Written evidence submitted by Viasat

SDSR and Capability Advantage in the Modern Era

Viasat is a global communications company that has for more than 30 years helped shape how consumers, businesses, governments and militaries around the world communicate. It is a growing, global company, headquartered in the US with a workforce of 5,600 across 29 offices in 11 countries. Viasat UK provides a focus for efforts in the UK and in Europe in two major areas: Space and Communications and Information Assurance. The UK headquarters is in Farnborough, with an additional office in Cheltenham with a combined workforce of ~80. The company is involved with the UK Government in a number of areas. Viasat has more capacity on orbit than any other private sector SATCOM provider in the world and is about to launch 3 x 1TB satellites, which are the highest capacity geostationary satellite systems ever made. It is investing in the UK and considering bringing upto £300+m foreign investment and over 75 new high skilled network and cyber roles to the UK.

Why are we struggling to realise the Defence Vision?

The 2020 Strategic Defence and Security Review will, if carried out correctly, give the MoD an opportunity to save billions of pounds, end complex procurement procedures and ensure that UK armed forces have available the most up-to-date equipment. This will help to meet the rapidly changing adversarial environment the UK is facing. The review must provide a process to deliver a stronger industrial base, with more UK jobs at higher skill levels, achieving greater foreign investment and opportunity for exports.

Examples of such innovative solutions and potential savings are provided at the appendix. Integration of private sector and the MoD along with agile acquisition have the ability to out pace our adversaries and support the prosperity agenda.

To date there has been much publicised overspending on major programmes. This has attended many and multiple complaints but there is no real declaration by the MoD as to why this is occurring. Without honest reflection it will be impossible to change the status quo of failure.

A great deal of rhetoric has accompanied every defence review. This 2020 review must address the attitudes and behaviours of failure so that robust deliverables are reflected in a Strategic Integrated Defence and Homeland Security Plan. Delivering more value and capability from platforms and service personnel across all the MoD domains depends on both effective and efficient information networks, as well as speed in handling decisions and intelligence across Government down to the tactical edge.

It is widely published and accepted that the UK Defence and Security community faces relentless and demanding challenges with dramatically reduced resources under growing pressures for the UK MoD to act and move faster than its adversaries. Present day threats include the nuclear deterrent, kinetic, non-kinetic and intelligence warfare. It is further acknowledged the Government that traditional defence elements of platforms, food and logistics need to be expanded to include information and innovation underpinned by technology.

So why are we struggling when the desired outcome is clear?

Without taking a simplified approach to the issues, organisations hide in the complexity of their hierarchy, processes and operational environments and use these as an excuse(s) not to improve. When simplified and examined, this reveals excessive waste and overspend that no action or reluctance for change introduces.

Pure platform-centric focus on capability delivery involves long gestation periods, whilst the technology and capability mission requirements continue to develop at pace. To meet the paradigm, operational shift, therefore needs a hybrid platform and technology capability process that fuses modern bite-sized technology investments with rapid incremental applications into platforms. This must become the replacement of Bernard Gray's 2009, now obsolete, review to provide a new modern procurement and delivery framework, matching today's MoD and Government needs. This Strategic Integrated Defence and Homeland Security Plan must deliver the imperative for transformation – it is not just about vision, objectives and spending focus, it is instigating a framework to change and deliver the UK defence and security needs to keep the nation safe, protect our way of life and empower our service men and woman.

Reframing the Challenge

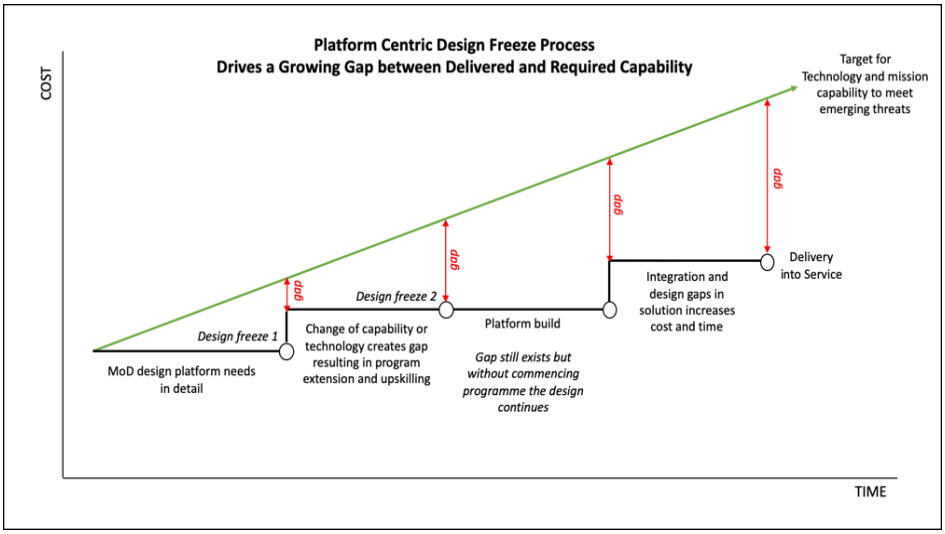
There are a number of issues that hamper MoD programmes. These include:

- overspend and delays;
- unplanned obsolescence of equipment and programmes;
- protracted contract procedures failing to deliver rapid capabilities; and
- adversaries using all available technologies and changing the rules of warfare.

The MoD, and defence in general, are no longer leading technology roadmaps. A tsunami of technology advancement is upon us and this relentless innovation shows no sign of slowing down. This places a huge burden on existing programme processes which are not shaped to continuously evolve or learn from the environments in which they are used. More must be made of the private sector industrial and procurement strategy to provide both solutions and funding.

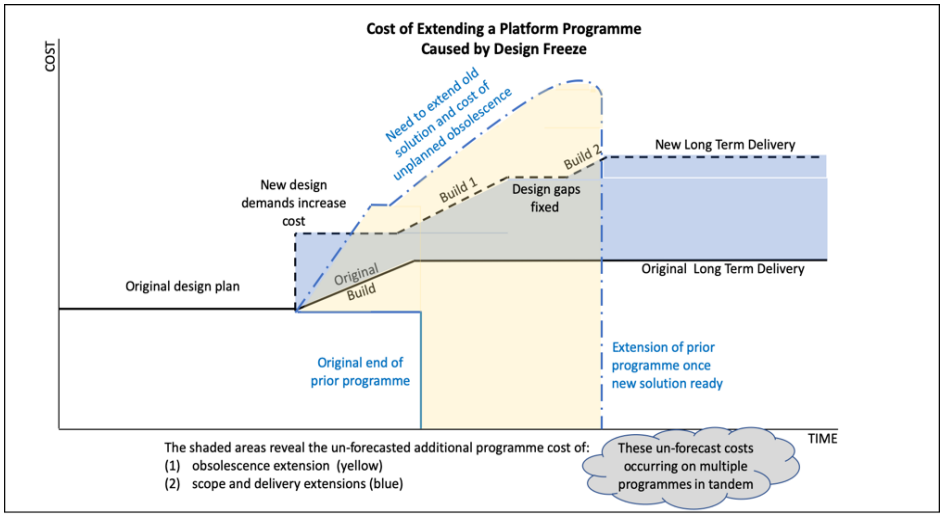
Further, the oxymoron of trying to define technology specifications rather than outcomes results in the MoD owning all the programme risk rather than forming industrial partnerships. These partnerships would, therefore, own the integration and configuration challenges when delivering capability and mission requirements.

When such tsunamis and oxymorons are combined, the current MoD approach of trying to design the perfect end-state solutions always pushes programmes and delivery to the right, as the technology continues to change at pace. Irrespective of whenever the decision is taken on the final specification, the solution ends up outdated when delivered. As the programme is delayed to address this technology and capability evolution, it creates a hidden cost with demand for more people and skills on the 'floor plate' to address the continuing solution expansion.



Currently, the programme requirements are delivered by the MoD through extensive and detailed technical deliverables, where the MoD is the design authority for the solution and technology. This process places the onus on the MoD to not only own the requirements but also the inevitable gaps. As the programme is not a capability outcome document, it allows the eventual supplier(s) to change control of the programme and to use these gaps as a vehicle to push up the cost and delay delivery, often as a sole supplier placing more leverage on their power position.

The final impact of the current failing process is that it places substantial demands on the existing solutions to be extended beyond economic life. This diverts resources to the existing solutions to manage obsolescence and to provide dual running, which ultimately increases the marching army costs. If plugged into a full Figure of Merit analysis, the exponential cost of slowing the main programme would demonstrate a substantial indirect cost increase.



Ultimately the problem is realised too late for effective management, as the process gap between the mission capability needs and the technical requirements does not reveal itself until well into the delivery phase. The result is the highly publicised overspend but, worse and often not publicised, is:

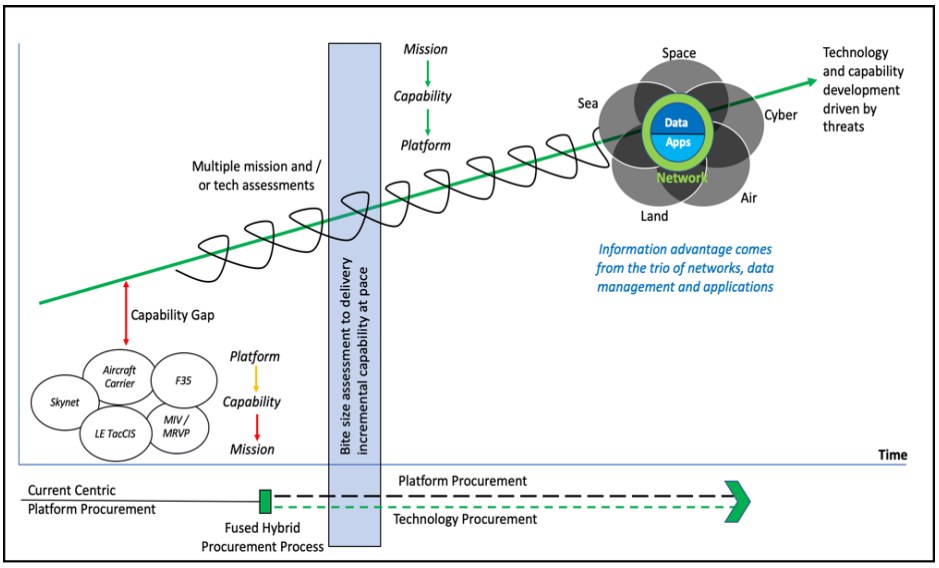
- the failure to deliver the required capability due to the technology advancement post-design freeze; and

- the scoring of tenders being weighted against technology and price, rather than mission capability outcomes. Price and technology become irrelevant to our troops if such required missions cannot be achieved.

The Solution – A fused hybrid approach to capability delivery

To improve, the MoD needs to simplify the complexity of its huge defence organisation into elements that can deliver change for the benefit of the nation, troops and way of life. Behavioural challenges occur where the MoD manages risk and outcomes as the primary objective (to keep nation safe), but to move forward requires risk-taking.

By starting the review with the required outcomes that must be delivered, we can describe the strategic process to achieve the desired force multipliers required for the modern age. We suggest that the programme process must be turned on its head so that the required mission outcome(s) derive a capability that evolves into the platform, rather than trying to deliver an obsolete capability from the outdated platforms described above. Whilst the MoD's vision of the future battlespace enabled by weaponised information is correct, we need to implement, as part of the 2020 review, a 'how-to-fix-the-issues-driven-by-the-platform-centric-design-freeze' mentality into the new fused-hybrid outcome-driven engagement framework.



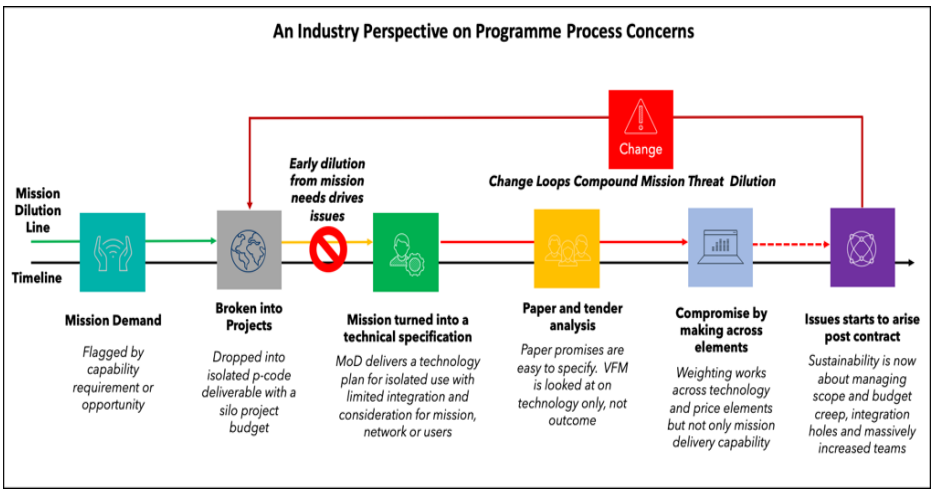
The five domain capability interdependencies to deliver outcome are, therefore fulfilled within a single assured, resilient, integrated network architecture to deliver information across the entire battlespace. The modern age of information-centric warfare driving the new paradigms of increased data management and applications to deliver the effects form the networks and the data. Such outcome architecture allows the design-freeze gap to be circumvented by continual spiral development (or minimal viable products) that keep the capability delivery ahead or in tandem with the changing curve of technology and adversarial operational threats. This spiral development pro-actively provision the fused-hybrid-outcome approach by:

- Frontline commander and mission outcomes are used to align and agree priorities;
- The MoD's requirements of industry become a mission-outcome-delivery statement (tagged with simple 'System Design Principles' for consideration of programme interdependencies). Long gone are the 10,000+ page design documents and arguments of IP ownership;

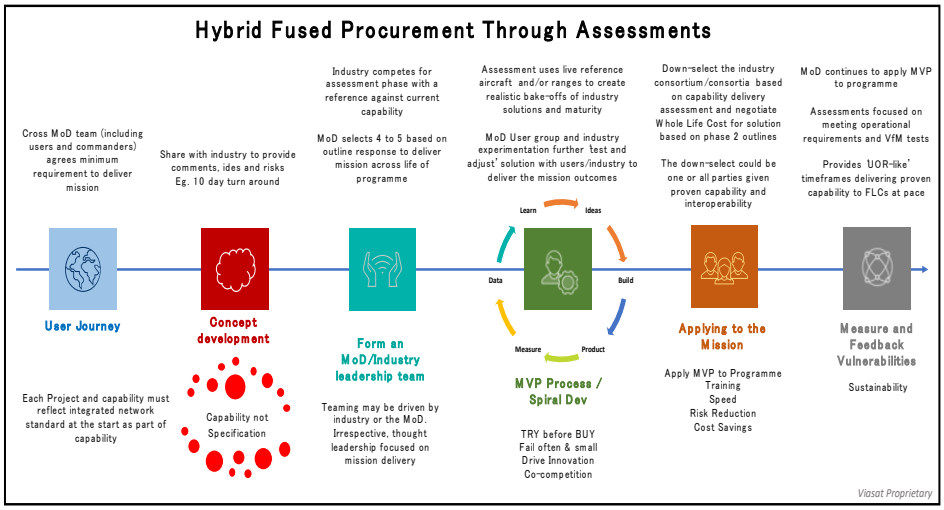
- Using outcome sandboxes, rather than paper assessments against promises of the future, a process of multiple assessments are run in a value test environment to ratify the design, prove capability and allow adoption incrementally into the battlespace network and platforms. These need to be sufficiently funded, relevant activities from programme cost, e.g.15% allocated to simple outcome requirements and assessment centres. Given the above cost-overruns, the earned value of risk-reduction saving would alone pale such 15% into insignificance. These assessments are run in multiple bite-sized phases across programme life, where the 15% is a revolving value of each assessment and not a major, single upfront cost of the entire programme;
- Being outcome capability-driven, resolves much of the integration and gap risk. As suppliers are offering delivery of solutions to meet mission capability, they own the detailed technical architecture and cannot rely on gaps within the MoD's technical specification;
- This assessment and outcome requirement will incentivise industry to form eco-systems to deliver this fused hybrid approach. Today's private sector companies undertake such structures already in order to deliver modern innovation challenges at speed in the commercial markets, eg consider the current space vehicle projects, modern airliners or satellite networks. The competitive requirement is met by an initial down-select of 3-5 consortia into the assessment phases and incorporation into programmes could be one or all three suppliers. Modern backward-compatible technologies allow platforms and fleets to be upgraded incrementally, dependant on the mission rather than total fleets retrofits at one time;
- Through high-level outcome requirements documents and assessment work, this will drive innovation and ferment deeper industry collaboration, making the MoD (i) a more attractive customer, (ii) have 'more skin in the game' with industry, (iii) explain its vulnerabilities and mission needs more accurately and (iv) incentivise wider non-incumbent Tier 1 usage. Ultimately, the use of private sector support in areas such as the battlespace HQ, will grow and accelerate mission capabilities into use at the highest possible rate;
- Tangential benefits will come from increased learning by all parties, as this revised fused process will reveal the unknown demands that the users find when implementing and operating solutions. It also empowers the younger generation which often reveals new and innovative requirements and uses when implementing and operating the solutions; and
- Assessment work does not drive increased programme costs, as this work is undertaken by re-tasking current design teams, and supported by DSTL and the customer friend floor plate teams

Summary

The nemesis of delays and overspend begin on day 1 but are realised at day 100. Delays, huge cost and scope increases are a result of the platform centric and design freeze process with the MoD inadvertently holding all risk. This route creates huge process support requirements and escalates further costs and delays. Without change, we are in an era of visions without capability.



A more agile fused hybrid approach is therefore needed to acquire the appropriate systems and services to meet technology acceleration and rapidly changing adversarial threats. This, in turn, demands a new approach by Government in its relationships with industry in order to build trusted partnerships now with those companies supplying networks, data and applications to drive information advantage. The simplified spiral development assessment centres, with outcome capabilities as the drivers, meets competition rules, better sources capability (to deliver mission and technology), moves integration ownership to industry consortia, shares risk and design obligations, allows 'Test before you buy' and drives incremental innovation at speed into capability



Instituting these changes would save billions of pounds, would focus on mission capability delivery and would provide increased force effectiveness.

EXAMPLES OF ACCELEARTED CAPABILTY

Commercial High Capacity Satcom as a Service for ISR

Intelligence, Surveillance and Reconnaissance (ISR) aircraft are increasingly being outfitted with more and more advanced sensors, generating even higher quality data collection capabilities. Split second decisions and lives are often at stake based on the quality and timeliness of this fused Multi-Intelligence ISR data.

Key steps to an affordable dramatic reduction in the sensing-to-action timeframe are higher data rates off-aircraft and improved analytics to support real-time detection and identification at a lower cost per gigabyte. We have brought real-time capabilities to a MOD ISR aircraft in theatre utilising a commercial services contract, which has included providing x3 to x4 mission data rates, while simultaneously cutting operational costs per Mbps by 50% or more.

Modern Network and Cyber Operations Management driving 60% efficiency savings

Today we operate an assured resilient integrated network that globally delivers over 500TBs of data and 5.5bn security events each day from the tactical edge to the home base. Government, Defence, Security, Private sector and individual households rely on this information network to support their critical and day-to-day activities.

Through innovative artificial intelligence, machine learning technology and techniques to identify, contextualise and track threats in coordination with government and private organisations. Such investments are driving efficiencies of up to 60% against traditional network operations, whilst developing the skills and roles of the future.

Connecting F35 and AJAX to enable Land STRIKE

F35, Typhoon, Apache and other air platforms are able to destroy, disrupt, divert or delay the enemy using lethal or non-lethal effect if they are provided with the appropriate and timely targeting information.

For ground close air support we provide solutions, including handheld Link 16 and small tactical terminals, which significantly reduce time on target from 45 minutes or more, down to as little as 90 seconds improve lethality, reduce fratricide, reduce the exposure of high cost assets in harm's way, minimise operation costs, and empower information sharing through a common operating picture between Air and Land platforms (AJAX/Boxer), and ground troops. Opportunities exist for immediate potential savings and meet the modern warfare demands of operations at greater speed, range and precision.

1 May 2020