

# 'Fast' Acquisition: Streamlining Capability Delivery

by *Stu Olden*

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Today's Armed Forces need 'Operational Capability' not just 'equipment', and battle-winning capabilities are expected to be delivered within reducing budgets against increasingly tight time frames. With media interest in delays or overrunning budgets, the MoD faces a complex challenge to deliver capability at minimum risk.

Suggestions are that the current system is inflexible, better suited to the Cold War era of protracted procurement programmes than to the timely provision of operational requirements. This is supported by comparisons between the balance of Equipment Programmes (EP) delivered in the last 18 months and equipment provided under the Urgent Operational Requirements (UOR) system.<sup>1</sup>

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*"While progress has been made, performance remains variable, partly reflecting the complexity of defence acquisition and rapidly changing operational requirements."*  
MoD Major Project Review 2008

The UOR process has delivered excellent equipment, saving lives, but is neither truly sustainable nor does it provide integrated 'through life' capability. Delivery of a whole suite of UORs for Iraq and Afghanistan has produced 'stovepipes of excellence' without providing integrated capability. A common

cry is that UORs deliver equipment in a timely manner because cost and performance have been traded. Is there a smarter way of delivering capability? What best practice do the EP and UOR processes provide?

The EP is based on robust analysis and derived from well-defined, auditable capability assessments. Yet sometimes it doesn't deliver what the user wants. Is the cause a 'void' between the two ends of the M4, leading to ineffective translation of requirement into integrated capability delivery? Or is 'process' to blame, with overly complex assurance, scrutiny and approvals systems acting as 'blockers' rather than 'enablers'?

The EP and UOR processes seem to be increasingly distanced from each other. The result is incoherence; stove piping individual projects within the same capability areas. General Jackson recently commented: "...some form of (capability) delivery framework is essential, but it need not be heavyweight and should use only the processes that add value and enable delivery".<sup>2</sup>

The Defence Industrial Strategy (DIS)<sup>3</sup> directs the use of a 'systems engineering approach' for the introduction of high-technology systems. Under Performance, Cost and Time (PCT) restraints some projects have forgone the need to properly define the problem, opting to write requirements without considering all Defence Lines of Development (DLoD) issues or defining the effect required. Appearing to save time and budget in the short term, this invariably leads to issues downstream.

Almost any military capability delivered today could be considered a high-technology or complex system, even something as 'simple' as body armour. Even for UORs, it is vital for successful capability delivery that all DLoDs are considered. The challenge is to complete this work quickly whilst accommodating stakeholder viewpoints.

A Systems Engineering methodology supported by five key pillars of activity can achieve this:

- **Concurrency.** Through parallel activity stakeholder engagement is achieved, the requirements capture process is managed and project assurance activity is conducted in easy-to-manage packages.
- **Consultation.** Clear stakeholder understanding provides an agreed baseline from which to develop the capability.

Correct identification and management of stakeholders increases the probability of obtaining timely decisions across DLoDs. A robust communications plan is essential. Work must not be conducted in isolation.

- **Comprehensive Approach.** Simultaneously identifying and mitigating Through Life Capability Management (TLCM) issues and risks allows an 80% solution to be delivered to theatre rapidly, whilst assuring the remaining 20% can be introduced later via incremental acquisition. The key is integration; a robust architecture eases upgrades and enables currency of capability through life.
- **Competency.** Suitably qualified personnel (e.g. domain, systems engineering and project management experts) are essential to successful capability delivery. Stakeholder working groups, involving those most able to add value in the decision-making, are crucial.
- **Cataloguing.** Providing appropriate documentary evidence to satisfy all stakeholders. However, documentation should 'add value' not add 'red tape'!

The 'right' solution can be obtained without compromising delivery, budgets or performance. Operational capability is delivered to the user *when* it is required.

**The Capability Delivery Model:  
A Systems Engineering Approach**

Delivering operationally effective capability involves combining the approach (a process), method (systems engineering tools/techniques) and the support of the Five Cs (Figure 1). Comprehensive 'Systems Thinking' ensures all DLoDs are considered upfront, making realistic and justified assumptions, resolving issues, identifying risks and applying a more agile and flexible approach to capability delivery.

**The Approach**

The approach 'layer' of the capability delivery model proposes a five-step, streamlined roadmap (Figure 2). The first step of any acquisition process confirms the capability need (Stage 1), provided via an Urgent Statement of User Requirement (USUR) for UORs or the Single Statement of Need (SSoN) for the EP, accompanied by a Concept of Employment (CONEMP) or a Use Case.

These documents may be drafted around existing equipment (the 'I want that one' approach) and may not even be phrased in true capability terms. This is not necessarily wrong – having an existing equipment option as a starting point saves time – but the required 'end effect' must still be defined, providing requirements that lead to a chosen solution engineered across all DLoDs.

To define correctly the required effect it is necessary to start stakeholder engagement (Stage 2) at the outset of the project (consultation) and continue throughout (concurrency).

Complex systems require functional models describing their contents (equipment, people, communications, etc.), their boundaries (with legacy systems) and their interactions (e.g. NATO interoperability issues). Once stakeholders agree, the model is used to identify key risks and produce system requirements. This Enterprise Architecture provides a robust baseline for capability development. These first two stages of the process are achieved via BMT's proprietary Model Driven Requirements™ (MDR) process. Expending time and effort at this stage defines robust requirements and delivers stakeholder agreement.

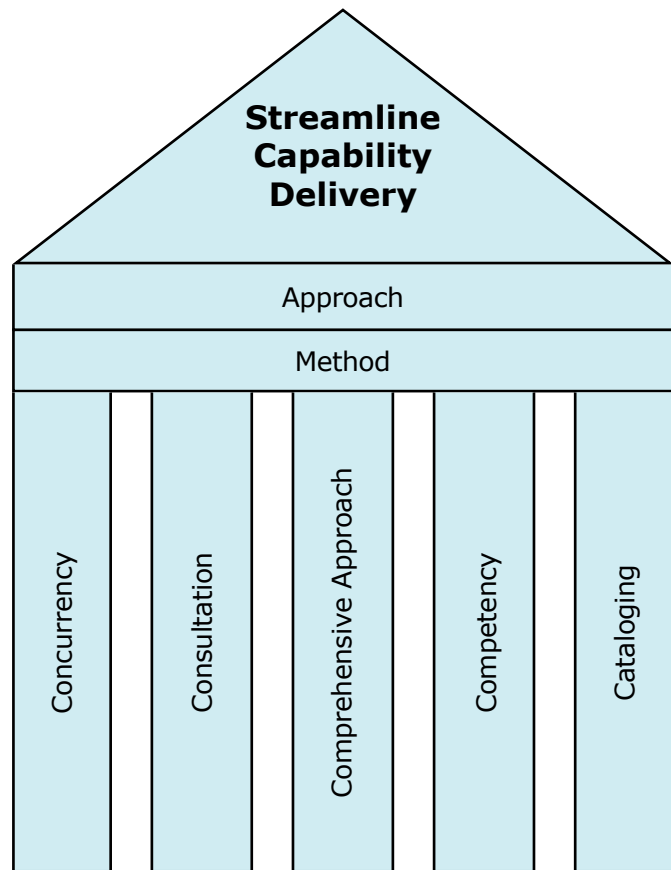


Figure 1: Five Cs – the streamlined capability development model

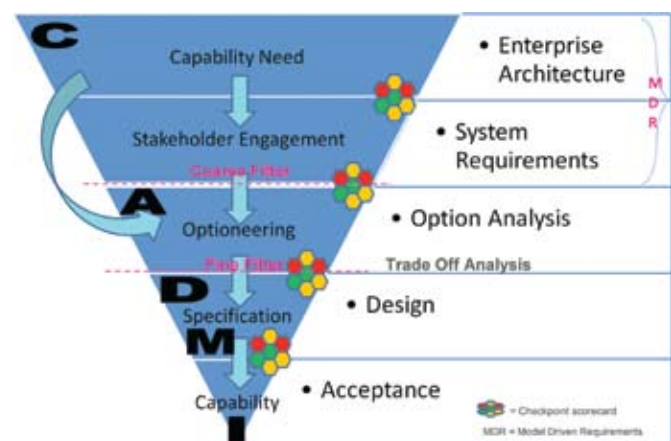


Figure 2: The five-step roadmap to capability delivery

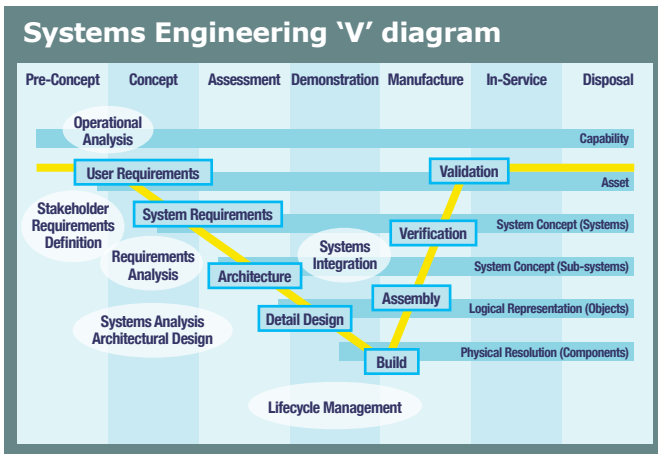


Figure 3: The Systems Engineering 'V' Diagram

As a rule, 15% of a project's cost should be spent upfront to 'scope' the problem,<sup>4</sup> yet often as little as 5% to 10% is committed during the Concept phase.<sup>5</sup> This 'Conspiracy of Optimism' leads to incomplete identification of risks, stakeholders and requirements. Problems remain hidden whilst their resolution becomes complex, time-consuming and costly. Systems engineering has significant leverage early in a project life-cycle. Considering 60% of the cost is determined in the first 15% of a project's life, it is imperative to get it right to balance the PCT trinity.

With project architecture defined sufficiently in Stages 1 and 2, system requirements can be derived. Options are assessed, evaluating their suitability for development. Often, these are presented as Commercial or Military 'Off The Shelf' (COTS/ MOTS) solutions, but may indicate a need to obtain a bespoke capability from industry. At this stage it is important that each requirement is given testable verification criteria so that they may be assessed objectively at acceptance (Stage 5).

At each stage, checkpoint scorecards are used to identify readiness levels of each DLoD, identifying interoperability issues and maintaining a comprehensive approach to delivery. Evidence trails for future use are produced, e.g. bringing the system into the core programme.

The final stage monitors the design solution against associated DLoDs and accepts the capability into service via trials assessment.

**Benefits of a Streamlined Process**

The streamlined capability delivery approach maps on to the CADMID lifecycle.<sup>6</sup> It is more agile and flexible than the Acquisition Operating Framework (AOF),<sup>7</sup> within which CADMID resides, because its outputs can be adapted to specific project needs.

Concurrent activity within the streamlined process minimises the cost and effort involved in project management. Robust requirements, obtained from the initial MDR™ process, have been proven to reduce the cost

of design, testing and integration activities by ensuring the capture of all system elements.

Empowering the most appropriate stakeholders increases confidence that the right capability will be delivered 'right first time'. Considering all DLoDs through life and documenting them enables future activity to be conducted from a sound evidence base.

**Method**

The five-step roadmap is not a panacea to solve all of the issues outlined earlier. Suitably qualified and experienced personnel must be 'mobilised' to operate the 'method layer' of the capability delivery model.

The CADMID cycle is based on the Systems Engineering 'V' diagram (Figure 3) on which the AOF is grounded. If the AOF is to be streamlined for rapid capability delivery then its underlining methodology must be re-considered.

The 'V' model takes a 'waterfall' approach from User Requirements, through System Requirements to Architecture Design in a sequential, time-consuming procedure.

The 'V' diagram is modified to create the 'O' diagram (Figure 4). The left side is 'straightened' for quicker progression through the requirement specification process utilising the five-step roadmap. Concurrence and consultancy activities produce an agreed architecture and robust requirements to inform design, manufacture and test. An 'optioneering' loop with continual analysis, comparison, decision, action and constant stakeholder engagement is developed.

Continual design, manufacture and test reviews identify and resolve issues early with maximum stakeholder input. System acceptance is eased by assessment against previously defined, robust and testable requirements. The feedback loop forming the completed 'O' is important in this approach. Feedback on fielded capability informs development and subsequent planning of modifications, allowing uplift from the originally delivered 80% capability.

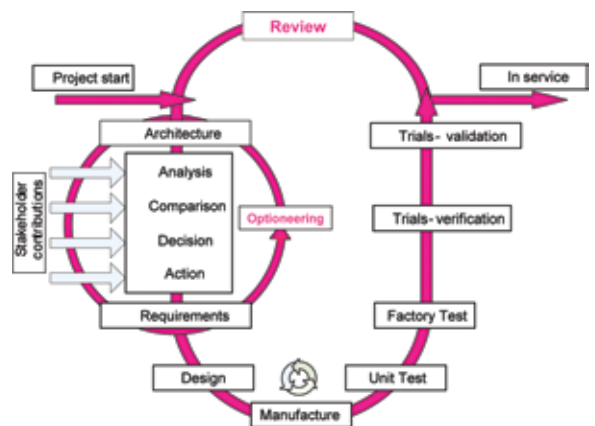


Figure 4: The systems engineering 'O' diagram

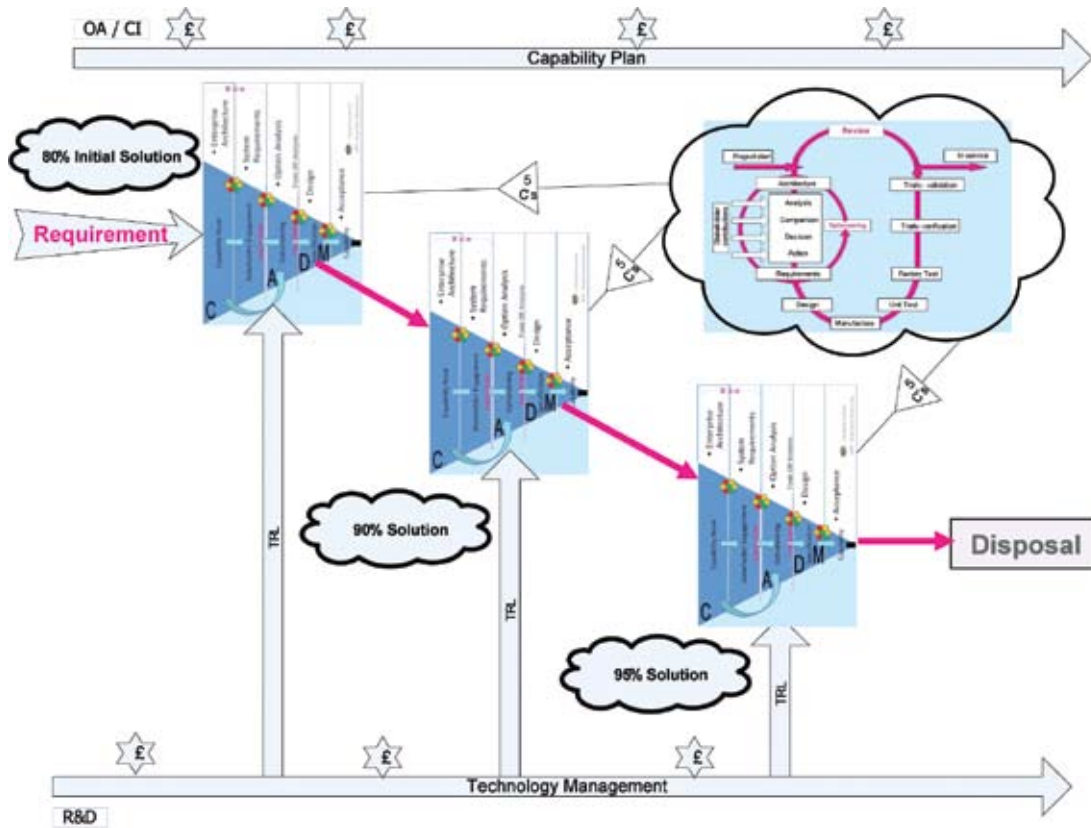


Figure 5: The streamlined capability delivery approach

**‘FAST’ Acquisition**

Using the five-step roadmap approach, the five supporting pillars of activity and the ‘O’ diagram methodology, the UK MoD acquisition community could deliver capability to the front line in a Flexible, Agile, Streamlined, Through Life manner – ‘FAST’.

Under FAST, capability is delivered in epochs, progressing via feedback from the previous delivery. This approach informs ‘through life’ capability and technology management planning.

**The G2ISTAR URD was completed in 12 weeks instead of 12 months.**

**The MDR™ process captured a missing 60% of requirements.**

**Summary**

Due to its complex and sequential nature, the EP does not lend itself to the delivery of urgently required capability. The UOR process concentrates on the Equipment DLoD. True capability and sustainable ‘through life’ solutions are not delivered as more effort is directed towards UORs and less to the EP programme.

Is it not time to adopt a single coherent process to deliver military capability? This is something the forthcoming MoD acquisition review<sup>8</sup> should consider. A ‘Systems Thinking’ approach would improve capability delivery, providing ‘FAST’ acquisition. ■

**NOTES**

- <sup>1</sup> Approximately four to five times more projects (by number) via UORs than by the EP
- <sup>2</sup> Defence Director, January 2009
- <sup>3</sup> Defence White Paper Cm 6697, *Defence Industrial Strategy*, MoD, December 2005
- <sup>4</sup> Enabling Acquisition Change, June 2006
- <sup>5</sup> National Audit Office, *MoD Major Projects Report 2008*, HC 64-1 Session 2008-2009, dated 18 December 2008
- <sup>6</sup> Established under ‘SMART procurement’
- <sup>7</sup> www.aof.mod.uk
- <sup>8</sup> To be led by the newly appointed Minister for Strategic Defence Acquisition Reform, Lord Drayson