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The Claxton Papers

The Queen's University Defence Management Studies program, established with the support of the Canadian Department of National Defence (DND), is intended to engage the interest and support of scholars, members of the Canadian Forces, public servants, and participants in the defence industry in the examination and teaching of the management of national defence policy and the Canadian Forces. The program has been carefully designed to focus on the development of theories, concepts, and skills required to manage and make decisions within the Canadian defence establishment.

The Chair of Defence Management Studies is located within the School of Policy Studies and is built on Queen's University's strengths in the fields of public policy and administration, strategic studies, management, and law. The program offers, among other aspects, an integrated package of teaching, research, and conferences, all of which are designed to build expertise in the field and to contribute to wider debates within the defence community. An important part of this initiative is to build strong links to DND, the Canadian Forces, industry, other universities, and non-governmental organizations in Canada and abroad.

This series of studies, reports, and opinions on defence management in Canada is named for Brooke Claxton, Minister of National Defence from 1946 to 1954. Brooke Claxton was the first post-Second World War defence minister and was largely responsible for founding the structure, procedures, and strategies that built Canada's modern armed forces. As defence minister, Claxton unified the separate service ministries into the Department of National Defence; revamped the *National Defence Act*; established the office of Chairman of the Chiefs of

Staff Committee, the first step toward a single chief of defence staff; organized the Defence Research Board; and led defence policy through the great defence rebuilding program of the 1950s, the Korean War, the formation of NATO, and the deployment of forces overseas in peacetime. Claxton was unique in Canadian defence politics: he was active, inventive, competent, and wise.

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The author is solely responsible for the contents of this publication. The information and opinions expressed herein do not necessarily reflect the views of the Department of National Defence or the Canadian Forces.

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Introduction

During the past
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virtually

governments across Western nations for several decades. The high value of acquisition contracts, the positive employment return from major contracts, the advanced technology inherent in weapons systems to the national economy, the spinoff of political pressure on politicians in ridings with a high concentration of defence employment, and the power of defence industry advocates combine to pressure national governments to generate employment through defence procurement spending. Indeed, the sophisticated, leading-edge technology necessary for the development and manufacture of advanced weapons systems produces the high-value employment that national governments want to foster, in large part for the “multiplier effects” it provides within the domestic economy. The significant demand for defence-procurement funding stems from the rapidly evolving nature of modern warfare and the so-called revolution in military affairs. Most other government programs are less dynamic and less prone to rapid technical change. Consequently, in comparison to these other government programs, defence capital expenditure tends to overshadow capital expenditure in all other government departments.

A combination of significant and persistent cost growth in defence acquisition programs and “a systematic bias toward underestimating

the costs”² of procuring weapons systems makes national military capital procurement programs a lightning rod for the media, opposition parties, and interest groups opposed to defence spending. For these reasons defence procurement processes are constantly under review by governments seeking to increase efficiency, effectiveness, and timeliness in the acquisition process. This paper examines defence procurement studies, reports or policy papers produced by allied nations, to determine if there are any lessons learned in these countries that might be profitably applied by Canadian defence procurement policies and processes. The period of review begins in the mid-1980s as the Cold War was ending and continues into early 2009.

The United States defence budget surpasses by several magnitudes that of any other nation. Its defence industrial sector outpaces in scope and technology all other industrialized countries. The effectiveness of the immense annual investment in weapons systems in America is under continual review, in ongoing analysis of procurement, by the Congressional Budget Office, the Government Accountability Office, RAND Corporation, a variety of prominent American think-tanks, and the national media. The depth of informed analysis and the wealth of information and data generated by these organizations provide benchmarks that other nations use to evaluate their defence acquisition processes.

Procurement reform in the United Kingdom, a leading middle power with a significant defence establishment and close historical links to Canada, is examined next. Its reform is an appropriate alternative comparison for defence procurement reform in Canada.

Australia is the final country considered in this international overview of defence procurement reform. Although its defence forces and budget are smaller than Canada’s, Australia has been prominent in deploying military personnel as part of multinational operations in failed and failing states in the post-Cold War era. Moreover, it is not as constrained by alliance commitments as Canada may be and has strived successfully to forge a more independent course of action in security issues. Thus, Australia provides a third, and different, reference point to the Canadian experience with our “strategic cousins.”

CHAPTER 1

*Defence Procurement Reform in
the United States*

historical overview of defence organization in the United States, and the framework under which it operated; as well as *Conduct and Accountability*,⁷ which examined the relationship between government

Section 800 Report (1993)

The unceremonious end to the Cold War brought forth demands for reductions in defence spending, and in the early 1990s pressure was growing in Congress to produce a “peace dividend.” The desire to keep the maximum amount of combat capability possible within a smaller defence establishment resulted in a course of action focused on saving money by increasing the efficiencies in defence procurement.

In the 1991 fiscal year, Section 800 of the *Department of Defense Authorization Act* instructed the department to establish the Acquisition Law Advisory Panel. This panel was directed to review acquisition laws affecting the department, with the goal of making recommendations related to repealing or amending those laws and regulations that required change. The goal was to begin a process that would ensure greater coherence in the legal procurement framework and a streamlining of acquisition practices. While appearing to be of secondary importance in the defence acquisition process, the legal framework had an overarching influence on the process and on the behaviour of the

organization. This support, in turn, enabled institutional learning and subsequent organizational adaptation prior to decisions that would fundamentally change existing acquisition processes.

Federal Acquisition Streamlining Act (1994)

The *Federal Acquisition Streamlining Act*¹² incorporated recommendations from the Acquisition Law Advisory Panel and the *National Performance Review* and consolidated a myriad of laws into a procurement code. The *Federal Acquisition Streamlining Act* also consolidated the structural, legal and procedural changes that had occurred since the Packard Commission had been released. Yet, the strategic, business and procurement environments were also changing at a rapid pace, leaving the defence establishment to struggle continually to keep pace. This reality broadened the scope of needed reform and ushered in a series of further studies, all with the objective of aligning acquisition processes better with the needs of operational military units.

The *Federal Acquisition Streamlining Act* provided a necessary consolidation of preceding recommendations. However, given the rapid pace of change at the time and the simultaneous, dramatic downsizing of the defence sector, what was most needed during this period was a road map to assist the Department of Defense in navigating through this change. The *Defense Reform Initiative Report* was an attempt in that direction.

Defense Reform Initiative (1997)

The *Defense Reform Initiative Report* tabled by the United States Secretary of Defense on November 1997 echoed a theme common at the period: it was time to “reengineer” government processes “that are at least a generation out of step with modern corporate America.”¹³ Indeed, an organization that could formerly boast of numerous state-of-the-art systems and practices – when compared to the private sector – the Department of Defense was now viewed in an unfavourable light as lagging behind contemporary, leading-edge corporate entities.

Adopting best business practices was recommended as the centerpiece of this reform initiative. These practices included a mix of specific initiatives, such the rapid leverage of information technology through embracing electronic business operations, a shift to electronic commerce in both finance and contracting, and the adoption of the

prime-vendor contracting approach utilized by major corporations. More generally, the report suggested that the use of the private sector models in both logistics and transportation would achieve efficiencies.

Streamlining defence through competition was the second key focus in the *Defense Reform Initiative Report*. This initiative concentrated on identifying the components of the military and civilian workforces that were of a commercial nature and opening these functions to competitive bids. Rooted in the longstanding philosophy that the federal government was not a competitor in commercial activities with the private sector, the report applied a framework that compared in-house bids with those of the private sector. Also prominent in the report was a number of organizational reforms, which largely involved shrinking quite substantially the size of military headquarters, defence agencies and the Office of the Secretary of Defense, as well as eliminating a broad range of infrastructure that was considered no longer necessary.

The *Defense Reform Initiative Report*, under a reform rubric, called for the dramatic transformation of the Department of Defense and Armed Services through the adoption of leading-edge business practices and the incorporation of the efficiencies of U.S. competition into defence. Yet, in a resource-constrained environment in which armed forces faced new and emerging threats, the necessity of reallocating resources from infrastructure and support to operations was deemed essential. Consequently, this initiative was, in effect, the launching of a revolution in business affairs to support the already ongoing revolution in military affairs.

To be sure, given the state of affairs at the time, the responsiveness of the acquisition and support functions to the shifting strategic environment was deemed critical. The ongoing transformation within the defence establishment in the United States was substantive. Both operational and support aspects of defence were changing simultaneously, while budgets were limited and the defence industrial base was declining. Indeed, the level of transformational ambition was significant; yet, success in the “new world order” could not be assured by following the military principle of “selection and maintenance of the aim” alone.

Rumsfeld’s Challenge (2001)

In a speech at the Pentagon on 10 September 2001 to launch the Department of Defense’s Acquisition and Logistics Excellence Week, Secretary of Defense Donald Rumsfeld addressed the serious threat posed to the security of the United States by an adversary close to home.

This adversary he described as the internal Pentagon bureaucracy. Institutional inertia within the department was viewed as a serious barrier to achieving an effective response to the changing environment. In addition, organizational processes were perceived as out of date and in need of modernization. Secretary Rumsfeld viewed the forty-year-old Planning, Programming and Budgeting System as a “relic of the Cold War, a holdover from the days when it was possible to forecast threats for the next several years because we knew who would be threatening us for the next several decades.”¹⁴ Nevertheless, his call for transformation of defence echoed the recommendations that had been made repeatedly in the preceding years.

The private sector was held up as the role model for defence. Like “the private sector’s best-in-class companies, DOD should aim for excellence in functions that are either directly related to warfighting or must be performed by the Department. But in all other cases, we should seek suppliers who can provide these non-core activities efficiently and effectively.”¹⁵ The private sector was highlighted as the “engine of technological innovation,” a position formerly held by the American Department of Defense.

The need to streamline the defence acquisition system was another key point in Rumfield’s presentation. Although nothing novel was introduced in this speech, it highlighted the approach of the U.S. administration to defence management. The speech, however, is of value because it illustrates the lack of continuity in addressing entrenched problems in the American defence acquisition system. Problems – largely the same problems – are identified repeatedly; many common solutions are advocated by learned and experienced observers, but yet the application of these solutions to persistent problems requires continuity and a long-term, stable plan to shift the acquisition system to more effective processes.

Defense Acquisition Performance Assessment (2006)

Both Congress and the Department of Defense senior leadership have lost confidence in the capability of the Acquisition System to determine what needs to be procured or to predict with any degree of accuracy what things will cost, when they will be delivered, or how they will perform.¹⁶

Assessment Panel of the Defense
Acquisition Performance Assessment Project

The primary task assigned by the Secretary of Defense to the assessment panel of the Defense Acquisition Performance Assessment project was to provide recommendations for a defense acquisition system that provided “clear alignment of responsibility, authority and accountability.”¹⁷ The major findings of the report are listed in Table 1.1.¹⁸

The authors of the report argued that given the present unpredictable international security environment, agility in the acquisition system was essential in order to respond quickly to operational requirements. Indeed, timeliness emerged as a key parameter in the report, with the finding that the “Department of Defense’s ‘one size fits all’ acquisition program structure does not meet the diverse capability and rapid time of delivery needs that are typical of a rapidly changing security environment.”¹⁹

Another key theme of the report is the need for greater accountability. This theme is linked to the barriers that are imposed by the increasing complexity of the acquisition process and the need to orient the process more towards a program focus. The authors concluded that stability and continuity are essential parameters to success in the acquisition process and that improvements across all major system elements would be required in order to increase procurement effectiveness.

Table 1.1. Defense Acquisition Performance Assessment – Major Findings

- Strategic exploitation of technology is a key U.S. advantage.
- The U.S. economic and security environments have changed.
- The acquisition system must deal with external instability.
- The DOD management model is based on a lack of trust.
- Oversight is preferred to accountability.
-

studies. One prominent recent exception is the report of the Center for Strategic and International Studies, *Department of Defense Acquisition and Planning, Programming, Budgeting and Execution System Reform*.²⁰

This report eschews the narrow focus of many government-based reform studies and concentrates on the broad subjects of requirements, resource allocation (budgeting), and acquisition execution. It identified the enduring problem areas in American defence acquisition management. Indeed, the report emphasized that the defence acquisition system still lacked responsiveness, cost overruns continued, and capital projects experienced persistent schedule delays – subjects raised two decades earlier by the Packard Commission.

Recommendations to address these problems included restructuring the acquisition process to give each service clear responsibility and accountability for the execution of procurement programs; increasing technological leadership by extending the stature and span of control of technological organizations within the department in order to encourage and facilitate the perceived next technological evolution; rationalizing the rapid acquisition process; adopting time-certain development requirements (limiting the time a project can proceed through the acquisition process); and, finally, establishing risk-based source selection, streamlining the oversight, and stabilizing acquisition leadership.²¹

The report emphasized the importance of efforts to change the tra-

The implementation plan for defence acquisition transformation is centred on seven goals, listed in Table 1.2.²³

Table 1.2. Department of Defense Acquisition Transformation – Goals

- A high-performing, agile and ethical workforce
- Strategic and tactical acquisition excellence
- Focused technology to meet war-fighter needs
- Cost-effective, joint logistics support for the war-fighter
- Reliable and cost-effective industrial capabilities sufficient to meet strategic objectives
- Improved governance and decision processes
- Capable, efficient and cost-effective installations

The acquisition transformation goals listed in the report may appear at first glance to cover too disparate and broad a spectrum to provide for a coherent and broad-based evolutionary change. Yet, on closer examination, each goal is oriented towards reforming the specific elements that are the essential building blocks to enable substantive change.

One theme that may prove to be remarkably fortuitous is the need for concentrated decisions around the idea of cost-effectiveness, particularly in the current situation where large numbers of aging equipment will need to be replaced in the coming decades. However, achieving the key goal of improved acquisition governance and decision processes is often compromised when looked at solely from an internal departmental perspective; there needs to be a more broad-based national governance and decision-making process involving Congress and the Administration to achieve this goal.

Conclusion on U.S. Defence Acquisition Reforms

The need for change in defence acquisition was evident over two decades ago, and the resulting Packard Commission report set the foundation for subsequent reforms. However, the dramatic unleashing of
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dedicating less attention to how weapons systems are produced and more to what the program is intended to deliver.²⁸

Assessments of the success of defence acquisition reforms in the United States are mixed and result from the several different visions and criteria for success in defence acquisition over time. Changes in governments invariably bring shifts in policy approaches, often challenging or reversing momentum that may have been achieved earlier. Specifically, “changing visions also create potential for less than full realization of change consequences, as change agents become overly focused on achieving some measure of change during their term in power.”²⁹

The major American defence reforms discussed above are summarized in Table 1.3.

Table 1.3. Major American Acquisition Reforms

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CHAPTER 2

Defence Procurement Reform in the United Kingdom

Defence procurement reform in the United Kingdom coalesced in

and that the provision of equipment programmed to enter service was, on average, three years behind schedule.³¹ Second, corporate business models were changing, and this brought new procurement practices to government, as well as opportunities to enhance the manner in which equipment was acquired and maintained. Third, as in other Western countries, citizens in the U.K. were expecting a peace dividend from their government when the threat emanating from the Soviet Union disintegrated. In order to preserve combat capabilities, defence departments everywhere (including the U.K.) were examining ways to reduce the cost of support functions to allow for core capabilities. The result of this basic review was the renewal of the landmark *Strategic Defence Review*, tabled by the government in 1998.

A prominent component of the *Strategic Defence Review* was the Smart Procurement Initiative. The objective of smart procurement echoed the theme of procurement reform underway in the United States and aimed to deliver military equipment in the U.K. “faster, cheaper and better.”³² The existing procurement system was described as a key operational handicap to the armed forces, as the protracted procurement cycle meant that the U.K. was “not keeping pace with the rate of technological change which in many areas is now commercially led.”³³

The Smart Procurement Initiative aimed to increase project planning in the initial stages, with subsequent trade-offs between resources, time, and costs; strengthen the relationship between the Ministry of Defence and industry; stress emerging procurement methodologies; invest in improved estimates; and, finally, increase adoption of commercial practices in the defence establishment. The key elements of smart procurement are listed in Table 2.1.

Table 2.1. Key Elements of Smart Procurement

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In addition to “faster, cheaper and better,” the *Strategic Defence Review* envisaged that the Smart Procurement Initiative would save the department approximately £2 billion over a period of ten years.³⁵ A key enabler of the initiative was the concept of Integrated Project Teams. These integrated teams would bring together all the relevant stakeholders of the equipment projects “under the clear leadership of a team leader able to balance trade-offs between performance, cost and time within boundaries set by the approving authority.”³⁶ Significantly, the three environmental logistics organizations were integrated into a consolidated Defence Logistics Organisation, with the responsibility for in-service management of all military equipment.

Smart Acquisition (2000)

In October 2000 the Smart Procurement Initiative was renamed Smart Acquisition, with the intent of further developing the concepts introduced under the previous initiative. The objectives of Smart Acquisition are listed in Table 2.2.³⁷

Table 2.2. Smart Acquisition Objectives

- Delivering projects that meet or better the time, cost and performance targets set when the decision to proceed with the project was made
- Acquiring capability progressively, at lower risk and with the right balance between military effectiveness, time and whole-life costs
- Cutting the time for key technologies to be introduced into the front line where needed to secure military and industrial advantage

The “whole life” approach to military equipment was emphasized in Smart Acquisition. Life began with concept development, moved to procurement, and continued through the full life cycle of the equipment. Public-private partnerships (PPPs) were viewed as a central component necessary to the modernization of public sector services. Consequently, the government introduced initiatives such as the Private Finance Initiative and declared “partnering and outsourcing are at the heart of the PPP concept, and under Smart Acquisition the MOD has fully endorsed the use of these tools for providing services throughout the Department.”³⁸

UORs) in the type of operations that West-
undertaking in the fast-evolving international
need, “the varied nature of operations and op-
that may be encountered and the different
employed mean that existing capabilities often
rapidly to fill previously unidentified gaps.”⁴⁵
national requirements, by their very nature, drive the
activity to rapidly procure capability in support of op-
key is that this activity brings together disparate groups
government, armed forces and industry to solve problems –
solutions –on a short time scale. Relationships are
of purpose develops. From this perspective, urgent
requirements are progressed in stark contrast to the plod-
deliberate pace of the traditional defence capital acquisition
table 2.3 lists the potential uses of the urgent operational re-
process.⁴⁶

2.3. Uses of Urgent Operational Requirements

- Procuring operationally specific capabilities
- Procuring equipment to fill previously unknown capability gaps
- Accelerating a programme already in progress
- Patching a gap until an already funded solution comes into service
- Filling a previously identified gap that has not been funded

The National Audit Office report is unusual – at least, in Canadian terms – in that it steps forward in its final main section from merely being an audit and evaluation document to providing a joint framework developed with both external consultants and the department to improve departmental UOR processes and tasks. Nine specific activities were identified within the UOR process. The recommendations in the report can serve to enhance the UOR process, as well as inform the broader defence acquisition community through a type of lessons-learned process how to move significant capital projects forward faster. For example, the report suggests ways in which a defence industrial strategy can incorporate some of the successful techniques and processes of the UOR process into broader national acquisition strategies.

Defence Industrial Strategy (2005)

achieving primacy of through life considerations; coherence of defence spend across research and development, procurement and support; and successful management of acquisition at the departmental level.”⁴⁸

Defence acquisition reform in a nation has the objective of improving the methods and processes in which capital equipment is bought and managed by defence departments. Nevertheless, unless this reform is supported and facilitated by associated actions in interrelated areas, benefits of this reform will be limited. Indeed, in the case of the United Kingdom, the lack of adequate funding to implement the *Defence Industrial Strategy* has for the most part negated the positive impact that this welcomed strategy had on release. Although the government has put in place both a structure and guiding principles for a defence industrial strategy, without sufficient funding the U.K. defence industry will continue to experience declines in capability.⁴⁹

Enabling Acquisition Change (2006)

The report entitled *Enabling Acquisition Change: An Examination of the Ministry of Defence's Ability to Undertake Through Life*

Conclusion on U.K. Defence Acquisition Reforms

The United Kingdom has charted a remarkably consistent course in defence acquisition reform since the Smart Procurement Initiative was introduced in 1998. Nevertheless, the evidence, to date, from “Smart Procurement/Acquisition is that these initiatives have rarely delivered the complete scope of expected benefits.”⁵² Yet, this conclusion must be seen in the context of improvements that have been made in the acquisition system over the past decade.

The most substantive benefit of the British approach is the combination of relative stability in the system – once it was implemented – and the value of subsequent incremental enhancements under the Smart Acquisition framework. Stability of approach is a key enabler to lasting change. Nevertheless, management – or process – changes are in themselves not the complete solution. Indeed, adopting private sector processes in isolation is not a panacea. Procurement within the private sector is distinguished by certain market incentives that are absent in the public sector. Likewise, elected politicians of all stripes have their own interests in these matters, and they usually centre on incentives to support defence contracts in their constituencies, irrespective of the costs.

The continuing problems identified in the 2006 *Enabling Acquisition Change* report highlight the difficulty of effecting change in defence processes, notwithstanding considerable efforts that may be made to undertake those changes. The U.K. has, in effect, adopted an incremental approach to defence acquisition. To begin with the procurement process and then expand to the in-service life of the equipment has a conceptual appeal. Subsequent phases addressed the need for future upgrades of existing equipment and the emergence of urgent operational requirements as an enduring feature of the current operational environment. Finally, this acquisition reform was linked to defence industrial strategy. With regular feedback on developments, the U.K. defence acquisition model provides one approach to defence acquisition reform. The British defence reforms discussed above are summarized in Table 2.4.

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... Defence Procurement Age
... Logistics Organisation into an integr
... and support organization; and increase concentration
... on risk management and oversight of major investment
... decisions.

CHAPTER 3

Defence Procurement Reform in Australia

Australia is unique among Western-oriented nations because of its particular location in the Asia Pacific region, its size and primary export markets for goods and services. The considerable distance between Australia and allied Western nations necessitates a certain level of in-

Defence Reform Program.⁵⁴ The objective of the reform program was three fold: first, to consolidate individual Service support and training activities to increase efficiencies; second, to improve management effectiveness by merging headquarter functions; and third, to produce savings through the sale of surplus defence properties. These reforms resulted in a relatively centralized structure, with individual Services left with limited control over numerous military capability inputs.⁵⁵ Although the Australian Defence Reform Program was not centred on acquisition reform, it did provide the foundation for the management framework under which subsequent acquisition-related reform would take place.



a less adversarial relationship between the defence establishment and

one percent of world military expenditure,⁵⁸ this appears to be an improbable objective. Similarly, government support for defence exports – given their small market size – also appears to be overly ambitious.

A key decision announced in the White Paper, related to acquisition reform, was the adoption by the Defence Materiel Organisation of commercial best practices as the standard organizing principle. In addition, performance standards in the Defence Materiel Organisation would be measured against industry benchmarks. Furthermore, to improve the relationship between defence and industry, the defence department was given the responsibility of encouraging a closer relationship between the parties.

D E F E N C E P R O C U R E M E N T R E F O R M (2 0 0 3)

After a wide-ranging review of the national acquisition process, the 2003 *Report of the Defence Procurement Review* concluded that “there is no single cause of the failures that have become apparent in the development of capability and the acquisition and support of defence equipment. Consequently, there is no single remedy that will ensure that problems do not occur in the future.”⁵⁹ This review both continued and re-emphasized the procurement reform begun in the preceding decade. Taking a more broad-ranging view, however, and mindful of the new and emerging threats in the international security environment, the report urged more rapid change, while stressing the need to fundamentally remodel existing structures, departmental systems and the culture inherent within the defence department. Specifically, the review emphasized that changes were needed within each phase of the acquisition process, as well as throughout all subsequent in-service life-cycle phases.

This review echoed defence reports in other Western nations and emphasized the importance of improving the departmental process for defining and assessing capability requirements. It followed similar approaches recommended in the United Kingdom, including an increased investment in the early stages of program development and a special emphasis on technological, schedule and cost risks. The Australian review emphasized, especially, the importance of cost analysis for both acquisition and subsequent life-cycle costs.

In a period of change within any organization, external advice and support is usually beneficial. The report recommended two important initiatives in this regard. First, it recommended the establishment of an advisory board, independent of operational processes, to “provide the

advice of people who have acquired business skills and experience in the private sector”⁶⁰ to senior managers in defence acquisition. The board, it was assumed, would consequently enhance the commercial orientation within that department. Second, the report recommended that the mandate of departmental project governance boards shift from managing simply acquisition to managing both acquisition and through-life support in order to provide continued oversight of fleet operating costs.

Finally, despite the extensive changes proposed in the report, one innovation specifically, making the use of off-the-shelf acquisitions a key project benchmark, has the potential to cause a positive, enduring change. In this regard, the report states:

Off-the-shelf equipment is often cheaper and can usually be delivered faster. Accordingly, an off-the-shelf alternative must be part of any set of options put forward to government to ensure that a benchmark is estab-

Defence and Industry Strategic Policy Statement that explicitly encouraged Australian industry to be proactive in presenting ideas and innovations to the department of defence, resulted in the committee recommending “an efficient formal mechanism for the promotion and handling of unsolicited proposals”⁶³ from small and medium Australian enterprises. This innovative approach to doing business was intended to help leverage the “knowledge edge” of primary leaders in a range of defence technology fields.

The committee endorsed the merits of defence partnerships and alliances with industry, while recognizing that both partners needed expertise in managing their relationship and negotiating effective, collaborative joint ventures. The committee acknowledged the efficiencies and benefits that a competitive market can bring to defence acquisition, noting that the Australian government policy commitment to partnerships could impede future competition among potential suppliers.

To counter potential decreases in future long-term contracts, the committee recommended that the department “remain in regular contact with the 221 2ucs wsful bidd2.2327 TDcommen3(6 -1.485055 0 TD3.8540 Tw(

The 2007 policy statement stresses the necessity of a domestic defence

to superior efficiency and effectiveness; and fourth, obtain better value for money.⁶⁵ Although it was acknowledged that the reforms advocated in the 2003 *Defence Procurement and Sustainment Review* had improved the procurement system over the ensuing five years, the desired outcomes had not been fully achieved. Consequently, this report proposed a number of further defence procurement and sustainment reforms to the existing system. Significantly, they “can be characterized under the themes of making the Defence Materiel Organisation more business-like and imposing discipline on the defence procurement and sustainment processes.”⁶⁶ The report identified five principal areas of concern (see Table 3.2).⁶⁷

Table 3.2. Principal Areas of Concern

- Inadequate project management resources in the Capability Development Group
- Inefficiency of the process leading to government approvals for new projects
- Shortages in Defence Materiel Organisation personnel
- Delays due to inadequate industry capacity
- Difficulties in the introduction of equipment into full service

Although the review was geared towards progressing defence procurement reforms initiated in the preceding decade, and the majority of recommendations followed from that theme, a number of them have the potential to make a distinct difference. First, oversight is strengthened through the recommendations to establish an independent Project Performance Office and an independent Sustainment Efficiency Office. The proposed role of the Project Performance Office is to review projects, as well as to facilitate problem solving within projects, where necessary. The proposed role of the Sustainment Efficiency Office is to benchmark and to explore methods to enhance the delivery of sustainment to the military. Finally, the review recommended the dismantling of artificial – yet historical – financial barriers between procurement and sustainment budgets when deciding to purchase new equipment or maintain existing equipment. The primary financial con-

C O N T E N T S

Australia, like the United Kingdom, has charted a distinctly national and consistent course in defence acquisition reform since the 1997 *Defence Reform Program*. Prominent throughout this period has been the relationship between the defence department and industry. Indeed, the clearly defined policy framework linking national defence capabilities and Australian industry has largely endured throughout the past decade. The benefit of this policy was that it provided defence and industry with a structure to improve their relationship. Although perhaps somewhat ambitious given the relatively modest size of the Australian defence industry and the changes that were occurring in the defence sector globally during this period, it did cater predominantly to the unique geographical and security circumstances of the country. The distinctively national approach taken with industry was complemented by the adoption of a number of defence acquisition reforms implemented by the United States and the United Kingdom. This consisted of embracing commercial best practices, taking a whole-life approach to equipment, increased investment early in procurement programs, and enhanced program oversight.

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CHAPTER 4

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While DOD maintains military forces with unparalleled capabilities, it continues to confront pervasive, decades-old management problems related to its business operations – which include outdated systems and processes – that support these forces.⁶⁸

United States Government Accountability Office

Although all countries discussed in this section shared the same international strategic environment, their individual national responses to reform of the defence acquisition process during this period were different. Each of the three nations' examinations of their recent approach to defence procurement reform were distinctly national. There were, however, a number of common themes concerning structural, legal and procedural changes. Indeed, it is not the differences but the commonalities that have defined defence procurement reform in recent decades.

In effect, each nation has taken a unique path to arrive at similar, desired objectives. Yet, the strategic, business, and procurement environments were also changing at a rapid pace, leaving the defence establishment continually struggling to keep pace. This reality broadened the scope of needed reform and ushered in a series of further studies aimed at better aligning acquisition processes with the needs of operational military units. What is noteworthy is that the pace of change does not appear to be abating. Consequently, a series of further defence acquisition reforms can be expected on the horizon as defence departments continue to strive towards a closer alignment of military operational requirements and delivery of timely new operational capability through the acquisition system. These themes are listed in Table 4.1.

4.1.

A

- Establishment of a defence industrial strategy
- Parliamentary oversight of the defence acquisition system
- International collaboration
- Close links between government and industry
- Use of an advisory board for defence acquisition

- Clear responsibility and accountability
- Effective project governance regimes and decision processes
- Configuration of technology to meet military needs
- Stable acquisition leadership

- Use of best-in-class private sector practices
- Use of commercial products and processes
- Improved cost-estimating practices
- Consideration of both acquisition and in-service costs in decision making
- Responsiveness of the acquisition system

The enduring themes in defence acquisition reform throughout the past two decades are perhaps not evident to the casual observer, or even to those working within defence department procurement organizations. In a period of constant change it is imperative that all parties in this field understand the shifting landscape and be capable of responding appropriately. Defence acquisition reform consists of three distinct, yet interrelated, themes. In the current procurement environment, policy can and does make a difference. The role played by policy is integral to setting the appropriate conditions to facilitate success. An active policy regime also engages Parliament and intensifies the relationship between the defence department and government. Policy also establishes the parameters for departmental management of the defence acquisition process. Effective management through clear lines of communication, accountability and authority can make a difference, as can stability in project management leadership. Finally, knowing, understanding and applying emerging leading-edge private sector practices is vital to improving performance metrics.

declining by three-quarters over a single country project, and unit costs for the weapons system decreasing with the larger, four-country market for the weapons system.⁷²

Indeed, national policies in Canada, the United States, the United Kingdom and Australia are universal in their advocacy of international joint weapons system projects.⁷³ The benefits can be significant for all parties involved. From a simply economic perspective, the economies of scale that can be generated by a number of nations purchasing a specific weapons system make a persuasive case for nations to pursue this course of action. Add on other potential benefits from research and development, sub-contracting and assembly, as well as economic spinoffs, and the case for international collaboration is even more substantial. Furthermore, both the cost savings and the work that these projects can bring to the defence industrial base are important considerations. Given these attributes, why is collaboration in international weapons system programs not more pervasive? The answer lies in entrenched national processes and procedures, as well as domestic political considerations, that are tenaciously resistant to change.

Under the current circumstances the relative scarcity of major international collaborative weapons system projects – when compared to the large number of national projects – is potentially increasing per-unit costs, multiplying the number of military and departmental civilians working on capital projects nationally, short-changing the defence industrial base of the opportunity for international contracts, and limiting the ability to support and upgrade national systems effectively. In the current capital acquisition environment, with military forces purchasing increasingly smaller quantities of replacement weapons system fleets – even if those systems are more capable – procuring and maintaining small fleets can be cost prohibitive.

Once weapons systems are purchased, they regularly remain in service for several decades, and life-cycle costs and upgrading can be very expensive. However, when several nations hold the same equipment, unit costs can be reduced and spread out across several nations. Indeed, weapons systems designed for use in an asymmetric environment, such as vehicles to counter the threat of improvised explosive devices (IEDs), employ relatively new and rapidly changing technology, and frequent upgrades to incorporate this technology are essential. Consequently, obtaining the benefits of international collaboration against the threat of IEDs and inserting this technology quickly into vehicles is the type of benefit that can accrue from such projects in the

future. These benefits are so central to the capabilities required in the types of conflicts in which Western military forces continue to be involved for the foreseeable future that historical barriers to international collaboration need to be overcome. Moreover, it may now be appropriate to consider developing an integrated alliance capitalization plan within NATO.⁷⁴ Alternatively, defence convergence criteria⁷⁵ related to international collaboration in capital projects can be established as a point of reference, and then developments measured against specific criteria.

In terms of volume, more than 90 percent of 55 -1.2218 TD5a.

Consequently, in the current economic climate, defence dollars are competing for funding not only with the usual social, health and industry programs but also with additional economic stimulus programs to assist struggling Western economies. Thus, international collaborative programs facilitate the leveraging of defence dollars and can be promoted by governments as cost-effective initiatives. Nevertheless, the current economic climate may exacerbate the potential for protectionist tendencies in some countries.

The increasing propensity for Western military forces to deploy in a coalition, as part of NATO, or on independent missions⁷⁸ often means that these nations have a tendency to serve together on multiple missions simultaneously – and face the same threats together. Consequently, interoperability and developing equipment together to counter these threats is mutually beneficial. The factor, however, that can still create issues is politics. Forming an appropriate framework for the establishment of specific policies and practices is necessary. Properly structured, international collaborative projects can mitigate this factor by moving “as much program-structuring and decision making as possible down to the industry level.”⁷⁹ Likewise, in the development of international collaborative projects there must be mutual interest among partner nations. Finally, competition by international groupings of defence firms will result in contract awards based on merit.

The U.S. Joint Strike Fighter aircraft project is a current example of a major international weapons system project that is benefitting a number of nations. The structure of the program, the large quantity of aircraft that will be produced, and the incentives provided to development program participants give an opportunity to examine a project that was explicitly established to encourage international participants in order to reduce unit costs. Indeed, the Joint Strike Fighter aircraft project can be viewed as a template for future international collaboration. Although the contentious issue of technology transfer has been prominent throughout the development phase of the project, issues such as international design capacity, information sharing and other global aerospace challenges have also been addressed as this cooperative project goes forward.

A

The Joint Strike Fighter (JSF) aircraft project is one of the largest, current international capital programs in the international defence sector.

The aircraft resulted from a series of other aircraft development efforts in the initial stages of the 1990s primarily aimed at meeting all the air-to-ground requirements of the United States Navy, Marine Corps, and Air Force. Early in the project, officials and industry leaders recognized that this broad objective was also well suited to address the needs of a number of military forces in allied nations. Thus, an important goal of the program is

to create a new model for international collaboration that provides specific entry and exit criteria for the programmes's non-U.S. participants. This model allows individual countries enough insight into the programme to decide whether the JSF is the right platform for their national security needs. They are also allowed to use JSF modeling and simulation technologies to validate their requirements.⁸⁰

To facilitate international partnership in this project, countries are able to decide on the level of partnership that best suits their needs. For the Joint Strike Fighter, there are three formal participation levels. Level I partners are deemed to be collaborative partners. As such, nations in this category have considerable influence in aircraft requirements and design solutions. This also includes having a substantial number of personnel working in the integrated project office. Associated with this responsibility comes the requirement to fund a commensurate amount of the system development and demonstration costs.

Level II partners are considered to be associate partners. This lesser level of partnership provides limited access to the program and related technology. Staff in the integrated program office is minimal, and funding required for system development and demonstration costs is proportionally less than that of collaborative partners.

Level III partners are regarded as informed partners. This level provides the nations with only the level of information necessary for

proportional shares of levies on American foreign military sales in recognition of their investment in program research and development costs.

Early commitment to a major international weapons system project may limit future national options. Furthermore, the international strategic environment could possibly change, along with future anticipated requirements. One option is to delay procurement decisions for as long as possible. Indeed, “cost pressures can always be mitigated by buying some of the aircraft later than currently planned to take advantage of the expected reductions in cost in the first years of JSF production.”⁸¹

The industrial benefits of participation in a major international joint weapons system contract – irrespective of the operational merits of the program – can be significant. Projects can vary between very centralized development, design and production and a more decentralized approach. Trade-offs can be made within this range, with additional costs accepted by nations in return for an enhanced share of work within the countries. Furthermore, some project work done during the acquisition phase can be leveraged to provide benefits in subsequent phases of the equipment life cycle. In a study for the United Kingdom Ministry of Defence on assembling and supporting the Joint Strike Fighter nationally, its authors concluded that final assembly and check-out tasks overlap with maintenance, repair and upgrade tasks.⁸²

Canada’s Department of National Defence is not currently in partnership with any other nations in the development of any aircraft except the Joint Strike Fighter. The only potential competition to the Joint Strike Fighter aircraft project is the Eurofighter aircraft program. From a conceptual perspective the Joint Strike Fighter aircraft project provides the best model to date for future international collaboration projects. On the positive side, it provides participating nations with leading-edge technology. On the negative side, participation at Level II and below does not give those nations substantive input in development of the aircraft or significant influence over requirements.

CHAPTER 6

E P I P

Every dollar spent inefficiently in acquiring weapons systems is less money available for other budget priorities.⁸³

Michael J. Sullivan

process if management of those problems were improved. Independent program oversight is emerging as a significant enabler in enhancing program management.

The fifth practice gaining prominence due to the critical importance of timeliness in the current international strategic environment is shorter capital programs. The sixth emerging practice (closely related to the fifth concept) involves a range of capital asset management practices that facilitates the acquisition and operation of infrastructure and equipment. The most important emerging capital asset management practice is an integrated portfolio investment strategy drawn from the corporate sector. This strategy prioritizes needed capabilities and links them to available resources, while implementing controls over requirements, funding, and acquisition processes.

Also growing in practice are public-private partnerships, with government and the private sector entering a long-term arrangement for the maintenance or use of infrastructure and equipment. The final capital asset management practice, which has been adopted by a number of national governments, is the use of accrual accounting and budgeting for the acquisition of capital assets.⁸⁴

Evolutionary Acquisition

One of the most promising acquisition strategies to emerge into prominence in this decade is evolutionary acquisition. The primary goal of this acquisition strategy is to “provide operationally useful capabilities to the warfighter much more quickly than traditional acquisition strategies. Instead of the old approach of ‘single step to full capability,’ evolutionary acquisition aims at achieving an overall objective end capability through the more rapid fielding of numerous operationally useful threshold capabilities by pursuing less demanding intermediary or increment steps.”⁸⁵ The time required in traditional procurement methods can result in a weapons system being delivered with important technology embedded within the equipment that is a minimum of one generation old. Military leaders everywhere complain, moreover, that traditional procurement methods are not well suited to the tight timelines required in the current international strategic environment.

The traditional method that defence departments have used to acquire a new fleet of weapons systems is to begin with a set of specific performance requirements for the systems. Once those requirements have been established, the following decade and a half is taken up in

Chart 6.1 provides a graphic illustration of the differences between

effects can include the growth in breadth of missions undertaken, and expansion in the number, or type, of users. Finally, incorporation of enhancements or modifications to manufacturing capabilities can bring cost savings and improved production processes in subsequent iterations of a weapons system.

A fundamental precept of applying an evolutionary acquisition strategy within defence departments is the necessary establishment of linkages between operational military personnel, evolving technologies, shifting requirements, and equipment sustainment, together with the consequential increase required in responsiveness of acquisition practices. Given the evolutionary nature of this strategy, decision points can be tailored to meet the particular demands of the program, throughout the various stages of acquisition from development to production.

the annual budgetary cycle to respond to shifts in financial resource requirements, inadequate resources could lead to suboptimal results. Similarly, committing an excess of financial resources towards a project is an inefficient management practice.

The challenge to those Western defence departments considering implementing the concept of evolutionary acquisition – and a challenge which they have not successfully managed to overcome – is to develop ways to program funding allocations against theoretical requirement changes or estimated future obsolescence rates for equipment fleets, when real budgetary shortfalls exist in current operations. Supporters of evolutionary acquisition practices argue that whereas military personnel “may not initially receive an ultimate capability, the product is available sooner, with higher quality and reliability and at a lower and more predictable cost.”⁹¹ The United States Government Accountability Office supports the concept and has concluded that evolutionary acquisition within defence is aligned with best practices in commercial acquisition.⁹²

Incremental Development

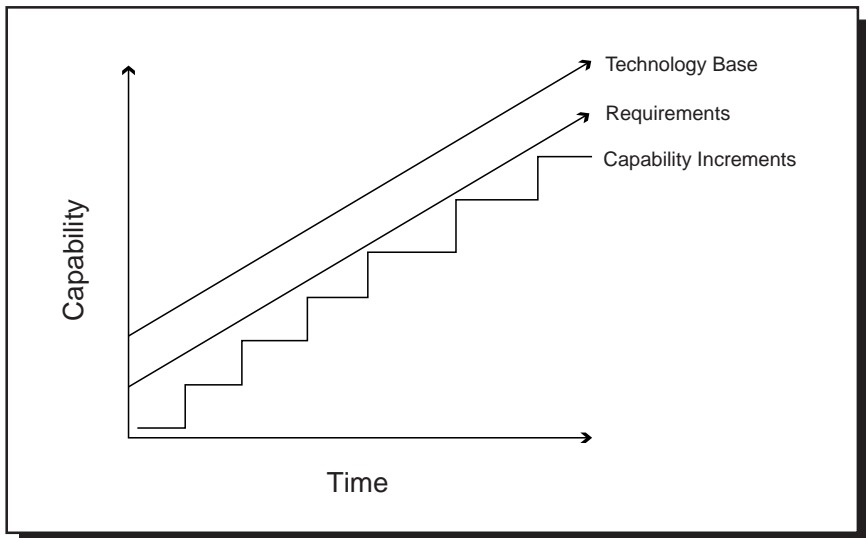
An incremental approach to acquisition is based on the use of available mature technology, with desired capabilities established at the start of the program. Based on the objective of meeting capability goals – over time – a series of increments are planned to achieve this capability. With each new increment, more functionality is added to the weapons system, with the process continuing through a series of increments over time until all required capabilities are attained.

The contribution of this acquisition process is that a working system is available to required users immediately after the first increment. From that point each succeeding increment provides the user with superior capability. Furthermore, in a resource-constrained environment where operational priorities can shift, future planned increments can be cancelled and military forces would still have a functional product.

Despite the benefit of timeliness that this approach to acquisition brings to military forces, there are a number of challenges that it brings to defence departments.⁹³ Most prominent is the need to define fully the desired requirement at the beginning of the process, a requirement that may not be either known or practicable at the onset. This difficulty can, however, be mitigated to some extent in subsequent changes to later increments. Although incremental development facilitates project

management, the division of the project into discrete steps spread out over time complicates support for the equipment once it has been deployed. Complications arise because different models of the weapons system may be in use at a given time and because additional training and, perhaps, parts supply may change greatly with the release of each new increment. See Chart 6.2.⁹⁴

Chart 6.2. Incremental Development



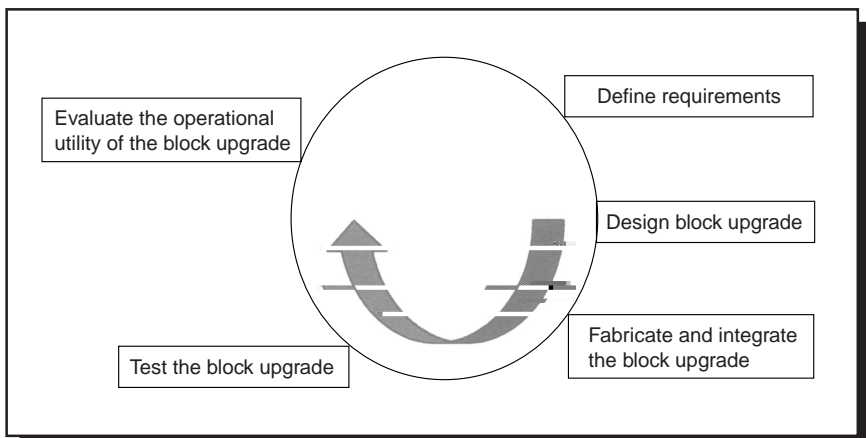
Spiral Development

Another approach to defence acquisition, the so-called spiral development approach, is characterized as a series of acquisition activities that are incorporated incrementally into a shifting baseline. Capability is increased over a short period of time with an individual spiral, which is built on the foundation established by preceding spirals. This course of action enables the distribution of both development costs and project risks over an extended period of time. Individual spirals are compartmentalized through the largely independently developed project, or projects, within that cycle. Once the spiral has produced specific improvements, it is incorporated into the baseline production model. Spiral development, out of necessity, brings together operators of the weapons systems, development staffs, evaluators and specialist personnel.

The spiral development process has been used in a number of weapons systems in the past. The F-16 aircraft is a prominent example of an enduring weapons system that was “developed in the early 1970s and has been upgraded with block modifications over the last three decades.”⁹⁵ This approach is particularly suited for aircraft in which weapons systems are being developed at a much faster rate than are the airframes, which have experienced a “maturing of platform capabilities.”⁹⁶ In essence, this process decreases risk by focusing on developing technologies already in use in existing weapons systems. Conversely, application of spiral development techniques can act to mitigate the significant risks in developing weapons systems that utilize nascent or emerging technologies.⁹⁷

Chart 6.3 graphically illustrates the process inherent within an individual spiral. Each spiral begins with a definition of requirements, which includes the establishment of performance objectives. The second step within the spiral is the design of the increased capability within the weapons system. The third step begins with the creation of the applicable software code, followed by the integration of both operational and manufacturing incremental improvements. The fourth step focuses on testing the incremental capabilities, as well as experimenting to assess the enhanced capabilities objectively. The final step gauges the value of extending operational capabilities, making adjustments as required, and delivering the capability enhancements. Each successful increment may contain a number of spirals.

Chart 6.3. The Spiral Development Process



Fundamental to the spiral development process is the integrated nature of the relationships that are essential for creating a continuous series of improvements. Within each spiral, the user of the equipment, the development entity, and the organization that is involved in testing and evaluating the incremental capabilities all work directly in concert. The operational military personnel who use the equipment invariably have ideas for practical improvements and understand the strengths and weaknesses of the existing weapons system. In addition, those with recent deployed operations experience with the equipment will understand and are often capable of articulating the deficiencies of the equipment in the current security environment. Similarly, personnel who are experienced in testing and evaluating will be proficient in subjecting equipment with incremental capabilities to conditions that exhibit design flaws, deficiencies and shortcomings.

Finally, the developer will invariably have particular expertise in this field and will be adept at translating the suggestions of the operator into the development of improved capabilities. The intensity of this relationship creates an effective collaboration among all parties, linked by the procurement community in the central process of determining which requirements take priority and the timelines under which they will be integrated into the particular weapons system.

The primary difference between incremental and spiral development is that in incremental development end-state capabilities are known, whereas with spiral development end-state requirements are unknown. This distinction has a fundamental influence on each of the two development processes.

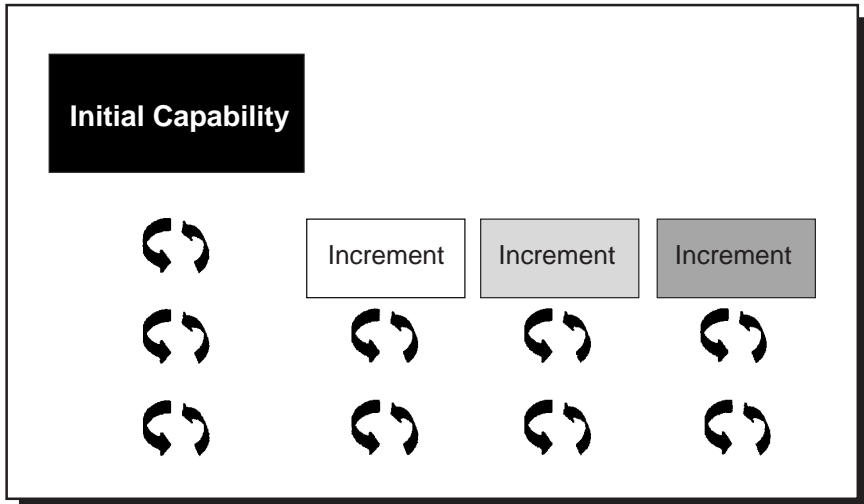
Under the incremental developmental process the final project is delivered through a series of distinct stages, whereas under the spiral developmental process the product design is a work in progress until completion of the final spiral. Spiral development, however, provides for enhanced risk management through the continuous feedback inherent in the spiral process. This is predicated on a superior understanding of user needs, achieved through ongoing feedback. Under this circular feedback loop, requirements are refined through both product testing and risk management. Consequently, these factors contribute to the provision of optimal capability within each increment. For this reason, “spiral development is often used in the commercial market because it significantly reduces technical risk while incorporating new technology.”⁹⁸

Nevertheless, cost and schedule risk can rise, and the process is inherently more difficult to control due to the need to manage the costs and delivery of requirements while managing several other variables. Similarly, the necessary superior understanding of user needs may not always materialize, thus the effectiveness of this process may be diminished. The continuous feedback loop partially compensates for this possibility.

Integrating Spiral Development and Evolutionary Acquisition

Chart 6.4 illustrates the amalgamation of evolutionary acquisition and spiral development. Although each is a distinct process, together the effect they provide greatly surpasses their individual impacts. This result occurs because, first and foremost, evolutionary acquisition is a strategy whereas spiral development is a process. Indeed, it is spiral development that supports the implementation of evolutionary acquisition. The integration of spiral development and evolutionary acquisition illustrates the value of combining various processes and techniques depending on particular circumstances.

Chart 6.4. Integrating Spiral Development with Evolutionary Acquisition



outcomes.¹⁰⁵ Moreover, discipline in the initial stages of the weapons system procurement process through establishing the requirement for certain knowledge thresholds improves the potential for enhanced outcomes. Corporate best-practices plans require development cycles of two to five years and multiple-gated reviews prior to product commitment.¹⁰⁶ To be sure, with timeliness a fundamental prerequisite of capital programs in the contemporary international strategic environment, the desire of Western defence departments to shorten the acquisition process – which in the past has often exceeded a decade – is virtually universal.

A primary characteristic that defines current insurgencies in failed and failing states is the use of improvised explosive devices (IEDs) by insurgents against coalition forces deployed to assist the local population. Consequently, the various measures taken by defence departments to counter this emerging and prominent threat constitute the most high profile example of rapid acquisition and deployment of military equipment to meet changing operational requirements.

Leading this response is the development of new generations of mine-resistant vehicles.¹⁰⁷ The United States' "Mine Resistant Ambush Protected (MRAP)" vehicle program has, for example, been the most important weapons system acquisition program in the last half of this decade in support of American forces in Afghanistan and Iraq. The program, for which US\$22 billion in funding had been appropriated by mid-2008,¹⁰⁸ is a large-scale, contemporary illustration of a deliberate process to condense product development, assembly, and delivery to deployed units.

The American MRAP vehicle program has a number of characteristics that deserve consideration. Foremost was the predominant reliance in the development phase of the program on commercially available products. While production, testing and fielding of the vehicles was done concurrently, indefinite quantity contracts¹⁰⁹ were awarded to nine different commercial sources, for up to 4,100 vehicles annually from each vendor, with test models purchased from each source. Project management also took the decision to integrate mission equipment packages, such as radios, into the vehicles after procurement.

Although "the department's concurrent approach to producing, testing, and fielding the vehicles has provided an urgently needed operational capability, it has also increased performance, sustainability, and cost risks."¹¹⁰

challenges. First, the individual vehicle designs are specific to each manufacturer, requiring different vehicle operating and maintenance procedures. Second, the operation of several different models from the same manufacturer within the overall fleet adds to the maintenance complexity. Finally, logistics support requirements are multiplied by the proprietary nature of the vehicles and the added necessity to maintain stocks of spare parts for each MRAP vehicle variant.

The American MRAP vehicle program has delivered the benefit of vehicles designed to counter the current threat in a relatively short period of time while making a number of inventive changes to traditional acquisition processes. There is a medium-term cost, however, in complexity and difficulty of sustainment of the vehicles. For instance, in the current environment the cost-benefit relationship has shifted, placing the predominant weight on timeliness. Furthermore, even as these first improved vehicles were entering service, the threats faced by coalition forces in deployed operations in locations such as Afghanistan continued to evolve as insurgents change their tactics in response to procedures and equipment employed by national contingents within that coalition. Therefore, under current circumstances, operational requirements for equipment such as MRAP vehicles also will continue to evolve, thus, further exacerbating the complexity of this fleet.

This fact is an important consideration and needs to be acknowledged as a defining criterion of defence capital programs in support of deployed operations in hostile environments. Whereas traditional procurement programs delivered a final product with mid-life upgrades in one or two decades, equipment deployed to locations such as Afghanistan will need to be continually upgraded in order to remain capable of countering evolving threats.

The complexities and challenges inherent in developing and maintaining MRAP vehicles are to be expected in a field where technologies are relatively immature and developing in response to a still-evolving threat. Although the vehicles are still being procured, as the technology matures over the medium term, processes and procedures will be developed and implemented to reduce risks and costs while simplifying sustainability. As approaches such as evolutionary acquisition and spiral development become more commonplace in defence departments, the long-term task of consolidating and managing multiple variants in a specific fleet will become the principal conceptual challenge to defence acquisition in this evolving strategic environment.

through the adoption of leading portfolio management practices from the private sector. An integrated portfolio management strategy is one method for assigning and managing capital funding resources and priorities in line with corporate priorities. Similarly, smaller numbers of overall programs will allow management to concentrate efforts on the priority programs.

Capital Asset Management: Public-Private Partnerships

Management reforms in the 1980s strove to “re-invent” government by structuring work between government and the private sector so that it aligned best with the core competencies of each entity. Public-private partnerships facilitate this relationship by helping to foster “the well-defined yet flexible environment a government needs to retain responsibility for and control over its mission while an outside source handles implementation.”¹¹⁷ A public-private partnership can be defined as “a partnership arrangement in the form of a long-term performance-based contract between the public sector (any level of government) and the private sector (usually a team of private sector companies working together) to deliver public infrastructure for citizens.”¹¹⁸ Although public-private partnerships are typically used for infrastructure, in the case of defence departments this could also include capital equipment.

Public-private partnerships can take several different forms. At the most basic level, infrastructure is delivered to government through a

tends to be on time and within budget. Linked maintenance contracts can alleviate the fluctuations in public budgeted maintenance funding that can occur with government facilities. Furthermore, making the contractor that built the facility responsible for long-term maintenance costs provides an incentive to the builder to erect a facility to a high standard in order to reduce future life-cycle costs. Finally, public-private partnerships allow government departments to focus on their core businesses and on program outcomes, rather than expending considerable effort on managing output processes.¹²⁰

Although public-private partnerships have a number of positive attributes, their application in defence management can pose a number of challenges to defence departments. The foremost concern is uncertainty over future requirements. The long-term nature of public-private partnerships in an environment where the character of the threat can change suggests that requirements are subject to change, sometimes suddenly. Consequently, under these circumstances, establishing appropriate enduring long-term commitments is difficult. Indeed, much of the risk inherent in long-term contracts is derived from the extraordinary rate of sustained technological change. In addition, project complexity and the integration of multiple systems into one platform are further challenges that public-private partnerships need to overcome. The high value of acquisition costs for public-private partnership projects in defence and the subsequent time frame necessary to amor-

then, perhaps, a ship wreck.”¹²² With projections of required capital expenditures remaining high,¹²³ the considerable capital outlay required during the procurement phase is a fundamental limiting factor for governments and makes procurement and management of some defence capital assets candidates for public-private partnerships.

In response to the difficulties that public-private partnerships can generate for governments, a number of original hybrid models have been developed that account for the diversity of requirements across government departments. In the case of defence, the alliance and incremental public-private partnership models can be appropriate in certain circumstances.¹²⁴ Similarly, competitive partnerships can be applicable in some situations. The alliance public-private partnership model entails both sectors combining to develop and finance specific projects; this can also provide for the two parties jointly constructing, maintaining and operating a facility. The incremental partnership model allows the government to contract for work incrementally, as well as employ diverse partners for different tasks; central to this hybrid is that the government retains the right to terminate or reduce designated contracted work. The competitive partnership model provides for the contracted work to be divided amongst several different corporations; the performance of each firm dictates whether work is subsequently reallocated for future periods. The alliance and incremental partnership models are suitable for the defence sector because they can be employed in circumstances where future demand is uncertain. The competitive partnership model has the potential to be employed in certain cases where the government desires to maintain several competitors in a specific market.

Capital Asset Management: Accrual Accounting

The perennial problem in defence has historically been the considerable initial financial investment needed to acquire new multi-million-dollar equipment fleets. Although the expected in-service life of the weapons system could have been several decades, all capital investment costs were incurred at its introduction into service. Thus, the cost to the government for that equipment was not matched with the period during which the government derived benefits from its use. The cost of major capital programs completely funded at acquisition can result in those programs dominating a defence department’s capital program for several years, at the expense of other essential projects.¹²⁵

Consequently, the manner in which projects are funded can have a considerable impact on the possible number and timing of projects.

The effectiveness of military forces has a significant correlation with the defence capital program. Indeed, the capital program is closely linked with defence policy, with government policy informing what equipment capabilities are needed by the Canadian Forces. In a report on capital equipment procurement in 1998, the Auditor General observed that “defence capital acquisition decisions affect how well the Canadian Forces can implement defence policy. The amount and type of equipment they purchase directly affects their ability to carry out their roles, which in turn determines how and where the government can deploy them.”¹²⁶

Defence planning, by its very nature, requires a long-term focus, which can extend up to three decades. This intergenerational approach is essential to enable the planning, funding and sequencing of the significant number of high-value land, sea, air and joint capital projects. Under these circumstances, traditional cash-based accounting does not adequately provide the level of information required today for decision making and resource planning. Under the accrual basis of accounting, the capital equipment is recorded on the balance sheet at historical cost, which is amortized over the estimated useful life of the asset. As a result, the cost of the equipment is spread out over the expected life of the asset, rather than being recorded simply at the time of acquisition. This is important as it reduces the impact that procurement of one particular equipment fleet has on the defence capital base in the short term.

A number of national governments over the past decade and a half have moved to replace their traditional cash-based accounting method with an accrual-based accounting method.¹²⁷ Defence departments, normally the largest holders of capital assets within government, are the most affected. This shift in accounting methodology was made not in isolation but as part of a broad-based series of reforms in the public service.¹²⁸ From the perspective of ownership of an extensive asset base, defence departments also had the most to gain. With defence departments needing to plan over an extensive period of time, they benefit from accrual accounting as follows:

[It] generates the ability for decision makers to take a longer-term focus. The information presented for the ownership interest, and in particular the balance sheet, raises issues such as the need to hold surplus assets, to

may in fact take more than one year to implement. Accrual accounting strengthens the information base for reaching those decisions.¹²⁹

In defence the benefits that can be derived from the use of the accrual method of accounting include superior transparency of overall resource costs, improved resource allocation and enhanced accountability. Whereas the nature of budgetary decision making has not changed, the level and detail of information available to decision makers is enhanced.

CHAPTER 7

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The provision of a combat capable military force is a continuous process.

Timeliness is a key criterion in capital programs in the current international strategic environment. The emerging practices discussed in this section are increasing in importance expressly because they assist in reducing the time required from conception to delivery of the product. Although the concentration is often on operations, transformation of military forces affects all aspects of defence establishments. However, despite the extensive efforts that governments have expended on defence procurement reform, progress has been limited and has generally fallen short of expectations. To a certain extent, this is to be expected in an environment dominated by incessant change. Thus, adjustments in procurement processes designed for specific circumstances may be outdated by the time they are in place. The key, therefore, is to develop procurement processes that are designed to evolve as circumstances are transformed. The emerging practices in defence acquisition discussed in this section are examples of the ways in which defence acquisition is evolving, and bring greater flexibility and adaptability into this important component of defence management.

Emerging practices in defence acquisition cannot be viewed in isolation. The impact of one particular emerging practice can be, at most, moderate. When they are used collectively, these practices have the potential for the greatest impact. Circumstances are different in each of the air, land and sea environments; therefore, the responses must necessarily be distinct. Consequently, it can be expected that there will be further emerging practices integrated into defence acquisition over the coming decade in response to changing circumstances. Thus, continued defence acquisition reform will be required in order to meet the demands of future deployed operations.

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¹ Stephen V. Reeves (1996), *The Globalization of the World: A New Paradigm*, *Proceedings of the Industrial College of the Armed Forces*, p. 25.

² Mark V. Arena, Robert S. Leonard, Sheila E. Murrah, and Obaid Younossi (2006), *Health Care Costs: A New Paradigm* (Santa Monica, CA: RAND), page ii.

³ Stuart J. Evans, Howard J. Margulis, and Harry B. Yoshpe (1968), *National Security: A New Paradigm* (Washington, DC: Industrial College of the Armed Forces), p. 1.

⁴ Christopher H. Hanks, Elliot I. Aelband, Shuna Lindsay, Mohammed Rehan Malik, and Brett D. Steele (2005), *Regional Market Analysis*

⁸ President's Blue Ribbon Commission on Defense Management (1986), *AF : a : A : AR • P • D : A* (Washington, DC: President's Blue Ribbon Commission on Defense Management), <[http:// .ndu.edu/librar /pbrc/36ac7c2.pdf](http://.ndu.edu/librar /pbrc/36ac7c2.pdf)> accessed 9 October 2008.

⁹ President's Blue Ribbon Commission on Defense Management (1986), *A Q : Eλ : F a R • P •* (Washington, DC: President's Blue Ribbon Commission on Defense Management), p. 44, <[http:// .ndu.edu/librar /pbrc/36e 2.pdf](http://.ndu.edu/librar /pbrc/36e 2.pdf)> accessed 5 October 2008.

¹⁰ Reeves (1996), *T G : A R : ,* p. 23, <[http:// .ndu.edu/librar /ic6/96-e-04.pdf](http://.ndu.edu/librar /ic6/96-e-04.pdf)> accessed 9 October 2008.

¹¹ United States Department of Defense (1993), *Na a P : a R - ' (* Washington, DC: Department of Defense), <<http://govinfo.librar .unt.edu/npr/librar /nprprt/annrpt/agnrpt93/dod1.html>> accessed 9 October 2008.

¹² United States (1994), *T F a A S a A : 1994* (Washington, DC: United States Congress), <http://fr ebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=103_cong_bills&docid=f:s1587enr.t t.pdf> accessed 9 October 2008.

¹³ William S. Cohen (1997), *D : R : I a ' R •* (Washington, DC: Department of Defense), chapter 1 (conclusion), <[http:// .fas.org/man/docs/dri/cover.htm](http://.fas.org/man/docs/dri/cover.htm)> accessed 3 December 2008.

A. ; F. a Y a 2007; S. 804 (Washington, DC: Department of National Defense).

²³ Ibid., p. 6.

²⁴ Assessment Panel of the Defense Acquisition Performance Assessment Project (2006), *D. A. P. a A R.*, p. 8.

²⁵ Edward W. Rogers and Robert P. Birmingham (2004), *A Ten-Year Review of the Vision for Transforming the Defense Acquisition System*, *D. A. R. J. a*, Januar-April, p. 49.

²⁶ Valerie Bailé Grasso (2002), *D. A. R. : S a a. C I* (Ottawa: Congressional Research Service), p. 1.

²⁷ Hanks et al. (2005), *R. a M a A. R. :*, page iv.

²⁸ Ibid., page v.

²⁹ Rogers and Birmingham (2004), *A Ten-Year Review of the Vision for Transforming the Defense Acquisition System*, p. 54.

³⁰ Gordon Macdonald (1999), *Reform of U.K. Defense Procurement and State/Industry Relationships during the 1980s and 1990s*, *D. A a -* 15, no. 1:2-26.

³¹ United Kingdom National Audit Office (1997), *M. : D. : Ma P. R.*, 1997 (London: National Project Office).

³² United Kingdom Minister of Defence (1998), *T. S a. D. R. :* (London: Minister of Defence), paragraph 161.

³³ Ibid., paragraph 152.

³⁴ United Kingdom Minister of Defence (1998), *T. S a. D. R. : S. E a T. ; P. a I.* (London: Minister of Defence), paragraph 8.

³⁵ Ibid., paragraph 21.

³⁶ Ibid., paragraph 11.

³⁷ United Kingdom Minister of Defence (2001), *D. A. : MOD P. Pa. N. 4* (London: Minister of Defence).

³⁸ Claire Taylor (2003), *U.K. D. P. P. : R a. Pa. 03/78* (London: House of Commons Library), p. 20, <<http://parliament.uk/commons/lib/research/rp2003/rp03-078.pdf>> accessed 30 October 2008.

³⁹ Trevor Taylor and Derrick Neal (2004), *The Delineation of Defense Equipment Projects in the U.K. Minister of Defence*, *D. & S. A a* 20, no. 2:165-177.

⁴⁰ United Kingdom Comptroller and Auditor General (2002), *M. : D. : I. a. P. T a* (London: National Audit Office), p. 1.

⁴¹ Taylor and Neal (2004), *The Delineation of Defense Equipment Projects in the U.K. Ministry of Defence*,

⁶² Australian Foreign Affairs, Defence and Trade References Committee (2003), *Report on the Inquiry into the Australian Maritime Operations* (Canberra: Foreign Affairs, Defence and Trade References Committee), page v.

⁶³ *Ibid.*, p. 59.

⁶⁴ *Ibid.*, p. 92.

⁶⁵ Australian Department of Defence (2008), *Global Maritime Operations Report* (Canberra: Department of Defence), page vii.

⁶⁶ *Ibid.*, page i.

⁶⁷ *Ibid.*, page i.

⁶⁸ United States Government Accountability Office (2009), *Lessons Learned: Key Issues in the Maritime Operations of the Department of Defense* (Washington, DC: Government Accountability Office), p. 5.

⁶⁹ NATO (2006), *Brussels: NATO*, p. 1, <<http://www.nato.int/docu/interoperabilit/interoperabilit.pdf>> accessed 15 October 2008.

⁷⁰ According to NATO, standardisation makes a vital contribution to the combined operational effectiveness of the military forces of the Alliance and promotes opportunities for the better use of economic resources. Extensive efforts are made to improve cooperation and to eliminate duplication in the research, development, production, procurement and logistic support of defence systems, primarily through the promulgation of NATO Standardisation Agreements, known as STANAGs. Implementation of STANAGs helps nations to achieve the required levels of interoperability and to better accomplish their common strategic, operational and tactical tasks, to understand and execute command procedures, and to employ techniques, material and equipment more efficiently. This is managed by the NATO Standardisation Organisation. NATO (2006), *Brussels: NATO*, p. 2, <<http://www.nato.int/docu/interoperabilit/interoperabilit.pdf>> accessed 15 October 2008.

⁷¹ NAMSA (2008), *About NAMSA* (Capellen, Luxembourg: NAMSA), <http://www.namsa.nato.int/about/about_e.htm> accessed 28 December 2008.

⁷² Ron Matthews, *Costing a Bomb*, *Foreign Affairs*, March 2003, p. 19.

⁷³ The close cooperation between these countries stretches back to the

⁷⁴ D.W. Read (2000), *The Revolution in Military Affairs: NATO's Need for a Niche Capability Strategy*, *Canadian Military Journal*, Autumn 2000, p. 23.

⁷⁵ Heiko Borchert and Rene Eggenberger (2003), *European Security Defence Policy, Role Specialisation and Pooling of Resources: The EU's Need for Action and What it Means for Switzerland*, *Current Affairs*, 24, no. 3:7-10.

⁷⁶ Edward Lundquist (2009), *Good Business Is Good Policy: Foreign Military Sales Add to the Bottom Line and Reinforce Strategic Goals*, *Armed Forces Journal*, Januar 2009, <<http://armedforcesjournal.com/2009/01/3810243>> accessed 10 Januar 2009.

⁷⁷ Vija Kumar (2001), *Defence Collaboration: Policy Implications for Singapore*, *Journal of Strategic Studies*, 27 (October-December 2001):4, <http://www.mindef.gov.sg/safti/pointer/back/journals/2001/Vol27_4/5.htm> accessed 13 Januar 2009.

⁷⁸ An example of an independent or custom-designed mission is the longstanding Multinational Force and Observers (MFO) in the Sinai Desert. For different mission types, see Ross Fetterl (2006), *A Review of Peacekeeping Financing Methods*, *Defense and Peace Economics*, 17, no. 5:395-411.

⁷⁹ John Birkler, Mark Lorell, and Michael Rich (1997), *Foreign Military Sales: Implications for the United States* (Santa Monica, CA: RAND), p. 4, <http://www.rand.org/pubs/issue_papers/IP161/index2.html> accessed 13 Januar 2009.

⁸⁰ Cynthia R. Cook, Mark V. Arena, John C. Graser, Hans Pung, Jerr Sollinger, and Oblaid Younossi (2003), *Armed Forces Journal: U.K.: Implications* (Santa Monica, CA: RAND), p. 5, <http://rand.org/pubs/monograph_reports/2005/MR1771.pdf> accessed 5 October 2008.

⁸¹ Andre Davies (2008), *How Much Will the Joint Strike Fighter Cost Australia?* *Pacific Affairs* ASPI 27 (Australian Strategic Policy Institute, Canberra), p. 1.

⁸² Cook et al., *Armed Forces Journal: U.K.*, accessed 6 Januar 2009.

⁸³ Michael J. Sullivan (2008), *Defense Acquisition Reform: A Review of DOD's WAP* (Washington, DC: United States Government Accountability Office), p. 1.

⁸⁴ Ross Fetterl and Richard Groves (2008), *Armed Forces Journal: British Defence* (Kingston, ON: Queen's University School of Policy Studies), p. 1.

⁸⁵ Mark A. Lorell, Julia F. Lorell, and Obaid Younossi (2006), *Evolutionary Acquisition: Implementing Evolutionary Acquisition* (Santa Monica, CA: RAND), page 17.

⁸⁶ Richard K. S. Ivester and Joseph A. Ferrara (2003), *Conflict and Ambiguity: Implementing Evolutionary Acquisition*, *Acquisition Review Quarterly*, Winter 2003, pp. 1-27, <http://www.rand.org/pubs/quarterly/2003arq/S_Ivester_t3.pdf> accessed 6 October 2008.

⁸⁷ Jogn T. Dillard (2005), *Toward Centralized Control of Defense Acquisition Programs*, *Acquisition Review Quarterly*, December 2004-March 2005, p. 333, <<http://www.rand.org/pubs/quarterly/2005arq/2005arq-40/Dillard.pdf>> accessed 7 October 2008.

⁸⁸ United States Department of Defense (2001), *Strategic Evolutionary Acquisition* (Fort Belvoir, VA: Defense Acquisition University Press), p. 26, <<http://books.google.ca/http://books.google.ca>> accessed 6 October 2008.

⁸⁹ Alexander R. Slate (2002), *Evolutionary Acquisition: Breaking the Mold; New Possibilities from a Changed Perspective*, *Procurement Magazine*, June, pp. 6-15.

⁹⁰ Gar J. Pagliano and Ronald O'Rourke (2004), *Evolutionary Acquisition: A Study of the DOD Procurement Process* (Washington, DC: Congressional Research Service), pp. 5-6.

⁹¹ United States Government Accountability Office (2007), *Contract Acquisition: Best Practices for Evolving Acquisition Management Processes* (Washington, DC: Government Accountability Office), p. 39.

⁹² United States Government Accountability Office (2003), *Best Practices for DOD Contract Acquisition* (Washington, DC: Government Accountability Office), pp. 2-3.

⁹³ United States Government Accountability Office (2007), *Contract Acquisition: Best Practices for Evolving Acquisition Management Processes*, pp. 40-41.

⁹⁴ Chart 6.2 is based on a similar chart in United States Government Accountability Office (2007), *Contract Acquisition: Best Practices for Evolving Acquisition Management Processes*, p. 40.

⁹⁵ S. Ivester and Ferrara (2003), *Conflict and Ambiguity: Implementing Evolutionary Acquisition*, p. 9.

⁹⁶ Steven Kosiak (2004), *Major R&D Programs: Overview and Budgetary Assessments* (Washington, DC: Center for Strategic and Budgetary Assessments), pp. 58-60.

⁹⁷ Pagliano and O'Rourke (2004), *Evolutionary Acquisition: A Study of the*

¹¹⁰ Sullivan, (2008), *Road to a More Accountable Process*, p. 2.

¹¹¹ United States Government Accountability Office (2007), *Buying the Process: An Investigation of the Military's Acquisition Process* (Washington, DC: Government Accountability Office), p. 3.

¹¹² Ibid., p. 3.

¹¹³ Schinasi (2008), *DoD's Acquisition Process: A Review of the Current State and Recommendations for Reform* (Washington, DC: Government Accountability Office), p. 2.

¹¹⁴ And Fainer (2008), *A Glimpse into DoD Weapon Systems Programs*, *Defense Acquisition Journal*, Jul 2008, <http://www.dau.mil/pubs/arq/2008arq/ARJ48Web/ARJ48_Fainer.pdf> accessed 20 December 2008.

¹¹⁵ United States Government Accountability Office (2007), *Buying the Process*, p. 3.

¹¹⁶ Michael A. Greiner, Kevin J. Dooley, Dan L. Shunk, and Ross T. McNutt (2002), *An Assessment of Air Force Development Portfolio Management Practices*, *Research Quarterly*, Spring 2002, p. 118.

¹¹⁷ Frank Camm (2003), *Using Public-Private Partnerships Successfully in the Federal Setting* in *Handbook of Public-Private Partnerships*, eds. Robert Klitgaard and Paul C. Light (Santa Monica, CA: RAND), p. 182.

¹¹⁸ *Partnerships British Columbia* (2008), *Understanding Public-Private Partnerships* (Victoria, BC: Partnerships British Columbia), <<http://www.partnershipsbc.ca>> accessed 1 January 2009.

¹¹⁹ World Bank (2008), *Private Activity in Infrastructure Reached a New Peak in 2007*, *Private Public Infrastructure Development: Data Update 2008* (Washington, DC: World Bank).

¹²⁰ Deloitte (2007),

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