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The UK Defence Acquisition System  
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## **Introduction**

The British defence acquisition system has been in a condition of continuous reform and a search for improvement at least since the Labour Government introduced its Smart Procurement Initiative as part of its Strategic Defence Review of 1998. In mid-2008, as this chapter was drafted, a major Defence Acquisition Change Programme was in the process of implementation and the acquisition system itself was in the midst of significant modification. This chapter can therefore offer but a photograph of the situation in the spring of 2008 and note areas of intended further change.

Defence acquisition is a complex affair with many players, activities and inter-dependencies to be addressed. Since it involves concepts, rules, processes, and organisations working in an organic manner, it is not easy to explain it in the linear form of a written text. Moreover, its analysis inevitably involves simplification, the leaving of gaps, and the inclusion of some overlaps. Some of the simplifications here involve the structure of the paper, which is divided into 6 sections.

Section 1 deals with the national and governmental context within which defence must operate.

Section 2 covers the organisation of the Ministry of Defence

Section 3 looks in more detail at the different elements of the MoD that shape acquisition practice, at the organisations involved in acquisition and their high-level functions.

Section 4 explores the concepts and discourse used in UK defence acquisition.

Section 5 looks at some key acquisition processes.

Section 6 looks at the role of defence industry in the shaping of acquisition and at the evolution of the Defence Industrial Strategy since its publication in 2005, and at the international aspects of the UK acquisition system.

There is finally a short conclusion.

This chapter draws extensively on official documentation and, when personal judgements are offered, an effort has been made to provide appropriate evidence and illustration. However, it was written by an individual author writing in a personal capacity and it should not be seen as an official statement of UK policy or practice.

## **Section 1: the Governmental context of defence**

### The state: history and traditions

The United Kingdom assumed its present shape in 1922 when a large part of Ireland achieved independence, leaving only the six counties of Northern Ireland attached to London. The four constituent elements of the UK are England, Scotland, Wales and Northern Ireland, Scotland having been united with England in the Acts of Union that came into effect in 1707.

The United Kingdom does not have a written constitution and its constitutional arrangements can be seen as untidy. Scotland, Northern Ireland and Wales each have (differing) areas of self rule and today have their own representative bodies. The Labour Government that came into office in 1997 introduced the Scotland Act in 1998 leading to the establishment of the Scottish Parliament a year later. It also established the Welsh Assembly from 1999, while the Stormont Assembly in Northern Ireland, dating from 1922, came back into full and normal operation only in 2007 with representatives of the Protestant and Catholic communities taking their place in a coalition government<sup>1</sup>.

Happily foreign affairs and defence are the prerogative of the Government of the United Kingdom as a whole. There is obviously political awareness that the people of Scotland could at some stage opt for independence from the rest of the UK and that the Faslane nuclear submarine base is in that region, but in essence defence is entirely a matter for the government in Westminster.

The United Kingdom is a monarchy with the ruling monarch serving as head of state. Since her coronation in June 1953 Her Majesty Queen Elizabeth II has filled this position. The ruling monarch is also in formal terms the commander in chief of the armed forces, with officers in the armed forces receiving their commissions from the Queen. This presents some interesting issues, not least whether it is possible for a serving British officer openly to favour a republican form of rule. The monarch herself takes part in ceremonial events with the armed forces and she and many members of her immediate family are associated with the armed forces in a range of ways. However in practice the monarch delegates all her powers regarding defence to the Prime Minister and his Government.

### The Government

#### The legislature

The UK legislature has two houses, the House of Commons and the House of Lords. Members of the former are elected by voters in individual constituencies. Each constituency elects a single Member of Parliament (MP) on a 'first past the post system' and there is no proportional representation in UK national politics. In

2008 there were 648 MPs (and constituencies), each with 70,000-100,000 potential voters. The boundaries of constituencies are periodically reviewed and revised to take account of population movements within the country, and the total number of constituencies varies slightly over time.

There are three main state-wide British political parties, Conservative, Labour and Liberal Democrat. Although it is over 80 years since the latter formed a government, the Liberal Democrats have had a minority but constant presence in the House of Commons. The Labour Party came to power in the 1997 election, and was re-elected in 2001 and again in 2005. The rule is that an election must be held at least every five years. However Prime Ministers have the freedom to choose the precise timing of an election within that period and obviously select the moment that they think will favour their party. When a Prime Minister wants an election, he/she goes to the Queen and asks her to dissolve Parliament. The election is held within a month. As the election results become known, the leader of the largest single party, (and that party almost invariably has an overall majority of its members in the Commons) is called by the Queen and invited to form a new government.

The House of Lords is a different and evolving institution, with a prime task of scrutinising and approving legislative proposals, although eventually the Commons can push through legislation without the Lords' blessing under the Parliament Acts of 1911 and 1949. Historically the House of Lords comprised members of the aristocracy who held titles awarded by the monarch. Many of these titles were hereditary, and passed from one generation to the next. As democracy took hold, the elected authorities also gained the power to bestow titles, and all the major political parties gained the right to nominate people for peerages. Gradually the trend became for the award of hereditary titles to become rarer and rarer, and life peerages became the norm, usually for services to the nation. The Labour Government after 1997 reduced the number of hereditary peers allowed to sit in the Lords to 92 and these have been elected (for life) by the total 'constituency' of hereditary peers. Bishops of the Church of England and the most senior members of the judiciary (the Law Lords) are also (life) members and (quirkily) the House of Lords remains the highest court in the land. Although the House of Lords deals little with defence, retired Chiefs of the Defence Staff are normally awarded peerages and some choose to take an active part in some of the Chamber's debates.

Some peers opt to associate themselves with a particular political party ('take the Party Whip') while others, whose contribution to national life may have been to defence, science or academia, opt to remain as cross-benchers. Also retired House of Commons members (or individuals who lose their seat in an election and yet are wanted by their political party to be able to contribute to political life) may be awarded peerages. Today a number of people have been made peers by political parties to represent them on areas where they have particular expertise. For instance, in 2007 Pauline Neville-Jones, a retired senior foreign office official,

was chosen by the Conservatives to be Shadow Security Minister and was made a peer in order to be able to carry out her duties. An appointment of particular interest to defence was that of Paul Drayson as minister overseeing defence procurement from 2005. Drayson was a private citizen with an industrial background and a Labour Party member. He was selected by the Prime Minister Tony Blair to be a minister and to bring industrial expertise to the Ministry of Defence. His initiatives, especially with regard to the Defence Industrial Strategy, drew a lot of public attention until he opted to resign from political life in the autumn of 2007.

In 2008 further reform of the House of Lords remained likely, with it having become the chamber where those with specific subject matter expertise were available to give detailed consideration to legislation. At least some in the chamber could be considered as 'technocrats' and a few as defence experts.

The legislature in the UK obviously scrutinises, modifies and approves new legislation including annual budgetary measures, but it also monitors the performance of the Executive and seeks to hold it to account. These tasks are executed in part through the Committee system which is particularly important in the House of Commons.

#### The Committee structure of the House of Commons

The House of Commons has three types of Committee. The first are Committees of the whole House which (obviously) have every MP as a member. Today such committees only examine legislation that is either straightforward and can be dealt with quickly, or is considered to be of constitutional importance, or needs to be dealt with very urgently (such as the Prevention of Terrorism Act in 1974 in response to IRA activity).

The second type of Committee is the Standing Committee. These are formed to examine most specific pieces of legislation. Despite their name, they are not permanent and are dissolved once the legislation has been passed.

The third type of Committee is most involved in holding the government to account and these are called Select Committees. Each major department of state is overseen by a specific select committee and the Select Committee on Defence is of most interest here. These committees select their own agendas, conduct investigations taking evidence from within government and without, and issue reports. Their composition broadly reflects the relative weight of the main political parties in the House of Commons but the Committees seek not to work on a party political basis. The chairman of the Defence Committee since 2005 has been a Conservative MP, James Arbuthnot, who had experience of being a junior defence minister (1995-1997) when his party was in power. The Defence Committee regularly covers equipment related topics. Several other committees

have defence related interests, including the Foreign Affairs and Trade & Industry Committees. On occasions, committees with related interests come together to conduct a joint enquiry and so, for instance, reports on Britain's export control system performance are issued by the Quadrapartite Committee representing the combined view of the Defence, Foreign Affairs, International Development and Trade & Industry Committees. The Defence and Trade & Industry Committees have on occasions come together to look at defence industrial/procurement issues.

These committees, while they can work to secure publicity and public attention for their reports, are of fairly limited power since their ability to command the government to provide sensitive information is limited and they have no financial control. The most influential Commons Select Committee is probably the Committee on Public Accounts, with its financial focus and its capacity to explore the waste of public money. Some its enquiries also are concerned with defence.

Parliament is supported in its efforts to oversee government by the National Audit Office (NAO), which provides reports to Parliament (see [www.nao.gov.uk](http://www.nao.gov.uk)). It has significant but not enormous research resources, although no special access to classified information. Its Annual Major Projects Report on the most important defence projects has for almost two decades sought to measure how defence was doing in terms of the delivery of projects on time, on schedule and to the required performance. Perhaps mainly because there are usually significant shortcomings to announce, the Report often secures good press coverage and follow-up work by the House of Commons Select Committees. In recent years, the NAO has apparently sought a constructive relationship with the MoD, seeking out the characteristics of successful projects and project management, and showing some understanding of the MoD's predicaments. It has generated a series of reports supporting the effort to acquire value for money from defence spending in general and defence acquisition in particular<sup>2</sup>.

## The Executive

The head of Government in the UK is elected as part of the legislature and the Executive as a whole is drawn from the legislature unlike in, for instance, the United States,

As noted, the Prime Minister is normally the leader of the largest Party in the House of Commons. He or she (Margaret Thatcher remains the only British female Prime Minister and was in post from 1979 to 1990) is responsible for the appointment of all Members of 'the Government'. This is an extensive group of about 100 heads of ministries and their junior ministers who are responsible for the political direction of the UK's departments of state. At the beginning of 2008 the Ministry of Defence had a Secretary of State with overall responsibility (The Right Honourable Des Browne MP), two Ministers of State, one with responsibility for the Armed Forces (Bob Ainsworth MP) and the other overseeing

Defence Equipment and Support (Baroness Ann Taylor), and an Under-Secretary of State for Defence and the Minister for Veterans (Derek Twigg MP). As her title indicated, Baroness Taylor was a member of the House of Lords, where she represents the Government on all aspects of defence. Earlier in her career, however, she had been a member of the House of Commons. It is a common but not invariable practice that the junior minister responsible for defence equipment should be from the House of Lords.

The scope and division of government into specific ministries varies somewhat over the years. For instance in 2007 there was a major re-organisation of the Home Office, breaking it down to form a new Home Office which included responsibility for crime, terrorism and immigration, and a new Ministry of Justice.

### The Cabinet

The Cabinet is a central component of the Executive, and in principle has general responsibility for the direction and control of government business. It is responsible for the endorsement of all major government decisions. The Prime Minister selects its precise membership from among the more prominent ministers and it normally comprises a group of between 25 and 30. The Chancellor of the Exchequer, the Foreign Secretary, the Home Secretary and the Secretary of State for Defence are always members. While there are some concerns that the UK Prime Minister has in the past three decades become much more presidential and much more than the 'primus inter pares' of the Cabinet, the Cabinet remains the focal element in British government.

The Cabinet, which is chaired by the Prime Minister and traditionally meets every Thursday, operates on the basis of collective responsibility so that all individual members are obligated to support every decision, regardless of their individual feelings about it.

The Cabinet has specialist committees that cover specific areas and the National Security, International Relations and Development Committee is of particular relevance to defence. It has five sub-committees covering Europe, Overseas and Defence, Trade, Protective Security and Resilience, and Tackling Extremism. Major defence equipment decisions, involving billions of pounds and with significant wider implications, are dealt with at Cabinet as well as at ministry level.

Wars and military campaigns obviously constitute testing times for prime ministers and there are no hard and fast rules and practices for their political oversight and direction. The broad outline of conventional practice is that the prime minister establishes an ad hoc group of trusted ministers and appropriate military figures to provide advice and guidance.

## The Civil Service

The roles and responsibilities of the Civil Service have been evolving over the last two decades or more. The UK has a tradition of a strong, politically impartial civil service that supports the government of the day, whatever its complexion, in the achievement of its goals. It collects information to support the generation of policy, identifies options for different courses of action and then implements the policy as settled by the professional politician minister. Although senior civil servants can develop very close relationships with their ministers, when a new government is elected, the same senior civil servants stay in post and learn how to live with their new masters. This system is clearly very different from that found in the United States and some other countries.

The majority of advice for ministers still comes from civil servants, although it has become the norm for secretaries of state, including the defence minister, to have a small number of personal advisers that come from without the civil service. These people naturally are concerned to take into account considerations that relate to a minister's career and individual standing, and the electoral interests of the ruling party. While civil servants cannot ignore such considerations, they have a traditional responsibility to provide the truth to those responsible for making decisions.

The distinction, albeit blurred, between policy making and policy implementation is of importance, not least because, since the time of Mrs Thatcher from 1979, the Government has often seen fit to outsource to the implementation of policy and the delivery of related services to the private sector. Civil servants in defence are involved in both policy making and its implementation and there is widespread recognition that agencies charged with implementing policy themselves need to devise policy to guide how they will execute their tasks. As will be seen, this can clearly be seen in the defence acquisition domain. Conventionally many of the most capable and ambitious civil servants prefer 'policy jobs', not least since these are associated with close access to Ministers.

Today, ministers and civil servants also opt to allocate many information collection and policy option generation tasks to consultancy houses. This has been a trend, which the executive occasionally tries to stem, for more than a decade. Thus, because of the studies they did, the design of the Smart Procurement Initiative is closely associated with McKinseys, while KPMG provided many staff to support the SPI implementation.

The MoD employs a number of different sorts of civil servant with specialist knowledge and skills. Today only about 3,000 are science and engineering staff, whose technical expertise is intended to make the MoD an intelligent customer and user of technology. There is also a much reduced pool of industrial civil servants, working mainly in equipment repair and maintenance, since more or less all equipment manufacturing and an increasing amount of equipment

support has been outsourced to the private sector. Relevant to acquisition, there are also civil servants who develop specialist expertise in financial management and commercial matters.

### Parliament and Public Finance

The Ministry of Defence is provided with funding on an annual basis by Parliament, although this does not prevent ministries with making long-term contracts and other commitments. Basically the budget generation process is coordinated and controlled by the Treasury, with the Prime Ministers' office also being able to provide inputs. Ministries make proposals to the Treasury which examines and aggregates them into a government budget that is dealt with by Parliament in a two-stage process beginning in the autumn and ending in the spring. The UK Government financial year begins on 1 April. Parliament debates each element of the government budget but it is not provided with great detail on how it is to be spent. Thus there are figures for capital spending but Parliament does not see and cannot change the individual amounts associated with a specific weapon system. Again this is a clear contrast with US practice and the powers of the US Congress. The overwhelming norm is that the government presents the budget and parliament approves it without modification. This is not surprising since the government is based on the party with the most seats in the Commons.

To improve the exercise of useful effort, the Government now conducts 'Comprehensive Spending Reviews' (CSR) only every three years so that Ministries can plan with a high degree of confidence on the money they will be allocated for the forthcoming period. The CSR that was concluded in the autumn of 2007 assured the Defence Ministry of only a 1.75% annual increase in real terms for the next three years, an increase so small that it presented the MoD with massive adjustment problems. The money it could expect to receive and the plans and commitments it had made were widely reported to be far apart.

Of course the figures in the CSR are not set in concrete and may be modified by executive and legislative action. Also the annual approved budget may be supplemented by additional monies supplied by Parliament and this occurs regularly in connection with the needed but unpredicted costs associated with the conduct of non-routine military operations<sup>3</sup>.

## **Section 2: The Organisation of UK defence**

The UK Government aspires to manage defence in a cohesive fashion with policy and financial matters being dominated at the Ministry level, with a number of joint organisations dealing with aspects of military business, and with the individual services being mainly responsible for dealing with most dimensions of their personnel management and the preparation of forces to be ready for operational duties.

The Ministry of Defence in Whitehall is a complex organisation seeking to operate both as a department of state and as a military headquarters, with civil servants and military personnel working in integrated teams in most areas. It also operates with a mixture of individual responsibility, with a number of people being designated as owners of Top Level Budgets (TLBs) with responsibility for generating specified outputs from that money), and committees whose members collectively make major decisions and recommendations to ministers.

The Secretary of State for Defence has two principal advisers of equal standing: the Chief of the Defence Staff (CDS) who is selected on merit from any of the three services, and a Permanent Under Secretary who is a career civil servant. He is also the Principal Accounting Officer of the Ministry and responsible for the financial planning and control of the defence programme. In practice he (there has been no female PUS at the MoD) delegates most of his financial responsibilities to the 2<sup>nd</sup> Permanent Under-Secretary who works alongside the Vice Chief of the Defence Staff to drive forward the effective management and delivery of defence.

The formal basis for the conduct of defence in the UK rests on a range of powers vested by government statute in the Defence Council chaired by the Secretary of State<sup>4</sup>. The Defence Council membership comprises the four ministers, the CDS and the VCDS, the PUS and the 2<sup>nd</sup> PUS, the three services chiefs, the Ministry's Chief Scientific Adviser, the Ministry's Finance Director and the Chief of Defence Materiel. However the Defence Council does not meet frequently (two or three times a year at most) and does not play at present a major role in defence acquisition matters.

Beneath the Defence Council, each of the services has its own Board, chaired by the service chief, with formal, statutory responsibilities relating to the administration of the service and its personnel. Clearly service boards have a wide remit that includes oversight of the effective integration of equipment into their organisations, but they again the boards themselves do not have a prominent role in defence acquisition. The involvement of the individual services in acquisition is covered below in more detail.

Two key defence wide committees beneath the Defence Council are the Defence Board (DB) (formerly the Defence Management Board (DMB)) and the Investment Appraisals Board (IAB).

The DB is chaired by the PUS, its membership is that of the Defence Council without the ministerial element, and it also has three members from the private sector who are present in a non-executive role. Given the centrality of this body, it is worth quoting its formal duties.

The Defence Board is responsible for delivery of the Defence Vision, which is: "To defend the United Kingdom and its interests, strengthen international peace and stability, and act as a force for good in the world". In order to deliver this vision the Board is responsible for pursuing three high-level Departmental objectives, namely:

- Achieve success in the military tasks we undertake, at home and abroad
  
- Be ready to respond to tasks that might arise
  
- Build for the future

In pursuit of these high-level objectives the Defence Board's core tasks are:

- **Role of Defence:** To help define and articulate the Department's strategic direction, and provide a clear vision and set of values for defence.
  
- **Targets and Objectives:** To establish the key priorities and Defence capabilities needed to deliver the strategy.
  
- **Resource Allocation:** To ensure that Defence priorities and tasks are appropriately resourced.
  
- **Performance Management:** To manage corporate performance and resources in-year to deliver the required results<sup>5</sup>.

In short the Board has responsibility for the oversight of defence management and generating continuous improvement in the management of defence resources.<sup>6</sup> The 2006-7 Capability Review of the Ministry of Defence undertaken

by the Cabinet Office, while generally favourable to the Ministry, led the Ministry to commit to strengthening the corporate leadership of the department, a task that fell centrally on the DB<sup>7</sup>, and implied that single service chiefs should adopt a defence perspective on the DB, and not act as delegates from their services<sup>8</sup>.

Following the Capability review, a major initiative driven by the DMB in 2007-8 was to 'streamline' the MoD by significantly reducing the ministry's head office staff where a 25% cut in numbers was envisaged.<sup>9</sup>

Below the DB sits the Investment Approvals Board which, as its name implies, must approve all MoD major investments whether in equipment, services or infrastructure. The IAB is chaired by the 2<sup>nd</sup> PUS. Its membership has changed somewhat and in 2008 it comprised the Chief Scientific Adviser (as the approvals process owner), the VCDS, the 2<sup>nd</sup> PUS, the MoD's Commercial Director, and the Chief of Defence Materiel<sup>10</sup>. The full (4\* and 3\*) IAB deals with only the most expensive (£400m in initial acquisition costs) projects and delegates less costly projects to more junior representatives, unless they are deemed to possess particular sensitivity. The IAB approves proposals on the basis of the Business Case presented to them and formally generates only a recommendation for ministers (that may on occasions also be reviewed by the Defence Board as well). The most important defence acquisition decisions in the UK are eventually made by Ministers, sometimes at Cabinet level.

In terms of individual responsibilities, since the reforms introduced by Michael Heseltine in the mid-1980s the Ministry of Defence has operated on the basis of individuals being appointed to roles with budgets, and with those individuals being responsible for the delivery of specified outputs. The division of the defence budget has evolved somewhat and in 2008 there were eight Top Level Budget Holders<sup>11</sup>:

The three single service chiefs (each four-star rank), with responsibility for the recruitment, retention and development of people and the generation of forces at specified rates of readiness to undertake operations. The single Army TLB will formally come into existence in 2008-9

The Chief Scientific Adviser, with responsibility for the Science, Innovation & Technology TLB, addressing the effective use of the MoD's science and technology budget of about £500 million. In 2008 the CSA was acting on a part-time basis and so the de facto TLB holder was the three star Science and Technology Director;

The Chief of Joint Operations, a three-star officer, responsible for the command of operations and some joint activities including training to facilitate such operations;

The 2<sup>nd</sup> PUS and the VCDS, who jointly control the central TLB covering the central activities of the MoD, including the generation, prioritisation and planning of equipment requirements and the provision of some central services including some training and education;

The Chief of Defence Materiel, in charge of the Defence Equipment & Support organisation, with responsibility for the procurement of new equipment and the in-service support of existing equipment; and

The head of Defence Estates, responsible for managing and developing the MoD's land and buildings in an effective and sustainable manner.

Awareness of the TLB system is significant for understanding the UK approach to both the acquisition of defence goods and services and ensuring that items acquired are effectively exploited so as to make their contribution to the generation of defence capability.

Also of significance for acquisition is the MoD's evolving financial management system. The Conservative administrations of Mrs Thatcher and John Major decided to introduce a financial system into government which reflected commercial accounting practices and which was formally called Resource Accounting and Budgeting (RAB). One key element was to try to capture the period in which resources were consumed as well as the year in which the money was spent to acquire the resources. Two key notions were the introduction of capital depreciation and the concept of a service/interest charge on capital investments. The introduction of RAB into the MoD was undertaken in the Project Capital framework. It took more than the second half of the 1990s to introduce all the accounting frameworks and specific rules, some of which were still evolving in 2008. However, by that year the National Audit Office had been able for some time to approve the MoD's accounts on an annual basis as an accurate record of the department's income and expenditure.

By 2008 some significant financial practices had become accepted. In particular, for Private Finance Initiatives, where the MoD was the only user of the service involved, and where there was little significant risk remaining to the contractor, it had become accepted that the capital value of the investments concerned had to lie on the MoD's balance sheet and thus, at governmental level, formed part of the national debt. This somewhat limited the appeal of many prospective PFI projects<sup>12</sup> Second, after some uncertainty, it had been agreed that a particular category of capital assets, Single Use Military Equipment (SUME) should be counted as governmental as well as MoD assets and should thus be included in the national accounts.

One impact of RAB was obviously to make the definition of the distinction between capital and cash (or resource as it is called in the MoD) very important,

since each have their own control totals (CDEL = Capital Defence Expenditure Limits) and RDEL = Resource Defence Expenditure Limits). An important question was the point at which in a research and development programme associated with a new project could the expenditure be capitalised. Until 2007 the practice was to capitalise expenditure after the Main Gate approval point (see below). However the MoD and others had recognised that Main Gate was essentially being taken too early. To advance it, however, implied that the Ministry would have to find more RDEL to finance the preparatory work, and the RDEL were generally under more pressure than the CDEL, at least in the short term. Suffice it to say here that the management of defence projects had come to involve considerable skill in dealing with the different colours of money that were used in the MoD.

Table 1 below provides a brief extract from the MoD's accounts for 2006-7 showing the value of the Ministry's intangible and tangible assets.

**Table 1: Extracts from the MoD Balance Sheet, from MoD Annual Reports and Accounts 2006-2007, Pg 246-247**

**Intangible Assets**

Intangible assets include development expenditure in respect of fixed assets in use and assets under construction where the first delivery into operational use of the asset type has taken into place.

|   | <b>Single Use Military Equipment</b><br>in £billion | <b>Others</b><br>in £b | <b>Total</b><br>in £b. |
|---|---|------------------------|------------------------|
| <b>Net Book Value:<br/>At 31 March 07</b> | 23.817  | 0.346                  | 24.163                 |
| <b>At 1 April 06</b>                      | 22.029  | 0.953                  | 22.983                 |

**Tangible Fixed Assets**

|  | <b>Dwellings</b> | <b>Other Land &amp; Buildings</b> | <b>Single Use Military Equipment (SUME)</b> | <b>Plant &amp; Machinery</b> | <b>Transport</b> | <b>IT &amp; Comms. Equipment</b> | <b>Assets under construction (SUME)</b> | <b>Assets under Construction (others)</b> | <b>Total</b> |
|--|------------------|-----------------------------------|---|------------------------------|------------------|----------------------------------|---|---|--------------|
|  | £billion         | £b                                | £b  | £b                           | £b               | £b                               | £b                                      | £b  | £b           |
| <b>Net Book value<br/>At 31 March 07</b> | 2.970            | 15.463                            | 34.244                                      | 2.649                        | 4.347            | 1.134                            | 12.366                                  | 1.427                                     | 74.601       |
| <b>At 1 April 06</b>                     | 2.913            | 15.543                            | 31.489                                      | 3.274                        | 3.912            | 0.986                            | 12.594                                  | 1.063                                     | 71.775       |

Source: Ministry of Defence, *Ministry of Defence Annual Report and Accounts 2006-7*, London, The Stationery Office, p.246-7

### **Section 3: Defence acquisition: key organisations**

This chapter outlines some of the key organisations within the MoD that are concerned with the acquisition of defence equipment and services.

#### **The Ministry of Defence centre**

The centre of the Ministry of Defence, and especially the Policy and Commitments areas (under the civilian Policy Director) generates the policy and analysis of the emerging strategic context that provide fundamental guidance to the requirements staff in the Equipment Capability Customer (ECC) (see below). The UK's overall defence policy was comprehensively reviewed in the 1998 Strategic Defence Review, and has been marginally modified since in the light of events. The SDR articulated the UK's need for the government to be able to project forces well beyond Europe and explained that UK defence should be 'a force for good' in the world. This force projection aspiration led directly to some significant procurement choices, especially the lease and then purchase of C.17 aircraft and the acquisition under a Private Finance Initiative of six roll-on roll-off (ro-ro) ferries. The UK's plan to build two aircraft carriers is also underpinned by this policy.

UK defence policy provides a steer for the prioritisation of resources across defence, since it spells out the operations that the UK should be able to mount at short notice and with some time for preparation. Within the individual services there is a system for assessing readiness and the 'front line commanders' (who essentially are concerned with directing the generation of forces) have systems for the preparation of units at specified rates of readiness and sustainability. Defence Planning Assumptions on the scales of effort to be operated at any one time are derived from defence policy, which is one element of the overall Defence Strategic Guidance

The UK's aspirations are linked to its assessment of the future strategic context, which is undertaken and coordinated by the Development, Concepts and Doctrine Centre (DCDC). An unclassified version of this context is published and it looks out for 30 years at global trends and potential developments that could impinge on UK defence<sup>13</sup>.

The UK's policy ambitions and its strategic context analysis permit the development of a series of scenarios (the detail of which is classified). Operational analysis using these scenarios permits assessment of the military value of a proposed military capability centred on a piece of equipment. This is also linked to the work of the Directorate of Force Development within the MoD centre that explores the desired characteristics of UK forces for the future.

### The Equipment Capability Customer

The Equipment Capability Customer organisation is a purple (joint) body which has primary responsibility for the generation of requirements and their prioritisation into a rolling, affordable plan that extends ten years into the future. It is headed by the Deputy Chief of the Defence Staff (DCDS) Equipment Capability, a three star military position. Beneath him are four two star Capability Managers, concerned respectively with Information Superiority, Precision Attack, and Battlespace Manoeuvre. The organisation is defined entirely in capability rather than service environment terms and each CM has a number of colonel/one star Directors of Equipment Capability beneath him and their domains are outlined in Figure 1.1. There is also a two-star position currently held by a civil servant which is responsible for them Strategic Requirement i.e. the UK nuclear deterrent. Within the ECC there are those responsible for scrutiny and financial management (headed by the two-star Director General Equipment) and for research and technology (headed by a two-star civilian). This small (and reducing under the Streamlining exercise) organisation of less than 400 people addresses all the UK's military requirements. The organisation's three and two stars comprise the Joint Capabilities Board which has overall responsibility for balance of investment matters regarding the Equipment Programme. Finally there is a one-star post, Director of Capability Improvement, concerned in particular with the development and implementation of the multiple links between a piece of equipment and usable capability. The UK addresses this through what it calls the Through Life Capability Framework which is explained below.

## MOD Equipment Capability Customer Joint Capabilities Board

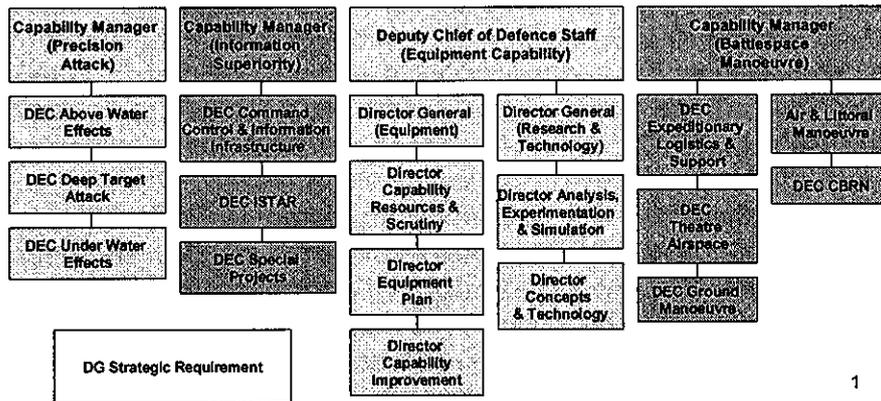


Figure 1.1

### The Defence Equipment & Support (DE&S) organisation

The Defence Equipment & Support (DE&S) organisation is responsible both for the procurement of new equipment to meet the requirements set by the ECC and the support of in-service equipment at levels specified by the military users in the single service commands and, to a lesser extent, in the Permanent Joint Headquarters that commands UK military operations and has some equipment and training activities of its own. It is also responsible for logistics support for deployed UK forces with oversight of the whole process 'from factory to foxhole'

The DE&S is headed by a four-star Chief of Defence Materiel who, for NATO purposes, is designated as the UK's National Armaments Director. Under a Chief Operating Officer there are eight two-star cluster leaders who oversee somewhere between 10 and 20 Integrated Project Teams. The clusters are focussed on similar sorts of product (such as 'Weapons' and 'Submarines' rather than capability as such. Some IPTs are concerned with a single item (such as the Hercules fleet and the Tornado aircraft) whereas others are involved with a number of smaller projects (such as the Infantry Guided Weapons IPT). The IPTs include the technical, financial, commercial and other personnel that they need to manage their projects under a leader who is seen as having a motivational even inspirational role. The leader reports on the progress of his project or projects to the relevant DEC in the ECC and on the effective management of his resource to the Chief Operating Officer of the DE&S. The appropriate staffing of IPTs as

projects move through their different phases is an ongoing challenge receiving high level attention in 2008.

Until the spring of 2007 the MoD operated a separate Defence Procurement Agency (DPA) and a Defence Logistics Organisation, with IPTs operating in each. One concern was that DPA IPTs, not least because of the focus of the National Audit Office, could focus excessively on the initial cost, delivery date and performance of a piece of kit and might neglect its needs through its life. The creation of the DE&S was meant to weaken this tendency and to build a whole life perspective firmly into every team with the core competence of the DE&S teams needing to remain expertise in dealing with external suppliers concerned with all aspects of a piece of equipment's development and then operation.

Leading the linkage of the purple DE&S organisation with the individual services are three (three star) Chiefs of Materiel covering Land, Fleet and Air. Under them are two two-star officers dealing with Information Systems and Services and the Joint Supply Chain. The latter covers defence storage and transport, and also support for people including mail services, food and clothing.

Finally in the DE&S are the corporate services which cover human resources, finance, commercial expertise, and safety and engineering, facilities, and the politically significant International Relations Group which handles generic international issues (such as the role of the European Union and the European Defence Agency) arising in acquisition.

### Organisation of DE&S (1)

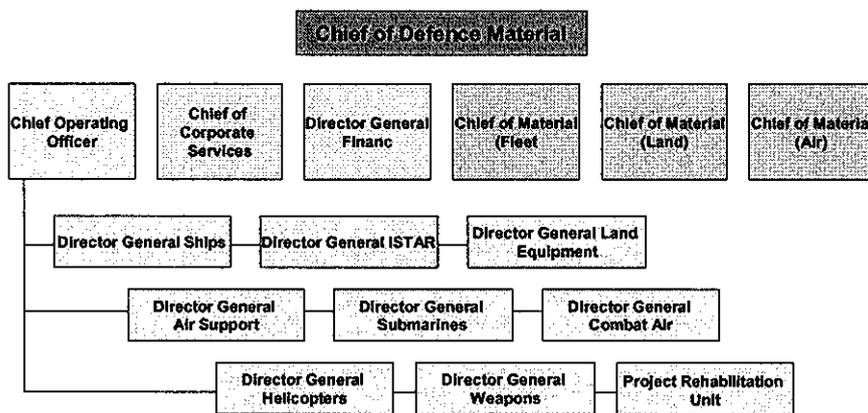
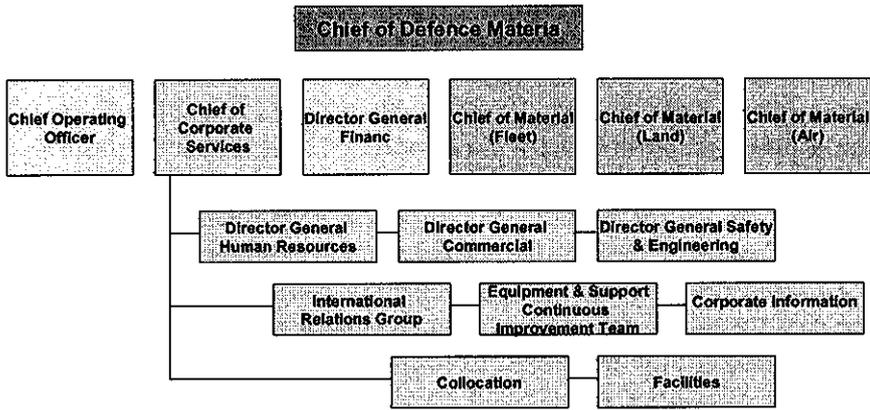


Figure 1.2

### Organisation of DE&S (2)



1

Figure 1.3

### Organisation of DE&S (3)

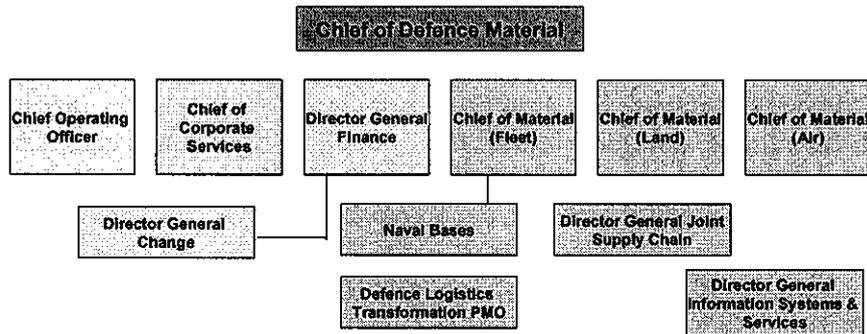


Figure 1.4

### Defence Scientific & Technical Laboratories (DSTL) & QinetiQ

Many of the 3500 people in the MoD's scientific and technical branch contribute to the MoD's efforts to be a technically intelligent customer and they work for DSTL<sup>14</sup>. This organisation contains groups thought too sensitive to be placed in the private sector, including chemical and biological warfare experts, as well as operational analysis professionals. The DSTL web-site outlines the breakdown of the organisation's range of concerns<sup>15</sup>. Part of the DSTL is to outsource to best effect much of the MoD's research spending of about £500 million a year and DSTL includes a procurement organisation (the Research Acquisition Organisation) based at Shrivenham. Among DSTL's roles is the monitoring and anticipation of technological advance in the world as a whole but its staff are also directly involved in the support of military operations in Iraq and Afghanistan, where they help with incident and operational analysis and the generation of Urgent Operational Requirements. There are dozens of DSTL staff deployed in theatre.

Prior to 2001 the MoD's had a much larger group of about 12,000 science and technology staff who had been based in a series of laboratories that were eventually organised within the Defence Evaluation & Research Agency. DERA was responsible for a wide range of research, development, testing and other technical services until the Blair Government decided that it could obtain better

performance for the defence budget by placing many of them in the private sector. The result was the division of DERA into DSTL (outlined above) and a new company QinetiQ formed in 2001. In 2004 the National Audit Office released a major study into the management of defence research in the UK that addressed progress in this area<sup>16</sup>. Shares in the new company were released in increments into the public domain and a key move was to allow the venture capital Carlyle group to take 33.5% of QinetiQ shares. The role of Carlyle was to prepare the new organisation for full privatisation, which it did. Carlyle sold its shares in QinetiQ in 2006-7 having made a healthy profit on its investment. The National Audit Office was somewhat critical of the Government about the gains that Carlyle and the others, including company staff, had been allowed to make through the privatisation process<sup>17</sup>, but overall it recognised that many aspects of the privatisation had been well handled.

In 2008 QinetiQ is an energetic company focussed on growth, and has made a number of important investments in the United States<sup>18</sup>. The Government's plan is to compete more and more research work but it has a long-term (25-year) contract with QinetiQ covering many testing activities and MoD range management. This contract was of considerable value in providing the QinetiQ business with a firm base.

#### The individual armed services

The single services organisations have changed and continue to change. Until recently the services were organised so as to focus separately on collective training/force preparation and on personnel management: Each service had a separate Top Level Budget Holder to direct these two functions. By 2008 each service had either created or was in the advanced process of creating a single headquarters under a four star officer to look after both these areas. Each service was to be run under a single TLB under the direction of the service chiefs, the Chief of the General Staff, the First Sea Lord and the Chief of the Air Staff respectively. The single services have roles throughout the acquisition cycle, beginning with an input into needed capabilities and requirements and including provision of many of the elements needed to ensure that equipment is reflected in capability.

There is scope for tension between the single services, normally keen to maintain their individual importance and activities, and the ECC which is directed to think in capability terms and not to consider only the replacement of existing systems with something better of a similar nature. The establishment of Capability Management Groups and Capability Planning Groups is meant to provide an environment in which the best interests of defence can be thrashed out and developed.

In the American context, Michael Brown has written about explanations for new weapons programmes that are strategic, technological, bureaucratic or

economic. Defence policy makers, the force development community and the DCDC can be viewed as constituting of those providing what might be termed the strategic push for new requirements. The MoD's science and technology staff, especially within DSTL, provide some element of technology pull (or at least technology steering) for new requirements, while the single services reflect what Brown called the bureaucratic (concerned with core missions and institutional interests<sup>19</sup>).

### Resources and Programmes

In organisational terms, the Resources and Plans section of the MoD, which is the focus of financial control in the department and is headed by the Finance Director, also plays a central role in issues of how much can be spent and on what. Its focus naturally is on financial control and the avoidance of overspend.

The R&P community have a formal and important place in Capability Management Groups and Capability Management Groups, being particularly concerned with the financially possible as well as the optimum use of defence resource.

## **Section 4: Defence acquisition central concepts**

This chapter discusses the central concepts and ideas that shape defence acquisition activities in the UK.

### Capability

The UK acquisition system is based largely on the concept of capability i.e. what the armed forces need to be able to do. Arguably the centrality of capability, which is today common across the developed world, has arisen primarily because of the absence of a specific threat against which weapons needs could be assessed. In British Defence Doctrine, defence is broken down into seven related but separate areas of capability: Prepare, Project, Inform, Command, Operate, Protect and Sustain<sup>20</sup>. These are similar to the frameworks used in other states as well as NATO and the EU, although it is unusual to find Prepare identified as a capability in its own right.

While these categories are not reflected explicitly in the organisation of the Equipment Capability Customer organisation, not least because many systems provide elements of a number if not all the capabilities listed, it remains the case that the UK considers acquisition centrally from the perspective of the particular capabilities that need to be acquired.

The stress on capability has got several important implications. First it discourages 'straightforward' replacement thinking in which a service organisation or branch might seek simply to replace an ageing piece of kit with something newer and better but essentially similar. Instead it challenges MoD staff to define a needed capability and then to explore a range of equipment solutions that could contribute to the generation of this kit, some of which might be organisationally and in other ways disruptive.

Second a capability-based approach offers a double reminder. The first is that there may be ways to generate a capability without the acquisition of new equipment by re-ordering existing human and physical assets. The second is that equipment alone does not provide capability and a number of other ingredients need to be added in the appropriate amounts at the right time. The UK MoD specifies ingredients, including the equipment element, as Defence Lines of Development (DLODs).

### Defence Lines of Development (DLODs)

Obviously the introduction of equipment has never in itself assured the provision of capability and the UK defence acquisition system has long distinguished

between when a piece of kit was delivered from industry in an acceptable form and when it could be declared available for operational use.

However, in the light particularly of problems in introducing some novel systems including the Apache helicopter and the Bowman communication system, the MoD thought systematically about the links between a physical system and usable capability. The January 2004 edition *Smart Acquisition Handbook* (p13) specified six 'Lines of Development' that came together to form military capability (Training, Concepts and Doctrine, Personnel, Equipment & Technology, Structures and Estates and Sustainability).

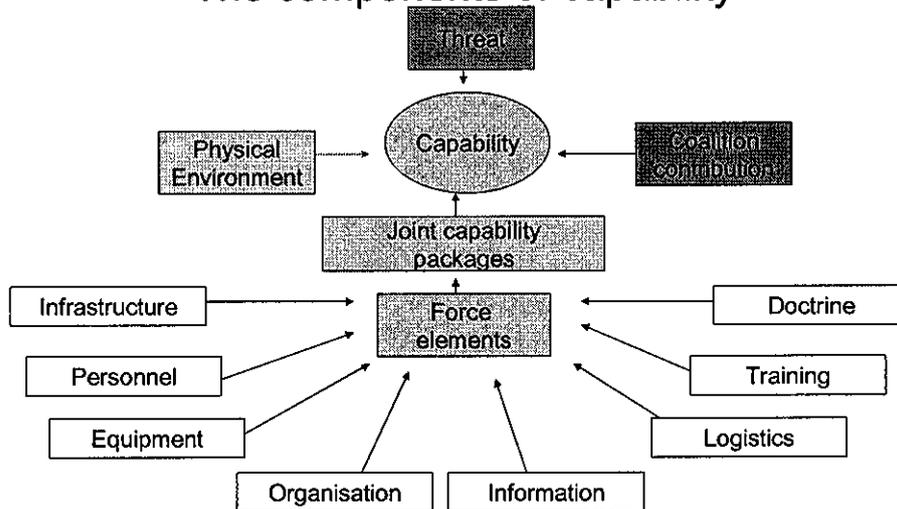
Further thought brought an expanded list of eight items, usually summarised by the TEPIDOIL acronym.

- Training
- Equipment
- Personnel
- Infrastructure
- Concepts and Doctrine
- Organisation
- Information
- Logistics

Interoperability is recognised as an overarching element to enhance all the elements of capability.<sup>21</sup>

However by 2007, with two major campaigns running, it was also explicitly recognised that capability could not be treated in isolation from the forces aligned against it and other factors. Thus the MoD's current model of capability, centred on force elements and joint capability packages, includes not only the DLODs, it also recognises the importance of the characteristics of the adversary, the physical environment in which an operation could occur, and the possible/likely contributions that might be made by allies.

## The components of capability



### Through-life capability management (TLCM)

With the Smart Procurement Initiative in 1998 the UK stepped up its efforts to consider equipment on a whole-life basis and Integrated Project Teams were directed to develop Through Life Management Plans for the equipment under their direction. There was a particular concern not to neglect the support phase of equipment even as it was being designed and developed.

After 2005, however, and the publication of the Enabling Acquisition Change report,<sup>22</sup> the MoD endorsed an aspiration to implement Through Life Capability Management, which involved the long-term coordination and control of all the DLODs. TLCM involved most obviously a change to financial and planning systems, with the generation of data estimating the cost of all the DLODs associated with a capability over a 10-year period, and with broader planning for even longer periods. This should clearly support improved calculations about the affordability of any new system and improve the conditions for bringing new systems into effective service. As the equipment line entered the production phase, the MoD wanted to be assured that all the other DLODs would be available so that usable capability could be rapidly generated.

However the MoD also aspired to manage the DLODs in a coordinated manner, in other words to take advantage of opportunities to trade off system performance against personnel, training and so on. In general, through the Capability Management Groups and Capability Planning Groups (CPGs), the MoD hoped to set the mix of DLODs so as to secure the best capability for the best cost.

### Requirements management and engineering

The UK since 1998 has operated a method of requirements management that involves two key elements. The first is the idea of the User Requirements Document that captures all that the user needs to be able to do without addressing directly how those these things are to be done, although they do take account of military concepts.

User requirements are not expressed in a way that anticipates a particular solution being selected. They are expressed using terminology specific to the relevant applied Concept or Concept of Employment (CONEMP) for the capability.

There is provision for a hierarchy of requirements with a single, high level statement of user need at the top (Single Statement of User Need). Then, 'within the URD those requirements which are assessed as key to the achievement of the Defence capability will be identified as Key User Requirements (KURs). Typically an overall capability will be characterised by no more than 10 KURs'.<sup>23</sup> Finally there are detailed individual requirements. These last should be as clear and as measurable as possible, including only a single requirement in each statement. Also All user requirements are numbered and, using specialist software, located in a database.

The Systems Requirement Document (SRD), on the other hand, captures what the system needs to be able to do in order for the user to have the capability desired. Requirements in the SRD also need to be terse, clear and individually identified. Moreover they have to be matched against individual user requirements. In order to ensure that all user needs are met, each user requirement has to be referenced to one or more system requirements and, to ensure that there is no unnecessary provision of technology, all system requirements have to be justified by a user requirement. Moreover system requirements must have the precision necessary for appropriate test and acceptance arrangements to be laid down for each<sup>24</sup>.

While the SRD follows from the URD, it is recognised that in practice they should be considerable interaction in their development as awareness of cost, need and feasibility develops. Trading off is also a central concept in the UK acquisition system, in recognition that it may make sense to accept a lower level of capability if it can be delivered relatively quickly and inexpensively. Alternatively it may also be more sensible to accept a slightly longer time to delivery if a disproportionate increase in capability can be achieved.

Contracts with industry are based on the SRD, with test and acceptance wherever possible to be based on functional performance and not the delivery of a specified design or technology. This obviously can place considerable risk with industry.

The introduction of user and system requirements was to encourage consideration of how novel technologies could be used and to discourage 'replacement thinking' – the inclination to exchange an ageing system with a newer one of a similar nature. When the managed requirements system was first introduced after 1998, the deep strike capability, the capacity to strike with precision targets perhaps 300 kilometres behind the forward edge of a 'battle area' was often cited as a needed capability for which a variety of possible solutions could be discerned.

Heightened awareness of non-equipment lines of development clearly raises questions about how these are to be linked into the contracting and overall acquisition process, since industry since the link between a physical system, for which industry is responsible, and usable capability, is the harmonious provision of all lines of development. This is most obvious with regard to a number of sensors whose findings may need interpretation by skilled operators for a capability to detect or track to be present.

#### The CADMID/CADMIT cycle

With specific regard to equipment, the acquisition cycle has a central role and it is deemed to have six phases with regard to equipment:

- Concept
- Assessment
- Demonstration
- Manufacture
- In-Service
- Disposal

When the MoD views the acquisition of services, some of which may be based on a significant capital investment by industry, the Disposal phase is replaced by the (contract) Termination phase in the CADMIT cycle and Manufacture is replaced by 'Migration' of the service into the MoD.

The activities that are expected to be undertaken in each phase are spelled out in MoD documentation<sup>25</sup>. Briefly in the Concept phase time, cost and performance parameters are specified, technology and procurement options are identified as means of generating performance, a Through-Life Management Plan is begun, a new IPT is formed or an existing IPT identified to procure the system, a User Requirements Document (URD) is generated and an Initial Gate Business case is prepared for the IAB for approval. The end of the Concept phase is marked by the granting of the Initial Gate approval which includes approved funding for the Assessment Phase. In the Concept Phase, the MoD works out broadly what it needs to be able to do and assures itself that its aspiration is feasible and affordable, but there need be no commitment to any particular technology solution.

The identification of the most cost-effective technological solution and procurement strategy takes place in the Assessment phase, which also generates a System Requirements Document (SRD) closely linked to the URD. Trading off time, cost and performance can and should occur in the Assessment phase, along with spending to reduce technological and other risk. The Through Life Management Plan is refined and eventually a Main Gate Business case is generated 'seeking approval for the project within tightly defined performance, time and cost boundaries'<sup>26</sup>. In 2008 the MoD recognised that it often had not spent enough in the Assessment phase to de-risk projects sufficiently and was not meeting its average target of spending 15% of the estimated development and production cost before committing to the project, indeed for category A projects the average was only 5%.<sup>27</sup>

In the Demonstration phase a contract is placed to meet the SRD and further development and production risk reduction occurs. An ability to produce integrated capability is demonstrated. In Manufacture the solution is delivered within time and cost limits, System Acceptance takes place to ensure that the SRD and URD are satisfied and equipment is transferred to the front line commands.

In the In-service phase an In-service date is declared and there is confirmation of the availability of the equipment for operational use. Effective support for the equipment is provided, performance levels are maintained and the annual cost of ownership should be driven down. Upgrades or increments of capability may also take place.

Finally in the Disposal phase the plans for the efficient, effective and safe disposal of the equipment are implemented.

To summarise, the UK seeks to practise capability-based acquisition, using the CADMID/CADMIT cycle, using the frameworks of Through-Life Capability Management and the Defence Lines of Development, so as to integrate the acquisition and support of equipment and services into the wider task of capability generation.

## **Section 5: Acquisition processes**

This chapter outlines the key processes that knit together the organisations concerned with defence acquisition (Chapter 3), and the ideas and concepts that shape their behaviour (chapter 4) so as to generate the delivery of goods and services.

As indicated above, the Equipment Capability Customer (ECC) organisation has the lead on the generation of new requirements and their prioritisation into an affordable plan. In MoD language, it is described as the Sponsor of new capability.

### Requirement generation

The essence of the ECC approach is to secure input from the main MoD stakeholders through the operation of Capability Management Groups and Capability Planning Groups. There are four other stakeholders present in these bodies:

The Ministry of Defence central staff, bringing both the policy and the financial dimensions to the table;

The MoD's science and technology community providing guidance on what is possible given technological progress;

The Defence Equipment & Support organisation which will be responsible for the purchase and eventual support arrangements for any new equipment; and

The user community, i.e the single service front line commands, which will generate many of the lines of development associated with any new purchase.

The MoD has specified the term Unified Customer to cover this group of interests.

The MoD has specified a six stage process for the generation of a new requirement/capability. The text below is taken directly from the Acquisition Organisation Framework<sup>28</sup>

### *The Capability Change Planning Process*

*Capability Change Planning - an integral part of Capability Management comprises of the first 5 stages of a 6-stage process to optimise the capability delivered at all points in time, within available resources.*

*The Capability Change Planning Process requires the active involvement of all ECC staff, in particular Director Equipment Plan (DEP) and DECs, all DLoD stakeholders and the MOD*

*Unified Customers members of the Capability Management Groups (CMGs) and Capability Planning Groups (CPGs).*

*The output of the Capability Change Planning Process may be a series of endorsed changes to the current plan. The key planning documents used to enable this are:*

- **Capability Management Strategies (CMS)** for each Capability Management Group (CMG)
- **Capability Management Plans (CMP)** for each Capability Planning Group (CPG).

*The sixth (final) stage of Capability Management is concerned with Capability Delivery through the establishment of a pan-DLOD Programme Board, led by the Sponsor as SRO. This provides governance over the delivery of a programme up to the In Service Date, where responsibility is transferred to the User.*

#### *Stage 1 – Capability Definition*

*This stage develops a Capability Definition of the capability area for each Capability Management Group and Capability Planning Group. It also requires each DEC to establish and/or review Capability Planning Groups (CPGs) for their area. CPGs consist of those groups of stakeholders which are responsible for the coherent management of force groupings on an enduring basis and across multiple DLoDs.*

*Each DEC must identify dependencies on other CPGs and CMGs, including stakeholders for their area. This is a primary task of DEC strategy staff and DEP, in consultation with wider departmental stakeholders.*

#### *Stage 2 – Define Capability Goals for Area*

*This stage draws on Defence Planning Assumptions and other policy guidance and analysis, to develop a clear definition of the capability requirement in terms of one or more statements of capability need. The statements should be specific, measurable, solution independent characteristics for the capability area.*

*The capability characteristics are typically phrased in terms of broad performance characteristics required of one or more force groupings.*

*Capability goals are recorded at CMG and CPG levels within Capability Management Strategies and Capability Management Plans respectively.*

*This is a primary task of DEC strategy staff and DEP, in consultation with wider departmental stakeholders.*

#### *Stage 3 – Baseline Review and Audit*

*This stage develops and validates a baseline assessment of the capability area across all DLoDs as currently planned.*

*This stage draws on the output of Stages 1 and 2, and presents the five perspectives relating to each CMG and CPG capability area:*

- *Capability*
- *R&T*
- *Industry*
- *Financial*
- *Commercial*

*They may include current DLoD plans, and other known shortfalls, threats and opportunities. This is a primary task of DEC's. It requires active engagement from all members of the MOD Unified Customer at CPG level.*

#### *Stage 4 – Shortfall and Opportunity Analysis*

*The Shortfall and Opportunity Analysis stage develops a clear understanding of risk-based capability priorities and opportunities.*

*It draws on the previous stages, together with other scenario based operational analysis, Balance of Investment (BOI) studies and military judgement. These priorities and opportunities include an assessment of the level of tolerable operational risk.*

*This is a primary task of DEC's, supported by the CPG members.*

#### *Stage 5 – Capability Investigations*

*Capability Investigations are undertaken to identify generic options across all DLoDs, which could resolve capability shortfalls and exploit opportunities.*

*Down-selection to a leading option and key alternatives is based on capability, affordability and, where appropriate, industrial considerations.*

*Capability Planning Groups, Capability Management Groups, or the JCB may initiate Capability Investigations. In some instances, Capability Investigations may form the basis of a concept phase for a new equipment project.*

*The Requirements and Acceptance process captures, analyses and tests the documented statement of the User's needs.*

*Capability Investigations should be conducted with the best experts selected from across Defence and Industry as required.*

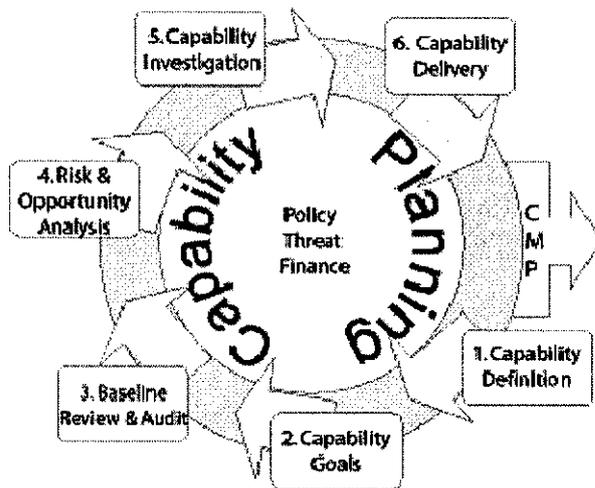
#### *Stage 6 – Capability Delivery*

*The final stage takes the recommended option(s) and establishes the strategies and programme plans to enable capability delivery, describing how the cross DLoD option(s) will be delivered.*

*These define how the associated portfolio of cross DLoD change programmes and projects are managed. In the case of the Equipment and Support DLoDs this may drive*

changes to the supporting Through Life Management Plans (TLMP) or lead to a new project commencing. The focus of these plans, which is a primary task of a Programme Board, is:

- Defining new project and programme boundaries and changes needed to existing projects and programmes across all DLoDs.
- Identifying important internal dependencies between the plans and links to external plans.
- Managing top-level risks, issues and assumptions.<sup>29</sup>



More detail is available on the crucial Stage 5 of Capability Investigation within which there are again six stages.

- **Task 1 – Stakeholders.** Identify and engage with the individual ‘capability users’ and ‘capability stakeholders’.
- **Task 2 – Capture.** Capture requirements and constraints.
- **Task 3 – Analyse.** Analyse the exercising process(es) and constraints in order to define the set of activities that the capability must enable.
- **Task 4 – Engineer.** Engineer the aggregation of individual requirements into one cohesive data-base.
- **Task 5 – Review.** Review the URD for adherence to guidance and clarity of purpose.

- **Task 6 – Endorse and Publish.** Record and communicate the user requirements.

The process is iterative and the URD should be reviewed throughout the project life cycle, so that changes are recorded, including trade off decisions and change of needs<sup>30</sup>. “

The initial stages of the generation of a new requirement are the responsibility of the Capability Planning Groups that must first secure approval for their proposals from the Capability Management Group above it and eventually the Joint Capabilities Board of the ECC. Fundamentally Directors of Equipment are responsible for the direction of balance of investment i.e. prioritization issues within their field of responsibility. On the larger scale, the three two star Capability Managers have the same role, while the Joint Capabilities Board oversees the balance of investment across defence as a whole.

However, to proceed through the full acquisition cycle, a project on at least two occasions, Initial Gate and Main Gate, needs the support of approval of the MoD as a whole. This is provided through the responsibilities allocated to the Investment Approvals Board (IAB) which deals with all major investments by the ministry, including in infrastructure projects.

#### Initial Gate Approval and Business Case

As a URD develops, a key process with the ECC having the lead responsibility is to prepare the Initial Gate Business Case for approval by the Investment Approvals Board. The MoD provides detailed guidance as to what this case is to address but clearly it has to cover the value and benefits of the military capability to be acquired, not least in terms of several of the planning scenarios endorsed by the MoD. It must also address acquisition strategy (or strategies if there is more than one type of solution to a capability gap) and needs to demonstrate that a viable approach to cost-effective procurement is available.

The IAB does not set out to assess the relative value of any one proposal against all other uses of MoD funds. It is essentially concerned to assure that the case for a new requirement has been properly thought through in terms of the benefits to be gained, and the costs to be incurred. It is unusual for a proposal to fail an IG Gate business case review on grounds of lack of military potential. More common is for projects to be sent back for further work and refinement.

The IAB represents the scrutiny of the MoD as a whole for proposals emanating initially from the ECC, but the more important projects also must receive endorsement from the Treasury and even the Cabinet as a whole.

## System Requirement Document

As work becomes established on the generation of a new requirement, the Future Business Group of the Defence Equipment & Support organization assesses whether the procurement of the requirement can be handled by an existing Integrated Project Team or will need the formation of a new team. Given that most IPTs today address more than one project, the norm would be for a new requirement to be placed with an existing team.

The IPT, which includes a military requirements management function, has prime responsibility for the generation of the System Requirement Document to meet the URD's demands. In this respect the Requirements Manager on the Integrated Project Team plays a key part. This is a military officer who acts as the agent of the ECC and who has an important role with regard to the specification of the SRD to meet the needs laid out in the URD. As noted, the process of arranging a set of URD and SRD documents is iterative with modifications going in both directions, although the URD is normally the first to be set. Significant interaction between the URD and the SRD will probably increase in the future as the MoD looks more to trade off cost and at least initial performance in favour of procurement speed.

## Main Gate Business Case

The IPT also leads on the generation of the Business Case for the Main Gate (MG) approval point by the IAB when cost, time and performance parameters for the equipment are base-lined. A finished SRD which assures the demands of the URD will be met is a key element of the MG Business case but a range of other tasks also need to be completed.

The Main Gate is seen as a higher hurdle than IG with more detail about remaining risk. The Business Case must provide extensive information on the procurement strategy to be used, the support arrangements envisaged and so on. Under the Through Life Capability Management processes, the IPT must collect data from across the defence community on all lines of development, including their costs, and the aim is to provide the IAB with a comprehensive picture as regards benefits, costs and risks. The MoD is trying to enhance the amount of technical development completed before the Main Gate is passed (and the Demonstration phase can begin), so that technical risk when firm commitment to a project is made is minimized. Historically the MoD has recognized that it provided projects with MG approval before they had been properly de-risked.

It is not unknown, even when a competitive procurement strategy is planned, for a clear preferred supplier to be in place by the time of MG approval. In 2008, for instance, this was the case with the UK's two aircraft carrier project. One technique for securing a cost estimate that can give some confidence is to arrange a competition and see what an invitation to tenders brings forth. In such cases a preferred supplier can be known and

even announced, although the actual contract for development and normally production cannot be signed until the project itself has passed through MG.

#### Procurement strategy selection and implementation

As noted, the UK pays significant attention at an early stage in a project's life to the possible procurement strategies to be adopted for new equipment.

In this area it is significant that the UK has little relevant legislation, other than its commitments in the European Union to conduct public procurement on a competitive EU rather than a national basis unless the item concerned is 'war materiel' and so covered by Article 296 of the Treaty of Amsterdam. Basically the British parliament does not specify rules for defence procurement. There is however much guidance, with the Treasury having the reputation of a strong disposition for the use of competitive tendering. The main internal guidance is to be found on the MoD's own Acquisition Organisation Framework ([www.aof.mod.uk](http://www.aof.mod.uk)).

One possible procurement solution is to opt for the provision of a service, based on a significant capital investment by a company, instead of the defence ministry buying the equipment. The company then charges for the provision of the service, normally with a minimum level of demand being assured for a long period and with the MoD having flexibility about the high level of demand which it may put in place at any one time. In some cases, the company will have the freedom to sell surplus service capacity generated by a physical system on the private market. Arrangements of this sort are called Private Finance Arrangements (PFIs).

The MoD has put in place a considerable number of such Private PFIs, many of which have been for the provision of buildings and other infrastructure assets. However, there is a significant amount of private investment today tied to training assets including simulators and equipment of direct relevance to military operations, including the Skynet V network of communications satellites and ground stations, the emerging fleet of Airbus tankers, the fleet of six roll-on roll-off ferries, and the Heavy Equipment Transporters. In 2006-7 the MoD paid in all a total of £1.147b against PFI contracts. This will increase significantly once the Air Tanker deal is implemented. A complete list of extant PFI projects, with the capital value involved, can be found in the MoD's Annual Report and Accounts<sup>31</sup>.

Whether a PFI or conventional procurement is involved, the UK MoD has had a strong historical presence since the early 1980s for the choice of contractor through a competitive tendering mechanism. Thus the 2002 Acquisition Handbook observed that 'obtaining the greatest advantage from competitive leverage, at prime and sub-contract level, remains a major tool of defence procurement'<sup>32</sup>.

However, by 2008 there were grounds for doubt about how competition might operate in practice. There was concern that a company might well submit in an unrealistic bid in order to obtain a contract that, because of the infrequency of orders, was vital to its survival in a particular defence sector and even in defence overall. Unrealistic bids were usually followed by losses for the company and cost increases for the MoD. When foreign bidders were allowed, and increasingly they were needed because only one UK company might be available, competition could mean the loss of UK defence industrial capability associated with 'operational autonomy' and 'appropriate sovereignty' (see below).

The result of these and other considerations was that there was reduced emphasis on the centrality of competitive tendering and in particular on the selection of a prime contractor early in a project's life which would commit to delivering the finished product at a specified time for a specified cost. This was the route taken for the Astute submarine and Nimrod anti-submarine aircraft and it had proved massively problematic. In the case of the two aircraft carriers first envisaged in the 1998 Strategic Defence Review, procurement strategy evolved over an extended time period. The MoD arranged an original competition in 1999 from which it sought to extract the best thinking from both bidders (BAES and Thales). These and other players including the MoD were then formed up into the Carrier Alliance, and the (five) contracts involved in the construction of the carriers were signed only on 3 July 2008<sup>33</sup>.

From the publication of the 2005 Defence Industrial Strategy (see below), the UK was increasingly seeking to reconcile competitive tendering with the desire to sustain specific areas of national industrial capability.

By 2008 procurement strategies for major projects often revolved around how projects were to be broken up and parts allocated to different contractors, as was the case with the carriers where Thales, for instance, had a £425 million contract for design and engineering work. In the case of the Future Rapid Effects System (a family of armoured vehicles), Boeing in partnership with Thales was appointed as the Systems of Systems Integrator, a role in which it would essentially help the IPT to manage the project rather than be responsible for the development and production of specific elements of it.

Reflected in much UK thought and practice was recognition that successful acquisition would at many or even most stages of a project's life need the MoD and industry to see themselves as working to a common purpose rather than in an adversarial position. Thus, certainly once any competitive phase was over, the MoD increasingly looked to partnering relationships with industry to deliver what UK armed forces needed.

### Planning adjustments

A project that has passed through MG and has a chosen contractor signed up to deliver it enjoys significant but not total security. It should not have to go back for any further approval unless it fails to meet behind on its time, cost or performance targets.

However, as the annual reports of the National Audit Office make clear, some projects do suffer disruption and cost more or take longer than expected. This means that the 10-year expenditure plan that used to be called the Equipment Plan has to be adjusted on an annual basis. Since the plan now includes the costs of all DLODs and thus includes resource as well as capital spending, it is today called the .

Nevertheless the processes by which the UK adjusts its plans include the widespread assessments of 'Options' under the direction of the Resources & Plans section under which delays and even cancellations of particular projects are compared against each other for their impact. The MoD expends significant resource in 'running options' in an effort to demonstrate that no effort has been spared to identify the best route to optimizing benefit from the defence budget.

A further element in the hands of the individual Top Level (or lower) Budget holder, is to decide how much 'risk' to carry in his or her programme. This means essentially how much individual project leaders can be authorised to spend, with the aggregate of their authorizations exceeding the sum actually available by a specified percentage. The expectation is that, with careful monitoring and control, and with not all project people managing to spend all their 'allowance', the budget can be spent fully and sensibly. Both unspent funds and short term projects hastily approved at the end of the year can be minimized.

#### In-service support

Responsibility for arranging the in-service support of equipment is the responsibility of the Integrated Project Team within the Defence Equipment & Support organisation. It is the trend for industry to be called on to contribute ever more in the support area.

MoD processes demand that consideration of in-service support begin early in a projects life and, as noted, business cases must show that it will be possible to put in place an affordable set of solutions for the support phase by the time the new equipment is delivered.

In practice, support solutions evolve, in part in accordance with the maturity of a system. The UK MoD dislikes cost-plus contracts for the support phase but the early months and years of operation for complicated new systems such as a combat aircraft or a helicopter are usually marked by considerable uncertainty. Thus it may become feasible to pass many support responsibilities to industry

only once a system has matured, or at least when important parts of it, such as the engine, radar or undercarriage, are showing regular performance patterns.

The UK MoD has for more than a decade been tending to outsource more and more repair and maintenance activities and, instead of contracting for the supply of timely parts, is more inclined to contract for 'availability' and even capability. Arguably only a Private Finance Management involves contracting for capability, but long-term support contracts have become common under which a company commits to providing a set number of aircraft, helicopters and so on that the services can then use.

The contracting of support is a complicated, expensive and dynamic area and the central responsibility for arranging it falls on the IPT, using its mix of technical, commercial and financial staff.. However, long-term, financially significant contracting arrangements normally go to the IAB for further review/approval, even though the project concerned passed through the MG probably years before.

UK acquisition thought treats disposal as an element to be taken into account with all acquisition decisions and its significance is likely to increase as environmental considerations loom larger in defence acquisition. The central responsibility for disposal falls on the IPT and in some cases the costs can be significant. Thus the UK will incur expense as a result of its destruction obligations under the 2008 agreement to abandon many forms of cluster munitions. Anticipated costs must be built into TLM financial plans.

In the case of nuclear systems (both weapons and power generation elements), the safe storage and disposal arrangements for irradiated materials, used nuclear fuel and fissile materials is a matter of very significant cost. However similar materials are also generated in the civil nuclear sector and any long term solution in the UK will address both military and civil needs. Currently British nuclear waste materials are in a range of temporary (and inexpensive) storage solutions. However provision has been made in the Ministry of Defence accounts for nuclear de-commissioning, the sum cited in 2004 being £7.82 billion<sup>34</sup>. These amounts are treated as liabilities on the Ministry of Defence balance sheet.

In the cases the disposal stage may involve the sale on to another country of a functioning defence system, responsibility for direction of the disposal moved in 2007 away from the former Defence Exports Services Organisation to the Defence Equipment & Support organisation. However in both cases there was a specialist unit concerned with the export of used UK equipment. The most prominent items that are periodically resold are ref-furbished warships.

In summary, the UK has established although evolving processes to ensure that the whole of the CADMID cycle is taken into account throughout the life of equipment, with the ECC leading on the consultation processes that lead to the

specification and prioritisation of a requirement while the Integrated Project Team manages procurement and support.

However, the processes that should deliver Through Life Capability Management, in which all the Defence Lines of Development are actively managed in a coherent manner, are much less mature. The ways in which Capability Management Groups and Capability Planning Groups will actually work and what will emerge as accepted effective practice, is still to be defined once the six stage process of specifying a requirement has been implemented.

## **Section 6: Defence Industry Strategy and the International Aspects of UK Defence Acquisition**

UK policy towards its defence industry evolved significantly and continuously through the Cold War and after, as the costs and limited successes of a number of approaches emerged. In the early years of the Cold War, the UK responded to the needs of the Western world to be able to conduct the war in Korea and limited its post-Second World War disarmament. UK defence industry was revived, with US support<sup>35</sup>. For more than 25 years the UK Government sought to protect and maintain UK defence industrial capability while recognising that there would be areas that the UK either could not afford (such as ballistics missiles with the cancellation of the Blue Streak programme in 1959) or would undertake only in collaboration with others (such as combat aircraft after the publication of the Plowden Report in 1965).

When Mrs. Thatcher came to power in 1979, as part of the introduction of improved public management, the government introduced a policy of competing UK defence firms against foreign companies and the privatisation of state-owned defence enterprises. As far as competition was concerned, the number of competitively tendered contracts rose significantly and a key development came when the government cancelled the late and over-budget commitment to a Nimrod airborne early warning aircraft fleet (where BAe and GEC were the responsible companies) and awarded a contract to Boeing for the E3A system). Under Mrs Thatcher, and with the today Lord Levene as chief of defence procurement, the MoD took the stance that competition would help UK defence industry to become efficient and successful but there was little clear sense of the industrial capabilities that were felt to be needed inside the country.

Pressures for this to change began to build in the 1990s as the campaigns of the decade, including the Gulf campaign of 1990-91 and operations in the Balkans, involved the mobilisation of industry to support military activity. It began to be apparent once more that military capability depended significantly on access to industrial capacity<sup>36</sup>. Formal Government recognition of the salience of this area came in 2002 with the publication of the brief Defence Industrial Policy document, which importantly recognised that ownership of a company was not a salient factor and that companies that added significantly value in the UK would be treated as British, regardless as to where their owners were located<sup>37</sup>.

On the initiative of the then procurement minister, Lord Drayson, and in the light of many Urgent Operational Requirements arising from the Iraq and Afghan campaigns and some differences with the US on technology transfer issues, the Defence Industrial Policy was followed by the Defence Industrial Strategy in December 2005.

The Defence Industrial Strategy (DIS) document laid out a small number of areas where the UK had to maintain capability: these included nuclear weapons, chemical and biological weapon defences and cryptography. It also spoke of the need for the UK to maintain 'appropriate sovereignty' and 'operational autonomy'. Linked to these was the notion that the country should be able to 'sustain and modify' equipment in its armed forces, even when that equipment had been bought from overseas. There was a clear wish also to maintain UK capacity in a number of areas including complex weapons, ship design and integration and helicopters.

Subsequent to the publication of the DIS, the Ministry negotiated some specific agreements that gave life and credibility to the document. Long-term support contracts were agreed with BAES and Agusta Westland to cover the Harrier & Tornado fleet and helicopters. A 'Team Complex Weapons' was formed by the government and a number of companies with the aim of using procurement and support contracts to secure both good value and continuing industrial capability in the missile area. The Government also engineered a unification of the ship-building capabilities of BAES and Vosper Thornycroft to bring greater national coherence in this sector.

The Government produce a further internal report, *Enabling Acquisition Change*, in June 2006, which adopted a wide perspective on how defence acquisition should work in the light of the DIS, but there were repeated delays on the publication of a follow-on document to the original Defence Industrial Strategy, often referred to as DIS2. To summarise the situation in the middle of 2006, the Government has clearly recognised the importance of industrial capability for defence, but it has not been able to define with any precision the costs and risks that it will bear as the price of maintaining such capability.

That which is not national is by definition international and UK acquisition practice is both to look to a wide range of suppliers for important equipment (including Israel and South Africa as well as more obviously the United States in the 21<sup>st</sup> century) and to undertake a wide number of collaborative development projects.

There is a good deal of concern and occasionally frustration in the UK defence acquisition world at the perceived unnecessary time and expense associated with collaborative projects, but in reality the UK regularly finds the collaborative route to be the least unattractive of the possible procurement approaches. The MoD website includes a list from 2005 of 58 projects that the Ministry defines as collaborative<sup>38</sup> and, as Table makes clear, the UK seeks to collaborate extensively with the United States while having the majority of its joint projects done with Europeans.

| Partner                      | No of projects |
|------------------------------|----------------|
| US                           | 13             |
| US and Europeans             | 10             |
| Europeans                    | 32             |
| Europeans and others         | 1              |
| Others (Canada or Australia) | 2              |
| Total                        | 58             |

Table : UK collaborative partners

The European Defence Agency has also published information in this area which shows the UK as the largest spender in Europe on collaborative projects, with expenditure of €2586 million in 2006 compared with €1639 million for France in 2006<sup>39</sup>.

As far as defence trade is concerned, the UK has clearly made some high profile choices in favour of US equipment and suppliers, such as the purchase of the Trident missile system, the ASTOR airborne ground surveillance system and the C.17 airlifter (of which it has bought six to date). Given the incidence of trade associated with collaborative projects and of overseas elements being imported into 'UK-badged' national systems, it is not easy to generate financial estimates of the importance of imported defence equipment in the UK.

The Defence Analytic Services Agency, relying in part on information provided by industry, provides annual estimates of UK defence equipment imports and exports and the figures for 2005 and 2006 are provided in Table below. The data for 'identified' exports and imports are comparable (and relate to HM Customs and Revenue definitions) and on the exports side industry provides estimates of other defence equipment and services

|  | 2005 | 2006 |
|--|------|------|
| Identified defence imports in current £m                 | 652  | 1098 |
| Identified defence exports in current £m                 | 1391 | 1358 |
| Estimates of additional aerospace equipment and services | 3136 | 3339 |

Table : UK defence trade, source Defence Analytic Services Agency<sup>40</sup>, <http://www.dasa.mod.uk/applications/newWeb/www/index.php?page=48&thiscontent=10&date=2007-09-26&pubType=1&from=close&goToSec=113>

Behind these numbers lies a UK preference to maintain strong arms cooperation links of all sorts with European partners, the United and indeed other friendly states such as Canada and Australia. The UK certainly wishes to avoid the

emergence of situations in which it appears to be choosing unambiguously in favour of either the US or Europe and believes that effective working with both is desirable and feasible.

### **Conclusion**

UK defence acquisition in 2008 is a condition of continuous evolution in which the government is seeking both to improve all aspects of performance, including more accurate forecasting of development, production and support costs and effective delivery near to those forecasts. The UK is also seeking to think increasingly in terms of capability generation, with all the lines of development taken into account, rather than solely in terms of equipment.

While UK authorities both within the MoD and without are properly self-critical about the ministry's acquisition success, it should also be recognised that the UK MoD does not have a terrible record of bringing in high technology, high risk projects both in comparison to other ministries and foreign defence acquisition arrangements. This is recognised even by staff in the National Audit Office.

There are clear ongoing and significant challenges within current UK defence acquisition. In particular the implications of an ambitious, even over-heated acquisition plan are that problems with anyone project will cause difficulties for all. The UK is still working on extended acquisition cycles with 16 years being the average time between the launch of a project and its entry into service. Part of the Defence Acquisition Change Programme involves efforts to reduce this period. Time, cost and performance forecasts too often still prove inaccurate although this is improving, especially when two or three 'toxic legacy' programmes are excluded from considerations. Finally the active management of projects on a through-life, whole capability basis will require new mind-sets and ways of working within the MoD, within industry and between industry and the MoD.

With all these provisos, however, the UK is pushing towards sound behaviours and practices, especially the effort to make defence equipment users, purchasers, logistics and support staff, the R&D community and industry all act coherently as part of team defence.