strategic face of the contractor aspect of people capability can be seen to be based in the competencies of the project managers to delivery on the organisations forward portfolio of projects, career management of project managers and the engagement of project managers with industry standards and networks as part of a professional development program. Distinctive features of the DMO on this face of the people capability model is the recognition of project management as a core competence which is resident in the permanent workforce. This represents challenges for sourcing critical project management competencies.

**Summary**

The people capability framework presented by Bredin (2008b) has been extended to include the integration of contractors into the project team as a separate identity to the permanent workforce. The proposed extension of the framework’s activities, Figure 6.4, to include contractors has been explained against the problem situation themes identified as part of the research and the proposed integration of contractors model shown in Figure 6.2.

The issues raised in the discussion of the extension of the people capability includes: the identification and development of competencies to support the acquisition and support of the future portfolio of work, the development of social capital in the development of long term relationships and access to external networks and COP, the need to fully integrated
contractors as part of the people management process and the implementation of career management as an essential part of organisational competence development.

These issues which relate to project based organisations are discussed further in change themes and actions that review; knowledge governance, a people planning process, strategic workforce planning and accountability.

6.7 Change themes and actions

The framework for change presented above provides an integrated view of how the problem situation could be improved. Themes for the changes identified are provided below as to how the framework could be implemented and measured.

6.7.1 Governance

At its most basic the question ‘why do firms exist’ provides a focus on the essence of the problem that organisations are trying to resolve. Pitelis and Teece (2009) suggest that firms exist to reduce transaction costs (Williamson, 1991) and capture knowledge. Transaction cost economics suggest that the morale hazard that agents will work to their own benefit not owners. If we apply this to LSD then it could be seen that the organisations ‘raison d’etre’ is that acquisition projects and sustainment of fleets are less costly to run in-house even allowing for the inherent inefficiencies as suppliers may not always act in the interests of the Government. The Government’s role as a trusted broker to deal with third parties is also important to control the risk of knowledge spillovers (Capron and Mitchell, 2004 p.159). In addition, to the transaction cost issue with the ability of firms to capture can be seen to be essential to the capability of the organisation to acquire goods and services.

Changes that would support people and knowledge related governance are:

- Ensure governance boards have the skills and expertise to assess people capability aspects of projects.
- Focus governance boards on ensuring projects have the right mix of skills and expertise across the project life cycle to deliver capability.
- Support informal communities of practice and networks within LSD.
- Engage the senior executive in the knowledge governance strategy.
6.7.2 Project people planning

The people planning capability is key to translating the strategic goals and objectives of the organisation to realisable skills and expertise to delivery project outcomes. Project Managers have a central role in interpreting the need for skills and expertise in project teams. The interpretation comes from a clear understanding of the requirement, from sound analysis of the need, realistic planning and estimating in detail to establish the resources required. The ways in which LSD should improve the planning capability are:

- During project gate reviews ensure the discipline of work breakdown structures and estimating particularly with regard to the skills and expertise required to deliver projects is realistic and complete.
- Establish an integrated work force planning tool that considers the total need for skills and expertise in the project.
- Review the effectiveness of the current Open Plan Professional scheduling tool for ease of use particularly with regard to planning and reporting of people resources used by projects.
- Extend the use of Open Plan Professional or another scheduling tool for use by Sustainment.

6.7.3 Strategic people capability

The capabilities perspective of project based organisations (Davies and Brady, 2000; Söderlund, 2005; Bredin, 2008b) emphasises the knowledge and processes of the firm to access, attract, deploy and develop skills and expertise. People management systems are challenged by project based structures (Bredin, 2008b) and more permanent and different stable logics are required to manage the flexible, dynamic and adhoc project based structures. Bredin (2008b) notes that previous studies in project competence and project capability have not extended into people management systems. Figure 6.4 is an effort to address this shortfall.

Alignment of the organisations people capability with organisations work systems and organisational structure can be seen to be central to organisational success (Bredin, 2008b). Together with the organisations workforce access to external networks who can take on short term assignments with the skills and expertise to complement the organisations
competence to delivery projects is a necessary strategic people capability. While the capability to access external networks is important the ongoing need to retain and develop an internal core competence in project management is essential.

The changes that should be considered to improve the LSD strategic people capability are:

- Establish a people management system that is integrated with strategic planning and combines project and functional capabilities.
- Commoditise packages of work for low risk short duration tasks managed through relationship based procurement methods such as alliancing or partnering.
- Incorporate resource sharing, learning and teamwork in performance management key result areas.
- HR governance board to review utilisation of people allocated to LSD.

6.7.4 Empowerment of project managers

Providing project managers with the authority to make best use of the resources allocated to the project is an important aspect of project success (Munns and Bjeirmi, 1996 p.84).

There has been a range of initiatives (Mortimer, 2008b; Kinnaird et al., 2003) that have sought to provide DMO project managers with the authority and responsibility required to deliver projects. A central initiative has been the issuing of project charters to properly certified DMO project managers. The certification of project managers together with training and professional development is recognised as a significant step in the professionalisation of project managers.

Leadership of project managers is important to the success of projects and DMO has a leadership framework through which training is delivered. This leadership training should be extended into transformational and emotional intelligence leadership styles. Leadership development could also be improved by using 360 degree performance appraisals which could be incorporated into the individual’s annual performance agreement.

Changes that would support the authority of project managers is:

- Delivery of an ongoing professional development training program for all project managers.
- The delegation of authority to approach the market for low risk short duration tasks.
• Consideration that the DMO human resource delegation to manage and structure the workplace should be delegated where possible to project managers (Defence Materiel Organisation, 2007).
• Establishment of performance appraisal key result areas for the management of people
• Training in the use of the DMOSS panel.
• Support project management charters with authority for management of resources such as delegating line management authority for procurement decisions.
• Ongoing leadership training and appraisals to support transformation and emotional intelligence styles of leadership.

6.8 Discussion

The findings or this research that are suggested to improve LSD people capability and better integrate the skills and expertise of contracts into project teams are summarised below.

Table 6.4 - Framework for change in Land Systems Division

<table>
<thead>
<tr>
<th>Literature Themes</th>
<th>People Capability</th>
<th>Knowledge Management</th>
<th>Strategy, Portfolio and Program Management</th>
<th>Supply chain and procurement</th>
<th>PM Leadership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agenda for Change</td>
<td>Select/assign competent people with governance responsibility</td>
<td>Informal governance practices to support creation and sharing of knowledge. (Pemsel and Müller, 2012)</td>
<td>Establishment of people governance structures that support business goals and objectives</td>
<td>Governance oversight of requirements translation to WBS. Emphasis on people skills and expertise, effort and estimates.</td>
<td>Employee well-being and ethical treatment</td>
</tr>
<tr>
<td>Governance</td>
<td>Establish a people</td>
<td>Development of social</td>
<td>Integrate strategic</td>
<td>Develop the skills and</td>
<td>Project performance</td>
</tr>
<tr>
<td>Maturity Model to Develop Business Competencies</td>
<td>Capital Management of People with Project and Functional Capabilities</td>
<td>Expertise to Manage Supply Chain and Acquire Goods and Services</td>
<td>Appraisals and Support for Career Development</td>
<td></td>
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<tr>
<td>------------------------------------------------</td>
<td>---------------------------------------------------------------</td>
<td>---------------------------------------------------------------</td>
<td>------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workforce Planning</td>
<td>Support the Establishment of Informal Communities of Practice and Networks</td>
<td>Synthesise Skills and Expertise in All Stages of the Project Lifecycle</td>
<td>Improve Work Breakdown Structures and Estimating</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Planning</td>
<td>Support the Establishment of Informal Communities of Practice and Networks</td>
<td>Synthesise Skills and Expertise in All Stages of the Project Lifecycle</td>
<td>Improve Work Breakdown Structures and Estimating</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Empower Project Managers</td>
<td>Synthesise Skills and Expertise in All Stages of the Project Lifecycle</td>
<td>Improve Work Breakdown Structures and Estimating</td>
<td>Integration of the Planning Team</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Certification, Training and Development of Project Managers</td>
<td>Incentivise and Performance Management of Low Risk Contracts</td>
<td>Delegate HR Responsibility and Approval of Low Risk Contracts</td>
<td>Delegate Line Management Authority for Procurement Decisions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collaboration with Suppliers</td>
<td>Transaction Cost Economics Theory Likely to Inform Behaviour and Identify Governance Needs</td>
<td>Use of Partnering and Alliance Based Contracts</td>
<td>The Importance of Trust and Openness in Knowledge Transactions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suppliers Could Complement the Skills and Expertise of the Project Team</td>
<td>Transaction Cost Economics Theory Likely to Inform Behaviour and Identify Governance Needs</td>
<td>Use of Partnering and Alliance Based Contracts</td>
<td>The Importance of Trust and Openness in Knowledge Transactions</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The literature themes identified in chapter three have been considered alongside the identified areas for change. The actions listed in the framework have been validated by three senior executives from DMO and industry and will form the basis of the next round of action research.
Chapter summary

This chapter presents the suggested actions for change to improve LSD people capability. By establishing the people capability context the integration of contractor’s skills and expertise into the project team can be more easily determined. The contribution of contractors to LSD’s business outcomes is part of the total people capability available to LSD’s business which acquires and supports land equipment. Table 6.3 provides a summary of the suggested interventions.

The chapter opened with a discussion of the conceptual model which describes a system that defines and acquires the skills and expertise required by the project team in order to acquire goods and services. All the research participants were interviewed to elicit their views on the gap between the real world situation as described in the rich picture compared with that proposed in the conceptual model. Questions were proposed to the participants that considered each activity in the model.

The summary of answers provided by the participants was analysed in the quantitative software NVIVO. The answers pointed to:

- Shortcomings in LSD strategic capability;
- Authority of project managers;
- The determination of requirements; and
- Collaboration with suppliers.

These findings were then applied to a people management model described in Figure 6.3. The people management model was adapted from a generic model for a classically managed organisation and elements combined from the project oriented company model proposed by Huemann et al. (2007). The people management model provided insights into the people governance arrangements and project manager planning and authority. These aspects were developed further and presented in a summarised form in Table 6.3 as a framework for change.

The framework for change provides a range of initiatives that would improve the ability of LSD to integrate contractors into the project team. These initiative have been validated by three senior executives in DMO and industry to determine the viability and feasibility of the changes. It is beyond the scope of this research to implement these changes although an
assessment of their likely success has been made by the senior DMO and industry executives.
Chapter Seven - Conclusion

7.1 Introduction

The previous chapter discussed the identification and implementation of changes associated with the integration of contractors into the project team. The changes were identified after a discussion with each participant on the conceptual model and its relationship with the perceived problems associated with integrating contractors into project teams in the DMO environment.

As stated at the outset, this research arose from study and reflection of the Doctorate of Project Management coursework. The coursework included knowledge areas such as project management leadership, knowledge management, ethics and procurement and project management practice and research methodologies. From this basis and my previous studies in management and innovation lead to the research topic on the integration of contractors into the project team. The project management theory that supports this topic area can be seen to draw on the literature themes of leadership, knowledge management, people capability, supply chain and procurement and strategy, portfolio and program management. The relevance of this literature is discussed in Chapter Three.

Issues surrounding the effectiveness of contractor engagement were canvassed extensively in understanding the problem situation and the development of the rich picture. The method used to construct the rich picture through unstructured interviews and validation provided a deep and rich source of data. The problem situation was identified as being based in the way the organisations integrated contractors into project teams. The expression of the problem in the rich picture was based on unstructured and in-depth interviews with participants from the acquisition organisation's program management and senior executive areas and also defence industry. Issues that were raised in relation to the acquisition organisation during the interviews were; accountability arrangements, excessive bureaucracy, commercial approach, the workforce mix, competence development, industry capability, requirements determination, risk sharing, performance reporting, professionalisation and value for money. These issues are discussed in depth in Chapter Five through a theoretical lens that analysed the issues. In general these issues can be seen to be human resource based and relate to the organisations people capability.
Following development and validation of the problem situation systems thinking was applied to the conceptualisation of the situation. Definition of the system was undertaken through analysis of the intervention, stakeholders, cultural and political perspectives and a root definition developed in Chapter Five. In Chapter Six a systems level conceptual model was developed based on the root definition and was presented to the participants along with the rich picture. The comparison interview with the participants contrasted the problem situation with the ideal world conceptual model of a system to integration of contractors into the project team.

The discussion proceeding from the comparison interview also canvassed feasible and desirable actions which could be implemented to improve the situation. The outcomes of the discussions lead to an agenda for change that focussed on the organisations strategic people capability, empowerment of project managers, requirements determination and collaboration with suppliers. Using this agenda an organisational model of contractor integration, Figure 6.2, and people management model, Figure 6.3, was developed. This analysis provided insights into the extension of the people capability framework as proposed by Bredin (2008b) for the integration of contractors. The people capability framework assisted in the triangulation of the human resources based models presented in this research. This work was finally brought together in a framework for change, Table 6.3.

This framework linked the change agenda with the relevant literature.

The focus of the study is the mechanisms of people capability in project based organisations. The problem is based in a real world situation so like the messy unstructured nature of these problems there is a range of disciplines that can contribute to a rich understanding of the issues. Broadly, some of these can be seen to be knowledge management, strategy, supply chain and leadership.

The objectives of the research were to:

- Identify and propose how to project performance through the effective integration of contractors in the DMO by the:
  - engagement of a wide range of stakeholders to establish a realistic picture of the current reality;
development of an agenda for change to address the issues
- development of a general model of contractor integration in a PBO; and
- identification of a framework for change in the integration of contractors that will improve the outcomes for the DMO.

- Extend the people capability framework as proposed by Bredin (2008b) to include the integration of contractors.

This chapter will summarise the findings of the research and its applicability to project management body of knowledge and human resource literature.

7.2 Summary of thesis findings

The contribution of this thesis can be seen through a practical research framework (Winter et al., 2006). The thesis has extended of ‘theory about practice’ in the area of human resource management and the project based organisation, proposed a ‘theory for practice’ to integrate contractors into acquisition project teams of complex organisations and ‘theory in practice’ through the application of soft systems methodology to the workplace of a complex acquisition organisation and the learning of participants in that research. A summary of the contributions of this thesis is shown in Table 7.1 below.

Table 7.1 - Summary of research findings

<table>
<thead>
<tr>
<th>Research dimension</th>
<th>Definition</th>
<th>Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory about practice</td>
<td>Theory that helps us to understand practice, albeit from a particular perspective that does not have immediate practical application.</td>
<td>• The extension of the ‘people capability framework’ (Bredin, 2008b) to include the contractors. • Development of a simple model of people management process that considers contractors in project based organisations.</td>
</tr>
<tr>
<td>Theory for practice</td>
<td>Concepts and approaches that do have practical application. Becoming or emerging knowledge reflecting the lived experience of project managers.</td>
<td></td>
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<tr>
<td>--------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• A people management process for integrating contractors into complex organisations.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• The application of knowledge management theory such as absorptive capacity and knowledge sharing in the workplace context.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Theory in practice</th>
<th>How practitioners learn their craft using theory from published literature.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• My experience of using Soft Systems Methodology in the workplace.</td>
</tr>
<tr>
<td></td>
<td>• Workplace as a case study adds to the body of case studies for others to consider.</td>
</tr>
<tr>
<td></td>
<td>• Use of NVIVO to code interviews.</td>
</tr>
<tr>
<td></td>
<td>• Research participant learning as a result of being engaged in the action learning research.</td>
</tr>
</tbody>
</table>

The findings of this research can be categorised using Winter et al. (2006) practical research framework for informing and stimulating future research activity. This praxeological approach (Bredillet, 2013) to project management research aligns with the researcher’s philosophical approach as discussed in Chapter 4. The action research method using the soft systems methodology allowed the workplace based situation to the explored. As a result a number of issues were distilled and related through the lens of current theory to provide a people management process for the integration of contractors into complex organisations.
The thesis initially proposed a number of questions about the integration of contractors into the project team. These questions are seen to be answered through the contribution of the research as outlined in Table 7.1.

The primary question is:

**How effective is the integration of contractor’s skills and expertise as part of the people capability of complex project based organisations?**

The supporting questions that flesh out the main issues and themes of this research are:

- **How effective are the procurement mechanisms in supporting the organisation’s people capability?**
- **How well are people management systems integrated with the organisation’s strategic, functional and project capabilities and facilitated through practices that support knowledge and competence development?**
- **Are there theoretic constructs and management models that can better inform and improve practice in the LSD?**

Each of these questions has been answered through the research and will be discussed in turn.

**How effective is the integration of contractor’s skills and expertise as part of the people capability of complex project based organisations?**

The drivers and barriers to the integration of contractor’s into project teams are identified in the ‘expression’ (Checkland, 1999) of the problem situation. This is step one and two of soft systems methodology. The key issues were; accountability arrangements, excessive bureaucracy, commercial approach, the workforce mix, competence development, industry capability, requirements determination, risk sharing, performance reporting, professionalisation and value for money. These issues are discussed in Chapter Five, traced through the research and summarised in Table 7.2 below. These issues have been viewed against the theories of the standard people management process and people capability framework and provided clarity in the contractor integration model for complex organisations.
The supporting questions that provide specific areas of interest in relation to the primary question are as follows;

**How effective is the contractor engagement transaction in supporting the organisation’s people capability?**

The contractor engagement transaction does not contribute to the organisation’s people capability. The issues associated with the transaction involve the outsourcing of skills and expertise of the project team. The issues align with activities one and two of the contractor integration model as shown in Table 7.2. The principle issues can be seen to be; excessive bureaucracy, commercial approach, competence development, risk sharing, industry capability and value for money. These are summarised in Table 7.2 below. The transaction is based on a standing offer panel is transactional, bureaucratic and poorly developed requirements do not appear to support business like arrangements. Difficulties are noted in the definition of tasks, sharing risk and the long ‘gestation period of an elephant’ time taken to select a successful tenderer. This appears to be accentuated for smaller tasks. These issues lead to an impaired value proposition that leads to sub optimal outcomes for the organisation and industry.

It is suggested that this could be addressed through the development of relational contracting arrangements for larger tasks and standardising smaller tasks and transacting them as a commodity. In addition, providing LSD project managers with the authority to engage contractors for short term low risk tasks, supporting the development of social capital through knowledge transfer, integration and sharing by supporting informal knowledge networks and performance incentives through the performance appraisal process would lead to better outcomes for both parties and achieve more equitable risk sharing, knowledge transfer and value for money outcomes.

**How well are people management systems integrated with the organisation’s strategic, functional and project capabilities and facilitated through practices that support knowledge and competence development?**

The organisation’s people management systems do not appear to be well integrated and this results in poor learning outcomes. The issues associated with learning can be seen to be; competence development, performance reporting and professionalisation. These issues
could be addressed through the improvement of the skills and expertise outsourcing transaction as noted above, improvement in performance appraisals and incentives, broadening the professionalization to include logistic job families.

Organisational learning is noted as key performance driver in project based organisations (Bartsch et al., 2013). The contractor’s role in the organisations could be seen to be transaction based, socially distant from the project team and result in poor learning outcomes from the transaction. The contractual arrangements under which contractors are engaged should be modified to support relationship based arrangements. This should enhance the transfer and integration of knowledge and improve organisational learning.

The process of developing social capital appears to be not well understood by executive and project management staff in LSD. The solution is suggested to be that LSD line management and project leadership should be incentivised through performance appraisals to encourage informal knowledge networks, share risks and resources. This should be supported by senior executive communication, actions and resourcing.

**Are there theoretic constructs and management models that can better inform and improve practice in the LSD?**

There are a number of theoretic constructs and management models that could be applied to improve the current situation. This theory could be categorised as either part of the investigative process or content of the problem situation. The application of soft system methodology and action research to investigate a messy and unstructured workplace situation is an important mechanism to improve practice.

Human resource literature provides a range of theory to view the problem situation. People capability framework and Quadraid (Bredin, 2008b; Bredin and Söderlund, 2011) provide insights into the issues with organisational capability. People management process theory provides a basic view of mature functional and project managed organisations. Supporting theories such as social capital, governance of knowledge, transaction cost economics, trust, capability and resource based views of firms all provide a basis for understanding practice and are covered in more detail in Chapter Three.
In addition, to the existing theory identified above this research has developed the people capability framework and people management process. Also, a model for the integration of contractors into project based organisations has been developed.

In summary, the research questions have been adequately addressed through the SSM process, providing an in depth and rich perspective of the integration of the contractor’s skills and expertise in the project based organisation.

7.2.1 Discussion

The research has refined the people management model in Figure 6.3 and developed a model for integrating contractors into the project team in LSD in Figure 6.2 that are based on theories of human resource management in project based organisations, knowledge management and learning, governance of PBO and knowledge, strategy portfolio and program management, project management leadership and supply chain and procurement.

An outcome of the research is the development of a people model for contractor integration as theory for practice as outlined in Figure 6.2. This model is based on a range of theories principally but not exclusively in human resource and knowledge management. The model provides an approach of ‘theory for practice’ as espoused by Winter et al. (2006) in that the model provides a concept and approach that has practical application.

The research journey that has been guided by the use of SSM (Checkland, 1999 p.16) has without distorting the problem into a preconceived or standard form provided a learning experience and outcomes that were not understood at the beginning of the journey. The use of the methodology and learning that has taken place is part of the process is categorised as theory as practice. During stage four of the SSM process when developing the conceptual model, Figure 6.1, it was discovered that the integration of contractors could not be considered in isolation to the organisations broader people management processes. Indeed the organisations people capability appeared to be very dependent on and could be improved by the provision of contractor’s skills and expertise. So the acquisition of skills and expertise for the project team was seen from a holistic perspective using both external and internal sources. The process of developing the conceptual model was based on Checkland and Poulter (2006) p.38-48 guide on making purposeful activity models.
Figure 6.3 develops the HRM practices and processes as presented by Huemann et al. (2007) and Robbins et al., 1994). The research has pointed to the significance of the strategic workforce planning process that sets the goals and objectives as part of the business planning process and develops a workforce plan that determines the mix and skills and expertise required to support the business’ strategic objectives. The strategic capability is defined as the ‘ability to identify, create and exploit business opportunities and leave declining areas more quickly than competitors’ (Bredin, 2008b p.569). In terms of the defence acquisition organisation it can be seen to be the ability to deliver on the future program of work which is defined in the Defence Capital Program. Either way the strategic planning activity should be undertaken so the organisation can source or develop the skills and expertise for the future business.

The research has produced a range of outcomes for theory and practice based on a qualitative problem structuring method. These outcomes were developed through theoretic lens.

7.2.2 Mapping theory to the contractor integration model
The relationships between the contractor integration model, problem situation theme, relevant theory, the dimensions of people capability model and the SSM conceptual model is outlined in Table 7.2 below.
### Table 7.2 – Contractor integration model matrix

<table>
<thead>
<tr>
<th>Activity (Figure 6.2)</th>
<th>Description</th>
<th>Problem situation theme</th>
<th>Theory</th>
<th>People capability dimension (Figure 6.4)</th>
<th>Conceptual model (Figure 6.1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 and 2</td>
<td>Outsourcing to an external market governed by terms and conditions</td>
<td>Excessive bureaucracy</td>
<td>Managing temporary workers (Koene and van Riemsdijk, 2005)</td>
<td>Project and Functional interface</td>
<td>Activity 2 - Appreciate external market</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Commercial approach</td>
<td>Contractual and Relational capabilities (Hartmann et al., 2010), Formal and relational contracting (Carson et al., 2006)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Competence development</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Risk sharing</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Industry capability</td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td>Requirements determination</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Value for money</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 and 4</td>
<td>Insourcing to develop competence and career management</td>
<td>Workforce mix</td>
<td>Career choices (Bredin and Söderlund, 2012)</td>
<td>Project and Functional interface</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Competence development</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Professionalisation</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

268
<table>
<thead>
<tr>
<th>Activity (Figure 6.2)</th>
<th>Description</th>
<th>Problem situation theme</th>
<th>Theory</th>
<th>People capability dimension (Figure 6.4)</th>
<th>Conceptual model (Figure 6.1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>The make or buy decision</td>
<td>Accountability Commercial approach Value for money</td>
<td>Transaction Cost Economics (Williamson, 1991), Procurement choice (Walker and Rowlinson, 2008)</td>
<td>Strategy</td>
<td>Activity 3 – Define project people competencies</td>
</tr>
<tr>
<td>6</td>
<td>Definition and management of the required capability</td>
<td>Accountability Requirements determination Risk sharing</td>
<td>The theory of the new nature and essence of the firm. (Pitelis and Teece, 2009), Organisational capabilities in learning in complex product systems. (Davies and Brady, 2000)</td>
<td>Strategy</td>
<td>Activity 1 – Appreciate capability and project needs Activity 2 – Appreciate external market Activity 5 - Appreciate with sponsors relevant equipment solutions, technologies and PM.</td>
</tr>
<tr>
<td>7</td>
<td>Assembling the people capability</td>
<td>Accountability Excessive bureaucracy</td>
<td>People capability framework (Bredin, Integrated capability model)</td>
<td>Activity 4 – Acquire skills and expertise</td>
<td></td>
</tr>
<tr>
<td>Activity (Figure 6.2)</td>
<td>Description</td>
<td>Problem situation theme</td>
<td>Theory</td>
<td>People capability dimension (Figure 6.4)</td>
<td>Conceptual model (Figure 6.1)</td>
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<td>1</td>
<td>with right competence, skills and motivation</td>
<td>Commercial approach Competence development Industry capability Risk sharing Performance reporting Professionalisation</td>
<td>2008b) Developing project competence in cooperation with others (Söderlund et al., 2008)</td>
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<td>8</td>
<td>Workplace environment and culture</td>
<td>Accountability Excessive bureaucracy Commercial approach Competence development Industry capability Risk sharing Performance reporting Professionalisation Value for money</td>
<td>Trust inter org projects (Maurer, 2010) , Reputation - (Grabher, 2002)</td>
<td>Project</td>
<td>All activities</td>
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<tr>
<td>Activity (Figure 6.2)</td>
<td>Description</td>
<td>Problem situation theme</td>
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<td>9</td>
<td>Delivering the project. Leadership, learning and performance</td>
<td>Accountability Excessive bureaucracy Commercial approach Competence development Industry capability Risk sharing Performance reporting Professionalisation Value for money</td>
<td>Project learning and social capital (Bartsch et al., 2013), Developing project competence (Söderlund et al., 2008)</td>
<td>Integrated capability model</td>
<td>Activity 5 – Appreciate with sponsors relevant equipment solutions, technologies and PM. Activity 6 - Define project requirements, boundaries and competencies. Activity 7 – Acquire and support equipment in a timely manner achieving value for money.</td>
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<td>Activity (Figure 6.2)</td>
<td>Description</td>
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<td>People capability dimension (Figure 6.4)</td>
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</table>
| 11                    | LSD people planning model | Accountability  
Commercial approach  
Competence development  
Industry capability  
Risk sharing  
Performance reporting  
Professionalisation  
Value for money | Quadraid structure  
(Bredin and Söderlund, 2011), HR Management Model (Huemann et al., 2007) | Integrated capability model | Activity 6 – Define project requirements, boundaries and competencies. |
| 12                    | Governance environment | Accountability  
Excessive bureaucracy  
Commercial approach  
Competence development  
Industry capability  
Risk sharing  
Performance reporting | Governance of knowledge  
(Pemsel and Müller, 2012) | Strategic | All activities |
<table>
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<th>Activity (Figure 6.2)</th>
<th>Description</th>
<th>Problem situation theme</th>
<th>Theory</th>
<th>People capability dimension (Figure 6.4)</th>
<th>Conceptual model (Figure 6.1)</th>
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<td></td>
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<td>Professionalisation</td>
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<td>Value for money</td>
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</table>
The table above links the contractor integration model to the problem situation themes and theory. The first two columns describe the activities in the contractor integration model shown in Figure 6.2 and described in Section 6.5.

Column three aligns the problem situation themes with the contractor integration model and the theoretic basis. Activity one and two is described as ‘outsourcing to an external market governed by terms and conditions’ is excessive bureaucracy. Excessive bureaucracy is evidenced by the internal organisational process to gain approval and solicit contractors. The excessive bureaucracy is exacerbated for shorter term commodity based tasks which follow a similar process as larger tasks. The other themes that can be seen to be associated with these activities are commercial approach, competence development, risk sharing, industry capability, requirements determination and value for money. These themes are discussed in depth in Chapter 5.3.4.

Theory is related to the activities of the contractor integration model in column four. These theories provide the lens through which the problem situation is viewed. For instance, activity one and two described as ‘outsourcing to an external market governed by terms and conditions’ can be seen to be related to the theories of management of temporary workers (Koene and van Riemsdijk, 2005) and learning through contractual and relational capabilities (Hartmann et al., 2010). These are not the only theories relating to these activities but are perhaps indicative of some of the more recent thinking in this field.

The people capability framework (Bredin, 2008b) provides a view into the problem situation. The people capability elements; strategic, functional and project are related to the integration of contractors model. This can also be compared with the people management process in Figure 6.3. For instance, activity one and two is described as ‘outsourcing to an external market governed by terms and conditions’ and can be seen to be related to the functional and project interface of the people capability model. This activity is related to the functional and project capability in the way it supports the ‘integration of resource allocation and the creating of effective teams’ (Bredin, 2008b p.573). This is extended in the conceptual framework of contractor integration in Figure 6.4 through the activity of ‘identification of competence shortfalls and sourcing of the skills and expertise’.
Column six provides traceability between the contractor integration model in Figure 6.4 with the conceptual model presented in Figure 6.1. The conceptual model is a ‘systemic account of a human activity system’ and ‘should have the minimum activities required to support the root definition’ (Checkland, 1999). The conceptual model is compared with the problem situation in Chapter Five to identify the gap between reality and the conceptual model. This provides the basis of action in the application of SSM.

Table 7.2 traces the contractor integration model from the problem situation themes as seen through existing theory. Providing this support to the contractor integration model actions arising from the model can now be discussed.

7.2.3 Summary of findings

The significant findings of the research in relation to the model for contractor integration into the project team can be seen to be summarised as follows:

- The importance of the make or buy decision in terms of the delivery of project work packages. The decision to in-source or out-source particular project work packages is ad hoc and not structured in terms of the corporate goals and objectives based on the skills and expertise needed to support a particular organisational core competence. It is stated that DMO seeks to be ‘the premier program management and engineering organisation in Australia’. This vision should be supported by a defined level of skills and expertise and people capability in the organisation.

- The relationship with contractor’s that is reflected in transactional contractual arrangements. Relationship based procurement choices such as partnering or alliances should provide better outcomes from an organisational learning and project delivery perspective. The current arrangements are bureaucratic, have increased transaction costs and slow and were identified during the research to contribute to sub optimal outcomes.

- The ad hoc nature of the management of the in-house asset. People management appears to be reactive and driven by crisis management (Charlie). Only when things go wrong is the management of people reviewed. The in-house people asset in particular the APS staff should be managed more closely using the model of people management suggested in Figure 6.3.
• The transfer of project staff once a project is complete. The transitioning of project staff on completion of a project is part of the broader people management issue mentioned in the above point. The transition of staff should be more closely managed to provide and ongoing development of project capability.

• The importance of planning and estimating to the success of the project. Whole of life project planning and estimating is evidenced in the research to be poorly executed and this can be seen to result in sub optimal project outcomes. Oversight and supervision of realistic and full resourced work breakdown structures often fails in the planning and estimation of the skills and expertise required to deliver projects. Part of this issue is the cumbersome scheduling tool that does not provide an effective way of planning and review of workforce requirements.

• The importance of workforce planning to parallel project life cycle from definition through to sustainment. Building on the previous point workforce planning at the strategic level should be rigorously pursued from project conception through to equipment disposal.

• The competence of the project staff being related to the projects ability to manage risk. The importance in having the right skills and expertise in a project is highlighted by the projects ability to manage risk. Insufficient skills and expertise is noted as a significant factor in the failure of projects.

• The importance of reward and incentives to motivation and development of the organisational culture. The creation, sharing, integration and use of knowledge and other aspects of the projects resources should be supported by appropriate rewards and incentives.

• The importance of performance appraisals to learning and workforce planning. Honest and targeted performance appraisals which are focussed on the development of intellectual capital is important to the achievement of project outcomes.
• The importance of a people management structure and process that supports workforce planning and considers collaboration with contractors as an essential part of the organisation’s capability.

• The corporate and knowledge governance arrangements. Managing the knowledge or intellectual capital assets of the organisation needs to be an integrated part of all the organisation’s corporate governance systems.

• The collaboration with contractors to provide organisational learning and developing the dynamic capabilities of LSD. Relationship-oriented procurement choices develop trust and commitment and can provide superior intangible outcomes such as team relationships, knowledge transfer, improved decision making and waste reductions (Walker and Rowlinson, 2008 p.396).

The findings summarised above support theory for practice in the development of a model for contractor integration into the project team.

7.3 Significance of the research

There appears to be two aspects of the research that are significant or original in the project management body of knowledge. The first significant contribution is the development of a model of contractor integration into the project team from existing theory. The model provides a ‘theory for practice’ model that should when implemented improve the problem situation surrounding the engagement of contractors in LSD. The human resource areas appear to have been under researched particularly in relation to the impacts of temporary organisations (Huemann et al., 2007) and knowledge governance in these types of organisations. The problem area which is embedded in human resources and knowledge management could be seen to be part of the stream that Winter et al. (2006) sees as being projects as social processes. This area is specifically rich in social process as it relates to people capability, learning and social capital.

The second is the application of SSM process to this problem. The iterative nature of the action learning process that has involved the researcher as a stakeholder, validating conclusions and engaging with participants in depth has provided a rich learning environment. This second area of suggested significance is an area that Winter et al. (2006)
categorises as ‘theory in practice’ and provides an insight into how practitioners learn and practice their craft using the soft systems and action learning approach.

The net effect of the combination of social process theory for practice model of contractor integration into the project team and the theory in practice use of soft systems methods is to better understand how knowledge is developed in project based organisations. The meshing of contractor knowledge and skills into the project team through understanding the organisations and projects priorities and using relationship oriented procurement arrangements provides a rich approach to the development of LSD people capacity. Of particular significance is the analysis of the front end of the HR process by developing a model to assist in the make or buy decision making process that considers the needs of the broader organisation through the workforce planning process, the relationship focussed terms and conditions of the contractor’s engagement overlaid by the consideration of knowledge governance that is integrated into the corporate governance system. In this way the messy social problems of the ‘swampy lowlands’ of the practitioner’s world is suggested to be turned into the higher ground of research theory and technique in the development of a model that can guide practice in this situation.

While the significance of the research should not be overstated the limitations of the study’s scope and scale should be recognised in order to place the value of the outcomes in context.

7.4 Limitations of the study’s scope and scale

The limitations of the study’s scope and scale should be understood as these might provide an indicator of opportunities for future research. As the study is based on a single division of a large public sector company that operates in a specific industry it might be useful to explore how the findings are applicable to other parts of the organisation, firms from Australian Defence industry and more generally Australian private and public sector project based organisations.

It is recognised that HRM has not been widely studied in the temporary and project oriented firms (Huemann et al., 2007) the body of knowledge is growing. While this study has attempted to address the issues associated with the integration of contractors into the project teams it has not addressed the broader HRM issues of ethical treatment of contractors and the leadership aspects of team integration.
In addition, it has not been possible within the scope of this research to fully address HRM issues surrounding project success. The model of contractor integration into the project team could be extended into the consideration of project success and the practical measures that could be used to validate the model. Therefore, further quantitative research into the relationship between the people capability ‘make or buy decision’ and project success could assist in the further development of model as a theory for practice contribution to project management body of knowledge.

In addition, the research methodology while based firmly on the SSM method as espoused by Checkland (1999) the researcher can also be an issue owner. So as the researcher investigating a problematical situation associated with my work I need to separate my roles. The positive aspect is that I understand much of the problem context, the culture of the organisation and have insights that an independent observer would not recognise. The downside is that the research could be biased toward my views. In laying out the case for SSM as a valid problem structuring method (Mingers and Rosenhead, 2004) Checkland and Poulter (2006) p.30-31 describe two ways of applying SSM as either in the form of ‘c’ for content or ‘p’ for process. ‘c’ is the problematic content of the situation where the researcher could be a stakeholder and ‘p’ is the purposeful activity of doing the study and this is associated with the practitioner’s role. This aspect is acknowledged by Checkland (1999) and is in part dealt with by the researcher acknowledging their worldview and philosophy of the validity of truth.

7.5 Suggested research

This research into the integration of contractors into the project team has been framed in the literature with strong links in people management or HRM and knowledge management. HRM is noted by Huemann et al. (2007) as being ‘strongly framed in terms of the problems of large, stable organisations’ rather than the temporary organisation which combine human, material and financial resources in a novel way (Turner and Müller, 2003). Nevertheless, there appears to be an increasing awareness of HRM and its application to the temporary and dynamic nature of project based working. This is evidenced in the work of (Bredin, 2008b, Bredin and Söderlund, 2011). So the research chasm that this thesis has attempted to shine some light is in the literature stream that considers links and impacts between people management and knowledge management in temporary organisations.
This research has indicated that there is much more ore to be mined in an empirical and conceptual sense in relation to people management and capability in project based organisations. Temporary organisational forms create their own challenges for the management of people as a primary knowledge asset of the firm. In particular, the tacitness and public goods nature of knowledge is better managed in the cohesive structure of an organisation (Pitelis and Teece, 2009) where the transaction costs are lower and value can be captured. The challenge for organisations is to create, share, and integrate knowledge from internal and external sources in order to continue to capture value through such structures as the temporary organisational form of the project.

It is suggested that the governance of knowledge or intellectual capital in the support of creating, integrating and sharing knowledge available to the organisation is a valuable theme. Researchers in this area include Pemsel and Müller (2012), Antonelli (2006), Grabher (2004) and (Keenan and Aggestam, 2001) and this provides a rich source of theory for practice.

Therefore it is suggested that future research efforts could concentrate on transferring the insights gained in the model of contractor integration into the project team more broadly into the project based organisations in other industries and public sector organisations. This research has indicated that the action identified would lead to an improvement in the problem of integrating contractors into project teams. The model could be extended in the following areas to make it more useful as test bed for the development of a dynamic people capability and to inform workforce planning policy and practice:

- The extension of the contractor integration model in the application of knowledge governance concepts such as that suggested by Keenan and Aggestam (2001).

- The extension of the contractor integration model to operational areas such as the sustainment of vehicle fleets as part of the materiel life cycle. Perhaps combining the work done by Turner and Keegan (2000) in operations management of the ‘large projects – few customers’ model.

- Perhaps one of the most challenging parts of the acquisition project life cycle is project closure where the projects activities and resources are transitioned from the project structure. The transition arrangements usually include the transfer of all the
project’s tangible and intangible resources into the through life support domain where the equipment is operated or they are reassigned to other projects. The transition arrangements crystallise the project’s value creation and this should lead to a recombination and integration of this these co-specialised and complementary assets to continue the value creating activities of the firm.

- This research has proposed that performance appraisals, incentives and senior executive interventions could be used to support the sharing of resources and knowledge process in LSD. The view that mechanisms for sharing and resolving resource issues are seldom in place is supported by Turner and Müller (2003) p.4. Further research could consider the effectiveness and utility of incentives in the public sector environment to encourage resource sharing.

Another gap in the research which has gained some interest is the professional development and ethical treatment of contractors. This has been researched previously by Ng (2012) who explored in part the professional development of contingent workers in information technology organisations.

There appears to be a number of gaps in existing research surrounding people capability and knowledge in temporary organisations. Themes associated with knowledge governance, the application of contractors in operations of project based organisations, transition arrangements between projects, performance appraisals and incentives to support resource sharing. This provides a broad source of topics for further research and opportunities to develop the contractor integration model.

7.6 Recommendation to aid entities considering this approach

The use of an action research SSM has proven to be an effective way of engaging the problem owners and determining a way forward. It offers practical insights into the nature and solutions to the problem situation and contributes to knowledge about theory for practice.

Researchers considering using SSM should perhaps understand the capacities of the NVIVO qualitative data analysis software. The software is able to analyse large amounts of qualitative data sources through researcher input or drawn from social networking and
internet sources. The analysis and presentation capacity of the software was found to be very useful in providing rigorous data.

Also, as the data source is relatively small but of high quality it is useful to engage the voluntary research participants in a meaningful way. The intensity and frequency of the meetings and ongoing nature of the relationship between the researcher and participants requires that the participant value proposition is clearly delineated and understood from the start. This will ensure the ongoing support of the participants over frequent encounters and the high quality of the research result.

The combination of SSM supported by the use of NVIVO qualitative data analysis software has proved to be an effective action research method. Further development of this approach in theory for practice applications is recommended.

**7.7 Chapter summary**

It is perhaps useful in concluding this thesis to restate the assumptions underpinning this research. The significant assumptions are:

1. That projects are change actions that improve a situation. Projects operate in a socially complex environment and change that is planned through project is inherently beneficial.

2. It is also useful to provide a definition of a project to highlight the key features of projects as: ‘an endeavour in which human, material, and financial resources are organised in a novel way, to undertake a unique scope of work, of given specification, within the constraints of cost and time, so as to achieve beneficial change...’ (Turner and Müller, 2003). This definition amongst other features highlights to resource based view of the firm.

3. Action research is an appropriate methodology to investigate ‘your own problems’ and the use of frameworks such as SSM and systems thinking is a valid way of achieving this outcome. As Reason and Torbet state (in Coghlan and Brannick, 2005) ‘the epistemological assumption is that the purpose of academic research and discourse is not just to describe, understand and explain the world but also to change it’.
4. Firms including public sector organisations like LSD are viewed as capability based and therefore the importance of creating and capturing value is foremost. The capability based view incorporates the theory of transaction cost economics and importantly the transaction cost reducing properties and implications for governance (Pitelis and Teece, 2009).

People’s frustrations can provide the requisite irritant, somewhat like grit in an oyster that causes the growth of a pearl, to provide a rich source of research. So it has been in this research into the integration of contractor’s skills and expertise into the project team. Some of the frustrations were the bureaucratic and time consuming nature of the contractor engagement process in LSD, the transactional procurement choice, knowledge not being managed or valued and varying outcomes to the value proposition. These frustrations and the broader context in which the problem was characterised, as expressed in the rich picture, lead to a number of research questions that sought to address the organisations value proposition regarding the integration of contractors into LSD project teams. Important themes that were captured in the research questions related to the organisation being more business-like and accountable, the creation, sharing, integration of knowledge and best practice.

Broadly these questions have been answered in the course of the research. The research lead to the development of two models; one an enhancement of the conceptual people management process in figure 6.3 and the other a model for integration of contractors into the project team shown in figure 6.2. The key findings which inform theory for practice are:

- The importance of the make or buy decision in the development in-house of people capability or the outsourcing of these skills and expertise.

- Relationship based procurement choices such as partnering or alliances should provide better outcomes from an organisational learning and project delivery perspective.

- People management appears to be reactive and driven by crisis management. The in-house people asset in particular the APS staff should be managed more closely using the model of people management suggested in figure 6.3.
• The transitioning of project staff on completion of a project is part of the broader people management issue mentioned in the above point. The transition of staff should be more closely managed to provide and ongoing development of project capability.

• The importance of planning and estimating to the success of the project.

• The importance of workforce planning to parallel project life cycle from definition through to sustainment.

• The competence of the project staff being related to the projects ability to manage risk.

• The importance of reward and incentives to motivation and development of the organisational culture.

• The importance of performance appraisals to learning and workforce planning.

• The importance of a people management structure and process that supports workforce planning and considers collaboration with contractors as an essential part of the organisations capability.

• Managing the knowledge or intellectual capital assets of the organisation needs to be an integrated part of all the organisations corporate governance systems.

There appears to opportunities to undertake research around the topic of people capability and knowledge in temporary organisations. Themes associated with knowledge governance, the application of contractors in operations of project based organisations, transition arrangements between projects, performance appraisals and incentives to support resource sharing. This provides a broad source of topics for further research and opportunities to develop the contractor integration model.

The combination of SSM supported by the use of NVIVO qualitative data analysis software has proved to be an effective action research method. Further development of this approach in theory for practice applications is recommended.
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## Appendix A – Glossary of Abbreviations

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<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>ADF</td>
<td>Australian Defence Force</td>
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<td>ADO</td>
<td>Australian Defence Organisation</td>
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<td>APS</td>
<td>Australian Public Service</td>
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<td>ASDEFCON</td>
<td>Australian Standard for Defence Contracting</td>
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<tr>
<td>CATWOE</td>
<td>Customers, Actors, Transformation, Worldview, Owners, Environment</td>
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<tr>
<td>CDF</td>
<td>Chief of the Defence Force</td>
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<td>CEO DMO</td>
<td>Chief Executive Officer of the Defence Material Organisation</td>
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<td>COTS</td>
<td>Commercial Off the Shelf</td>
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<td>CPR</td>
<td>Commonwealth Procurement Rules</td>
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<td>DOD</td>
<td>Department of Defence</td>
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<td>DMO</td>
<td>Defence Materiel Organisation</td>
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<td>DMOSS</td>
<td>DMO Support Services</td>
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<td>DPM</td>
<td>Doctorate of Project Management</td>
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<td>DPPM</td>
<td>Defence Procurement Policy Manual</td>
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<td>DSTO</td>
<td>Defence Science and Technology Organisation</td>
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<td>FTE</td>
<td>Full Time Entitlement</td>
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<td>HR</td>
<td>Human Resources</td>
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<td>IPT</td>
<td>Integrated Project Team</td>
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<td>LSD</td>
<td>Land Systems Division of DMO</td>
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<td>MAA</td>
<td>Materiel Acquisition Agreement</td>
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<td>MNC</td>
<td>Multi National Corporation</td>
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<td>MOTS</td>
<td>Military Off the Shelf</td>
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<td>MSA</td>
<td>Materiel Sustainment Agreement</td>
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<tr>
<td>OPP</td>
<td>Open Plan Professional</td>
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<tr>
<td>OTS</td>
<td>Off the Shelf</td>
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<td>PMBOK</td>
<td>Project Management Body of Knowledge</td>
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<td>PMSG</td>
<td>Project Management Stakeholder Group</td>
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<td>PSP</td>
<td>Professional Service Provider</td>
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<td>RFQ</td>
<td>Request for Quote</td>
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<td>Acronym</td>
<td>Definition</td>
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<td>RP</td>
<td>Rich Picture</td>
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<td>SME</td>
<td>Small to Medium Enterprise</td>
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<td>SPO</td>
<td>DMO System Programme Office</td>
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<td>SSM</td>
<td>Soft Systems Methodology</td>
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<tr>
<td>TPBO</td>
<td>Temporary Project Based Organisation</td>
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</table>
Appendix B – Glossary of Terms

**Australianisation**
Goods that are purchased from an OEM that are modified usually by the OEM to meet Australian requirements.

**Capability development**
Those activities involved in defining requirements for future capability, principally during the Requirements Phase of the capability systems life cycle.

**Capability Development Group (CDG)**
CDG has the responsibility for taking capability proposals from initial Government consideration and financial endorsement to final approval by Government. CDG has a close relationship with DMO and oversights a number of the Defence Procurement Review recommendations.

**Commercial-off-the-shelf**
Goods or services that are immediately available in the market place.

**Contractor**
An organisation or an individual engaged by the DMO to provide services. This includes people who could be classified as consultants, eminent persons or an outsourced service.

**Cost of ownership**
Is the sum of the acquisition, support, upgrade and disposal costs.

**Defence White Paper**
Outlines Government’s decisions about Australia’s strategic policy for the next decade. It provides a plan for the development of Australia’s armed forces, with a commitment to provide the funds required. Defence White Papers have been issued in 1994, 2000 and 2009.

**Efficiency and Effectiveness**
Efficiency and Effectiveness requires openness in the procurement process, encouragement of effective competition through procurement methods suited to market circumstances, and a framework of procurement laws, policies and practices that is transparent and available to the public.

**Emerging project teams (EPTs)**
Teams linked to the major DMO divisions to provide improved teaming arrangements between DMO specialist skills and CDG professional mastery skills for all pre-First Pass projects.

**Full Time Entitlement**
A management term used to describe the equivalent of a full time APS position allocated to an APS organisation.

**Gate Review**
A structured governance review managed by DMO Corporate as an internal project review process undertaken at prescribed points in the acquisition project life cycle.
**Integrated Project Team (IPT)**

A cross-function group of people with project-related skill sets, who are responsible for managing a capability proposal from First Pass approval to Second Pass approval. The IPT is led by the CS Div Desk Officer assigned to the project.

**Materiel Acquisition Agreement (MAA)**

An agreement between the CM, CDG and DMO that states in concise terms what services and products the DMO (as supplier) will deliver to Defence, for how much and when.

**NVIVO 10**

Qualitative research data collection, analysis and codification software, version 10

**Off-the-shelf**

Hardware or software that already exists, is in service with one or more other customers for an equivalent purpose and requires no, or minimal, change. Sometimes expressed as COTS (commercial off-the-shelf) or MOTS (military off-the-shelf).

**Outsourced service**

A contract delivering specific services or supplies usually against predefined milestones and deliverable requirements. The provider of the outsourced service is not subject to direct management by the DMO such as a contractor who might undertake agency roles and are engaged as an alternative to normal APS resources under a labour hire agreement for specific personnel remunerated at hourly or daily rates.

**Project Management Stakeholder Group (PMSG)**

The role of the PMSG post project approval is to provide a formal means to obtain stakeholder involvement and commitment in the planning and execution of a DMO Acquisition Project and to align stakeholder expectations. The PMSG is an advisory body only and is not authorised to make any changes to the Acquisition Business Case or MAA baselines, or empowered to grant or exercise any delegations. The PMSG is a mechanism to provide feedback on project performance to project stakeholders, DMO Line Management, dependent projects, the Capability Development Group and Army.

**Requests for Proposal (RFP)**

A formal invitation seeking industry interest, used to encourage the offer of innovative solutions and indicative costs to meet desired outcomes in a broadly based project proposal. A Request for Proposal seeks information on potential suppliers and their capabilities or capacities to ascertain what solution exists to meet problems or needs.

**Request for Tender (RFT)**

An invitation to suppliers who satisfy the conditions of participation to submit a tender in accordance with the RFT documentation.

**Small to Medium Enterprises (SMEs)**

A SME is an Australian or New Zealand firm with fewer than 200 full time equivalent employees.
Standing Offer

Is not a contract but a continuing offer by a supplier for a pre-determined length of time, usually at a pre-determined price. Standing Offers are used to enable Defence to buy goods and services over a specific period on set terms. However each time Defence uses the Standing Offer to order goods or services a discrete contract arises.

Statement of Work (SOW)

A Statement of Work forms part of a contract, and is a statement of the requirement to be delivered under the contract.

Tender

A submission from a Tenderer making an offer to perform a procurement in response to the release of request documentation in the form of a Request for Information; Invitation to Register Interest; Request for Proposal; Project Definition Study; and/or Request for Tender.

Tender Evaluation Plan

Records the method by which tenders for a requirement will be evaluated, including the evaluation criteria and the relevant probity requirements.

Value For Money

A procurement concept which requires objective consideration of all factors contributing to the utility, usability and usefulness of items offered for sale as inputs to a procurement decision, rather than automatic choice of the suitable item having the lowest purchase price.

Workforce Plan

A mandated analysis of the total workforce required to support the development, implementation and sustainment of a capability. It examines and plans how the Defence workforce will get from where it is now to where it needs to be in the future. It describes in detail the existing, transition and future workforce required in terms of workforce mix, numbers, training and skills, ranks and levels, and locations. It explains workforce supply and demand factors, and examines high value employment categories, structural sustainability, skills and training requirements, scheduling, workforce studies and costs and identifies risks and mitigation strategies. A mandated outcome of the Workforce Plan is the Workforce Estimate. The Workforce Plan is a key supporting document, on which the independent DEPSEC PSP Workforce Risk Assessment is based.
Appendix C - DMO Strategic Framework 2013 to 2015

Purpose of the DMO Strategic Framework
The Defence Materiel Organisation 2013-2015 Strategic Framework (DMO Strategic Framework) is our high level plan to describe what we do, what we are aiming to achieve and how we will achieve our goals. The DMO Strategic Framework sets out our direction for the next three years, and will align us in our day to day operations.

Our Purpose
The DMO exists to equip and sustain Defence’s materiel capabilities to meet Australia’s needs in an effective, efficient, economical and safe manner.

Our Vision
To be recognised and respected as a global leader in defence materiel solutions.

Who we are accountable to
We are accountable to:

• The Australian Government.
• Secretary of Defence and Chief of the Defence Force.
• Capability Managers and Capability Development Group.
• The Women and Men of the Australian Defence Force.
• Defence industry in Australia.
• International partners.
• The Australian public.
• Each other.

Our Goals
Over the next three years we will deliver defence sustainment and acquisition capability to achieve our vision. We will do this by:

• Providing sound, timely, respected and independent advice
• Delivering government approved sustainment and acquisition outcomes
• Improving our understanding of Defence’s required outcomes and providing cost-effective materiel options to meet those outcomes
• Improving the transparency of our business
• Building stronger and more trusted partnerships
• Maintaining a balanced and flexible organisation with strong governance to support the performance of the DMO
• Building a capable workforce with a strong safety and performance culture to support our core functions
• Improving and leveraging our relationships with suppliers
• Building stronger links to create future capability solutions and managed technology

**Our Core Functions**

To support our core business of sustainment and acquisition, the functions we perform are:

1. Procurement.
2. Financial Management.
3. Project and Sustainment Management.
5. Materiel Logistics.

**Our Values**

We will align ourselves to the Defence values of:

• Professionalism.
• Loyalty.
• Integrity.
• Courage.
• Innovation.
• Teamwork.

**Our Behaviours**

To enable us to deliver our vision, we will operate in accordance with the following key themes:

1. **Outcome focussed**: Understand and respond to Defence’s needs to deliver approved outcomes on time and on budget.

2. **Cost self awareness**: Understand the true cost of doing business, including the impact of delays on Defence.

3. **Managed urgency**: Be more driven and agile in our approach and delivery, of new capabilities and sustainment of existing capabilities, to meet Defence’s needs.

4. **Personal accountability**: Take personal accountability to deliver the outcomes required, including providing comprehensive, timely and accurate advice and information to those we are accountable to.

5. **Business acumen**: Understand industry’s motivations to ensure we work cooperatively to deliver successful value for money outcomes for Government.
6. **People management**: Improve our organisational capability by:
   - Developing our people,
   - planning for the future,
   - creating a flexible and agile workforce,
   - attracting and retaining the right skills,
   - strengthened robust performance management,
   - evolving our culture to align to the Pathway to Change.

7. **Organisational effectiveness**: Strengthen our governance to enhance organisational effectiveness.

8. **Simplify processes**: Rationalise, standardise and simplify processes to improve our ability to achieve outcomes.

9. **Building industry capability**: Develop and implement strategies that contribute to building an industry that will enable a capable Defence Force.
Appendix D1 – RMIT ethics approval of a project involving human participants

The original human research ethics approval for this research was provided in August 2009. This approval document is attached below as Appendix D1.

The human research ethics approval letter from the DSC Human Research Ethics Sub Committee is attached as Appendix D2.

The period of the human research ethics approval was extended in May 12 by the RMIT Design and Social Context College Human Ethics Advisory Network (CHEAN) until 31 December 13. This approval is attached as Appendix D3.
Application for Ethics Approval of a Project Involving Human Participants

No handwritten applications can be accepted. This form is available from: http://www.rmit.edu.au/rd/hrec

Section A: Approvals and Declarations

**Project Title:** The integration of contractors into the project team as a key to project success: A general model of knowledge development and transaction costs in project complexity.

<table>
<thead>
<tr>
<th>Research Degree</th>
<th>Staff Research Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete this column if you are undertaking research for a research degree at RMIT or another university (Masters by Research/PhD)</td>
<td>Complete this column if your research is not for any degree.</td>
</tr>
</tbody>
</table>

**Investigator**
- Name: David Joseph Taylor
  *(family name to be underlined)*
- Student No: S3159582
- Qualifications: B Prof Studies, M Enterprise and Innovation, M Mngt Studies
- School: School of Property, Construction and Project Management
- Address: PO Box 167 Sandringham 3191
- Phone: 03 9533 4191
- Email: davejtaylor@optusnet.com.au

**Degree for which Research is being undertaken:** Doctorate of Project Management

**Senior Supervisor**
- Name: Derek Walker
- Qualifications: PhD, MSc, Grad Dip (Mgt Sys)
- School: School of Property, Construction and Project Management
- Phone: +613 9925 3908
- Email: derek.walker@rmit.edu.au

**Principal investigator**
- Name:
- Qualifications:
- School:
- Phone:
- Email:

**Other investigator/s**
- Name/s:
- Qualifications:
- School:
- Phone:
- Email:

Add additional rows as required for additional co-investigators.
Declaration by the Investigator/s:

I/We have read the current NH&MRC National Statement on Ethical Conduct in Human Research 2007, and accept responsibility for the conduct of the research detailed in this application in accordance with the principles contained in the National Statement and any other conditions laid down by the RMIT Human Research Ethics Committee.

Name: [Signature of Principal investigator]  Date: 10 Aug 09

Name: [Signature of senior supervisor if applicable]  Date: 10 Feb 09

Copy, paste and complete additional signature boxes to enable all co-investigators to sign.

Declaration by the Head of School:

The project set out in the attached application, including the adequacy of its research design and compliance with recognised ethical standards, has the approval of the School. I certify that I am prepared to have this project undertaken in my School/Centre/Unit.

Name: [Signature of Head of School or approved delegate]  Date: 10/8/09

School/Centre:  Exttn:
Please set out the details of your proposed project according to the headings given below.

Investigators are advised to include with their application sufficient detail about the project (including discussion of the expected benefits relative to the risk to participants), recruitment method and procedures for obtaining informed consent, to enable the Committee to evaluate the proposal for conformity with the principles set out in the NHMRC National Statement.

Refer to Notes to assist in completing the HREC Form 1 for further details on completing these Sections.

Section B: Project particulars

B1. Title of Project:

The integration of contractors into the project team as a key to project success: A general model of knowledge development and transaction costs in project complexity.

B2. Project description: for HREC assessment of ethical issues. (Research aim/s, Background, Research Method, End points, Statistical aspects)

Please write aims/objectives of the research and some brief description.

The aim of the research is to identify a general model of knowledge development and transaction costs in the integration of the part time workforce into project teams. Having developed a model then apply this to a real life situation in the Defence Materiel Organisation to identify improvements in the current process.

The objectives are to:

1. Engage a wide range of stakeholders to establish a realistic picture of the current reality.
2. Develop a general model of knowledge development and transaction costs in the integration of the part time workforce into project teams.
3. Identify improvements which will make Defence Materiel Organisation more business like and accountable and will therefore contribute to project success.
4. Identify potential savings from the suggested improvements.

The research is planned to by undertaken within the Defence Materiel Organisation’s, Land Systems Division based in Melbourne. Land System Division acquires and sustains land based equipment for the Australian Defence Force. Project Management is the basic methodology used to acquire the prime equipment and sustainment systems. Full time employees manage the core of the acquisition process supported by External Service Providers (ESP). The process to engage and integrate ESP into the project team is slow and consumes significant effort in the project office.

It is planned to investigate the engagement and integration of the part time labour force through an action research exploratory study utilizing Soft Systems Methodology (SSM) approach as the qualitative tool to map reality and identify improvements to the current process.

Research methods

Rationale: SSM is a useful approach when investigating complex systems where the problem is ill defined and multiple world views exist. It can be used for developing a robust understanding of an organisation’s Knowledge Advantage (Walker 2005) to bring about improvement, through facilitating the identification of individual stakeholders, instigating mapping processes and making sense of entire situations rather than isolated components. SSM is most useful as an approach in “fuzzy ill-defined situations involving human beings and cultural considerations” (Checkland 1990 p. 10).

The seven-stage model of SSM based on Checkland’s (1990) framework, will be followed, recognizing that the seven steps are not necessarily sequential and that the model should be cyclic, thus relevant particularly for continuous quality improvement processes.
• Stage 1 & 2 Identification of the problem(s) situation through unstructured interviews with all relevant stakeholders and development of a rich picture which reflects explicit knowledge unearthed
• Stage 3 Interpretation of the picture and formulation of a set of root definitions to underpin a conceptual model. A root definition is well-formulated if it aligns explicitly with the mnemonic Checkland (1990) proposed CATWOE:
  o Customer – beneficiaries or victims of the situation
  o Actors – those directly involved or affecting the situation
  o Transformation – what is happening in terms of inputs
  o Weltanschauung – worldview of participants
  o Owner – the entity most affected by the situation
  o Environment – what lies outside the situation
• Stage 4 Development of a conceptual model as described in the root definition(s). Involves formal system concept and thinking.
• Stage 5 Comparison of perceptions with the conceptual model developed to reveal questions to be addressed, assumptions to be re-visited and behaviours/actions to be identified and possibly remedied.
• Stage 6 Specific recommendations, cultural feasibility, desirable and possible changes suggested. Outcomes usually recommend change to either structure, procedures, or organisational culture
• Stage 7 Action to instigate changes or re-visit Stage 1 to use feedback loops to test and monitor changes. Evaluation framework required to ascertain effectiveness of change. At this stage a workshop validation session is proposed in which about 12 subject management experts will be invited to probe the findings from Stage 6 and to comment on the feasibility and the driver/inhibitors that would be present in trying to action recommendations. This will therefore form a ‘simulated’ action phase because of the difficulty in timing to actually implement Stage 6 recommendations within the DPM elapse time.

B3. Proposed commencement of project

The project is planned to start last quarter 2009.

B4. Proposed duration of project; proposed finish date.

The project is planned to be run over a 12 month period from last quarter 2009 to end 2010

B5. Source of funding (internal and/or external)

The project will be principally funded by the student. Funding assistance may be sought from the employer Department of Defence to support the facilitated sessions and travel.

B6. Project grant title; proposed duration of grant (where applicable)

It is not proposed to seek a grant for this research project.

Section C: Details of participants

C1. Number, type, age range, any special characteristics of participants and inclusion/exclusion criteria.

Number of participants will range between 30 and 55 dependent on how many of the Defence Materiel Organisation (DMO) staff agree to participate in stage 1-3 and about 12 subject matter experts in stage 7. The majority of the participants will be peers of the investigator, with a small number being senior.

C2. Source of participants (attach written permission where appropriate)

Principally the participants will be employees of the Department of Defence and Contractors to the Department of Defence. Permission will be sought from the contractors organisations concerned.
C3. Means by which participants are to be recruited
Participants will be invited by email or telephone to attend workshops or interviews by the author. When invited by email the Plain Language Statement will be attached. When inviting by telephone if the participant agrees the Plain language Statement will be sent by email.

C4. Are any of the participants “vulnerable” or in a dependent relationship with any of the investigators, particularly those involved in recruiting for or conducting the project?
No

C5. Are you seeking to recruit Aboriginal and Torres Straits Islanders to this investigation?
It is not intended to specifically use Aboriginal and Torres Straits Islanders in the research. However, it is possible that people from this group could appear in the study as they are employed by the organisations under study.

C6. If “Yes”, have you taken account of the requirements in NH&MRC, Values and Ethics - Guidelines for Ethical Conduct in Aboriginal and Torres Strait Islander Health Research, June 2003, when designing your research? Describe how:
No

C7. If you specifically intend to recruit children as participants, have the relevant members of the research team completed a Working with Children Check? If yes, please attach a photocopy of each Working with Children Check card. If no, please explain why a Working with Children Check is not required. For further information on the Working with Children Check please refer to Victorian Department of Justice website.
It is not specifically intended to recruit children as participants as part of the study.

Section D: Risk classification and estimation of potential risk to participants

D1. Please identify the risk classification for your project by assessing the level of risk to participants or (if any) to the researcher.
This project should be classified as Risk level 2.

D2. If you believe the project should be classified level 2 or level 1 please explain why you believe there are minimal risks to the participants.
The research involves interviews with a normal adult population where there are no dependent or vulnerable relationships between investigator and participants. Interviews will be unstructured with no set questions. Data from the interviews will be converted into 'rich pictures' which are a pictorial representation format used in SSM to more richly describe a situation. No names or identifying features will be used. The data relating to identification of interviewees will remain confidential and undisclosed in the thesis (only referred by codes eg Org1 for organisation 1 P1person 1 etc) and no person other than the investigator and the research supervisor will have access to this information. This will be kept until submission of project for examination.

OR

If you believe the project is classified level 3 please identify all potential risks to participants associated with the proposed research. Please explain how you intend to protect participants against or minimise these risks.

D3. Please explain how the potential benefits to the participant or contributions to the general body of knowledge outweigh the risks.
No risks
D4. **Contingency planning: first aid / debriefing**
There will be no mental or physical risk to participants as a result of any workshops or interviews. There will be a general safety brief provided at the beginning of any workshops that will include emergency procedures in case of fire or other emergency.

D5. **Adverse Events: Are procedures in place to manage, monitor and report adverse and/or unforeseen events that may be associated with your research?** Give details:
Any adverse events which are likely to cause mental or physical injury or attract media attention will be reported in the first instance to the Supervisor.

D6. **Please complete this checklist by placing Y (Yes) or N (No) and give details of any other ethical issues that may be associated with this project.**

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Is deception to be used?</td>
<td>No</td>
</tr>
<tr>
<td>b</td>
<td>Does the data collection process involve access to personal or sensitive data without the prior consent of participants?</td>
<td>No</td>
</tr>
<tr>
<td>c</td>
<td>Will participants have pictures taken of them eg, photographs, video recording, radiography?</td>
<td>No</td>
</tr>
<tr>
<td>d</td>
<td>Will participants come into contact with any equipment which uses an electrical supply in any form eg, audiometer, biofeedback, electrical stimulation, etc?</td>
<td>No</td>
</tr>
<tr>
<td>e</td>
<td>If interviews are to be conducted will they be tape-recorded?</td>
<td>No</td>
</tr>
<tr>
<td>f</td>
<td>Do you plan to use an interpreter?</td>
<td>No</td>
</tr>
<tr>
<td>g</td>
<td>Will participants be asked to commit any acts which might diminish self-esteem or cause them to experience embarrassment or regret?</td>
<td>No</td>
</tr>
<tr>
<td>h</td>
<td>Are any items to be taken internally (orally or intravenously)?</td>
<td>No</td>
</tr>
<tr>
<td>i</td>
<td>Will any treatment be used with potentially unpleasant or harmful side effects?</td>
<td>No</td>
</tr>
<tr>
<td>j</td>
<td>Does the research involve a fertilised human ovum?</td>
<td>No</td>
</tr>
<tr>
<td>k</td>
<td>Does the research involve any stimuli, tasks, investigations or procedures which may be experienced by participants as stressful, noxious, aversive or unpleasant during or after the research procedures?</td>
<td>No</td>
</tr>
<tr>
<td>l</td>
<td>Will the research involve the use of no-treatment or placebo control conditions?</td>
<td>No</td>
</tr>
<tr>
<td>m</td>
<td>Will any samples of body fluid or body tissue be required specifically for the research, which would not be required in the case of ordinary treatment?</td>
<td>No</td>
</tr>
<tr>
<td>n</td>
<td>Will participants be fingerprinted or DNA &quot;fingerprinted&quot;?</td>
<td>No</td>
</tr>
<tr>
<td>o</td>
<td>Are the participants in any sort of dependent relationship with the investigator/s?</td>
<td>No</td>
</tr>
<tr>
<td>p</td>
<td>Are participants asked to disclose information that may leave them feeling vulnerable or embarrassed?</td>
<td>No</td>
</tr>
<tr>
<td>q</td>
<td>Are there in your opinion any other ethical issues involved in the research?</td>
<td>No</td>
</tr>
</tbody>
</table>

Where you have answered Yes to any of the questions on the checklist, please give details and state what action you intend to take to ensure that no difficulties arise for your participants.

For all except items a and b, details must be included in the explanatory statement.

**Section E: Informed consent**
E1. **Attach to the application your explanatory statement & consent form.**
Prescribed Consent Form For Persons Participating In Research Projects Involving Interviews, Questionnaires or Disclosure of Personal Information attached as Appendix 1.

E2. **Dissemination of results**
The results may be published in an academic journal. This warning has been included in the Consent Form attached as appendix 1.

E3. **Participants under 18 years**
It is not planned to interview or otherwise engage persons under 18 years of age in this research.

E4 **Persons subject to the Guardianship Act (Vic) (if applicable)**
It is not planned to interview or otherwise engage persons subject to the Guardianship Act (Vic) in this research.

**Section F: Research Involving Collection, Use or Disclosure of Information**
We wish to acknowledge permission from the Department of Human Services, Vic on whose Common Application Form the questions in this section have been based.

Please note that if you propose to collect information about an individual from a source other than the individual, or to use or disclose information without the consent of the individual whose information it is, you will also have to complete the Special Privacy Module (Form No 5 – see also the related explanatory document, Special Privacy Module) in addition to questions below.

Under statutory guidelines a HREC may approve some research where the public interest outweighs considerations of privacy, however a researcher must make a special case for such approval. The Special Privacy Module is the starting point for preparing such a case.

For a more detailed guidance and definitions for each of the question below, see *Notes to assist in completing HREC Form 1, Section F*.

**F1 Does this Section have to be completed?**
Does the project involve the collection, use or disclosure of personal information (includes names & contact details), health information including genetic information, or sensitive information? *(see Notes to assist in completing the form, Section F)*

- [ ] No – you do not have to answer any questions in this section. Go to Section G.
- [x] Yes – you must answer questions in this section. Go to Question F2.

Only collection of name and contact details of interviewees which will not be disclosed and only used by the researcher to keep track of interviewees and to be able to re-contact them for validation purposes. Interviewees may request the research or supervisor to see this data on their names and contact details if they so wish.

**F2 Type of Activity Proposed**
Are you seeking approval from this HREC for:

(a) collection of information?
- [x] Yes – start at Question F3
- [ ] No – start at Question F4

(b) use of information?
- [x] Yes – start at Question F4
- [ ] No

(c) disclosure of information to some other party?
- [ ] Yes – start at Question F4
- [x] No
F3  Collection of Information
(a) Does the project involve collection of information directly from individuals about themselves?
   ☑ No – (If collected from a third party/existing records) You must fill out the Special Privacy Form (Form 5) as well as this form.
   ☐ Yes – answer the following questions:

(b) What type of information will be collected? (Tick as many as apply)
   ☑ personal information
   ☐ sensitive information
   ☐ health information

(c) Does the explanatory statement cover the following:
   The identity of the organisation collecting the information and how to contact it? Yes ☑ No ☐
   The purposes for which the information is being collected? Yes ☑ No ☐
   The period for which the records relating to the participant will be kept? Yes ☑ No ☐
   The steps taken to ensure confidentiality and secure storage of data? Yes ☑ No ☐
   How privacy will be protected in any publication of the information? Yes ☑ No ☐
   The fact that the individual may access that information? Yes ☑ No ☐
   Any law that requires the particular information to be collected/disclosed? (eg notifiable diseases or mandatory reporting obligations re child abuse) Yes ☐ No ☑ Not Applicable ☒
   The consequences (if any) for the individual if all or part of the information is not provided? (eg any additional risks if a participant does not fully disclose his/her medical history) Yes ☐ No ☑ Not Applicable ☒

If you answered "No" to any of these questions, give the reasons why this information has not been included in the explanatory statement.

F4  Use or Disclosure of Information about Individuals
(a) Does the project involve the use or disclosure of identified or potentially identifiable information?
   ☑ No – go to Question F5.
   ☐ Yes, answer the following questions.

(b) Does the project involve use or disclosure of information without the consent of the individual whose information it is?
   ☑ No - go to Question F5.
   ☐ Yes, You must fill out the Special Privacy Form, as well as this form.

Projects involving the access, use or disclosure of information, without the consent of the person whose information it is, are classified as risk level 3 and must be reviewed by the RMIT Human Research Ethics Committee.
F5 General Issues

(a) How many records will be collected, used or disclosed? Specify the information that will be collected, used or disclosed (e.g. date of birth, medical history, number of convictions, etc).

Between 20 and 55 rich pictures will be developed from interviews and an unknown (at this stage) consolidated rich pictures will be disclosed in the thesis and any academic papers produced.

(b) For what period of time will the information be retained? How will the information be disposed of at the end of this period?

Electronic files and paper documents will all be locked in my home office cabinet for a period of five years. Electronic files will be deleted after 5 years and hardcopies will be shredded before disposal after 5 years.

(c) Describe the security arrangements for storage of the information. Where will the information be stored? Who will have access to the information?

Electronic files will be password protected and stored on my Defence Department laptop. The information will only be accessed by myself and Senior Supervisor.

(d) How will the privacy of individuals be respected in any publication arising from this project?

Individual’s participation is entirely voluntary and he/she may halt the interview or choose not to answer certain questions. Participants are free to withdraw from the project at any time and to withdraw any unprocessed data previously supplied. All responses will be kept confidential at all time, and participants’ identities will be kept anonymous on all draft paper work and formal project report. Participants and organisations will only be identified by pseudonyms like A, B, C, etc.

(e) Does the project involve transfer of project data to someone outside Victoria?

☐ Yes ☒ No

If Yes, give details of how this will be carried out in accordance with relevant Privacy Principles (e.g. HPP 9, VIPP 9 or NPP 9).

Note: If you are a researcher sending data to, for example, another researcher or institution in another state then you will need to tick ‘yes’. Normally, a research student transferring data to their supervisor is not subject to these principles, whether or not the transfer is across state or national borders.

(f) Does the project involve using unique identifiers assigned to individuals by other agencies or organisations?

☐ Yes ☒ No

If yes, give details of how this will be carried out in accordance with relevant Privacy Principles (e.g. HPP 7, VIPP 7 or NPP 7).

F6 Adverse Events – re Data Security

Are procedures in place to manage, monitor and report adverse and/or unforeseen events relating to the collection, use or disclosure of information?
☐ Yes  ☑ No

It is not anticipated there will be adverse events in this project relating to the collection, use or disclosure of information. Procedures to manage monitor and report issues are documented in Section F, question 5 – General Issues above.

F7 Other Ethical Issues Relating to Privacy
Discuss any other ethical issues relevant to the collection, use or disclosure of information proposed in this project. Explain how these issues have been addressed.

Section G: Other Issues

G1. Do you propose to pay participants? If so, how much and for what purpose?
It is not proposed to pay participants.

No

G2. Where will the project be conducted?
The research is planned to be based in the areas occupied and adjacent to the Defence Materiel Organisation in Melbourne and Canberra.

G3. Is this project being submitted to another Human Research Ethics Committee, or has it been previously submitted to a Human Research Ethics Committee?

No

G4. Are there any other issues of relevance?

No

If you answered “No” to question F1, please answer G5 and G6:
(Applicants who have completed all of section F will already have answered questions).

G5. For what period of time will the research data be retained? How will the information be disposed of at the end of this period?

G6. Describe the security arrangements for storage of the information. Where will the information be stored? Who will have access to the information?

For any further detail about completion of the application form, or for additional information, please contact the Secretary of your Portfolio HRE Sub Committee, or the Ethics Executive Officer of the RMIT Human Research Ethics Committee, c/- Research & Innovation, (03) 9925 2251.

Please check that the explanatory statement, consent form and other documents as applicable (eg. evidence of required external approvals, recruitment advertisement, questionnaire and/or list of questions, clinical trial protocol) are attached to your application.
Appendix 1

RMIT HUMAN RESEARCH ETHICS COMMITTEE

Prescribed Consent Form For Persons Participating In Research Projects Involving Interviews, Questionnaires, Focus Groups or Disclosure of Personal Information

PORTFOLIO OF SCHOOL/CENTRE OF
Name of participant:
Project Title:

<table>
<thead>
<tr>
<th>Design and Social Context</th>
<th>Property, Construction and Project Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>The integration of contractors into the project team as a key to project success: A general model of knowledge development and transaction costs in project complexity.</td>
<td></td>
</tr>
</tbody>
</table>

Name(s) of investigators: (1) David Taylor Phone: +61 409 072 044

1. I have received a statement explaining the interview involved in this project.
2. I consent to participate in the above project, the particulars of which - including details of the interviews - have been explained to me.
3. I authorise the investigator or his or her assistant to interview me.
4. I acknowledge that:
   a) Having read the Plain Language Statement, I agree to the general purpose, methods and demands of the study.
   b) I have been informed that I am free to withdraw from the project at any time and to withdraw any unprocessed data previously supplied.
   c) The project is for the purpose of research and/or teaching. It may not be of direct benefit to me. The privacy of the information I provide will be safeguarded. The privacy of the personal information I provide will be safeguarded and only disclosed where I have consented to the disclosure or as required by law. If I participate in a focus group I understand that whilst all participants will be asked to keep the conversation confidential, the researcher cannot guarantee that other participants will do this.
   d) The security of the research data is assured during and after completion of the study. The data collected during the study may be published, and a report of the project outcomes will be provided to RMIT in the form of a research project report, possible conference presentations and journal publications. Any information which may be used to identify me will not be used unless I have given my permission (see point 5).

Participant's Consent

Name: ____________________________ Date: ___________

(Participant)

Name: ____________________________ Date: ___________

(Witness to signature)

Where participant is under 18 years of age:

I consent to the participation of ____________________________ in the above project.

Signature: (1) ____________________________ Date: ___________

(Signatures of parents or guardians)

Name: ____________________________ Date: ___________

(Witness to signature)

Participants should be given a photocopy of this consent form after it has been signed.

Any complaints about your participation in this project may be directed to the Executive Officer, RMIT Human Research Ethics Committee, Research & Innovation, RMIT, GPO Box 2476V, Melbourne, 3001. Details of the complaints procedure are available at: http://www.rmit.edu.au/rd/hrec_complaints
Appendix 2: Employer letter

RMIT University

Design and Social Context Portfolio
School of Property Construction and Project Management.

Dear XXXXX,

My name is David Taylor,

I am conducting research as part of Doctor of Project Management at RMIT University. The title of my research is "The integration of contractors into the project team as a key to project success: A general model of knowledge development and transaction costs in project complexity."

The Defence Department's Strategic Reform Program is seeking gross savings of $20bn over the next ten years to be reinvested into a stronger Defence Force. The savings are being sought through improved accountability, planning and productivity. The importance of successful project management outcomes in the Defence Materiel Organisation is central to achieving the Department's aim. A key to the success of project teams in delivering equipment to the Australian Defence Force is the ability of the organisation to source skilled and experienced personnel. The aim of this research is to explore how the engagement and integration of External Service Providers to compliment existing full time workforce can improve project success. The outcomes of this research could be used to identify improvements which will make Defence Materiel Organisation more business like and accountable and will therefore contribute to project success. This research is not funded from any organisations.

I cordially invite your organisation to participate in this research. I wish to interview six to eight personnel in your organisation who have roles associated with the engagement of External Service Providers (ESP).

In the process of research, each participant will attend a 30 to 45-minute interview at a venue of the participant's choice. The draft interview protocol and questions are attached. Their participation is voluntary and participants are free to withdraw from the research at any time and to withdraw any unprocessed data previously supplied. After the interview, the individual participant will receive the corresponding interview summary from researcher. He/she will help to check the accuracy of the summary. Participant may choose to withdraw at this stage. If some organisational documents can be shared with the researcher, the participant will supply a copy of document to the researcher. Participants may receive clarification phone calls from researcher on an as-needed basis. An initial research finding summary will also be sent to participants for voluntary feedbacks. Names of individuals, your organisational identity and industry will not be disclosed and will only be referred to by pseudonyms. The research report will document findings from multiple sources including interviews, literature and documentation reviews, in a generalised and summarised format. Individual interview records will be kept confidential. Every effort will be made to maintain participants' anonymity.

Where possible I would like access to relevant documentation from your organisation. These documents would be but are not limited to project management plans, lessons learnt,
contractual documentation, policy and operating procedures. I will manage documentation in accordance with the security classification or caveats which have been applied. Any documentation collected as part of this research such as interviews will be held on my issued Defence Department laptop. Electronic files supporting this research and development of the thesis will be deleted and hardcopies will be shredded after five years.

Should you have any further questions, please contact the undersigned or my supervisor – Dr. Derek Walker, derek.walker@rmit.edu.au.

Your participation in, and support of the research is very much appreciated.

Yours faithfully,

[Signature]

David Taylor
Mobile: 0409 072 044
davejtaylor@optusnet.com.au

Any complaints about your participation in this project may be directed to the Secretary, RMIT Human Research Ethics Committee, University Secretariat, RMIT, GPO Box 2476V, Melbourne, 3001. The telephone number is (03) 9925 1745.

Details of the complaints procedure are available from: www.rmit.edu.au/council/hrec
Appendix 3: Participant letter

Dear XXXXXX

My name is David Taylor. I am conducting research as part of Doctor of Project Management at RMIT University. The title of my research is "The integration of contractors into the project team as a key to project success: A general model of knowledge development and transaction costs in project complexity."

The Defence Department’s Strategic Reform Program is seeking gross savings of $20bn over the next ten years to be reinvested into a stronger Defence Force. The savings are being sought through improved accountability, planning and productivity. The importance of successful project management outcomes in the Defence Materiel Organisation is central to achieving the Department’s aim. A key to the success of project teams in delivering equipment to the Australian Defence Force is the ability of the organisation to source skilled and experienced personnel. The aim of this research is to explore how the engagement and integration of External Service Providers to compliment existing full time workforce can improve project success. The outcomes of this research could be used to identify improvements which will make Defence Materiel Organisation more business like and accountable and will therefore contribute to project success. This research is not funded from any organisations.

I cordially invite you to participate in this research. Your knowledge and experience in the management of project teams is very valuable to this research.

If you accept this invitation, please kindly read and sign the letter of consent and return to me prior to the interview. The interview will take 30 to 45-minute and be conducted at a venue of your choice. The draft interview protocol and questions are attached for your preview. Your participation is voluntary. You are free to withdraw from the research at any time and to withdraw any unprocessed data supplied. After the interview, you will receive a summary of the interview with a request that you check the accuracy of the summary. You may choose to withdraw at this stage. If some organisation document can be shared with me, please supply a copy to me at your convenience. You may receive clarification phone calls from me on an as-needed basis. An initial research finding summary will also be sent to you for voluntary feedbacks.

In this research the names of individuals, your organisation and industry will not be disclosed and will only be referred to by pseudonyms. The research report will document findings from multiple sources including interviews, literature and documentation reviews, in a generalised and summarised format. Your individual interview record will be kept confidential. Every effort will be made to maintain your anonymity.
Any documentation collected as part of this research such as interviews will be held on my issued Defence Department laptop. Electronic files supporting this research and development of the thesis will be deleted and hardcopies will be shredded after five years.

Should you have any further questions, please contact the undersigned or my supervisor – Dr. Derek Walker, derek.walker@rmit.edu.au.

Your participation in, and support of the research is very much appreciated.

Yours faithfully,

David Taylor
Mobile: 0409 072 044
davetaylor@optusnet.com.au

Any complaints about your participation in this project may be directed to the Secretary, RMIT Human Research Ethics Committee, University Secretariat, RMIT, GPO Box 2476V, Melbourne, 3001. The telephone number is (03) 9925 1745.

Details of the complaints procedure are available from: www.rmit.edu.au/council/hrec
Appendix 4

Interview Protocol:

Good morning/afternoon/evening.

This research study is to be used for a Doctor of Project Management at RMIT University.

In accordance with RMIT University ethics regulations I would like to confirm, that you have read and signed the consent form before we start the interview.

The goal of this study is to explore how contingent employment policy in large Hong Kong organisations impacts the enhancement of IT project management capabilities. The information generated from this research may be used for improvement of IT project management capability enhancement or used in future researches, including possible related publications.

With your permission, I would like to take notes of this interview.

Before we begin, I would like to notify you of the following:

Your participation is voluntary. You may halt the interview at any time and/or choose not to answer any of the questions.

Your responses will at all times remain confidential. At no time will your identity be revealed either by the procedures of the study or during reporting of the results.

No negative consequence will result for choosing not to participate.

A copy interview summary will be sent to you for validation before use.

An initial research finding will be sent to you for voluntary feedback and a copy the final research report will also sent to you.

Your identity will at all time kept anonymous, including in interview summaries and all project documents.

Interviewee Background:

1. What is your current role in your organisation?
2. How many years of service do you have in your current position?
3. How many years of contract employment history in what roles and organisations, if applicable?
4. How many years have you worked in Defence industry?
5. In what roles have you been employed in the past ten years?
6. What is your highest education level?
7. What is your highest level of project management qualification, if applicable?

Research questions:

From the perspective of people who employ part time staff in DMO:
1. What are the reasons for engaging part time workers in the project team?
2. How does the engagement of part time workers impact effective project management at the project and organisational level?
3. How can any identified problems associated with the engagement of part time workers be solved?

From the perspective of part time worker’s and their organisation:
4. What are your reasons for becoming a contractor to Defence?
5. How can professionals engaged on a part time basis contribute to successful project management team outcomes.

Thank you for your participation in this research.
Appendix D2 - Human Research Ethics Application – Register Number HRESC A-2000140-06/09

RMIT University

Human Research Ethics Sub-Committee

31 August 2009

Mr David Taylor
PO Box 167
SANDRINGHAM. 3191

Dear David,

Re: Human Research Ethics Application – Register Number HRESC A-2000140-06/09

The Design and Social Context College Human Research Ethics Sub-Committee, at its meeting on 21 August 2009 assessed your ethics application entitled “The integration of contractors into the project team as a key to project success: A general model of knowledge development and transaction costs in project complexity”.

I am pleased to advise that your application has been approved as Risk Level 2 classification by the committee subject to providing the Chair with a letter of approval from the Defense Department. This approval will now be reported to the University Human Research Ethics Committee for noting.

This now completes the Ethics procedures. Your ethics approval expires in December 2010.

Please note that all research data should be stored on University Network systems. These systems provide high levels of manageable security and data integrity, can provide secure remote access, are backed on a regular basis and can provide Disaster Recover processes should a large scale incident occur. The use of portable devices such as CDs and memory sticks is valid for archiving, data transport where necessary and some works in progress. The authoritative copy of all current data should reside on appropriate network systems; and the Principal Investigator is responsible for the retention and storage of the original data pertaining to the project for a minimum period of five years.

You are reminded that an Annual /Final report is mandatory and should be forwarded to the College Ethics Subcommittee Secretary by mid-December 2009. This report is available from: URL: http://www.rmit.edu.au/rd/hrec_apply

Should you have any queries regarding your application please seek advice from the Chair of the sub-committee Prof Joseph Siracusa on (03) 9925 1744, joseph.siracusa@rmit.edu.au or contact Cheryl de Leon on (03) 9925 2974 or email cheryl.deleon@rmit.edu.au

Yours sincerely,

CHERYL C DE LEON
Secretary
DSC Human Research Ethics Sub-Committee

cc: Prof Derek Walker, PCPM
Appendix D3 - Ethics clearance extension - HRES A-2000140-06/09

From: Derek Walker [walker@rmit.edu.au]
Sent: Wednesday, 23 May 2012 10:08 AM
To: Lisa Mann
Cc: Dave Taylor
Subject: Re: Ethics clearance extension - HRES A-2000140-06/09

Thanks Lisa,

Great that it was a relatively simple process.

Ta,

Derek

========================
Dr Derek H.T. Walker PhD MSc Grad Dip (Mgt Sys)
Professor of Project Management
Director of Research
School of Property, Construction and Project Management, RMIT University
PO Box 2476V, Level 8, 368 Swanston St, Vic 3001, Melbourne, Australia
+61 3 9925 3908
mob +61 (0) 40 996 0121
Email: derek.walker@rmit.edu.au
for research degree information
http://www.rmit.edu.au/browse?ID=7tJ7spixudy

>>> Lisa Mann 5/22/2012 4:22 pm >>>
Dear David,

Further to receiving the request for an extension to your original ethics clearance timeline for the project 'The integration of contractors into the project team as key to project success', I can confirm that the CHEAN have approved your request and your ethics approval now expires on 31 December 2013. Your request will be added to your original ethics file.

Best wishes for your research.

Regards,

Lisa Mann
Project Officer & Ethics Coordinator
College of Design & Social Context
RMIT University
Blg 101, Level 10, Room 05A

Ph (03) 9925 2974
Fax (03) 9663 2891

10/09/2014
Appendix E – Example of a Land Systems Division participant interview coded in NVIVO 10

Coding Summary By DMO Source

Engagement of Contractors

3/12/2012 10:39 PM

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</table>

restrictive and quite time consuming as far as the length of time to required engage contractors and it is intensively administrative

|              | 2          | DJT     | 18/11/2012 11:26 AM         |                  |

Exactly. Because of the original financial delegation that was exercised for x amount of dollars to go and do x work for x period of time and when that came to a halt, back you go again.

|              | 3          | DJT     | 18/11/2012 11:29 AM         |                  |

then its approved once it goes through the approval process and that has several levels the request place on the DMOSS panel and the panel is allowed a period of time to respond which I believe is a minimum of two weeks that is for urgent requirements but generally its more in the order of four to six weeks and then you are required to conduct and an evaluation of the responses to see which ones provide the best value for money for the Commonwealth and that process can be time consuming because your need to go through essentially line by line the statement of work items to assesses the qualifications and expertise of each of the respondents in once instance I had in excess of a dozen companies respond for a somewhat generic logistic support position and some companies responded with more than one candidate and the time it took to work through that and write up the selection report went into days - just noting the reason you are going out to gain external help is because you need work that needs doing.

|              | 4          | DJT     | 16/09/2012 9:05 PM          |                  |

I suppose it’s the hierarchy of approvals that needs to be navigated before you can proceed and then there is the financial delegations to be exercise etcetera because we are in the land of public moneys so that’s also somewhat clunky and then the actual selection process that needs to be scrutinised again by the delegate at the end of it to agree with your appraisal of the companies that have responded.

|              | 5          | DJT     | 16/09/2012 9:07 PM          |                  |

its quite prescriptive the path that you need to follow there is not a great degree of flexibility that is in there

Nodes\Issues\Business like or commercial approach
correct and its quite prescriptive the path that you need to follow there is not a great degree of flexibility that is in there. compared to private industry where you will go and get three quotes and get on with it.

In my experience most of the time yes its dependent on who is conducting the assessment of the contractors that are offered and that comes down to experience and looking for the right things in their resume and their experience levels. if you know what you are looking for and you understand the experience set that will meet your requirements then yes you get a good outcome most of the time unless people are misrepresenting their skill sets.

To bring in specific skill sets where we were either lacking those skill sets within our own team or we had you know too much work on to complete in the period of time. A case in point recently I have got two logistics support managers working away in support of the project but had to bring a contractor in to provide additional horse power to complete a suite of documentation to meet our project schedule because the equipment was being introduced into service very rapidly from contract signature to introduction into service in Afghanistan was four months and that equipment needed a whole bunch of through life support documentation, user handbooks, technical manuals repair parts books.

ALPHA: Yeah that is interesting private industry normally goes more into employing their own workforce and using overtime that sort of thing until it comes to the point were they need to put someone extra on, permanently when they in private industry when you use a contractor its usually for a specific task that is well outside you know your normal business.

DT: So what you are saying there is that the public service, military, ADF do not normally provide overtime which would normally be available in..

ALPHA: The overtime provisions are there but I guess we are also limited by head counts and FTE (Full Time Equivalent) limits and such like when recruiting to the requirement

ALPHA: as opposed to you know the commercial imperative that if we put Blogs on for x he will return us 10 times x.

DT: there is a clearly defined business case

ALPHA: very clear

To bring in specific skill sets where we were either lacking those skill sets within our own team or we had you know too much work on to complete in the period of time. A case in point recently I have got two logistics support managers working away in support of the project but had to bring a contractor in to provide additional horse power to complete a suite of documentation to meet our project schedule because the equipment was being introduced into service very rapidly from contract signature to introduction into service in Afghanistan was four months and that equipment needed a whole bunch of through life support documentation, user handbooks, technical manuals repair parts books.
Appendix F – Example of a major service provider participant interview coded in NVIVO 10

Coding Summary By Major Service Provider (MSP) Source

Engagement of Contractors

3/12/2012 10:42 PM

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It seems like there is someone in mind or it has been written by the contractor an incumbent contractor that seems to be a common theme and I know that because I have been asked to write them myself and I have said ‘No’ because of probity, ethics, integrity... when you are standing naked in front of the mirror in the morning all you have is your integrity so I try not to compromise that otherwise you will never work here again... but some people do it. So we see a lot of that were they do not know what they are asking for or they will put something our against a skill set that is completely inappropriate.

No I don’t think that it is efficient... as efficient internally as it could be and it is certainly not efficient for contractors. If you look at the way RPDE run their panel arrangements. You are a member and you are accepted and you have a login to their website and when an opportunity comes up, they just broadcast email there is an opportunity sitting in the hopper and its one or two line it looks like this. You then login as a member of the panel and you have a look at it or you want to have a crack at it or explore it and then you can down load it yourself do your response and send it in. Where the way the DMOSS panel works they may sent it to everyone on the panel they may sent it to two or three I think that it is a minimum of three I think and you have to respond in the positive or the negative and but the time we shop around and try and pull that together even a negative response will take us three to four hours to respond in the negative and say we are unable to meet that requirement. I think if they could come up with a... they have the business management system there anyway it would not take much to have a web portal where once a day you could go in a review the new opportunities and the current opportunities. Actually that is something that I am interested in because I can respond to doing work in Victoria or Canberra if we are prepared to. Because the problem is that you get everything and if you get a job for Perth because it has been sent to you – you have to respond to it and because... that takes time even though you have a snowballs chance hell because you would need to put a team over there to do all the work. Because when you think of it if every opportunity became an opt in and if you pulled it down and had to respond to it either positively or negatively it would be a much more efficient system and I think internally because I don’t think there has been any training in how to use it and what those skill sets mean and what the work levels are you would get a much cleaner request because... so the requests that are coming out that are a bit... so you are reading it and you are going what are they asking for and you make a phone call and you might get some sort of answer but quite often if they are an APS6, sometimes an EL1, that is doing it you will get the hide behind probity and ‘just answer the response’ and so straight away the alarm bells go off and what is going on here.
I think that comes down to panel management. Up until 2009 it was pretty good you had 35 members in 2009 they opened it up to the single shingles so anyone who wanted to be could be on the panel that was about October 09 when that happened there was something like 249 panel members...

OSCAR: Not in Defence... I had a meeting with my big boss yesterday actually and that was the big discussion... I can do Defence work and can eat State Government and other Federal Government work because I can live within the Defence environment and the governance overheads and the process overheads that are in here and the process overheads and I say overheads instead of policy quite purposefully. If you can meet the quality standards that Defence expects whether they be valid or not it does not matter... if you can meet that you can do any other job. The problem we have got is that even though we have people who are really good consultants for Port of Melbourne or Department of Transport or where ever else we happen to be working in the State and I will just talk the Melbourne office but we also do for a lot of Canberra departments and that as well. If you can do that it does not necessarily mean that you can work within Defence you may have your clearances and that all sort of thing unless you can understand the machine that is called Defence you can't consult back into here. People try... we tried to a fellow into here in Sydney into DPS Defence Plaza Sydney... I was spending two hours a day for the first three weeks sitting beside him, at no expense to the Commonwealth, just to explain to him what was going on and how he needed to deal with the people around him because he was completely bewildered and this was a guy that had been consulting for 24 years... in the business space.

DT: Is that right... so there is a big cultural issue here?

OSCAR: There is a massive cultural theme and there is also a huge governance overhead that I think costs Defence a hell of a lot...
OSCAR: It's not only slow it is broken. It is fundamentally broken, the suggestion we made to Jason Claire three years ago, two years ago was everyone is so reliant on process because they want to cover their ass. I followed the dotted line; you can't accuse me of things that have gone wrong. So that's cultural side of it and very rarely will they look at the policy there is the policy that governs all this the policy says to do this so you are not following the process you get really frustrated with that. And so what you find is that there is the only way you could possibly fix it that you made down to the Director level accountable for the entire operating budget not just their spend, not just you have a hundred million dollars to spend on a turret upgrade or whatever it is supposed to be and you have got four years to do it in, away you go. Make them accountable for their staff cost, their utilities, even if it is notional.

DT: So you make a business unit out of the SPO?

OSCAR: Yeah, make the SPO a business unit where they have the power within the budget to hire and fire at level as they see fit not and FTE cap and I think this hierarchical structure is broken because... I am sure you look across the organisation and look at peers that are not half as effective as you are and are still walking home every fortnight with the same pay packet as you are. It is not a smart way of running business.
Appendix G – Example of small and medium enterprise participant interview coded in NVIVO 10

Coding Summary By Small and Medium Ent (SME) Source Engagement of Contractors

3/12/2012 10:40 PM

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I think that it is largely cultural, a large trust mechanism a lot of military personnel do not trust us because they think that we are ripping them off because they see our daily contract rates but do not understand how that contributes to running a business, they see it as just personal gain

2 | DJT | 6/11/2012 12:14 PM |
There is that cultural issues about trust it is also some of the mechanics going through the RFT/RFQ process in order for a workplace to identify a need, write a business case, a higher delegate submission to get that need addressed get it funded. You know sometimes by the time they go through the process the need is gone. The opportunity is missed and in some cases you just put in the extra hours and do it themselves, so there is a problem with the process of engagement.

3 | DJT | 14/11/2012 9:48 AM |
It is, all our personnel are ex Defence, bar none all of us are fairly I think the majority of us would be old north or 45 considerably.

| Nodes | Culture | Trust | No | 0.0361 | 2 | 1 | DJT | 6/11/2012 12:11 PM |
|       |         |       |    |        |   |   |     |                   |
I think that it is largely cultural, a large trust mechanism a lot of military personnel do not trust us because they think that we are ripping them off because they see our daily contract rates but do not understand how that contributes to running a business, they see it as just personal gain

2 | DJT | 6/11/2012 12:14 PM |
There is that cultural issues about trust it is also some of the mechanics going through the RFT/RFQ process in order for a workplace to identify a need, write a business case, a higher delegate submission to get that need addressed get it funded. You know sometimes by the time they go through the process the need is gone. The opportunity is missed and in some cases you just put in the extra hours and do it themselves, so there is a problem with the process of engagement.
Nodes\Issues

| No  | 0.0423 | 2 | 1 | DJT | 14/11/2012 9:40 AM |

If we get back to purely on the panel one of the issues on the panel is recording past performance if I am an MSP a Major Service Provider, I get scored.

Reports\Coding Summary By Source Report

<table>
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<th>Classification</th>
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<td>14/11/2012 9:42 AM</td>
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</table>

A MSP, you get MSP by filling quite a number of the skills sets its mainly to purely support Major Capital [Projects] so therefore you can identify the big players so you can get your team from the one organisation which obviously has benefits so if you in your selection process tick MSP only you will get only the big five or big ten you will not get the subordinate or niche people which is OK. But those MSP have a process where they are supported by scorecards. Now, I am not sure whether you as the person going out for the RFP or RFQTS can see the scorecard so you can only target those companies with past performance and in my case I am not an MSP I am just a smaller provider do not get scored, there is no record of my past performance

Nodes\Issues\Bureaucracy

| No  | 0.0223 | 1 | 1 | DJT | 6/11/2012 12:14 PM |

There is that cultural issues about trust it is also some of the mechanics going through the RFT/RFQ process in order for a workplace to identify a need, write a business case, a higher delegate submission to get that need addressed get it funded. You know sometimes by the time they go through the process the need is gone. The opportunity is missed and in some cases you just put in the extra hours and do it themselves, so there is a problem with the process of engagement.

Nodes\Issues\Business like or commercial approach

| No  | 0.0238 | 1 | 1 | DJT | 14/11/2012 9:46 AM |

We will work with either spot, we do not mind, that is the beauty about using contracted personnel. I have prepared RFTs with industry getting them to wade through ASDEFCON was is a systems support plan so I understand from their perspective what they are getting delivered to them so they can put in a credible response so I can bring the experience across the other side of the line and sometime tamper with or explain things to project teams which often do not have any commercial or industry experience.

Nodes\Issues\Knowledge

| No  | 0.2617 | 4 | 1 | DJT | 14/11/2012 9:51 AM |
## Appendix H – Comparison interview question matrix

<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
<th>Does this activity exist?</th>
<th>How is it done?</th>
<th>Who does it?</th>
<th>When is it done?</th>
<th>How is it judged to be successful?</th>
<th>Are there other activities or sub activities?</th>
<th>Summary Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Appreciate capability and project needs.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2</td>
<td>Appreciate external or market equipment solutions, technologies and project management</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Define project people competencies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>4</td>
<td>Acquire skills and expertise</td>
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<tr>
<td><strong>5</strong></td>
<td>Appreciate with sponsors the relevant equipment solutions, technologies and business environment.</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td><strong>6</strong></td>
<td>Define project requirements, boundaries and competencies.</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>7</strong></td>
<td>Acquire and support equipment in a timely manner achieving value for money.</td>
<td></td>
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</table>
Appendix I – Example of NVIVO report of comparison interviews by theme/node

Coding Summary By Node

Engagement of Contractors

20/05/2013 3:23 PM

<table>
<thead>
<tr>
<th>Aggregate</th>
<th>Classification</th>
<th>Coverage</th>
<th>Number Of Coding References</th>
<th>Reference Number</th>
<th>Coded By Initials</th>
<th>Modified On</th>
</tr>
</thead>
</table>

**Node**

**Nodes\\Agenda for Change\\Central management of skills and expertise**

**Document**

Internals\\03 Comparison interviews\\My 130517 Delta - Summary of comparison interviews

No | 0.4695 | 11 | 1 | DJT | 20/05/2013 1:31 PM

Job families are needed to manage groups of competencies. This provides a critical mass of people to train and smooth the peak and troughs of demand.

2 | DJT | 20/05/2013 1:34 PM

Project Management certification is an example of where a job family is being managed and certification provides a validated method of ensuring there is consistent standards in competence.

3 | DJT | 20/05/2013 1:37 PM

The need for people and competence are not static in projects and this will vary over the project stages and activities.

4 | DJT | 20/05/2013 1:39 PM

A bureau service is a way of establishing a centre of expertise that can be uniformly trained, make use of lessons learnt and allocate the skills and expertise to where it is needed.

5 | DJT | 20/05/2013 1:41 PM

There are no management systems to assess workload.

6 | DJT | 20/05/2013 1:42 PM

How to develop a sharing culture between the SPO? It is noticeable that there is little incentive for SPO’s to share resources and allocate resources to priority areas when it means losing competent people. This issue is not restricted to people competencies.

7 | DJT | 20/05/2013 1:44 PM

Matrix management provides an amount of cross levelling of competencies between areas in LSD. Engineering has been done well as there are lots of them (40 percent of the LSD staff are engineers). Also occurs in the scheduling area. Management by job families is evident in these areas and actively assists in meeting demands in priority areas.

8 | DJT | 20/05/2013 1:47 PM
The higher level view is that skills and expertise are recruited in advance to anticipate future requirements. Centralisation of skills and expertise allows the organisation to smooth the demand and develop people. The MEA model although it is costly.

Need to grow your own skills and expertise. DMO runs a graduate engineering and scheduling program.

Key is to matrix the enabling services and this allows skills and expertise to be allocated to the priority areas.

Priorities are important and the allocation of specific skills to meet the need.

There should be a broader search for who is available and who has the skills sets within DMO. This management and authority does not appear to be exercised. Projects need to get by with who they have.

Building skills in areas where there is shortages such as tech spares assessors is important to the future.

You also need to leverage off suppliers. Suppliers know the equipment well and have a wealth of knowledge. This issue with suppliers in the contractual hazards and knowing whether they are acting in the buyers or project team’s best interests.
Nodes\Agenda for Change\Develop PM expertise

**Document**

**Internals\03 Comparison interviews\My 130517 Alpha - Summary of comparison interviews**

<table>
<thead>
<tr>
<th>No</th>
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<td>1</td>
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<td></td>
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<td>20/05/2013 1:07 PM</td>
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</tbody>
</table>

So indirectly if there is a lack of appropriate competence or skill sets then this will be evident in the schedule performance of the project.

---

**Internals\03 Comparison interviews\My 130517 Bravo - Summary of comparison interviews**

<table>
<thead>
<tr>
<th>No</th>
<th>Aggregate</th>
<th>Classification</th>
<th>Coverage</th>
<th>Number Of Coding References</th>
<th>Reference Number</th>
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<tr>
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<td>3</td>
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<td>DJT</td>
<td>20/05/2013 1:23 PM</td>
</tr>
</tbody>
</table>

It is usually left to the project to determine what skills sets are needed.

2  DJT  20/05/2013 1:25 PM

The way projects are introduced to LSD is through the emerging projects area and these decisions are usually made there.

3  DJT  20/05/2013 1:25 PM

The project manager as the leader of the team solicits the necessary competencies needed to deliver the project.

---

**Internals\03 Comparison interviews\My 130517 Delta - Summary of comparison interviews**

<table>
<thead>
<tr>
<th>No</th>
<th>Aggregate</th>
<th>Classification</th>
<th>Coverage</th>
<th>Number Of Coding References</th>
<th>Reference Number</th>
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<tbody>
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<td>DJT</td>
<td>20/05/2013 1:35 PM</td>
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</tbody>
</table>

Apart from industry certification it is difficult to be assured that people competent.
# Appendix J - Summary and analysis of comparison interviews

<table>
<thead>
<tr>
<th>Activity Description</th>
<th>Relevance of problem situation themes</th>
<th>Summary of Participant Comments</th>
<th>Synopsis of Issues</th>
<th>Desirable and Feasible Actions</th>
</tr>
</thead>
</table>
| Appreciate capability and project needs. (Needs phase) | **Accountability** – single point of accountability in the capability development process.  
**Excessive bureaucracy** – clear accountabilities.  
**Commercial approach** – establish the business case.  
**Workforce mix** – workforce planning established to ensure capability can be acquired, supported and operated.  
**Competence development** – sources of knowledge of capability identified.  
**Industry capability** – industry base is able to deliver the capability.  
**Requirements determination** – needs are realistic and achievable.  
**Risk sharing** – risks profile is acceptable and are able to be shared.  
**Performance reporting** – performance needs identified  
**Professionalisation** – Sufficient skills and experience in-house to oversee delivery and support.  
**Value for Money** – clear | Alpha: Capability Development Group does this activity.  
Mike: The model should not be viewed as linear and the appreciate capability and project needs should be iterative.  
Charlie: Capability Life Cycle is the charter of Capability Development Group  
Charlie: Scan of the environment and needs leads to requirements that are agreed by Government  
Charlie: Government decisions are based on funding. Policy considerations such as the White Paper and funding of the Defence Capability Plan. | • This activity is undertaken by CDG and supported by DMO and other services and agencies in the Department of Defence.  
• Strategic people capability needed to support early project definition and to ensure project is feasible. | • Ensure that the people capability needed to scope and deliver the project is agreed in the project business case and is capable of being fielded.  
• Establish an integrated workforce planning model to support project delivery and learning. |
<p>| | | |</p>
<table>
<thead>
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</thead>
<tbody>
<tr>
<td>2</td>
<td>Appreciate external or market equipment solutions, technologies and project management (Requirements phase)</td>
<td><strong>Business Case</strong> for the new capability.</td>
</tr>
<tr>
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<tr>
<td></td>
<td>Accountability – single point of accountability for decisions. <strong>Excessive bureaucracy</strong> – clear accountabilities. <strong>Commercial approach</strong> – develop the business case and assess commercial feasibility. <strong>Workforce mix</strong> – sources of competence to ensure capability can be acquired, supported and operated. <strong>Competence development</strong> – identify sources of knowledge and access to intellectual property. <strong>Industry capability</strong> – assess industry capability to deliver solution. <strong>Requirements determination</strong> – functional requirements derived from needs <strong>Risk sharing</strong> – risk profile is acceptable and are able to be shared. <strong>Performance reporting</strong> – performance criteria established <strong>Professionalisation</strong> – Job family</td>
<td>Bravo: Need to understand the acquisition concept whether the purchase is military or commercial off the shelf (MOTS/COTS) or it is a development solution. The skill sets required to deliver these projects are different. Oscar: Governance arrangements do not include people with experience and competence. Oscar: There is no program or portfolio level management. Oscar: It is not done quickly enough too much indecision. Charlie: Proposals are reviewed and refined several times. Charlie: The danger is when someone gets a fixed view on the outcome this distorts the outcome. Charlie: This activity is predicated on the skills and expertise that CDG has in developing the business case. Charlie: CDG lead this activity with DMO input. Charlie: Measure of success is if the capability is delivered and sustained. Not really measured but vetted through the committee process. <strong>Workforce planning</strong> should be integral to the capability development process and reflect the risk profile of the project. <strong>Insufficient skills and expertise</strong> applied to governance arrangements</td>
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<td></td>
<td></td>
<td>Project workforce requirement is progressively refined through the capability development process. **Establish an LSD panel or virtual network of people with requisite skills and expertise to participate in project governance arrangements such as project executive reviews, gate reviews and stakeholder group meetings (PMSG and IPT).</td>
</tr>
</tbody>
</table>
|   | Define project people competencies (Requirements phase) | Accountability | Alpha: The system to define people competencies is a reactive system instead of a proactive system.  
Alpha: Between First and Second Pass this is determined so when the Material Acquisition Agreement is signed at Second Pass the task is well known and then it needs to be executed against the plan.  
Alpha: Performance is judged by sticking to schedule agreed in the MAA. So indirectly if there is a lack of appropriate competence or skill sets then this will be evident in the schedule performance of the project  
Bravo: LSD uses the resources available either Australian Public Service or uniform.  
Bravo: It is usually left to the project to determine what skills sets are needed.  
Bravo: The way projects are introduced to LSD is through the emerging projects area and these decisions are usually made there.  
Delta: This activity is implied through the project definition process. So as the project business case is developed the staffing needs are considered then.  
Delta: Job families are needed to manage groups of competencies. This provides a critical mass of people to train and smooth the peak and troughs. | • Consideration of skills and expertise required in projects is very broad and is usually characterised as being reactive and crisis managed.  
• Workforce planning should be integrated into the project planning and approval process and be ongoing  
• Job families should be centrally managed to support priorities, professional development and career | • Establish a group of appropriately skilled people to implement an LSD workforce and people management model to support project delivery – ensure that competent staff are available to support new projects.  
• Establish incentives for early delivery of projects  
• Establish incentives in performance appraisals for resource sharing, workforce and cost estimation  
• Provide a user friendly workforce |
| | Certification level equated to project competence requirement. **Value for Money** – clear business case for acquiring or developing in-house the required competencies. of demand. Delta: There is an assumption of competence when a person from a skills set is provided. So there is sometimes a gap between requirement and competence which would be bridged by on the job and formal training Delta: Project Management certification is an example of where a job family is being managed and certification provides a validated method of ensuring there is consistent standards in competence. Delta: Apart from industry certification it is difficult to be assured that people competent. Delta: The people you get ‘are who they are’ and it is the projects job to up skill and manage their performance. Delta: The need for people and competence are not static in projects and this will vary over the project stages and activities. Delta: Better in most cases to have ‘warm bodies’ in the set than no one performing a required role in a project. Delta: The standard of the competencies reflects often in the outcome and success of projects. Delta: Inflation of job levels to reduce the risk of incompetence. Projects will seek to recruit the next higher level in order to reduce the risk of getting less competent people. Delta: A bureau service is a way of establishing a centre of expertise that can be uniformly trained, make use of lessons learnt and allocate the skills and expertise to where it is needed. Delta: There is no altruism between SPO in LSD management. • Performance should be closely managed to ensure job competence. • There are significant resource saving benefits in the early delivery of capability so incentives should be provided for the early delivery of projects. • Resources appear to be horded rather than being allocated to the highest priorities and shared. These should be incentives for sharing resources. • The workforce planning model should be explicit. • Management reporting and planning tool that is available to project managers. • Replace the current scheduling tool (Open Plan Professional) with simpler scheduling and resource management tool that can forecast and track staff. ie. Microsoft Project. • Executive and governance reviews of projects to routinely include scrutiny of project requirements and work breakdown structures including resource estimation. • Establish job families and certification requirements for Integrated Logistic Support and Sustainment. • Role modelling of |
and this leads to hording of people with skills and expertise. Often people in line management positions will release only the under performers when required to meet other priorities in LSD. There is no incentive to lose the performers.

Delta: There are no management systems to assess workload.

Delta: Managers need to manage competencies needed for projects and be held accountable for that activity.

Delta: How to develop a sharing culture between the SPO? It is noticeable that there is little incentive for SPO’s to share resources and allocate resources to priority areas when it means losing competent people. This issue is not restricted to people competencies.

Delta: Matrix management provides an amount of cross levelling of competencies between areas in LSD. Engineering has been done well as there are lots of them (40 percent of the LSD staff are engineers). Also occurs in the scheduling area. Management by job families is evident in these areas and actively assists in meeting demands in priority areas.

Mike: This process is not done well.

Mike: There is no model that defines how this activity takes place.

Mike: A robust work breakdown structure would identify the people skills and competencies that are required to deliver a project.

Mike: More can be done in this area.

Mike: Need to focus on skills rather than process

Mike: Is there the capacity in DMO and industry and software tools to support workforce planning is not user friendly.

- Requirements development and planning is not sufficiently robust as a result identification of in the people capability area as a result of poor estimation and use of project management tools.

- Informal and formal job family training is delivered in projects so project managers should be incentivised and assessed on their performance in this area.

changes at the one star level.
to run projects – a rigorous understanding of the competencies required to run a project would highlight the project risk profile and lead to a better understanding of the likelihood of project success.

Oscar: Issue with competencies at the program level.

Oscar: Need quality at the program management level so they can coach the project managers

Oscar: Different skills for project management and sustainment managers.

Oscar: Defining and estimating skills in developing project work breakdown structures is important to success.

Oscar: There should be a broader search for who is available and who has the skills sets within DMO. This management and authority does not appear to be exercised. Projects need to get by with who they have.

Oscar: Finance and work breakdown structures defined to third level and used to forecast needs in this MNC.

Oscar: Need to price major tasks and get good as estimating and forecasting effort.

Charlie: Very broad bush.

Charlie: Not done well.

Charlie: Certain skills sets and levels determined but not further defined.

Charlie: Process relies on gap plugging rather than a detailed process to determine skills and expertise.

Charlie: This activity is only done to high fidelity when there is a problem at any time along the
| 4 | Acquire skills and expertise (Requirements and acquisition phase) | **Accountability** – workforce managed by accountable competence manager.  
**Excessive bureaucracy** - single point of accountability and reduce transaction costs.  
**Commercial approach** – use of relational contracting arrangements and terms and conditions to suit.  
**Workforce mix** – workforce planning ensures capability can be acquired, supported and operated.  
**Competence development** – development needs of internal and external workforce identified.  
**Industry capability** – Industry able to supply required competencies.  
**Requirements determination** – needs are achievable.  
**Risk sharing** – workforce risks are shared.  
**Performance reporting** – quality of human resource | Alpha: There is a need to specifically target the skills needed to deliver a project. Specifically, targeting means knowing who is around and actively seeking individuals to be part of the project team.  
Alpha: Recruiting is a major way of getting the skills and expertise.  
Alpha: Funds need to be available and also time to use the DMOSS panel to get the competencies you need. This method is more work than getting people internally reallocated.  
Alpha: The allocation of skills and expertise is very much dependent on the priorities of the LSD decision makers, which is line management.  
Alpha: Need to actively manage poor performance. Managers will give up poor performers more readily so they do no need to manage poor performance themselves. Managing poor performance is viewed as a time consuming task.  
Alpha: Mixed teams of uniforms, APS and contractors can cause disharmony. This is caused due to the diversity in remuneration and contractors poaching competent staff.  
Alpha: You also need to leverage off suppliers. Suppliers know the equipment well and have a wealth of knowledge. This issue with suppliers in | • Need to consider all available sources of competence to deliver projects. This includes full time staff (APS and ADF), contractors and suppliers  
• DMOSS panel process is bureaucratic and slow and does not always delivery timely outcomes  
• Need to actively manage poor performance  
• Central role of the project management in selecting and developing competences used in projects  
• Project Managers provided the authority to use DMOSS panel for tasks of less than say four months to produce standard products.  
• Establish a section within DMOSS to provide standardised tasks such as the development of project documentation.  
• Emphasis on developing the skills and expertise of project managers including:  
  o Structured and ongoing professional development  
  o Uniform |
management.

**Professionalisation** – Individual and organisational learning objectives established.

**Value for Money** – The value of individual and organisational learning considered in transaction.

the contractual hazards and knowing whether they are acting in the buyers or project team’s best interests.

Bravo: SPO usually acquire the skills and needed to run a projects.

Bravo: The project manager as the leader of the team solicits the necessary competencies needed to deliver the project.

Bravo: At the strategic level the Human Resource process guides recruitment, selection and training process but this is implemented in the project team.

Bravo: Need to use the in-house resources that are available.

Bravo: Success of the skills acquisition process is judged through PMSG.

Bravo: Project Managers are responsible for removing road blocks to achieving project goals.

Bravo: There may need to be some retraining of existing people in the organisation to get the right skills and expertise mix.

Delta: The higher level view is that skills and expertise are recruited in advance to anticipate future requirements.

Delta: Centralisation of skills and expertise allows the organisation to smooth the demand and develop people. The MEA model although it is costly.

Delta: Need to grow your own skills and expertise. DMO runs a graduate engineering and scheduling program.

Delta: Project management needs to be core as these people are accountable for outcomes.

- Requirement for skills and expertise in the project team varies overtime so planning should be ongoing.
- Business case for skills and expertise to deliver projects is not fully costed.
- Skills and expertise of the project manager important to project definition, planning and estimation of all project resources.
- No incentive to deliver project early – this would have significant cost savings for workforce.
- Centralisation of skills and performance management standards
- Support informal communities of practice throughout the organisation.
- Support the close interaction with suppliers and customers
- Establish a one star forum to prioritise, share resources and redistribute effort accordingly.
Delta: Key is to matrix the enabling services and this allows skills and expertise to be allocated to the priority areas.
Delta: Priorities are important and the allocation of specific skills to meet the need.
Delta: The core is project manager and sustainment managers who are accountable to line management for outcomes.
Mike: There is no formal system to acquire skills and expertise in DMO
Mike: Consideration of the skills of the project director capacity to identify the skills and expertise needed to deliver a project
Mike: Timing of when certain skills are required is key to delivering a project
Mike: Have the right skills and expertise leads to a greater understanding of the project risk profile – ‘you don’t know what you don’t know’.
Mike: Particularly important for engineering skills sets as this skill set is central to delivery of projects
Mike: Resource implications for DMO and contractors
Mike: Scheduling (project controls) is not done well in LSD.
Mike: Projects should include the full cost of resources in the project business case.
Mike: There are peaks and troughs of effort required at certain times in the project life cycle.
Mike: Need access to HR to resource support and review skills and expertise needed in the project.
Mike: Project skills and expertise is not...
necessarily transferrable to Sustainment.
Mike: Project Management is not necessarily a core competence of Defence. This could be better done by contractors. Contractors would deliver earlier and this could generate other problems such as synchronising support and budgeting. Contractors are incentivised to deliver outcome better than Defence employees.
Mike: There is no reward for early delivery of projects.
Mike: Employment incentives would allow projects to better deal with project risks.
Mike: Potential to incentivise APS on contract.
Oscar: More planning, rigour and governance oversight needed to build work breakdown structures
Oscar: Define the requirements for the project and the liability or need for personnel.
Oscar: Three ways to get things; buy, build or steal.
Oscar: Project managers need; project management skills, general management skills and domain knowledge. The intersection of these spheres is where experience is needed.
Oscar: Project managers should know their own skills and shortfalls
Oscar: PM BOK is a good way to analyse tasks. Usually develop a matrix using the PM BOK knowledge areas and identify needs and impacts in these knowledge areas.
Charlie: Done worse than the preceding step.
Poorly done.
Charlie: Worse in the current environment of
Charlie: What will probably happen is that there will be a revision to outsource work. Contractors are brought in and there will be no transfer of knowledge. Charlie: The skills and expertise that are approved to deliver the project in the business case should be allocated to the projects. Its more of get by with what staff resources you have and take it out of hide rather than projects being allocated the resources required to deliver a capability. Charlie: Measured by outcomes that are assessed as part of gate and executive reviews.

| 5 | Appreciate with sponsors the relevant equipment solutions, technologies and business environment. (Requirements phase. Translate functional requirements to product specifications) | **Accountability** – Competent single point of accountability. Authority and responsibility defined.  
**Excessive bureaucracy** – Clear project goals and accountabilities.  
**Commercial approach** – Business case is aligned with product specifications.  
**Workforce mix** – workforce planning supports product to be acquired, supported and operated.  
**Competence development** – Sources of knowledge contracted and  
**Industry capability** – Industry capable of providing product to | Bravo: This is done with the PMSG and the key stakeholders.  
Oscar: Project assessments take too long in DMO. This company usually spends two weeks to do project assessments of projects work $200m or so.  
Oscar: Project management skills need to be grown in Army Minor Projects. This provides project managers with a total experience of project management within LSD and a base level to develop project management practice.  
Oscar: Building skills in areas where there is shortages such as tech spares assessors is important to the future.  
Oscar: Requests for Quotes for Services (under the DMOSS panel) need to be issued to all suppliers not restricted as have seen in Newcastle recently where an RFQTS was only issued to Newcastle based suppliers.  
- Project assessments and decision on acquisition take too long  
- Need to support the authority of project managers to develop staff.  
- Project teams need to engage closely with suppliers to understand competence of supplier teams.  
- Delegate authority and responsibility to project managers where possible.  
- Continual assessment of the competencies needed to deliver projects.  
- Support a close working relationship with suppliers and customers. |
achieve business case objectives.

**Requirements determination** – Product specifications developed and traceable to requirements.

**Risk sharing** – risk profile is acceptable and are able to be shared and contracted.

**Performance reporting** – Delivery quality criteria established.

**Professionalisation** – Individual and organisational learning objectives known.

**Value for Money** – clear business case to support product and non-tangible benefits identified.

Oscar: Authority needs to be devolved to project managers so they can control the decisions related to their project.

Oscar: A process like the Rapid Prototyping and Development Establishment (RPDE) needs to be introduced for all Request For Quotation and Tasking Statement (RFQTS).

(extract from the initial interview: If you look at the way RPDE run their panel arrangements. You are a member and you are accepted and you have a login to their website and when an opportunity comes up, they just broadcast email advising that there is an opportunity sitting in the’ hopper’ and it’s a one or two liner that describes the broad role.. You login as a member of the panel and you have a look at it in detail and if you want to have a crack at it or explore it and then you can down load it yourself prepare your response and send it in.

**Intent:** The RPDE RFQTS model is effective and more efficient – DMO should consider it. It will also support the Whole of Government procurement initiatives emerging from Department of Finance and Deregulation so that other Departments can more easily use it. There are not many skill sets on the DMOSS panel that are not required across other Departments and Agencies.)

Oscar: Need to meet the project team before contracts are signed. Do not hire on the basis of a CV in a tender response.

Charlie: Competencies to do this work in CDG
vary depending on the part of the capability development process. Sometimes the user requirement is outsourced by CDG.
Charlie: The committee process and inter agency reviews of the business case agree on the requirements.
Charlie: Measured by the completeness of the documentation suite. The Operational Requirements Document through to the requirements and statement of work need to be agreed by the capability approval process.

<p>| 6 | Define project requirements, boundaries and competencies. (Requirements phase) | <strong>Accountability</strong> – defined single point of accountability. Authority and responsibilities identified and resources allocated. <strong>Excessive bureaucracy</strong> – Accountabilities established. <strong>Commercial approach</strong> – business case benefits achievable. <strong>Workforce mix</strong> – workforce planning defined and providing people with competence to ensure capability can be acquired, supported and operated <strong>Competence development</strong> – Competence development known and resources allocated. <strong>Industry capability</strong> – Industry able to leverage capabilities to support acquisition. | Oscar: project assessments take too long. Charlie: Yes. This activity is a clear DMO responsibility based on the prior capability inputs. Charlie: Need competencies to delivery from first pass through second pass to commence delivery. Charlie: The preferred capability option is what is delivered. Charlie: Understand success of a project about half way through and measure of success is agreement from the stakeholders. | • Competence of project managers and line management to decide quickly. | • Workforce planning structures and process that support project outcomes. |</p>
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<tr>
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<th>Requirements determination – Requirements are described in product specification and delivery is scheduled and resourced. Risk sharing – risks profile is acceptable and are able to be shared or contracted and treated. Performance reporting – Clearly defined criteria for delivery. Professionalisation – Individual and organisational learning objectives tasked. Value for Money – clear business case to deliver benefits.</th>
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<td>7</td>
<td>Acquire and support equipment in a timely manner achieving value for money. (Acquisition phase) Accountability – defined single point of accountability. Authority and responsibilities tasked and resources allocated. Excessive bureaucracy – Accountabilities established. Commercial approach – business case benefits achievable. Workforce mix – workforce planning defining on going people capability to acquire, support and operate capability. Competence development – Learning by doing developing competence for the future.</td>
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<td><strong>Industry capability</strong></td>
<td>Industry able to leveraging and developing new capabilities to</td>
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<td>support acquisition and sustainment.</td>
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<td><strong>Requirements determination</strong></td>
<td>Product meeting required capability and needs. Benefits</td>
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<td>being realised.</td>
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<td><strong>Risk sharing</strong></td>
<td>risks profile is acceptable and are able to be shared or contracted, treated and retired.</td>
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<td><strong>Performance reporting</strong></td>
<td>Performance feedback, learning and reward.</td>
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<td><strong>Professionalisation</strong></td>
<td>Individual and organisational learning objectives achieved.</td>
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<td><strong>Value for Money</strong></td>
<td>-business case benefits being delivered.</td>
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