

14th ICCRTS Symposium C2 and Agility
Paper 045 Military Trading - A Personal Perspective
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Statement from EngD Director to follow

Biography

Kate Gill is the Group Leader for Maritime Systems Engineering and Systems Integration in the Naval Systems Department of Dstl, UK. She has worked for Dstl for three years, and previously for various UK defence and commercial companies. She is currently studying for an Engineering Doctorate (EngD) in Systems with Bristol and Bath Universities. She has an aeronautical and weapons background and has held Civil Aviation Authority (CAA) software signatory for commercial aircraft systems, as well as Military Aircraft Release (MAR) authority.

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Abstract

Military capability is delivered using a combination of factors (e.g. equipment, training, logistics and information). In the UK military context, these factors are collectively known as the Defence Lines of Development (DLoD¹). Trading is the mechanism used to adjust the levels of investment in each of the DLoDs to achieve the required military capability outcome in the most effective way. Effective capability trading is essential to capability based long term planning.

The trading process has taken place in the military domain for many years and is well documented. However, the effectiveness of the process and the success of the trading decision are less well observed. This research examines the problem space of trading and outlines the findings of an initial exploration of the practical experiences of trading practitioners, and uses historical data in case studies to examine the key decision points and processes that affected the trading outcome.

The research uses social science ethnomethodology verbal discourse analysis from the practitioner interviews, to examine trends and themes using grounded theory techniques. This work is being conducted with support from the Ministry of Defence with a view to developing their trading process model.

1.0 INTRODUCTION

Delivering optimum Military Capability in today's economic environment is dependent on effective trading across the breadth of the decision domain and are a vital part the process of Through Life Capability Management (TLCM²) (Figure 1).

Though TLCM sets the agenda for change in UK MoD acquisition, it is regarded by many as little more than the "latest initiative". However, because the MoD has no better way to balance the books and deliver the right Military Capability at the right tempo, there are many reasons to believe that TLCM will have widespread impact for defence acquisition.

Tom McKane's vision [1] of Through Life Capability Management (TLCM) is "*an approach to the acquisition and in-service management of military capability in which every aspect of new and existing military capability is planned and managed coherently across all Defence Lines of Development (DLoDs) from cradle to grave*". The TLCM vision is a key part of addressing the funding challenge posed by the Ministry of Defence's (MoD) anticipated major acquisition programmes. More than ever before it is critical that UK resources are deployed wisely and without waste: the current budgetary challenge in the UK, created by the need for major new procurements, is exacerbated by well over 200 Urgent Operational Requirements (UORs) costing in excess of £1.4billion [2].

¹ The UK DLoDs are currently Training, Equipment, Personnel, Information, Concepts and Doctrine, Organisation, Infrastructure, Logistics and Interoperability. (www.aof.mod.uk/aofcontent/strategic/guide/sg_dlod.htm)

² Through Life Capability Management (TLCM) is an approach to the acquisition and in-service management of military capability in which every aspect of new and existing military capability is planned and managed coherently across all Defence Lines of Development (DLoD), from cradle to grave. Because capability is the enduring ability to generate a desired operational outcome or effect, capability management is in perpetuity, and the use of the 'through life' terminology is superfluous. However, in the cultural environment it is still useful to retain the term as it provides a reminder that decision making needs to take a long-term perspective (The Stationary Office, 2005, Pg 17 Section A1:23).

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Whilst UORs, by definition, arise from unforeseen circumstances, many are arguably the result of failings in the acquisition process. UORs, though acting as a “quick fix”, can compound subsequent acquisition. Delivered piece-meal, with limited consideration of through-life management, they can ultimately add to cost and complexity. Efficient acquisition, working at the right tempo, would help to significantly reduce this aspect of the budget burden.

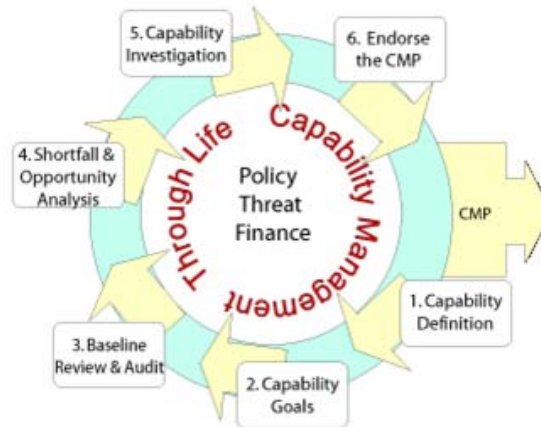


Figure 1: UK TLMC Process Map [3]

1.1 DACP Trading

The aim of the Defence Acquisition Change Programme (DACP) [4] is to deliver an environment conducive to better-informed capability management. The aim is to bring together the processes and tools needed to address “*capability-based trades*” in an environment which delivers “*increased objectivity, a single view of the truth, and pace*” [5, 6]. A coordinated approach increases shared awareness among decision makers, across all DLoD owners, to deliver the required force elements at the right tempo to match changes in the operational environment.

Trading decisions are made to develop and maintain a consistent, affordable and balanced capability portfolio. Any capability decision³ changes the nature and construction of a portfolio at some level, and that in turn has an impact on the cost, quality and risk profile of any project or programme, from national trade-offs down to equipment selection. Understanding how trading affects these levels is a complex problem.

This paper captures an examination of contributions from decision makers with experience of capability acquisition at the operational, tactical and/or strategic level. The trading decisions they made were re-visited using both national audit data and the individual’s own hindsight to identify lessons and best practice.

2.0 THE RESEARCH ENVIRONMENT

Trading is an area that has been academically reviewed in depth in a number of areas, such as campaign planning and gaming. In the defence domain, previous evaluations of defence trading processes have been largely empirical, concentrated on localised issues and have not included the disciplines of capability management and acquisition.

³ With the exception of the “Do Nothing” option which must be considered in all UK acquisition projects.

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Bath (2002 [7]) examined the trade-off of sensor performance factors within various platforms; this was taken further by Clark (2005 [8]) who focussed on the trade off of sub-system performance within an aircraft platform. Military aircraft have had a high level of scrutiny of trading both at a platform level (Clark, 2005), long term maintenance (Hockley, 1998 [9]) and on equipment selection (Middleton et al, 2006 [10]). Walmesley and Hearn (2004 [11]) conducted a study of balance of investment in armoured combat support vehicles using traditional operational analysis methods, but did not address the trading and decision making aspects. Mavronocolas et al, (2006 [12]) explored the effect of unilateral strategies of two-player trading on the mutually dependent outcome of the price of defence.

A few studies conducted outside of the UK have taken a more holistic view of the national problem of funding provision and the competing claims on resource. Ozsoy (2002 [13]) discussed Turkish budgetary trading between the various government departments. Gates (2002 [14]) examined the defence environment in the future, with a projection of how the economic dynamics of the customer-supplier relationship would work with an increase in world collaborative politics. Berkok (2005 [15]) continued this work and looked at how budgetary reductions have had an effect on the behaviours and priorities of defence contributors to combined forces operations worldwide. None of the cited work examined the effect of the decision maker in the process who is one of the pivotal links in the success or failure of the trading endeavour.

In the research to date, the trading experience has been examined from a personal perspective. The aim is to gain a view of defence trading from the people who have experienced the activity, using their views as a basis of examining the trading process and assessment of achievement.

Using the individual as the data source, this research gains a deeper understanding of trading using a qualitative approach. This methodology has been adopted to explicitly bring to light the views of the individual trading practitioners, expressed in their own words, thus defining their relative positions in respect to human inquiry. The work of Helen Fox (1994 [16]) and Moore and Smith (1994 [17]) have exemplified this approach arguing that '*the ideas of the individual need to be taken seriously*' (Fox, 1994). The challenge is then to let the data speak for itself in order that '*the unexpected and the serendipitous have the chance to emerge, illuminate and challenge*' (Moore and Smith, 1994). At this stage in the research the data is being examined using grounded theory methodology (Glasner and Strauss, 1967 [18]; Strauss and Corbin, 1994 [19]), using the verbal constructs as core data. This research aims to explore the extent to which, in their reflections and learning, individuals can enhance the current trading practices by exposing the issues and in constructing a model for UK Defence trading.

2.1 Experiential Trading Approach

In order to examine the trading experience, data was drawn from interviews and openly published data. The case studies were selected based on the experience of the interviewees, which was then compared and contrasted to open source material. All interviews were conducted at an unclassified level and all open source material is referenced in this paper. The interviews were conducted solely by the author and recorded. Nearly fifty individuals were interviewed: a small subset of the MOD acquisition population. The interviews were loosely structured and captured a series of snapshots of events and experiences.

Interpretative methodological (ethnomethodological) data gathering is defined as the analysis of naturally occurring talk, or conversation, and social interaction (Denzin and Lincoln, 2005 [20]). Ethnographic studies focus on local derived meanings and the settings within which social interaction constitutes the practical realities of the situation (Gubrium, 1992 [21]; Holstein, 1993 [22]). Previous research (Wodak, 2004 [23]) that involved military discourse contributions concluded

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that an ethnomethodological interactive approach produced less bias when used in medium (<50) populations.

Ethnomethodological research can be divided into two forms of implementation; the first focuses on the interactive meanings, the second focuses on the structure of the talk. This research concentrates on the former “interactive meanings” and placed some constraints on the latter. This ensured that bias, such as military hierarchy, were reduced to a minimum; structural interpretation was constrained and verbal content and meaning was analysed as the main contributor of expression. Interactive meaning analysis considered the situated content of the talk in relation to local understanding, and produced data that was highly descriptive of real life, including conversational extracts of the environment and ethnographic accounts of interaction.

Analysis of the interviews was achieved using (non-Foucauldian⁴) Discourse Analysis (DA), which critically orients talk, conversation and the use of other communicative processes to make meaning (Potter, 1996 [24], 1997 [25]).

In selecting ethnomethodology, part of the research considerations had to include a contribution from the researcher, and their effect on the work by intervention. In all the interviews, the author introduced themselves as a Dstl (part of the Ministry of Defence) researcher, grade and relative rank. The introductions then proceeded to the reasons for data collection, the scope of the study, the aims and the expected exploitation routes. In all cases, the interviewees were male.

2.1.1 Ethical Considerations

The ethical considerations of the research were addressed by the development of a research Code of Practice which was reviewed by representatives of Bristol University. The code was also reviewed by Dstl who advised that the proposed work did not require any higher military ethical approval. The Code of Practice was used to bound the scope the interview, and the usage of the findings.

2.1.2 Conduct of Interviews

An email was sent out to the target population which outlined the aims of the research and attached the Code of Practice. This email was then followed up, a week later, by a request for volunteers. The initial email prompted a level of discussion and enthusiasm from some parts of the population, and an initial set of volunteers was identified. Following the second email, a larger group came forward, of which a subset was selected for interview based principally on their availability.

The self selection aspect of the research meant that extroverted people naturally came forward at the first pass which was important as the basis for analysis was verbal dialogue; it was important that the contributors felt confident in expressing their views. The second tranche of volunteers included contributors who had taken a more reflective view on the request, before agreeing to contribute. As the interviews were not time-bounded, there was no need to make allowances in the interview for the more lengthy output of a reflective person.

A peer review was conducted with Dstl colleagues who had recent experience of qualitative interviewing, and guidance was given on approach, demeanour and attention to detail, which was invaluable in the interview stage.

⁴ In the early 1960's Foucault examined how cultural and historical systems of power and knowledge construct their own subject and worlds (1972:48; 1979:65). Foucauldians refer to these systems as “discourses”, emphasising that they are not just bodies of ideas, ideologies but are working attitudes, terms of reference and courses of action. The Foucault approach to Discourse Analysis focuses on the construction that the discourse represents. The non-Foucauldian approach focuses on the discourse content as the construct of meaning

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During this period, transcription equipment and NVivo [5] (V7) software was purchased and tested for compatibility with the Dstl network. Two Olympus DS-40 Digital Voice Recorders were purchased and tested for audio clarity and reliability. A transcription foot pedal and replay system was installed at the work station of a Dstl technical author with transcription experience who was employed for the task. Several trial recordings were made and transcribed to ensure best use of Microsoft Word style outputs compatible with the coding protocols of NVivo.

Interviews were conducted at the convenience of the interviewee, at a location of their choice, over the period of September 2007 to August 2008. The interviews were structured around a set of open questions designed to encourage an independent contribution. All the contributors were asked to relate their first-hand experience, to describe their involvement, rate their achievements and to identify areas that could be improved. In total eighteen interviews were conducted. These interviews were made anonymous and then transcribed before being analysed. Direct quotes from individuals have been used in this paper.

Next, the transcribed interviews were reviewed for sensitivities related to operational, political or industrial project related factors. The selection criteria for inclusion in the analysis stage were positive responses to the following questions:-

- Did the interviewee have direct first hand control over a trading decision?
- During their term in office, had the interviewee made a decision that remains in place since their leaving (if appropriate)?
- Could the interviewee provide first-hand experiential details of the trading process, including the information on which the trading decision was made and the trading outcome?
- Was the project reviewed by the UK National Audit Office Major Project Reports process?

The last criterion was included as it was a source of independently verified project data. Based on the outcome to the above questions, three transcripts were selected for more detailed analysis in case studies.

The transcribed interviews have been retained as a database of findings that will be added to, by the author, and then used to validate the trading model during its development.

2.2 Independent Project Data

The National Audit Office (NAO) conducts a review of the Major Projects within the Ministry of Defence (MoD). They report to Parliament and provide a key accountability document which provides information that underpins a number of the MOD Public Service Agreement (PSA) targets and a number of the Defence Equipment and Services (DE&S) key targets [26]. In the period 2002 – 2007, the Major Projects report examined the costs of major projects from approval to In Service (Main Gate).

In order to gain an insight into recent findings, the Major Projects Report 2007 [27] concluded *“that the forecast costs reported to Parliament do not give the full picture of the expenditure required to bring equipment into military service as they fail to include training and logistics support costs”*. As a result of this and several other high profile project failures in MoD, the Defence Acquisition Change Programme (DACP) was launched, which defined the restructuring of the UK Defence Procurement

⁵ NVivo is a brand name for a suite of packages developed to support qualitative research supplied by QSR International

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Agency (DPA) and the Defence Logistics Organisation (DLO), into one accountable through-life organisation, Defence Equipment and Support (DE&S).

The 2007 NAO report also commented that trading was not particularly well understood: *“the (MoD) does not have any mechanism to check whether it is getting value for money”* and *“the metrics for measuring performance should cover the whole capability, and not focus on the individual project contributions”* [28].

In line with the changes effected by DACP, NAO emphasis is now on understanding the trading process and its implications across capability boundaries. It is expected that the 2008 Major Projects report will look more closely at the cost of capability, with focus on trading decisions made in an environment of increasing financial pressure.

3.0 CASE STUDY ONE - GUIDED MULTIPLE LAUNCH ROCKET SYSTEM (GMLRS)

The first case study was selected due to the quantity/quality/ of evidence on trading activities between UK projects. The main focus of trading concerned the rocket munitions of the Guided Multiple Launch Rocket System (GMLRS), rather than the system itself, but has a clear audit trail of events and independent evidence from the NAO reports through its relatively short (<10 years) acquisition life.

The Guided Multiple Launch Rocket System (GMLRS) was planned to replace unguided MLRS M26 rockets as they reached the end of their shelf life from 2004 onwards [29].

Approval equivalent to UK initial gate was obtained in July 1998 for the UK to participate in a collaborative GMLRS assessment phase with the other MLRS Partner nations (France, Germany, Italy and the United States). In November 1998, as part of the assessment phase, and acting on behalf of the partner nations, the United States Department of Defense (DOD) awarded a contract to Lockheed Martin Missiles and Fire Control (LMMFC) to develop a GMLRS carrier rocket. The UK contributed to the Engineering and Manufacturing Development (EMD) contract, which was completed in early 2003, having been extended by the DOD from its earlier planned end date of November 2002. This extension, together with protracted negotiations with the United States regarding the arrangement for manufacture, caused the deferral of UK Main Gate approval from December 2002 to August 2003. The purpose of the EMD phase was to reduce costs and risk through the use of off the shelf components and sub-assemblies, thereby maximising sub-contractor competition.

GMLRS rockets were designed to be fired from modified M270 MLRS launchers (Figure 2). The requirement was for a rocket that will increase MLRS's range from approximately 30km to approximately 60km, with an associated reduction in heat and smoke signature. The rocket was designed to use Global Positioning System (GPS) and inertial guidance in order to achieve the required accuracy and significantly increase its effectiveness.

The GMLRS payload was initially planned to consist of bomblets, but in July 2005, the decision was made to change to a high explosive Unitary Warhead taking advantage of an accelerated United States programme. GMLRS is a modular open design, to allow other payloads, such as smart anti armour sub munitions to be easily incorporated.

The number of rockets to be procured for the GMLRS programme fluctuated throughout the acquisition process. Initially, design projections defined increased precision of the GMLRS, will therefore reduced the number of rockets required to defeat a target. This allowed stocks of GMLRS to be significantly lower than those for the M26 rocket, thus reducing the logistic burden and

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eventual disposal costs. At UK Main Gate in 2003, the requirement was for 6500 GMLRS rockets. In 2004, an analysis of operational requirements, based on Operational Analysis emerging from a related UK programme (Indirect Fire Precision Attack, IFPA), identified that the system was significantly more precise than originally anticipated, so the number of rockets required was reduced from 6,024 to 4,780. Following a further review in 2005, the Defence Management Board (DMB) considered it was tolerable to reduce further the number of rockets purchased under the GMLRS programme to offset a project unit cost price and thus ensure there was a nil cost increase to the project; only 4,080 rockets were ordered. After 2005, further operational and trials evidence led to a further reduction in rocket procurement; 1,488 rockets were procured and considered “*sufficient for current operations*” [30].

Figure 2: GMLRS (Guided Multiple Launch Rocket System) at White Sands Missile Range, New Mexico,



USA ³¹

The variation in rocket numbers was affected by a number of trading decisions. Some trades were part of the normal UK considerations of finance and risk. Others were related to political sensitivities related to MLRS partners and overspend on specific areas of the project budget. One specific trade was easy to identify as it involved trading part of the GMLRS capability (specific scenario provision) outside the project boundary to the IFPA project. The trade was achieved as the IFPA project, although immature, was developing a capability that would overlap with some potential areas of GMLRS deployment. Although the IFPA project was not yet mature, the trade was made, which reduced the GMLRS capability and placed a reliance on the IFPA capability delivery. This trade led to a transfer of budgets of £165 million to the IFPA project, and an associated reduction on rocket provision to the final figure of 1,488 mentioned earlier.

In the 2007 NAO report, it was recognised that the ability of the MoD to make trade-offs between projects was sensible to ensure provision of the best military response to a threat, reduce overlap and minimise obsolescence. However, in examining the reduction in units purchased, the NAO identified the risk that the delivery date for the weapons could be compromised by the fact that the MoD had not yet fully completed its acquisition assessments and enabled progression of the IFPA project. The undesired outcome was that frontline troops had the potential to go short of capability cover due to the MoD not yet being in a position to approve the main investment decision for the IFPA project.

In terms of the experiential source data, the interviewee was an Industrial manpower substitute who had worked on a technical axis within the MLRS project, and was then selected to work alongside the GMLRS Integrated Project Team focussing on the Integrated Logistics Support (ILS) side of the

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project. This role was of interest, as it represented the insights of an individual who had extant technical knowledge in a post with long term implications. His direct words were used to examine his trading decision and observations, which were then constructed into a rough timeline of events. Due to the lapsed time since the events, it was hard for the individual to recall the exact dates and what information was available at what time, but certain key events stuck in his mind that could be sequenced into a timeline.

In the interview, the experiences of the trading decisions concentrated on the variation in unit number of the rockets to be sourced to support the GMLRS project. The timeline of the individual's involvement spanned five years, during which unit numbers had varied considerably. When asked about the reasons for the fluctuations, a number of verbal contributions were made that have been constructed into a source diagram (Figure 3).

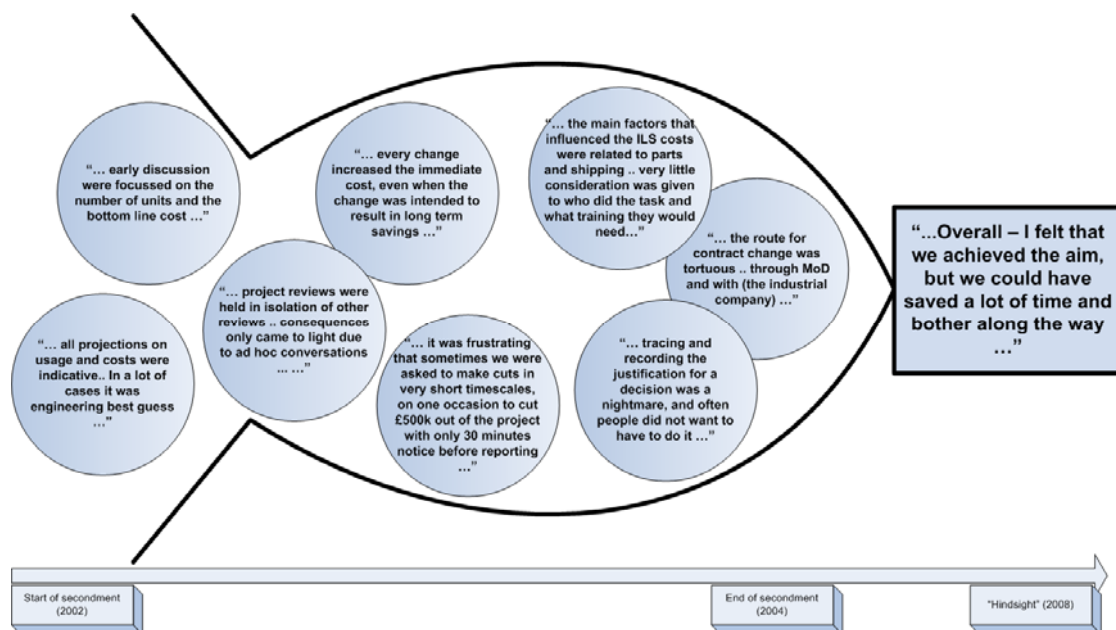


Figure 3: GMLRS Evidential Diagram

When asked about process and trading methods, there was limited evidence of the implementation of a defined and repeatable process, and the process appeared to be solution driven. For example, when asked to reduce costs, the interviewee was instructed to focus on a particular area without any supporting rationale. Subsequently, a similar request focussed in a different but again unsubstantiated area.

The interviewee also indicated that the key project decision points were not the focus of trading activity as expected, but most trades were made in relation to the MoD reporting and planning schedule. Though this schedule is intended to maintain capability assessments at a strategic, not tactical level, the evidence suggests that the reallocation of key personnel in support of the MoD budget deadlines had the effect of extending project considerations, and delaying trading decisions to a point where they were no longer significant. For example, a study into the supportability of the unit rocket was effectively shelved when an annual programme review highlighted a supplier cost issue that overtook events.

3.1 GMLRS Case Study Initial Findings

These findings should not be read as a definitive guide to the trading development, but should be interpreted as indicators in some areas.

- Accountability for trading decisions was not desired by the participants
- The trading process was inherently narrow and incomplete
- The trading decision were made at very short notice
- Short term costs rose despite long term projected savings
- The MoD planning schedule was the key trading driver, not programmed project decision points
- The trading process was biased by directed area of consideration

The main influences that affected the trading activities related to the GMLRS programme in the short period of four years have been identified and classified into four main categories – global, customer (UK), supplier (US), partners (MLRS). Some of these influences have longer term effects than others, and should therefore be considered appropriately. The factors are shown as an influence map (Figure 4) with the emphasis on establishing the hierarchy of factors using project specific effects.

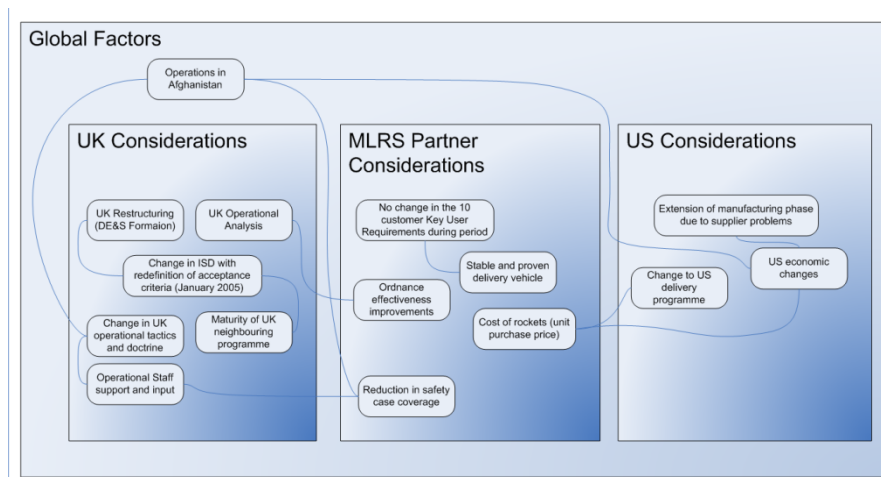


Figure 4: GMLRS Trading Factors Influence Diagram

4.0 CASE STUDY TWO - TYPE 45 DESTROYER

The Type 45 is a new class of eight⁶ Anti-Air warfare Destroyers, to replace the capability provided by the Royal Navy's existing Type 42's. The warships are being procured nationally. The Type 45 will carry the Principal Anti-Air Missile System (PAAMS) which is capable of protecting the vessels and the ship in their company against aircraft and missiles, satisfying the fleet's needs for area air defence capability into the 2030's. PAAMS is being procured collaboratively with France and Italy. The Type 45 Integrated Project Team (IPT) is responsible for providing PAAMS to the warship Prime Contractor.

⁶ The Type 45 was a planned class of eight ships; initial approval was given for six ships.

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BAE Systems Electronics was appointed Prime Contractor for the Type 45 in December 1999 and a contract for the first three ships was placed in December 2000. A contract of procurement for a further three Type 45's was placed with Prime Contractor in February 2002. The ships are being built under sub-contract by BAE Naval Ships and VT Shipbuilding⁷.

In 2006, there had been significant progress in the manufacture of the first three ships. The first ship, HMS Daring, was launched February 2006 and during the course of the 2007 was fitted with most of her equipment ahead of sea trials towards the end of 2007. The second ship, HMS Dauntless, and third, HMS Diamond, ships were on schedule. Main manufacture of the fourth ship, HMS Dragon, started in 2006. On the PAAMS programme, the Sampson Multi Function Radar demonstrated its ability to track targets using the Shore Integration Facility (SIF) based in Portsmouth, UK. The Aster missile development programme was also nearing completion following a number of successful trial firings during 2005.

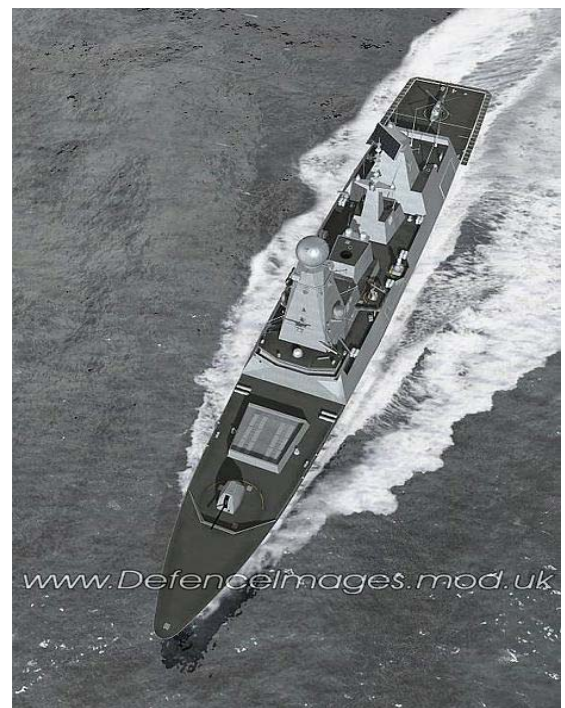


Figure 5: A computer generated image of the new Type 45 Destroyer

In the 2006 Major Projects report, the findings were that the project had suffered a net cost increase of £157 million, related to a forecast cost of completion of £336 million. The majority of the cost increase had come from an increase in build costs for Ships 4 to 6 which caused the forecast expenditure to rise in year by £184 million. The MoD achieved a reduction of £36 million by transferring the responsibility for shore training to support the operational deployment of the ships to another project team, with resource and experience in this area and who were better placed to manage the costs. Whilst the cost of the Type 45 project was reduced, this did not represent a saving to the MoD as a whole.

During the one year review period (2005 – 06), the project had also experienced a net delay of seven months. A re-assessment of the risks to achieving the In Service date (December 2009) for the Type

⁷ Now merged into one company, BVT

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45 identified an eight month delay in the production timetable and the likelihood that the Multi-Function Radar which formed a key part of the Principal Anti-Air Missile system, would not meet its development schedule. This delay was reduced by one month by undertaking more parallel working, so that the second ship was used to demonstrate elements of capability that would otherwise have been certified in the First of Class.

As a result of the delays, there were operational and cost implications. Operationally, there would be an induced capability gap in the Royal Navy being able to have the ability to defeat concurrent attacks by multiple sea-skimming missiles. To mitigate this risk, an existing Type 42 Destroyer was retained in the operational fleet for an additional seven months at a cost of £1m.

In terms of the experiential source data, the interviewee was a contributor to the Integrated Project Team (IPT) who was involved in the consideration and delivery of a ship sub-system. In the various iterations of the delivery team for the Type 45, the team had varied from a relatively small multi-national group (Common New Generation Frigate, ~1996, ~120 staff) to a very large industrial consortium (Type 45 IPT, ~2006, ~600 staff). It was during the latter phase that the interviewee was involved, and his experiences covered the 2004 to 2007 period. As before, direct words were used to examine his trading decisions and observations, which were then constructed into a rough timeline of events.

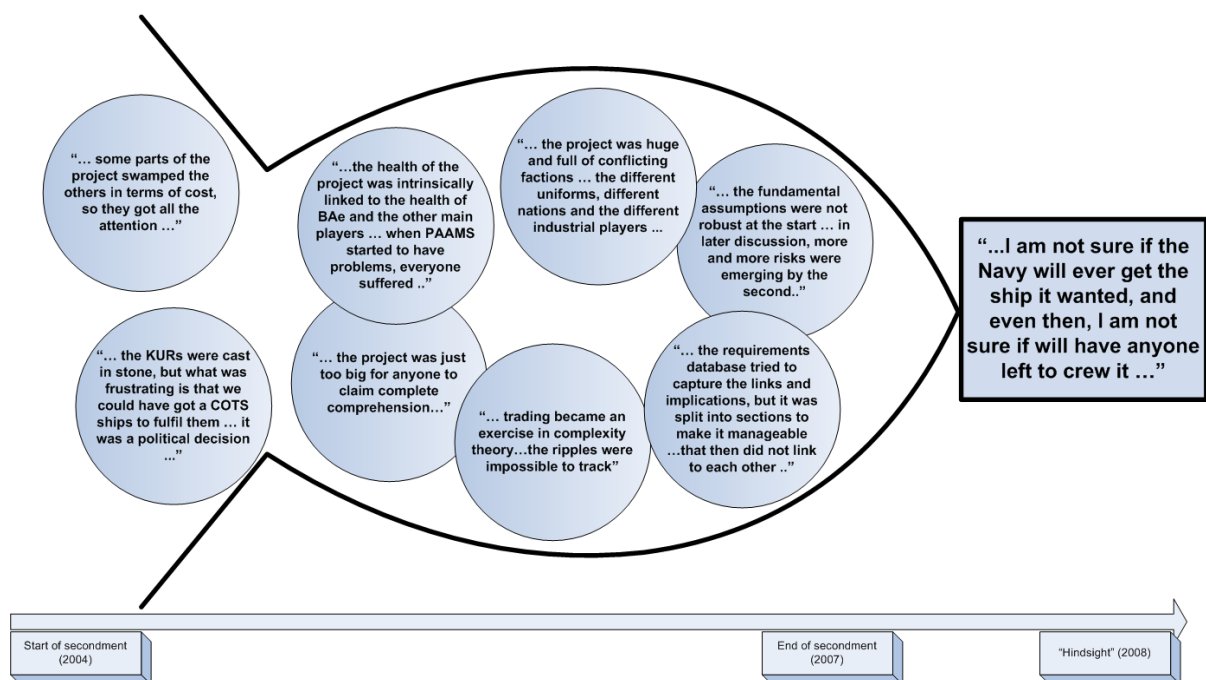


Figure 6: Type 45 Evidential Diagram

4.1 Type 45 Case Study Initial Findings

As before, these findings should not be read as a definitive guide to the trading development, but should be interpreted as indicators in some areas.

- The project trading decision were well documented but not well understood
- Trading took place in groups and "factions"
- The complex implications of trading were too vast to appreciate

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- Short term benefits took precedence over long term benefits
- Ownership of the trading decisions was not down to a singular sustained individual

The main influences that affected the trading activities related to the Type 45 programme can be identified and classified into the same four main categories as the GMLRS project – global, customer, supplier and partner.

5.0 CONCLUSIONS AND FUTURE WORK

The MOD's approach to TLM has been based on longer-term thinking, effective "trades" and greater consistency.

In a review of the process and the key decision makers, it has become clear that the central MoD staff, the majority of whom are drawn from Service personnel, are not well prepared or trained for long term decision making, especially when their trading roles are in domain areas that do not match their own operational experiences.

It is clear that quality information enables the most effective trades. In all verbal cases, evidence was present that decisions were made on the data provided, and in all the interviews, no comments were made on the independent validity or appropriateness of that data. In a number of the interviews, it was clear that there was a high requirement to record the trading decision, but little need to document the supporting data or justification; in some cases, the political influence was explicitly left out. This latter point will be explored in later work, examining the political influences of joint or combined trading of projects and programmes, and examining the evidence that collective endeavours can achieve more effective trading outcomes.

Consistency of format, aggregation and coherence of source data is essential to support decision making in as objective a way as possible. It is neither possible nor desirable to eliminate subjective judgement in trading decisions, but consistency of interpretation demands that the process is intuitive and easily assimilated by infrequent, and in some cases, first-time traders.

One key finding was that the expected reporting bias of personal contribution (e.g. I did everything right) was not proven; in nearly all cases the verbal discourse provided by the interviewee was validated by the independent open source data. In the exceptions, the errors could be attributed to the passage of time, and the verbal data provided did not conflict with the findings, but simply represented an incomplete picture.

The bias caused by allegiance to a project was lower than expected (e.g. my project did everything right). In the military domain, this finding was expected. For these individuals, the adaptation to a new set of tasks, responsibilities, environment and reporting chain every 18 months diminish the effect of long term allegiances to a project or role. The loyalty bias is expected to be higher in a more static civilian population, which will be examined by the ongoing research.

In classifying the major influences the classification of global, customer, supplier and partner seems to form the good base for further exploration. This classification was appropriate to the international nature of the two case study projects, but is also considered valid for national acquisitions. The timeline effect of the four categories may be different and the process for handling the effects may have to be appropriate to the layer.

Through the careful and pragmatic examination of trading in the real world, findings have been made that can be used for future development and expansion of the trading process. There has also been the reinforcement of a number of known points, for example the need for greater consistency

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in the taxonomy used, and, the impact of departmental structures and military boundaries. Adoption of an efficient trading process presents the opportunity to sort and bound a wide and diverse collection of information and to connect the levels of trading consideration. Better communication, and a common understanding of intent, will lead to better outcomes, and should lead to a practical and proven step forward in improving the decision process and thus the outcome of capability based trades.

The work in this area is continuing, involving further direct interaction and observation of acquisition trading processes and outcomes, with the aim of proving benefit to decision maker in whatever trading role they are cast.

ABBREVIATIONS

BOI	Balance of Investment
[dstl]	Defence Science and Technology Laboratory
DACP	Defence Acquisition Change Programme
DE&S	Defence Equipment and Support
DEC	Director(ate) of Equipment Capability
DIS	Defence Industrial Strategy
DLO	Defence Logistics Organisation
DLoD(s)	Defence Line(s) of Development
DMB	Defence Management Board (UK)
DOD	Department of Defense (US)
DPA	Defence Procurement Agency
EMD	Engineering and Manufacturing Development contract
GMLRS	Guided Multiple Launch Rocket System
GPS	Global Positioning System
IFPA	Indirect Fire Precision Attack
ILS	Integrated Logistics Support
IPT	Integrated Project Team
IPTL	Integrated Project Teams Leader
MLRS	Multiple Launch Rocket Systems
MoD	Ministry of Defence
NAO	National Audit Office
OGDS	Other Government Departments
PAAMS	Principal Anti-Air Missile System
PSA	Public Service Agreement
SIF	Shore Integration Facility
TLCM	Through Life Capability Management (TLCM)

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UK United Kingdom (England, Scotland, Wales and Northern Ireland)

UOR Urgent Operational Requirement

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