

CHALLENGES FOR THE BULGARIAN AIR FORCE – A ROYAL AIR FORCE PERSPECTIVE

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Abstract: Addressing the challenges facing the Bulgarian Air Force, this article examines the way defence planning is conducted in the United Kingdom. Ways to save money from the defence budget are suggested. The author offers valuable guidance on intelligent procurement and advice on how to achieve control of a country's defence procurement procedure.

Keywords: Defence Planning Procedure, Strategic Assessment, Capabilities Development, Cooperative Defence Projects, Intelligent Procurement.

Introduction

Many Armed Forces around the world have difficult decisions to make about what their force structure should be, *what* they buy, *who* they buy it from, and how to get agreement with other areas of their government about these issues. Many have lists of requirements that greatly exceed their budget. The Royal Air Force also has to face such problems.

As a mirror to the challenges facing the Bulgarian Air Force, this article will look at how defence planning is conducted in the UK. Some of the ways to save money from the defence budget will be examined and some thoughts on intelligent procurement will be offered.

The main theme is the national value to be gained from developing and retaining control of country's defence procurement procedure, so that a force structure that is geared to the particular national needs and aspirations is achieved – and is affordable; not just at the beginning, but throughout its Service life.

UK Defence Planning Procedure

The UK's defence planning is a top-down *joint* process conducted from first principles. It works from the broadest views towards the more specific. Most of it is done at

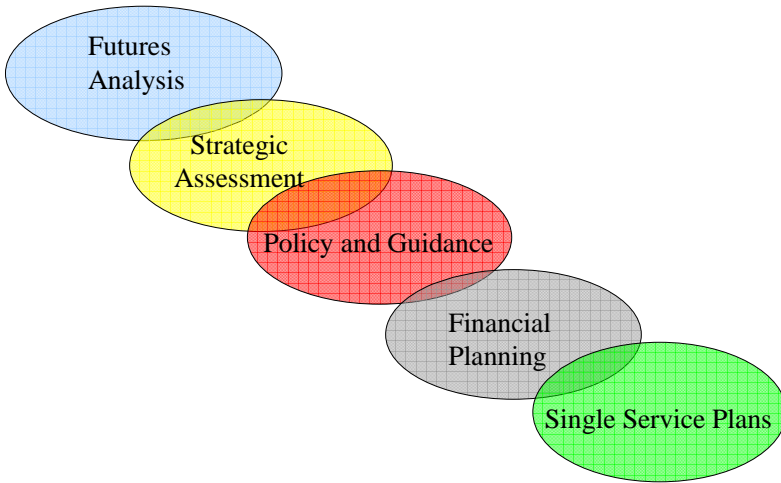


Figure 1: The Planning Process.

Ministry of Defence level, and only at the very end does it arrive at the single Services.

The planning process uses five stages (see Figure 1). It starts with the widest view of the future global environment and moves through trends that are relevant for defence, towards more detailed work on requirements. And it is only at the end that justifications for specific capabilities are provided.

This article will look at each of these phases.

Futures Analysis

The first stage of the decision process is to gather information about the wider environment and analyse it (see Figure 2). Inputs are taken from a wide range of governmental and non-governmental bodies and the focus is on the three levers of diplomacy – Politics, Economics and Military force. Obviously, we are most interested in the last of these, but we need to understand the other two and how we interact with them.

They also need to be considered against the likely social, legal, physical and technological developments in the UK, which will influence attitudes to the use of military force. These *internal* factors will be balanced by the next part of the equation, the strategic context and the *external* themes it gives us.

Strategic Assessment

The strategic context includes all the external pressures that may compel a nation or group of nations to take action. There are some global issues that impact all European

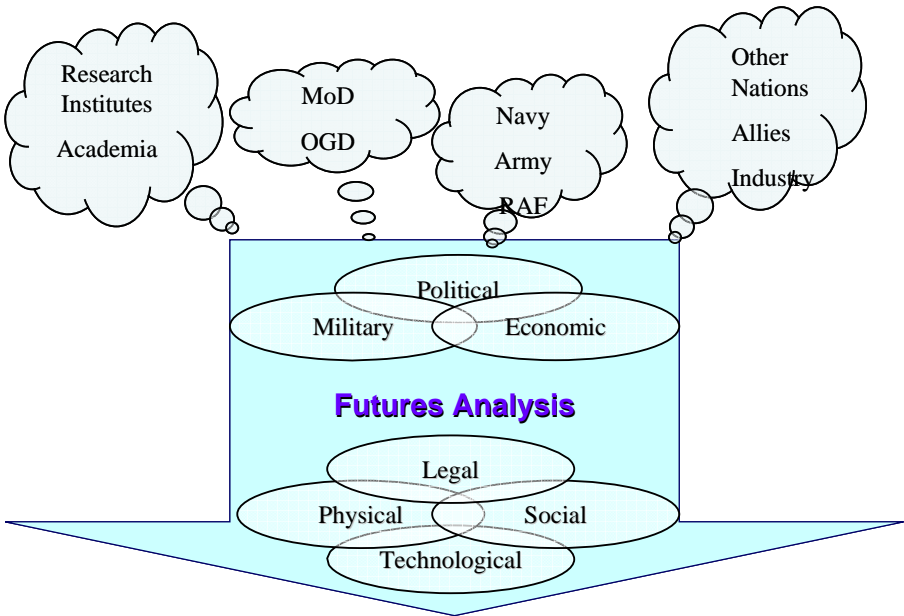


Figure 2: Futures Analysis.

countries:

- International Terrorism;
- Proliferation of Weapons of Mass Destruction;
- Failed and Failing States/ Intransigent Regimes;
- Energy Security;
- Climate Change and Resource Pressures;
- International Relations;
- International Legal Framework;
- Personnel;
- Technology;
- Coalition Operations;
- The Private Sector.

Confronting these issues offers difficult choices.

Overlaying the global strategic context on the wider analysis of the future gives us a basis for a strategic assessment as it affects defence. This needs to tell us *how* the world is changing around us and *what* defensive capabilities we need. We need to

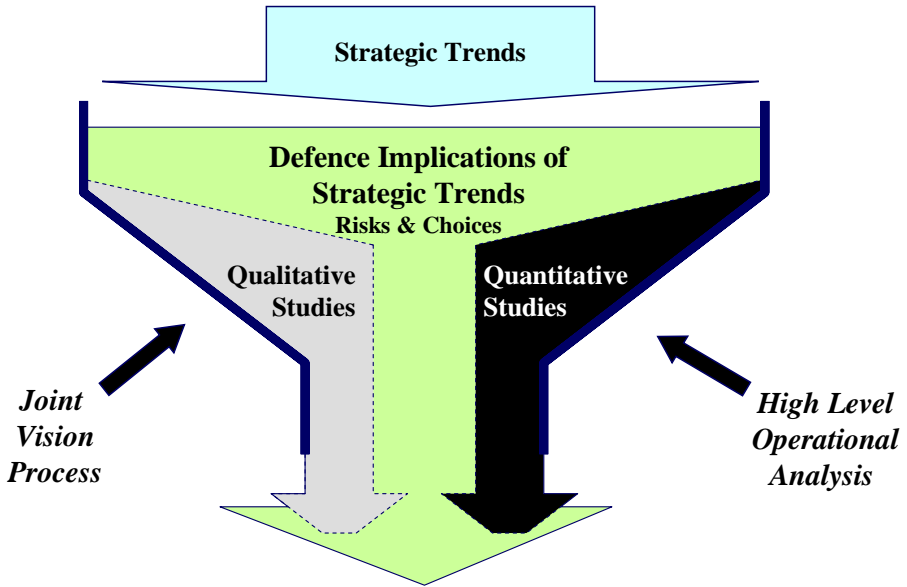


Figure 3: Strategic Assessment.

understand more about the risks and the choices, and this can be approached from two different directions (refer to Figure 3). Using *quantitative* analysis, we use war gaming techniques to model a range of outcomes from a particular set of circumstances. This will tell us how well we are doing at the higher level and whether we have enough capability.

Similarly, we can describe a selection of future capabilities and make decisions on their relative merits using our judgement. This is *qualitative* analysis.

All of these feed into our analysis of risks and choices and inform our strategic assessment.

Policy Development

We now have to make some decisions and set policy. Given the options that we have discussed, what are the defence goals that we should attempt to meet? The Defence Policy Staff set the boundaries for British defence. Defence planning assumptions are illustrated on the left hand side of the diagram in Figure 4.

Defence Planning Assumptions (DPAs)

The UK's Defence Planning Assumptions are grouped under four main headings as illustrated in Figure 5: (1) standing strategic tasks, (2) standing home commitments, (3) standing overseas commitments, and (4) contingent operations overseas. These

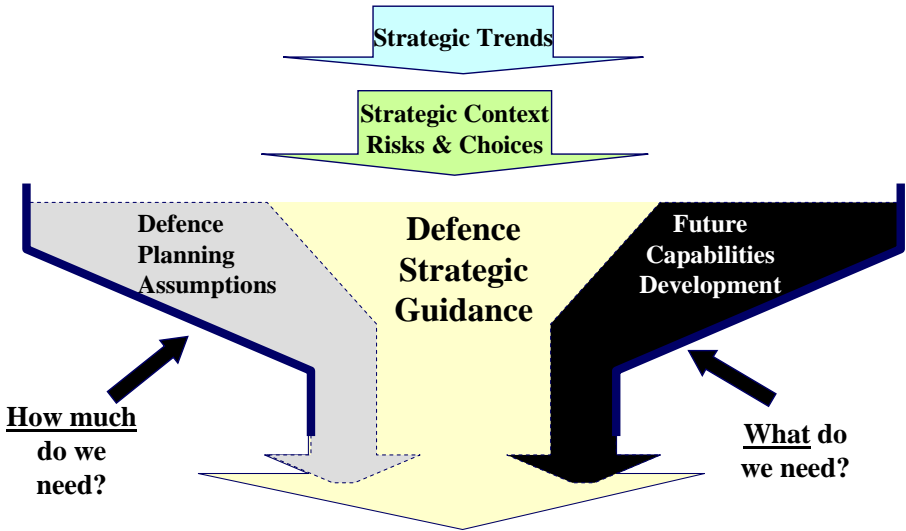


Figure 4: Strategic Policy.

capture the entire spectrum of current and foreseeable military tasks.

The force structure that is needed to support these tasks is built around a framework of ten sections, ensuring that all aspects are fully considered (refer to Figure 5). Let us consider three of them. *Concurrency* is the ability to conduct more than one task at a time; *Recuperation* is the time taken for a force to recover from a task and be ready to mount the next one; and *Harmony* is the ability to sustain forces through a cycle of

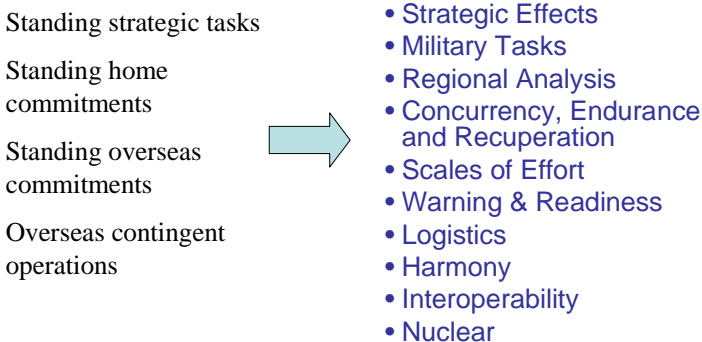


Figure 5: Defence Planning Assumptions.

deployments. Inevitably, some particular specialisations bear more than the average burden when recurring deployments take place. For the RAF, such groups include tactical communications and supply and the purpose of harmony studies is to identify these groups and find ways to relieve the pressure on them.

Strategic Policy

We now have the defence tasks derived from the risks and choices. The next step is to determine what equipment capability is needed to meet these tasks.

One defence planning assumption might be that British forces could be required to operate anywhere in the world. This would mean that future *equipment* has to be capable of operating in high and low temperatures; in mud, sand or snow. We would also need the means to get UK forces to these places – so we need a transport and logistic system that can support them. On the other hand, another assumption might be that offensive operations will *always* be done in coalition with other nations' forces. This would imply that forces from another country might provide one or more specific capabilities – which would mean a saving for us.

Resource and Financial Planning

Having decided what capabilities will be needed, decisions have also to be made on how they are to be achieved, how the costs are to be met and in what order. Ministers and the Heads of the Armed Forces provide the *Defence Strategic Guidance*. This must be practical and affordable, it must address known areas of weakness and it must identify future challenges and opportunities. It guides senior executives and budget holders, planning and resources staffs, and it forms the basis of the equipment plan.

Departmental Plan

The final stage is to develop a plan for each of the Services, showing them what equipment they are getting and for what purpose.

There are two parts (see Figure 6); the equipment programme, a long term (10 year) vision for the continuing re-equipment of all UK forces with new platforms and weapons, and the short term (4 year) plan, measures covering running costs, and contingencies not covered by the long term plan.

This is the part of the planning process that has to bear the brunt of defence cost reviews. The departmental plan is reviewed regularly and it is managed to meet the available budget. Some items are postponed; some brought forward, some cancelled. And there is a feedback process to the strategic policy level to make sure that policy ambitions do not get too far ahead of what we can afford.

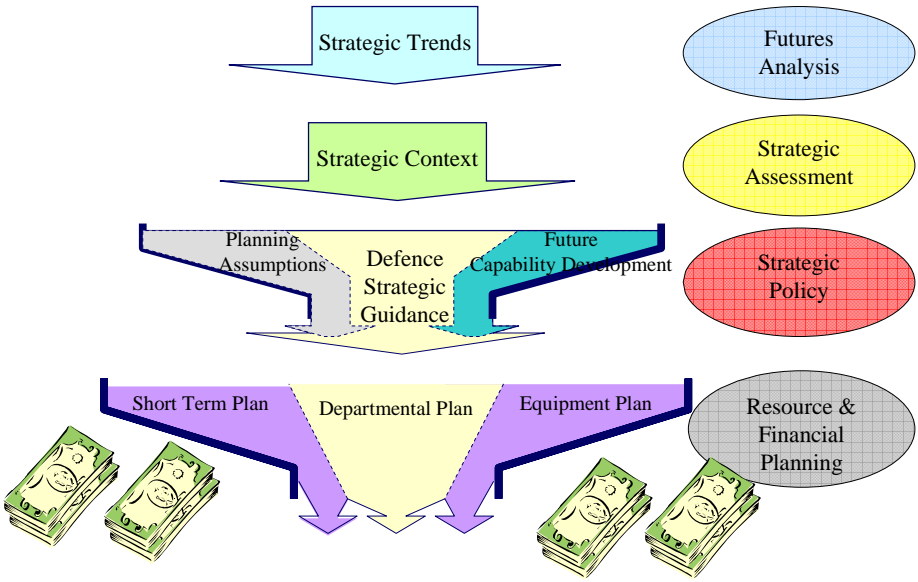


Figure 6: Departmental Planning.

Having assembled all the elements of the equipment plan, which is very much a *joint* process within the Ministry of Defence, the single Services' plans are clear. They can now see what equipment they will receive, when it will arrive, and they can decide

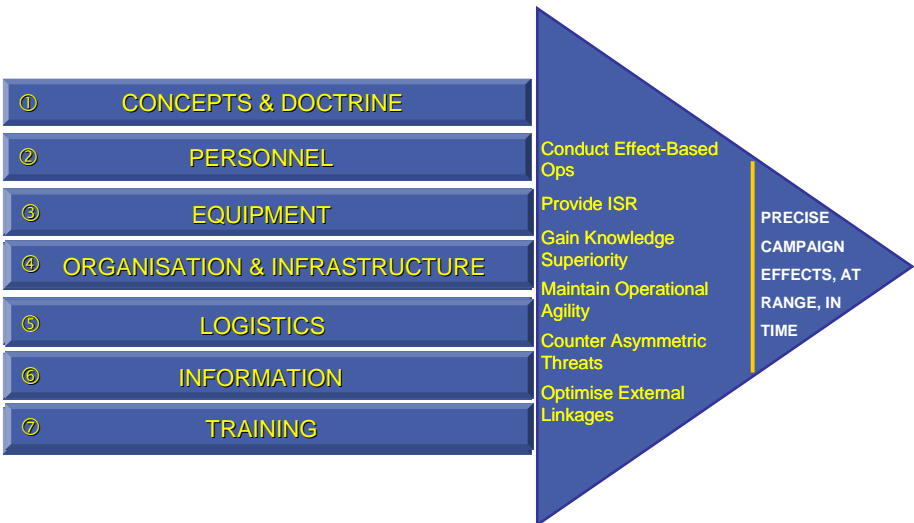


Figure 7: Developing Air Power for Tomorrow: Lines of Development.

what work they need to do to put it into service (just as is the case now with the Typhoon fighter).

All these decision processes, when put together, provide the background for the realisation of the Royal Air Force vision, which is what the diagram shown in Figure 7 illustrates. Every element has its place and its own staff somewhere in the Air Force machine, working to develop the bigger picture.

Getting Better Value for Money

This section looks at some of the measures that the UK has taken to get better value for money from its defence budget. With costs rising faster than budgets, we have had to make substantial changes to our business practices, and what the author means is *business*. We have looked at how industry determines best value for money. The most important part of this concept is being able to evaluate whole life costs.

Whole Life Costs and Cost of Ownership

No one today has the luxury of an unlimited defence budget. If budgets are to be realistic, then costs must be evaluated and constrained—not only at the planning stage but throughout life—and, for equipment, that includes the aggregated cost of research, development, design, testing, production, in-service support, modification and disposal. For personnel, it includes the costs of recruitment, training, pay, allowances, pensions, and support.

Definitions

A couple of definitions will be given first.

Whole Life Costing is the continuous process of forecasting, recording and managing costs throughout life of equipment with the specific aim of optimising its whole-life costs and military output.

Cost of Ownership (COO) is the annual estimate of resources consumed directly in procurement, operation, training, support and maintenance of military equipment at all stages of its life.

So, adding up every year's cost of ownership over the whole time the equipment is in service is the whole life cost.

Cost of Ownership

In compiling a Cost of Ownership Statement, all relevant costs associated with that project have to be gathered (see Figure 8).

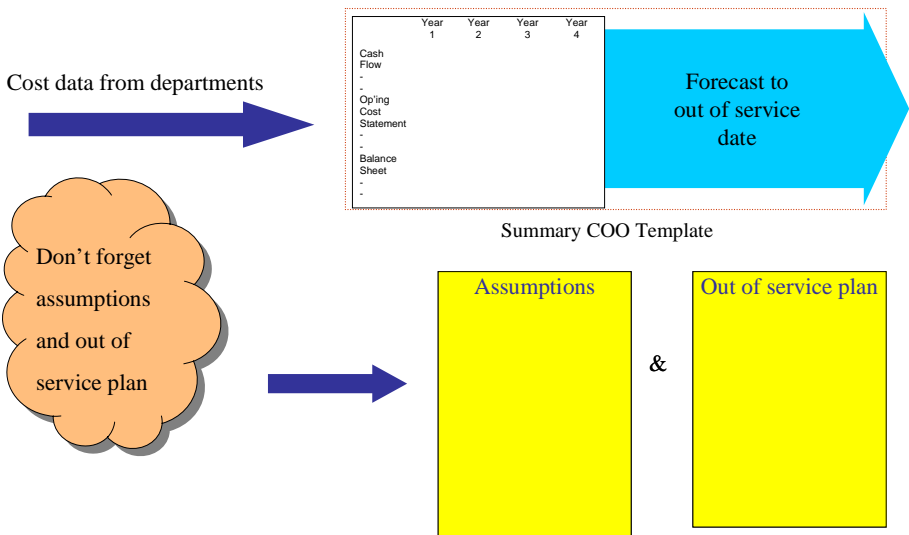


Figure 8: Compiling Cost of Ownership.

Each organisation, or “stakeholder”, has to identify how much of its planned annual expenditure relates to that particular equipment.

The *Through Life Management Plan* provides a series of agreed assumptions that allows each stakeholder to model costs in the same way across the remaining life of the equipment. The Cost of Ownership system then draws together all the inputs to provide a view of the full cost of the equipment – throughout its planned life.

Why do we put so much emphasis on estimating Whole Life Costs at the planning stage? Well, we have learned the hard way that it is absolutely necessary. A piece of equipment that seems very cheap to buy initially, may turn out to be hugely expensive in the long term if, for example, it needs a lot of maintenance, or consumes a lot of spares, or needs a large number of personnel to operate it.

The diagram presented in Figure 9 shows a typical COO profile. Costs are initially low in the early years – the Concept, Assessment and Demonstration parts of the project, but they start to increase as the project moves through Manufacture and into Service. Costs are at their highest during the In-Service phase, and they start to decline as the out of service date approaches and the number of assets reduces.

Data is captured against six cost categories. These are:

- Other Costs – a bucket to capture costs not covered by the other categories.

- General Services Received – represents contract costs with industry for supporting the equipment.
- Stock and Fuel Consumption – costs of actually running and supporting the equipment.
- Manpower – the cost of MOD/ Service manpower procuring, operating, supporting and maintaining the equipment.
- Depreciation – the annual consumption of the equipment asset. It is important to note that COO is based on resources consumed rather than cash; thus the initial procurement cost is reflected through depreciation over the useful life of the asset, i.e. total procurement cost divided by the life of the asset provides the annual depreciation or consumption of that asset.
- Cost of Capital – a notional charge within the MOD accounts. It seeks to promote correct behaviour within the MOD by making a charge on the value of assets that we hold thereby encouraging the MOD to keep its asset base to a minimum (an incentive to get the maximum return for each pound spent on assets).

Figure 10 demonstrates perhaps even more clearly the year on year cumulative effect of through life costs.

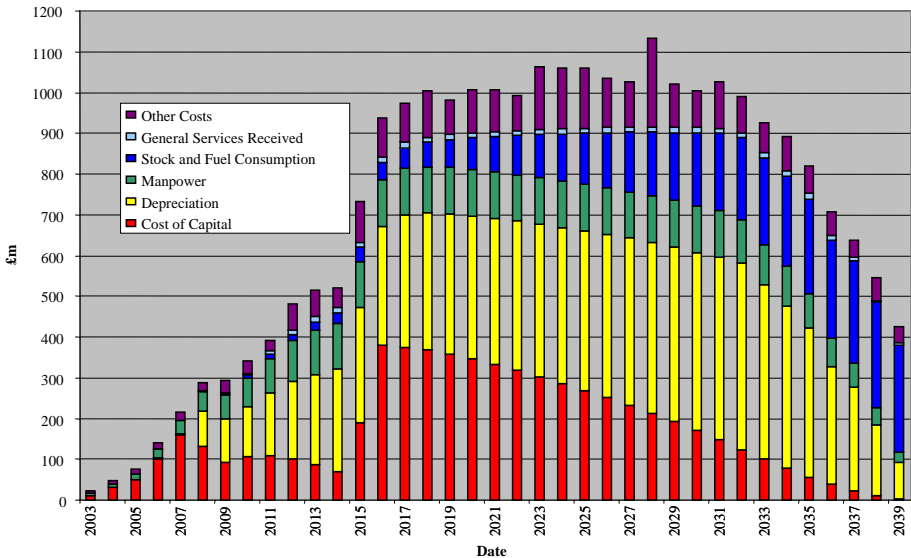


Figure 9: Annual Cost of Ownership Profile.

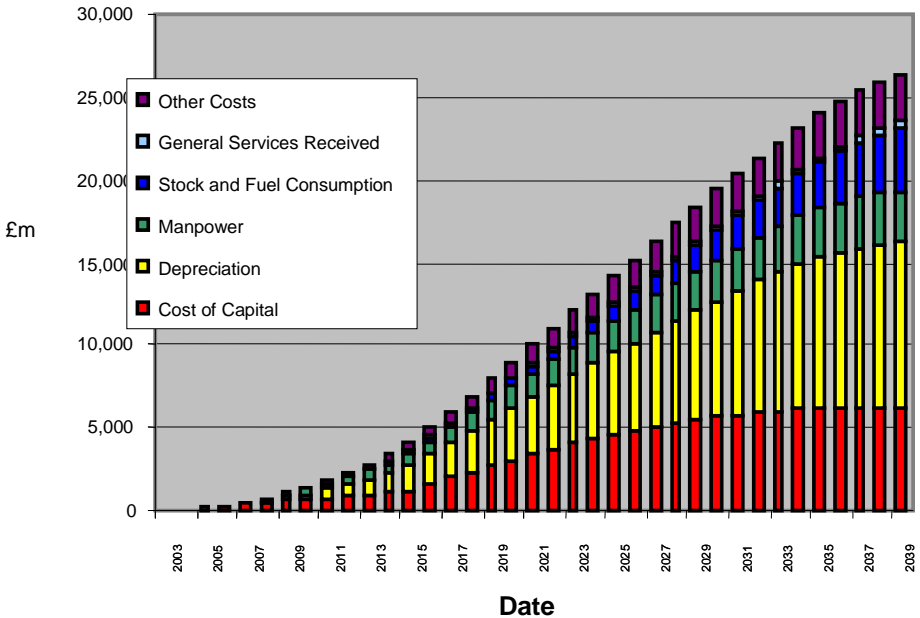


Figure 10: Year on Year Cumulative Cost of Ownership.

Co-operative Defence Projects

This subsection will look at international defence projects. Co-operative defence projects have many benefits.

Advantages

In these projects costs and skills are shared, making more advanced projects possible. We get economies of scale during production, provided that everyone wants much the same version of the product. International business contacts are made and refreshed, and—in the ideal case—technology transfer flows freely.

And one project often leads to another. For example, the UK, Germany and Italy went on from building Tornados to the highly successful Typhoon fighter. And British and American cooperation on the Harrier is continuing with the JSF. However, there are some disadvantages that are not always obvious at the beginning of a multi-national project.

Disadvantages

One major factor that can delay multi-national projects can be the fragile nature of the funding stream – if all the partner governments do not stay absolutely committed to production at the planned time.

Almost all of the advantages of co-operative programmes can be lost if the agreed equipment standards are not sustained. Some programmes never really start with common standards; with others the standards of the partners drift apart.

It is not smart practice to procure equipment that is likely to go out of service with one partner much before the other, unless agreement is reached about sustaining it in later life. While depreciation on older equipment reduces, other costs increase, especially when it becomes necessary to modify or change something in the system.

Consider software. Experts involved in project development and software modifications have a habit of disappearing when a project goes out of the parent nation's equipment programme. Modification in later life then becomes either impossible because no-one is prepared to release the source code, or because the cost of retaining a specialist workforce becomes prohibitive.

Thus, cost of ownership can start to rise in the later life of a project if appropriate safeguards are not provided.

Force Structure

The RAF also continues to refine its force structure. Using the experience of real operations and the output from operational analysis of imaginary scenarios, we can evaluate alternative structures before putting them into practice. For example, RAF's move to effects-based warfare, which means that one sophisticated aircraft with smart weapons can produce the same desired effect as a whole squadron only a few years ago, has allowed the RAF to reduce the numbers of squadrons and sizes of units. This has meant reduced support and reduced costs, while sustaining—and even increasing—RAF's capability in some areas.

We are moving from a structure with two major commands to one only, and we are reducing overall numbers of air force personnel, by working more efficiently, and by employing civilian contractors where it makes sense. This allows savings in recruiting targets, training budgets, wages, pensions, housing and support, releasing money to be spent on more sophisticated equipment.

This is also being applied to the RAF defence estate – all the stations and properties that the RAF occupies. The smaller size of many of our units gives us the opportunity to co-locate more of them at each station. The reductions of the UK base planned (already much reduced from what UK had during the Cold War) emphasise on grouping together specialist forces geared to expeditionary warfare. This allows much closer integration, and easier and better training. Houses at bases closed under this scheme can be sold on the civilian market, and airfields can pass to local authorities that wish to open regional airports.

Contractor Involvement

Civilian Roles

In the UK, we have significantly reduced whole life costs by involving the manufacturer more closely with the in-service maintenance of the product. Thus almost all major aircraft maintenance work on RAF bases is now performed by either manufacturer's or contract civilian staff, saving the cost of expensive Service personnel and allowing the manufacturer to more closely match his staff to the task. However, the author does appreciate that in Bulgaria the relative costs of Service Personnel and contractors may be different to their experience.

Also, much of UK armed forces' logistic support is contracted out to organisations that routinely provide the same sort of support in civilian life; for example, a well known global food supplier is on contract to supply basic foodstuffs to UK forces wherever they are in the world, saving the MoD most of the effort involved in organising its transportation. We have the same arrangement for the delivery of high priority freight.

Working with Civilians

It is obviously good practice to inject competition into defence projects, to achieve the best value for money. Not only should competitive tendering be the norm, but tenders should be scrutinised to make sure that they are realistically and fairly priced. It is common practice now to insist that where costs are estimated, an agreed level of profit should be specified so that subsequent audit can identify actual costs and relate them to overall project costs. This will prevent the contractor trying to take excessive profits.

Other techniques, such as defining the criteria for milestone payments, can also be adjusted. In this case, other components of the contract not on the critical path become part of the milestone itself; this practice is known as chevron payment. This is intended to encourage contractors to look at the project as a whole, not as a series of milestones. If necessary these ideas can be extended further, for example with 'Earned Value Management' to provide detailed control of both the programme and payments; ultimately incentivising the contractor to meet his targets in both cost and time.

Leaning

Hangar. In conjunction with previous measures, the Defence Logistics Organisation has adopted a concept referred to as 'Leaning' or the reduction of waste and spare capacity. This relies on defining clearly at every stage what degree of activity is essential to meet the output requirement – and discarding anything else. By working closely with manufacturers, we have removed a very significant proportion of 'fat'

RAF COTTESMORE
Harrier Maintenance
Flight



BEFORE



AFTER

RAF MARHAM
Tornado Propulsion Flight



Figure 11: Leaning – Eliminating Waste.

surrounding engineering activities. These before and after shots (see Figure 11) taken at two major RAF stations show the same activities in the same hangars. The savings are evident.

Innovative Funding

Many British defence programmes are now funded in what are referred to as ‘innovative’ ways. The C-17 aircraft we need for expeditionary warfare are very expensive to buy, but we were able to negotiate a lease with Boeing in the same way as an airline might do. Our future air-to-air refuelling capability will be provided by a civilian consortium through a Private Finance Initiative. Our staff college buildings and facilities are funded and operated privately with MoD being directly involved only in the running of the courses. Our contractors carry out all other activities to agreed standards. The four other programmes being provided under contract are only the tip of the iceberg, but they all allow the MoD to focus on *operating* rather than procuring and maintaining.

Leasing

The UK has been in the lead in procuring equipment by leasing a capability, and I will briefly show the advantages.

In the early stages, capital outlay is greatly reduced. Instead of paying for expensive research and development programmes, you get to use proven equipment. The risks attached to the project are almost completely transferred to the supplier, relieving the

Ministry of Defence of having to make provision for problems that may not arise, or—worse—having to cope with a problem for which there was no provision.

The overall capability is often acquired faster because more resources are in play. The contractor can plan the use of his facilities most effectively. He may divert other equipment and manage supply more easily. Combined with the purchase of appropriate weapons, you can rapidly acquire a complete capability. Training and support can be included in the contract, allowing a rapid build-up of forces. Capital funds can be directed towards the infrastructure necessary to accommodate the project. The problems of obsolescence and disposal at the end of project life go away, because the project is over when the contract runs out, so there is always a clear end state visible, rather than a lingering flirtation with obsolescence. The programme has auditable costs that allow a proper appreciation of value against capability. And finally, capabilities that are provided under contract are relatively immune to defence cuts, because the funding has been agreed. Thus pressure to make cuts can be resisted by pointing to the implications for particular programmes or capability areas. This is not so easy when all activity is managed by the MoD.

How Can UK Experience Help Bulgaria?

The author is aware that much work has been already done in Bulgaria on defence reform to align needs and budgets, and to enable a full and effective contribution to NATO. Some of the measures that the United Kingdom will have to implement are already in Bulgaria's programme. I offered a view of the way the UK plans to get the most from its defence budget, together with a few observations on procurement. The Royal Air Force and the UK Government are very keen to continue the discussions of defence matters, and there will be topics in the future not discussed here, such as alternative models for headquarters staffing, or the concept of identifying capability areas for equipment procurement.

Lastly, our forces are only as good as their training. We look forward to training and operating with the Bulgarian Armed Forces at a mutually agreeable time, and we remain ready to assist the Bulgarian colleagues in identifying their needs. Basis proficiency can certainly be developed during home-based training, but the benefits rapidly tail off as we become over familiar with scenarios and locations. All forces benefit from exposure to unfamiliar circumstances. Leaders are stimulated to make better informed decisions, and the operators develop a confidence in their own ability that can never be achieved from repetitive exercises. This means training abroad on allies' facilities where possible: and NATO recognises and encourages this through exchange training visits.

Defence Equipment Assistance

I discussed some of the background work that needs to go into defence equipment procurement to ensure a lasting and effective capability that meets the needs and budget of the nation. We are all aware that when this work is done some difficult decisions have to be made to align aspirations with funding. So what happens when generous offers are received that appear to solve at least some problems by providing capability at very little cost?

Advantages

The advantages are obvious to everyone; aircraft programmes suddenly appear possible instead of unaffordable, training and weapons may be provided, as may advisers and other facilities. This may indeed be an answer to capability and budget problems. But there is a downside.

Disadvantages

Firstly, by foregoing the analysis that leads to a sound defence programme and its budget, government is deprived of the tools it needs to control its defence. The provider, by making the programme fit the available budget, muddies knowledge about real costs of ownership. The real experience behind defence that stimulates debate, builds confidence and looks to the future, is lost in inexact figures designed to be acceptable. Neither is there any way of determining what capability is actually present where trials are already complete, and where weapons are included in the deal. The advantage moves firmly towards the provider who holds all the cards. In these circumstances there are questions to be asked about what capability is actually present, what it can be used for and for how long is it useful?

Given that such programmes come at low initial cost, overall costs are most likely to rise with time, operational effectiveness may well remain static rather than increasing with time, and fifteen years down the road nothing much has changed except that a follow-on deal is now being offered, with more of the same. Such deals are frequently attractively packaged, but the costs are in imported knowledge, something less than state of the art equipment and long term stagnation in national defence thinking.

Born and brought up in the north of Scotland, Air Vice-Marshal **GAVIN MACKAY** enjoyed a brief flirtation with the Royal Navy at BRNC Dartmouth before studying Civil Engineering at Glasgow University. He was commissioned into the Royal Air Force during his final year, and passed out from Cranwell in 1971. Creamed off from advanced flying training, he instructed on the Jet Provost before converting to the Hunter and subsequently the Harrier, serving in the fighter ground attack and reconnaissance roles in Germany, Belize and the UK. Returning from the Falklands after the war, and having been awarded the AFC, he attended Royal Naval Staff College before joining the Central Tactics and Trials Organization as the Harrier specialist. He subsequently commanded the Central Flying School's Examining Wing, leading advisory teams worldwide and flying, instructing and examining on numerous types of aircraft; from micro-lights to MiGs. He was awarded the OBE following this tour.

From 1987 to 1990, he served in the Ministry of Defence (MOD) in Concepts Studies and Operational Requirements, before commanding RAF Gutersloh and the RAF Germany Harrier Force from 1991 to 1993, during which time he also became limited combat ready on the Puma helicopter. Following a further short tour in the MOD as Deputy Director Air Offensive, he attended the Royal College of Defence Studies in 1994. He then moved back to Germany in a NATO appointment as ACOS Operations, HQ Allied Air Forces Central Europe, before returning to the Central Flying School as Commandant, once again accompanying CFS teams and the Red Arrows on tours abroad. From early 1999, he led the Joint Force 2000 Implementation Team, charged with bringing together the RN and RAF Harrier Forces. He was Air Officer Commanding and Commandant of the Royal Air Force College for two years from July 2000, and was appointed as a Companion of the Bath in 2002.

He took up his appointment as Senior Military Adviser in the Defence Export Services Organisation (DESO) in September 2002, leading a staff of experienced Navy, Army and Air Force officers providing tri-Service operational and technical advice on British military equipment and services.