Chapter 2

Capability development and acquisition

> A robust capability development process is critical to a successful acquisition. In the past, Defence capability requirements for some projects were inadequately defined before acquisition projects began. When the capability requirement evolved subsequently, causing changes in the scope of the project, the inevitable results were increased costs and delayed deliveries. In other cases, when the capability was defined at an early stage, it was sometimes done without reference to cost and risk drivers. This significantly increased the risk of cost and schedule overruns. To overcome these problems, the Vice Chief of the Defence Force and his capability staff are working with DMO staff to define a revised capability development process. This process emphasises a team–based approach involving both acquisition and through–life support specialists from the outset. [1]

2.1 The Committee has earlier indicated that the *Capability Systems Life Cycle Management Manual 2002* is a key reference document for the Committee's deliberations on materiel matters. It will form the basis for the ongoing monitoring and assessment by the Committee of the effectiveness of Defence's materiel acquisition and management strategies.

2.2 The *Manual* defines capability as 'the power to achieve a desired operational effect in a nominated environment within a specified time and to sustain that effect for a designated period'.[2] Capability is 'delivered by systems' which draw on many inputs including people, doctrine, materiel, facilities, through–life–support and command and management.[3]

> Capability systems have life cycles which begin with the identification of the need to reduce a current or prospective capability gap. The need is progressively translated into a working physical system which is operated and supported until it is withdrawn from service and disposed of. Capability must therefore be managed with both a system and life cycle perspective. The challenge of life cycle management is to bring into being a capability system that meets a specific requirement in the most cost effective way.[4]

2.3 It is the capability systems life cycle that provides the framework within which the DMO must work. The life cycle comprises four phases:[5]

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1 *Submission* 10, p. 7 (Department of Defence)

2 Dept of Defence, *Capability Systems Life Cycle Management Manual 2002,* point 1.2

3 *Manual,* point 1.3

4 *Manual,* point 1.5

5 *Manual,* point 1.16

a. Requirements phase—in which the capability needed is **defined** in terms of the functions it is to perform, the standards to be achieved under what conditions, the estimated costs to be incurred and the schedule to be met.

b. Acquisition phase—in which the solution to the required capability is procured and transitioned into service.

c. In Service phase—in which the capability is operated, supported and modified as necessary.

d. Disposal phase—in which the capability is progressively withdrawn from service and materiel items are disposed of.

2.4 It is abundantly clear from this sequence that effective acquisition depends critically upon the proper definition of the capability to be developed. The requirements phase includes the determination of costs and schedule. Given that those involved in acquisition are bound to operate within those cost and time parameters it is vital that those involved in defining capability are fully cognisant of the practicalities of acquisition. Correspondingly, the knowledge of acquisition personnel can make an insightful, even transformative, contribution to the deliberations of those working on the definition of capability and how it might be realised as, say, a weapons platform.

2.5 The difficulties of achieving mutuality between the capability requirement and acquisition phases seem to have been somewhat legendary, as indicated in the following remarks by the DMO client manager for Tanner James Management Consultants:

> The jargon used to go something along the lines of 'the dead cat coming over the fence from Capability Systems into DMO'. That was a common term around Defence… The dead cat being a project that was supposed to be revived by DMO when the budgets were unrealistic and the capability was not well defined. I believe that that is becoming less and less common. I have some confidence in some of the budgets that I see coming out now, particularly out of these ones where there is an integrated project team in place. When I first arrived three years ago in Aerospace Systems, it seemed that with almost every project that I dealt with, I would go in and talk to the project manager, who would say, 'I don't know what I'm doing here. I can't do this.' A lot of those problems are being resolved. That is why I am deliberately not sledging DMO. To DMO's credit, they have become a lot tougher on that.[6]

2.6 While the DMO has reported that 'in the past' acquisition projects were hampered, and it seems sometimes fatally undermined, by inadequately defined capability requirements, there is some evidence to suggest that similar problems still occur at present and are likely to persist into the future. In the opinion of one DMO insider:

6 *Committee Hansard,* p. 50 (Mr Raymond Ahern)

> The CS [Capability Staff] deliver poorly articulated requirements to the DMO and expects the DMO to deliver materiel against those requirements. The fundamental reason the CS cannot articulate requirements with sufficient speed is that they are simply under staffed to address all the issues with the degree of detail required in any reasonable time frame. Furthermore, the Committee systems the CS is forced to negotiate are intractable. If a Committee decides to defer a decision (which happens more often than not) the next round of deliberations will often fall to the next desk officer (as the first has moved on). This is inefficient and, again, wastes time and money.[7]

2.7 The Committee considers that there is a role for industry in assisting Defence to clarify its capability requirements, and notes that provision for this is included in the *Capability Systems Life Cycle Management Manual.*

> The early, close and continuous involvement of industry is essential to the effective life cycle management of capability. Industry involvement should commence during the Requirements Phase with the aim of ensuring the range of options for reducing capability shortfalls are technically feasible, affordable and represent all the practical alternatives.
>
> Engagement of industry in the Requirements Phase promotes the generation of innovative options, a better understanding by industry of Defence's capability requirements and better prospects for the early identification of costs and risks. Industry's improved understanding of the capability requirement may subsequently reduce the effort required to reach a satisfactory acquisition proposal, thereby saving industry and Defence time and money.[8]

2.8 While the arrangements specified in the *Capability Systems Life Cycle Manual* seem eminently rigorous to the Committee, it is concerned by evidence which casts doubt on the actual practices being pursued.

> I think it would be fair to say that, notwithstanding the very significant reform process which is under way in the DMO at the moment, it would be a widely shared view that the quality and discipline of the capability development process in Defence whereby these decisions are made has not improved in recent years and has probably deteriorated somewhat.[9]

2.9 These alleged shortcomings correspond to the advice provided by the Australian Industry Group Defence Council, which noted that:

> … within the environment in which it works, the Defence Materiel Organisation has a difficult task. This is compounded by a capability development process which remains product rather than outcome focused.

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7 *Submission* 14, p. 4 (Confidential)

8 *Capability Systems Life Cycle Management Manual,* paras 6.78–6.79

9 *Committee Hansard,* p. 61 (Mr Hugh White)

> This ensures that sustainability of capability, in–country support and, importantly, through–life support costs remain side issues within the capability development process and to a lesser extent during acquisition decisions. Also, the Defence Materiel Organisation still has to deal with the problems associated with insufficiently or inappropriately developed proposals from capability development areas. These increase the time it takes for the release of tender documentation, help to add to the time taken for a decision to be reached and exacerbate the costs of doing business with the Defence Organisation as a whole.[10]

2.10 If the AIG Defence Council is correct, and logistics and support costs 'remain side issues' in the capability development process, then the requirements of the *Manual* (and the *Guide* that preceded it) are simply not being adhered to. The *Manual,* at the beginning of its account of the Requirements Phase declares:

> Of particular importance is the need to consider all FIC [Fundamental Inputs to Capability], especially people and TLS [Through Life Support], from the beginning of the life cycle. The aim is to influence the development of a capability in order to improve its supportability and minimise Life Cycle Costs (LCC). **Careful attention must be given to all Fundamental Inputs to Capability from the beginning of the Requirements Phase. People and through life support matters are especially important. Input should be sought from SMEs [Subject Matter Experts] and TRAs [Technical Regulatory Authorities].** *(emphasis in original)* [11]

2.11 Given the crucial nature of the relationship between the requirement and acquisition phases, and the criticism that was coming from some quarters, the Committee pressed Defence officers to offer their account of the level of articulation of the capability section with the DMO as acquisition agent. The Vice Chief of the Defence Force, who has a major role in capability development, stated:

> I think we could do better… I think if we can specify in as much detail as possible what the ultimate capability requirement is going to be, it will allow DMO to satisfy that requirement better. Money spent up front is money that you save tenfold further down the acquisition track. So if we can define the requirement in sufficient detail for the DMO to then try to meet that requirement, that will assist them in the future. The other thing I would say is that we need to ensure that we have this teaming approach between my side—the requirements development people—and the DMO… I think our current two-pass approval process does assist in driving us towards meeting both of those aims.[12]

2.12 Further indications that Defence was beginning to take seriously the vital relationship between capability development and acquisition were presented in the evidence provided by the Head of DMO's Electronic Systems Division.

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10 *Submission* 20, p. 8 (Australian Industry Group Defence Council)

11 *Manual,* point 3.2

12 *Committee Hansard,* pp. 206–207 (Vice Admiral Russ Shalders)

> Our work to date has focused on requirements development. We have been working with the capability staff on the guidelines for developing operational concepts documents, functions and performance specifications and test concept documents. Our focus on requirements definition came from our consultations with industry. They thought we needed to improve requirements development. They wanted to understand more about how things were going to be used rather than just getting a specification. We also asked ourselves: if function and performance specs have been our policy for some time, what has been the difficulty with implementing that policy? We found that because we did not have a good requirements analysis process in terms of developing operational concepts and understanding the functions that need to be performed, the next part of that is obviously the function and performance spec.
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> In addition, we did some analysis of our work and, certainly in my division, we found that a large number of the delays in the projects getting to contract were because the DMO had to do substantial work in further defining requirements. That was leading to delays on our side because we had to add the additional information. Under our new approach, which the VCDF outlined this morning, we will have a greater level of requirements definition before we go to government approval. This will allow us to have a better understanding of the costs, the risks and the likely schedules that it will take to deliver on the requirements. It will also mean that the DMO will have a much more detailed definition of what is required from the capability staff, rather than high-level statements of intention and capability.[13]

2.13 A debate which emerged in the course of the Committee's inquiry centred on the question of whether a closer structural integration of the capability and acquisition functions should be pursued. The matter was first raised by ASPI's Hugh White, who elaborated in the following terms:

> My suggestion … would be a fairly radical one, and that is to change in a fairly deep way the relationship between … the DMO function as it is performed at the moment—and the capability development function. A very high proportion of the cost-capability trade-offs are choices, and therefore a very high proportion of the decisions—which, if made correctly, can produce a good project and, if done incorrectly, can produce problem projects of the sort we are discussing—are made during the process of source selection, somewhere between the time at which a senior committee in Defence produces a one-page specification of what is required in a broader sense, and somebody signs a contract that might be several feet thick, specifying exactly what is required on the other.
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> I think the best way to improve that interaction would be to move a lot more of the source selection process into the capability development end of the structure… I have often been struck by how quickly the centre, the headquarters with a strategic perspective, loses control of and loses track of the cost-capability trade-offs, which really drive the cost and schedule and

13 *Committee Hansard,* p. 249 (Ms Shireane McKinnie)

> technical risk of the projects as they are actually delivered. I think a better approach would be to move more of that responsibility back into the centre.
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> …
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> It seems to me one of the enduring problems in Defence on these issues has been that, although there are a large number of very talented people in the centre, I do not think it has had a sufficient depth of expertise on the very complicated range of technical issues, operational issues and market issues which are required.[14]
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> …
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> It is entirely feasible—and I would say pretty urgent—to rebuild within the headquarters a much stronger capability development element. …
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> It is not unachievable because it does seem to me that a high proportion of the reforms that have been undertaken within the DMO as part of the DMO reform program since amalgamation have been focused on what you might call the downstream ends of what the DMO does, the way it manages projects and, of course, manages the assets once they are in service. In a sense the amalgamation of Acquisition and Logistics has drawn the focus of the DMO further away from the beginning of the process that we are talking about—the capability development end—and closer towards the actual delivery of the capability once it has been produced and in service.[15]

2.14 The Committee acknowledged some prima facie merit in Mr White's 'radical proposal', especially given the importance of the capability/acquisition nexus and the claims that there were ongoing weaknesses in the capability definition phase. The Committee sought responses from Defence officials to Mr White's proposal.

> I think there is some merit in the basic principle. [Mr White] and I [Dr Williams] have discussed those issues and probably have similar views. The first issue is: should we go out with a firm requirement and say, 'We want X,' go to industry, tell them exactly what we want, get a price and then deliver it? Or, at the other extreme, should we go out and say, 'What will you give us, industry, and what will it cost?' then go back and weigh up the options? The former process is easier, cleaner, perhaps even simpler, from a procurement point of view, but you run the risk of asking for something which may push it just over the limit of some step function. You may finish up asking for a bigger engine which, if you had only known, you would not have asked for.
>
> On the other hand, if you keep it too broad and have a huge range of options, you make it very expensive for industry and somewhat of a nightmare for evaluation. You run the risk then of constantly shifting and you will never get to the end point. So I suspect the truth is a little bit

14 *Committee Hansard,* pp. 64–65 (Mr Hugh White)

15 *Committee Hansard,* p. 67 (Mr Hugh White)

> between what Hugh is saying. I think we probably are too requirement focused—that is a personal opinion—and we are trying to be a little more functional in what we ask for. I think the two pass approval process lends itself to that, because the first pass can keep it broad. In coming back, you can then go back to government with some flexibility and options, but there is balance.
>
> Should the people go into the headquarters? No. My view would be that it is much better to have the experts where they are and define the roles and the interactions. I think a small outposted team would lose touch with the reality. I come from a similar background to Hugh's. Quite frankly, two years in the DMO is quite a revelation. Things that you think are just oh so simple are a hell of a lot harder when you get there. In part what he is saying is right, but I would not go as far as he suggested.[16]

2.15 The Committee notes the emphasis placed by Dr Williams on the realities and complexities of dealing with cost–capability trade offs. It appreciates the challenges associated with defining capability so as to optimize it within the realms of the financially possible, the technically feasible and the logistically supportable. The Committee also notes the commitment of Defence to properly acquitting a life cycle approach to capability development which insists on acquisition and logistics considerations being taken into account right from the beginning of the cycle. The Committee is therefore disinclined to support a 'radical change' at this stage.

> **Vice Adm. Shalders**—I would like to give our current arrangements a chance to work. As I said to you before, I am very keen that the teaming approach be forced to work. I do not think we are too far off the mark in our current structures, provided both sides of that very complicated activity are working together as well as they should. I do not think that Mr White's proposal is necessarily the way to go. I fall down on Dr Williams's view, which is: let us leave it where it is. The reason that I take that point of view is that Dr Williams has worked on both sides of the equation. As Hugh White has indicated, he has only worked at one end of it… My personal point of view is that I think we are okay, provided the teaming arrangement—the partnership activity—works as well as it should.
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> **Air Marshal Houston**—If I could add to that, I think if you go back about 20 years our approach was very much where the source selection was done at the capability development end. Looking at some of the equipment we bought, we bought a lot of customised equipment when perhaps we would have been better off buying something that was more off the shelf or something that was common with other operators. I think the way we are doing it now is much more sophisticated. I would strongly support what the Vice Chief of the Defence Force has just said, in that the teaming approach is really the key to it all. I think the last thing we need is to make the decision in isolation in some part of the organisation. What is important is

16 *Committee Hansard,* p. 121 (Dr Ian Williams)

> that we work together in a very cooperative way as a team and make a corporate and collegiate decision.[17]

2.16 The Committee reiterates its requirement that Defence adhere strongly to the processes and values articulated in the *Capability Systems Life Cycle Management Manual 2002* and the *Guide* that preceded it. The Committee has marked the nexus between the requirement and acquisition phases as critical to success of projects, and will monitor very closely the diligence with which that nexus is observed by both the DMO and Capability Systems.

Recommendation

2.17 The Committee recommends that special training and professional development be undertaken jointly by capability and acquisition staff to ensure that all staff have a clear understanding of, an unequivocal commitment to, and the skills and knowledge to fully implement the practices specified in the *Capability Systems Life Cycle Management Manual 2002.*

17 *Committee Hansard,* p. 211 (Vice Admiral Russ Shalders, Air Marshal Angus Houston)