DS Paper – UK Defence Acquisition for the 21st Century

Defence Synergia

Defence Synergia (DS) is an apolitical group of operationally experienced Service people. DS is concerned with protection of the UK and offshore dependencies from external threats. DS commentary is focused on perceived shortcomings of defence and security forces. In this context, DS feels UK Defence acquisition is failing as a critical military enabler to provide our Armed Forces with the right cost and operationally effective equipment, systems and capabilities to meet current and future military threats, evolving wider security challenges, and to assist the UK defence sector be globally competitive.

Executive Summary

In the era of reduced budgets and increased uncertainty, UK Armed Forces require a rapid and adaptive acquisition system that meets the need of the maritime, land, air and joint commanders, is highly responsive, delivers timely and effective solutions, and is accountable to Service commanders and end users. In recent decades new MOD equipment delivery has focused on too few, too complex, too expensive and inflexible core platforms and systems via a bureaucratic legacy defence acquisition system. Current Defence procurement approaches could lock in too much of the defence budget on long-term, many single source, contracts, with too few companies, and significantly constrain future UK Force doctrine and operations.

The widely agreed requirement for rapidly adaptive and re-configurable Forces to match any future adversary operational tempo and morphing tactics requires not only an operationally responsive UK Defence Force, but also a supporting rapidly reactive UK Defence Acquisition process and organisation. Current Defence Acquisition is at 'arms length' from the customers/users and approached via a 'one size fits all', upfront procurement cost focused 'value for money' approach. There is a lack of accountability and delivery responsibility between the four Command customers/users equipment provider, using overly complex and bureaucratic Command Plans, business relationships and internal 'hard charging'. This leads to delayed, poor and confused Capability delivery, with some equipment only partially relevant for a few years as it reaches the frontline users. Rapidly evolving threats and enemy tactics change faster than the MOD's defence procurement and operational doctrine/tactics OODA loop[1]: UK Forces deploy with much equipment developed for yesteryear's requirements against tomorrow's challenges.

In an era of ~140,000 full time service personal[2], minimal major platform inventories and reducing effective Defence budget, can the UK MOD justify and sustain a separate central procurement organisation divorced from its customers/users by geography, process inertia, accountability and culture? Defence procurement must evolve to be more rapid and operationally effective. Defence Capability must be delivered with minimal overhead and costs to rebalance the 'tooth to tail' ratio in favour of rapidly adaptable, combat effective, UK Armed Forces.

Are DE&S and the wider UK Defence Industrial sector still fit for purpose and appropriate to meet future UK military agile and adaptive equipment procurement needs? If not, what options need to be considered to deliver Defence Capability that is responsive, adaptable and fully accountable to the prime users – perhaps defence procurement should be embedded within the four commands?

The Need for Defence Acquisition Change

On 15th September 2015, the then Chief of the Defence Staff (CDS) General Sir Nicholas Houghton GCB CBE ADC Gen, gave a Chatham House speech entitled "Building a British military fit for future challenges rather than past conflicts[3]." Sir Nicholas outlined the requirement for an adaptive and rapidly flexible procurement capability:

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[1] Observe, Orientate, Decide, Act - https://en.wikipedia.org/wiki/John_Boyd_(military_strategist)

[2] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/527838/Monthly_service_personnel_statistics-May_2016.pdf

[3] https://www.gov.uk/government/speeches/building-a-british-military-fit-for-future-challenges-rather-than-past-conflicts

*"To describe a **military fit for future challenges** rather than past conflicts, it would be a military that **embraces** the need for **continuous adaptation** which I would favour: a military imbued with the **spirit of innovation** rather than preservation.*

If we are going to stay ahead of the game then we need to spend more and more wisely on innovation."

The SDSR 2015 inspired CIVITAS report[4] "Defence Acquisition for the 21st Century" states:

"Defence acquisition is fundamental to our national security. It both underpins and reflects defence policy and forms a component of our strategic concepts.

We need an agile and flexible military capability, but this cannot be delivered by depending first and foremost on large and expensive equipment.

Moving to an adaptable force structure in the coming years necessitates a revolution in our thinking and approach to defence acquisition"

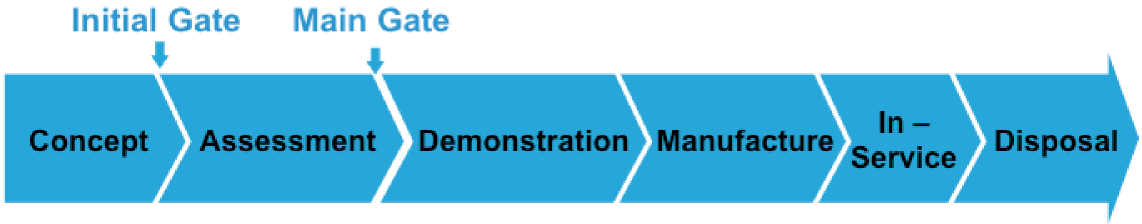
Acquisition includes purchasing and procurement, but is more than that. It involves knowing the whole lifecycle of the set of capabilities and associated capacity we need. It means understanding why we need it, and the best means of development, delivery, employment, support and disposal (i.e. what to mothball, what to move to the reserves, what to discard, when and how).

<u>Short History of UK Defence Procurement</u>

The MOD currently procures its equipment for the UK Armed Forces via the Defence Equipment and Support (DE&S) organisation based at MOD Abbeywood, Bristol. DE&S was formed in Apr 2007 by the merger of the Defence Procurement Agency (DPA - the MoD's then procurement organisation – launched on 1 Apr 1999), and the Defence Logistics Organisation (DLO - the MoD's support and maintenance organisation – launched on 1 Apr 2000).

In 1997, the Smart Procurement Initiative (SPI) was launched, accompanied by the Acquisition Organisation Review, based on the slogan "faster, cheaper, better". The need for reform was driven by Defence procurement cost overruns, less predictable military threats and differing strategic needs, restructuring within Defence, and increasingly complex equipment and technological advance. This remains the scenario today and likely for the remainder of this Century.

SPI introduced the 6-stage, two approval point, CADMID concept to provide a more logical procurement process, embedding the principle of 'spend more earlier before final decisions were made' to reduce risk and through-life support costs for the MOD main equipment programme.



Unfortunately, the CADMID process and its overheads have generally been applied as a 'one size fits all' approach to the majority of equipment acquisitions whether this be for an aircraft carrier, an armoured vehicle, a UAV, an ICT system, or uniforms and boots. The CADMID process is applied irrespective of the pace of change and requirement within individual technology areas or military environments, or even change in similar commercial sectors. Thus, due to protracted military procurement timescales and too early 'technology lock-in' decisions, much military equipment, especially in fast evolving technology sectors, can be nearing obsolescence as it enters service. Our adversaries, in today's era of asymmetric warfare, can, within months, identify, procure, have delivered and have into service a wide range of the latest, and adapted, technology by procuring from the internet and other responsive markets. Their procurement OODA loop reaction times can be far quicker than MOD's, thus, they can have evolved their tactics and capabilities a number of iterations by the time MOD has addressed a legacy threat using current procurement approaches.

The introduction of the Urgent Operational Requirement (UOR) process, in the late 1990s, facilitated the more rapid procurement of equipment to meet specific operational needs, such as in Iraq and Afghanistan to

[4] http://www.civitas.org.uk/content/files/DefenceAcquisition.pdf

address capability shortfalls or to react to theatre-specific threats and needs[5]. Between 2008/09 and 2011/12 alone, £3 billion was spent on UORs in just these two campaigns[6], £6 billion up to 2014, covered by the Treasury Reserve. However, these procurements were deemed 'non-core, theatre/operation-specific', so attracted limited support funding. UOR sourced equipment not deemed to have wider utility after an operation is denied full through-life cost support and is normally disposed of after the operation[7]. General consensus is that the UOR process delivers fit-for-purpose and modern equipment to the Frontline 'faster, cheaper, better' than the standard procurement approach. One has to ask, why does it take an operational campaign to procure the latest ICT equipment or body armour in months, yet it takes a decade or more to buy obsolete battlefield radios (BOWMAN) using the normal procurement process?

UK Defence Industrial Sector

The UK Aerospace Defence Security and Space (ADS) sector, and the broader supporting UK industrial base, is critical to both the MOD and wider UK economy. However, over the last 20 years, the UK ADS sector has seen many acquisitions and mergers with significant defence spending residing with fewer, but larger, defence companies.

The DE&S magazine 'DESider industrial focus 2015-2016' article highlights that of the £18.3 billion total of the 320 contracts worth over £10M spent by MOD in 2013-14, BAE Systems had 11 contracts worth £3.27 billion (18%). The top six ADS companies had 30 contracts worth £6.63 billion (36%) by value. This does not include these companies' additional income from being consortium members of other large contracts such as AWE Management Ltd, Air Tanker Ltd, MBDA UK Ltd, Aspire Defence Ltd, etc. Could a minority of very large ADS companies have an unhealthily large influence and impact on MOD procurement? Defence procurement should be spread across a wider spectrum of UK companies to invigorate innovation and spread the positive impact of Defence spending of taxpayer monies.

The MOD issued its original Defence Industrial Strategy in 2002, updated in December 2005[8], to provide industry and MOD procurement with guidance to provide the UK armed forces with the equipment they require, on time, at best value for money, and to highlight the need for the maintenance of sovereign capabilities to be retained in UK companies in key defence areas. 2006 saw the issue of the Defence Technology Strategy and its successor the 2012 'National Security Through Technology' strategy[9]. Unfortunately, these strategies appear to have had the unintended consequence that some ADS companies believed they had monopolies in these 'sovereign capabilities' and that the UK government would feed them contracts no matter what, to the detriment of export and global competitiveness. The UK now has many critical military residing in a minority of Defence contractors. Has an apparent 'cartel' or 'monopoly' industry position overly influenced UK military procurement strategic defence thinking and decision-making?

A reliance on significant contracting from the MOD can reduce innovation, adaptability and international competitiveness. It appears to have minimised bidding and success in attracting overseas orders, even in sovereign industrial capabilities. Why for instance was BAE Systems not a bidder or winner in recent competitions for new Australian submarines (won by DCNS of France[10]) or fleet support ships (won by Navantia of Spain[11])? Relying on UK military orders, and a few Middle East allies, for a trickle of Typhoon orders, small ship maintenance programmes, and a drip feed of 'grey warship' orders, does not bode well for the maintenance of a thriving UK defence and security sector, or the retention of world-class facilities, skills and work force. The need to be more globally competitive is ever more important given potential EU military procurement reaction to the recent BREXIT vote.

To survive in an ever more competitive world of emerging indigenous defence sectors, our UK ADS companies need to diversify, evolve, become far more globally cost effective and seek new business opportunities within, and more importantly, beyond traditional sectors. Defence procurement needs to

[5] https://www.nao.org.uk/wp-content/uploads/2004/11/03041161.pdf

[6] http://www.thinkdefence.co.uk/2013/02/urgent-operational-requirements/

[7] http://www.dailymail.co.uk/news/article-2543694/MoD-spent-millions-pounds-6-000-pistols-ditched-just-five-years.html

[8] http://webarchive.nationalarchives.gov.uk/20121026065214/http://www.mod.uk/NR/rdonlyres/F530ED6C-F80C-4F24-8438-0B587CC4BF4D/0/def_industrial_strategy_wp_cm6697.pdf

[9] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/36459/cm8278.pdf

[10] http://www.ft.com/cms/s/0/4ab37572-0b4a-11e6-b0f1-61f222853ff3.html#axzz4CavMVaDE

[11] http://www.defensenews.com/story/defense/2016/03/11/australia-picks-navantia-build-two-replenishment-ships/81656478/

leverage the faster reacting Small and Medium Enterprise base to embrace innovation and new thinking from other sectors to provide rapid development, prototyping and entry into Service of cutting edge technologies for Defence. R&D investment must focus on capability gap filling and provide a rapid proactive pull-through from prototyping to being fielded within a year or so. Dstl and the CDE process et al is currently too slow, too cumbersome and unfocused to be cost and operationally effective in today's threat environment.

The Defence Growth Partnership initiative[12], and recent MOD announcement on greater and easier access for SMEs to gain 25% of MOD annual contract value by 2020[13] are welcome steps to diversify the ADS market. Large ADS primes must embrace, mentor and harness UK world-class innovation to meet both UK Armed Forces requirements and export opportunities in military and adjacent sectors. To ensure competition and continual innovation, large procurements (even ships and aircraft) should consider spreading delivery across at least two companies, and orders issued in batches to embed latest technologies. Acquisitions and mergers within the defence sector must be limited to ensure no company (re)gains a monopoly or unfair advantage position.

There is a critical requirement to review and rebalance the need for the retention and nurturing of sovereign capability in key areas and sectors, whilst also not subsidizing these key areas as a sop to potential 'we'll close factories and dockyard' pressures. MOD and UK industry need to develop a robust and resilient military acquisition and industrial strategy to become more self-sufficient and agile in delivering cutting-edge technology for a capability limited, but focused, UK military Force. UK ADS companies need to be incentivised to maintain genuinely required sovereign capability in an increasingly globalised, complex, competitive and aggressive defence market. Whilst the ADS sector brings immense economic benefit to the UK, no industry or ADS Company can be allowed to consider itself 'too big to fail'. The recent ADS 'UK Defence Outlook 2016' report[14] is positive about the UK Defence sector, but highlights five barriers to future growth: decline in spend by existing customers; uncertain global economic environment; uncertain UK economic environment; lack of UK opportunities; lack of qualified skilled workers.

An invigorated UK Defence Industrial Strategy, as a sub-section of an overall UK Industrial Strategy, needs to identify: core capabilities to be retained onshore; how these core capabilities will sustained within the context of minimal UK defence orders in the pipeline; how export opportunities can be enhanced; and business diversification opportunities. The recent announcement that the Prime Minister will resurrect the concept of a UK Industrial Strategy is a welcome and positive step in this direction[15].

Effectiveness of Current MOD Procurement

NAO reports have for many years been scathing of MOD procurement and equipment programmes highlighting common systemic problems: lack of requirement setting and/or excessive requirement changing; project time overruns and delivering late; projects overspending; poor project and risk management; poor understanding and costing of procurement risk and risk costing by both MOD and contractors; continued annual underspend on the largest projects leading to likely future project time, cost and performance adverse performance. Furthermore, the "robbing Peter to pay Paul" budget management in a MOD procurement Ponzi scheme-like money carousel approach, and annuality behaviours, etc[16], must be addressed as a core defence procurement reform.

There has been, and continues to be, a trend of procuring ever fewer, more expensive and more complex systems that run over budget, over time and deliver less eventual capability: A400M; Astute; Future Strategic Tanker Aircraft/Voyager; F-35B/Lightning II; Military Afloat Reach and Sustainability (MARS); Queen Elizabeth Class carriers; T45 Destroyer and T26 Frigate; Typhoon; FRES/Scout SV/Ajax; Warrior; etc. Many of these programmes and systems have had serious problems and issues throughout their development and early lives: T45 propulsion and electrical power issues; Voyager refueling pipe leaks and no DAS; FRES/Scout SV/Ajax many issues over the last 20 years; QE II carrier issues with launch and recovery system indecision, size, design, afloat aircraft types and numbers, self defence armaments; F-35B too many to list. The core equipment programme of procuring fewer, more expensive and more complex/vulnerable systems is driving defence strategy and locking in military capability for the next 20-30 years. A smaller 'mass' of equipment fleets and reduced personnel numbers limits operational and tactical flexibility and adaptability. It also almost eliminates combat attritional reserve in an era of emerging threats and

[12] http://www.defencegrowthpartnership.co.uk

[13] https://www.gov.uk/government/news/mod-smooths-the-way-for-companies-to-do-business-with-defence

[14] https://www.adsgroup.org.uk/wp-content/uploads/sites/21/2016/07/DefenceOutlook2016-E-Res.pdf

[15] https://uk.news.yahoo.com/pm-may-resurrects-industrial-policy-britain-prepares-brexit-000745595--business.html

[16] https://www.nao.org.uk/report/major-projects-report-2015-and-the-equipment-plan-2015-to-2025/

adversaries that focus on a mass casualty and equipment attrition approaches. Is current defence procurement based on the 'tail wagging the dog' and industry dictating/influencing future military capability?

There needs to be a re-balance between quality, quantity and complexity. In a turbulent and uncertain global threat environment, all systems must be modularly designed for rapid through-life spiral enhancement and upgrade to ensure maximum 'bang for buck' for the UK tax-payer, and enhanced adaptability for UK Forces. A more agile, adaptive and progressive procurement approach is specifically required in the Defence Joint Operating Concept[17] and supported in the Royal Aeronautical Society briefing paper "Aerospace in the SDSR 2015: Building flexible capability for a fast-changing world".

"Equipment should, where possible, be (a) ***multi-role****, to avoid having expensive equipment that would not be useful in many potential scenarios, and (b) defined in close dialogue with the UK's defence export industry so that synergy with potential export markets can enhance its affordability."*

Gone are the days of large fleets of specialised platforms and regular replacement programmes. We must have the ability to rapidly re-role platforms in hours and days, not weeks and months, as the threat changes at an increasing pace. Truly modular design should allow new threats to be countered with rapid development, procurement, re-configuration and installation of cutting edge weapons, C4ISTAR and other capability modules and sub-systems. Thus, a RN warship must be re-configurable from ASW to AD or other role within 24 hours using sensor and weapon modules fitting into common compartments linked with common data, power and other support services. Common missiles and C4ISTAR systems should be cross-platformed between maritime, land and air systems. Modularity would improve opportunities for configuring adaptive platforms and systems to maximise export opportunities. Introducing a rapid Capability Gap filling acquisition system, and the ability to build campaign-specific Force Elements and Capability from smaller capability elements (the Lego brick approach) would leverage the innovation, ingenuity and fleetness of foot of small and medium enterprises from all sectors of UK industry.

One worrying increasing risk is the potential impact of increased procurement of equipment from the USA: Lockheed Martin F-35B; Boeing Chinook; Boeing C-17; Boeing RC-135W RIVET JOINT; Common module for replacement Vanguard; Westinghouse radar for E-3 SENTRY; Lockheed Martin ground-based radars; MRAP; Boeing P-8 Poseidon MPA; Lockheed Martin C-130J, and potential future replacement of Apache from Boeing, etc. Whilst this might seem to increase 'commonality' and 'inter-operability' with our key ally, what it has done in reality is reduced UK industrial design, manufacturing and support expertise. A further concern is the potential constraining of UK military freedom of operations due to US companies' application of International Traffic in Arms Regulations (ITAR) regulations for commercial advantage. ITAR is designed to keep important technologies from potential enemies, but is now extensively used by US companies to seemingly limit, or deny, access by UK contractors and military personnel to US provided equipment. This significantly reduces the ability of our military and UK defence industry (Whole Force concept) to support UK Forces in undertaking equipment repairs and upgrades both at home and deployed on the battlefield[18]. The more our UK forces rely on US procured or hired equipment, the more restrictive and vulnerable they potentially become due to reduced self-reliance on the battlefield. The worst-case scenario is that embedded (ITAR controlled) software could be used to geo-fence and restrict where the UK could operate US provided equipment, unless appropriate approval is gained prior to deploying the equipment globally.

Tighter control and need to justify the continuance of large single-source contracts should also break the hold of large ADS companies on defence procurement. Over the last nine years the average proportion of MOD spend on single source procurement was around 49 per cent - taking the average MOD spend on single source procurement over the last three years alone (around 56 per cent), the MOD spend on single source procurement could be as high as £100 billion. This problem has been highlighted in the recent Single Source Regulations Office "Interim Compliance Statement" July 2016[19]. This report highlights: continuing very poor overall single source contracting compliance by both the MOD and industry (6 of the 8 indicators being RED); poor governance of single source contracts and industry reporting verification by DE&S; quality of compliance submissions being very poor and incomplete; SSRO, not DE&S, identified £61million of potential non-Allowable costs (e.g. staff overhead costs, charitable donations, faulty workmanship rework rectification costs, risk costs not materialized, export campaign marketing costs, etc).

[17] http://xtlearn.net/Files/Users/ceri/WO/20140319-dcdc_jcn_1_14_djoc-U.pdf?zoom=80%25

[18] http://www.telegraph.co.uk/business/2016/06/22/raf-wont-be-able-to-repair-kit-on-f-35-jets---even-though-it-was/

[19] https://www.gov.uk/government/publications/ssro-annual-compliance-report-2015

A central procurement organisation such as the DE&S operates between a rock and a hard place with inevitable challenging delivery consequences. DE&S is tasked to balance the changing needs of indecisive and unaccountable customers, with contractual commitments, in a changing defence landscape such that it seems set up to under-perform on basic requirements due to too many pressures and changing stresses outside its control or vision. It tries very hard to meet the evolving needs of all customers in a volatile government-funding environment, within a military and civil service manning system that generates continuous churn, and a reducing corporate knowledge base. All around it there is a changing military threat environment in which Service needs have varying priorities year-on-year and campaign-by-campaign. DE&S's geographical and cultural distances from its customers also contribute to a 'them and us' friction that reduces defence procurement effectiveness[20]. The introduction of 'hard charging' Commands for DE&S operating costs adds further bureaucracy as more admin staff are employed to send bills and administer payments between military organisations, further diverting scarce resource and budget from delivering military effect[21].

Given the diminishing size of the UK Armed Forces, shrinking equipment fleets and reduced Defence personnel numbers one has to ask whether the UK can justify a separate central defence procurement organisation whose own structure now directly faces its mainly single requirement/operating environment focused customers: maritime; land; air; and joint. Furthermore, constrained budgets and resources must be optimised to maximise operational capability, flexibility, and accountability to the 'teeth' Services and reduce management and bureaucracy overheads of 'tail' organisations.

Options to rapidly evolve defence procurement for the 21st Century

There are a number of options to morph UK military procurement to meet the needs of the 21st Century, including:

a. do nothing and continue with the current less than effective procurement process and organisation;

b. greater partnering with, or out-sourcing to, industry that could further distance the military commanders, users and stakeholders from the responsibility, influence and accountability of delivery of vital future military capability;

c. task, directly empower and hold to account the four Command chiefs with the governance of the provision and through-life sustainment of their own resources and Capabilities.

Capability development, requirement setting and most of the capability budget responsibility have already been transferred to the four commands (RN, Army, RAF, Joint Force) who now appear better placed to define, procure and through-life support their own requirements, systems and Capabilities.

Why should the Royal Navy, the British Army and the Royal Air Force be beholden to an arms-length organisation for procurement of purely naval warfare, land warfare and air warfare equipment and systems? If the four DE&S divisions (maritime, land, air and Joint) were to be embedded within the four commands, then each head of Command would have the responsibility, budget, resources, accountability and ability to tune procurement processes in context, for the delivery of the best balance of equipment and manpower to deliver maritime, land, air and joint capabilities. There would be no more 'I defined and provided money for X, but DE&S bought a compromise Y that isn't now fit for purpose' excuses of failed procurement due to changing budgets, needs and priorities. CNS would be able, responsible and accountable for rebalancing RN resources (people, equipment, infrastructure, finance) to meet changing RN needs. Likewise, the three other Chiefs of Land, Air and Joint Commands would be held accountable for the Whole Force delivery of their tasked Capabilities. In some respects this structure already partially exists: Capability Planning staff joined Information Systems and Services (ISS) staff responsible for procurement of Information Communications Technology sitting within Joint Force Command[22]; and DE&S naval base support staff transferred to the Royal Navy in 2013/14.

Focusing Capability procurement within Commands should reduce the current annual 'smoke and mirrors' financial exercises robbing Peter to pay Paul depending on who shouts loudest, or maneuvers best, in planning rounds at Abbeywood. Commands could be tasked to 'veer and haul' within their own budgets and

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[20] Para 2.15 - https://www.nao.org.uk/wp-content/uploads/2015/02/Reforming-defence-acquisition.pdf

[21] Para 2.19 & 2.20 - https://www.nao.org.uk/wp-content/uploads/2015/02/Reforming-defence-acquisition.pdf

[22] Figure 1 and Para 2.17 - https://www.nao.org.uk/wp-content/uploads/2015/02/Reforming-defence-acquisition.pdf

resources, such that maritime, land, air and joint issues were resolved where generated and where the risk can be best managed – within each Command. CDS and central staffs would have the remit for pan-Command governance and coordination of system-of-systems capability delivery (e.g. Carrier Strike ship and aircraft issues) to ensure appropriate Joint acquisition and capability development was achieved and enforced by truly Joint Capability development. Requirement setting and scrutiny and assurance governance should address inter-operability and enabling Defence Lines of Development issues, and should be undertaken on a 'through-life Capability' delivery basis, rather than by equipment or infrastructure based stove-pipes. Capability delivery challenges that could not be managed within each Service would be escalated to CDS and central MOD staff for resolution in extremis.

How the Defence Infrastructure Organisation (DIO) should be better aligned to the four commands must be included in an overall MOD procurement and capability delivery review. Importantly, historically poor governance of some estates prior to the formation of the Defence Estate/DIO organisation would need to be addressed and not be allowed to re-emerge.

Conclusion

This paper has highlighted many limitations of the current military acquisition system to responsively provide UK commanders and service personnel with the resources to perform the tasks expected by the State against an ever-growing spectrum of threats and enemies. An option to change the Defence Acquisition approach for the 21st Century via a de-centralised, Command-embedded, Capability focused and whole-life responsible and accountable approach is postulated for consideration in any future Defence Acquisition review.