

Occasional Paper Sponsored by IBM

Key Issues Affecting the Provision of Logistics Support to the UK Armed Forces in Expeditionary Operations

Christianne Tipping
Head, Defence Leadership and Management Programme
RUSI



About RUSI

RUSI was founded in 1831, the oldest such institute in the world, at the initiative of the Duke of Wellington. Its original mission was to study naval and military science, what Clausewitz called the 'art of war'.

It still does so: developments in military doctrine, defence management and defence procurement remain central elements in the Institute's work. But in recent years RUSI has broadened its remit to include all issues of defence and security, including terrorism and the ideologies which foster it, and the challenges which we face from other man-made or man-assisted threats and natural disasters.

RUSI is a British institution, but operates with an international perspective. It has amassed over the years an unequalled expertise in its field and an outstanding reputation for quality and objectivity. RUSI's heritage and reputation, its location close to the Ministry of Defence and other ministries in Whitehall and its range of contacts with key opinion formers both inside and outside government, gives unique insight and authority.

About IBM

For more information about IBM in the UK public sector, please visit ibm.com/easyaccess/publicsector

Cover: A Chinook Mk II hovers over the ground before takeoff after unloading passengers and supplies for a village in Afghanistan, 2006. *Photo courtesy of Department of Defense/Andre Reynolds.*

Introduction

IBM commissioned RUSI to produce a paper exploring the issues which govern the provision of logistic support to the UK's armed forces in expeditionary operations in the short to medium term. The paper seeks to answer the following research question:

What, in broad terms, are the issues which govern effective logistics support to the UK's armed forces in expeditionary operations and to what extent will present policy and practice address these in the period to 2013?

The methodology adopted was a review of open source documentation, complemented by a series of discussions with subject matter experts in both the Ministry of Defence (MoD) and the defence industry. A large quantity of information was gathered and it has not been possible to cover all of the issues that emerged. Instead, the paper focuses on the themes which arose repeatedly in discussions. While much of the paper is grounded in fact derived from official documentation, the methodology used means that the content has also been informed by the personal opinions of subject matter experts. As such, the paper cannot be considered to be absolutely objective although the author has sought to be even-handed with respect to the representation of, and the weight given to, the perspectives of all contributors.

Context and Nature of Expeditionary Logistics

Achieving success in the Cold War scenarios, for which the UK armed forces were configured for almost fifty years, required a logistics support system that could deliver mass rather than velocity; stockpiles of materiel were prepositioned close to the likely area of operations and there was little

need for a fast, responsive supply chain. After the end of the Cold War, the Government sought to realise a peace dividend and put pressure on the MoD to become more efficient and reduce spending. *Options for Change* in 1990 saw significant restructuring and downsizing across the armed forces and the 1991 PROSPECT study gave rise to changes in the size and structure of the MoD Headquarters. The 'New Management Strategy' introduced in the early 1990s sought to improve financial accountability by aligning management responsibilities with delegated budgetary authority, and switching the focus from the cost of consumption (inputs) to the cost of activity (outputs). 'Front Line First: The Defence Cost Study', a programme of cuts introduced in 1994, brought further downsizing, base closures and restructuring; it also advocated contractorisation as a means of driving out cost inefficiencies with economies of scale being achievable where support services could be provided on a tri-service basis. The Strategic Defence Review of 1998 laid out the defence policy of the new Labour Government stipulating what the armed forces would be expected to do and outlined new force structures, including the formation of the Defence Logistics Organisation; though originally not supposed to be cost-driven, savings were nevertheless demanded. The 2004 'Delivering Security in a Changing World Future Capabilities Paper' brought further reductions in manpower and additional restructuring across the services.

Having significantly decreased the UK's military mass from 1990 onwards, successive governments proceeded to adopt a more interventionist approach to foreign policy, and the armed forces were required to gear for expeditionary operations. It was assumed that being smaller and having less mass to move, the military would simply

mass to move, the military would simply cope with the requirement for a faster, more responsive logistics system. Operation *Telic* in 2003 proved that this was not the case. The mounting and sustainment of expeditionary operations create significant logistical challenges as they require men and materiel to be transported strategic distances, to destinations where there may be little in the way of infrastructure, with varying demands for an often unknown duration. The so-called 'Four Ds' vary with the location, scale, intensity and maturity of each operation and the logistics support system has to be robust and flexible enough to meet these varying requirements. The longer the decision to commit to an operation is delayed, the greater the adverse impact on the logistics build up. Sometimes there may be good reason for delay – for example, the need to protect operational security – but often the delay stems from political inertia.

Though work was underway to address logistics inefficiencies before 2003, Operation *Telic* highlighted that the armed forces had failed to make the necessary changes to logistics processes to be able to meet the demands of a large-scale operation with short deployment timelines. Specific areas of shortfall in the UK's logistics performance related to: stock shortages; inadequate asset tracking; inadequate logistics communications; failure to deliver priority items; and inadequate control over the coupling bridge (CB) between the UK and the deployed operating bases (DOBs). To address these issues and generate coherence across existing projects, the Defence Logistics Transformation Programme (DLTP) was launched in 2004 with the aim of increasing the effectiveness, efficiency and flexibility of logistics support across the whole of the MoD. However, with the customary departmental demand for

savings, it seems inevitable that the DLTP was initially more focused on efficiency rather than effectiveness. The transformation – with a renewed focus on effectiveness brought by the current Chief of Defence Materiel (CDM) – continues today in the guise of the Defence Logistics Programme (DLP) launched in 2006 and within which the Defence Logistics Strategy is enshrined.

The DLP is built around five themes: Comprehensive Capability Planning; Flexible Command and Control (C2); Minimised Demand on Logistics; Optimised Support Network; and Unifying Logistics Ethos. Each theme has associated strategic objectives and clearly defined future states. There is a comprehensive programme of activity in train which reaches out to 2020 with key milestones to be achieved along the way. A great deal of effort has been put into improving logistics support and significant improvements have been made since Operation *Telic*. CDM, as the Logistics Process Owner, is responsible for providing coherence across the logistics system and it is his intent that all levels of operational command have confidence that the right support will be delivered when needed. This means that logistics must reliably deliver materiel, services and information to enable commanders to make better decisions and have greater freedom of action.

The on-going transformation of logistics is taking place against a backdrop of two significant operations and substantial budgetary pressures. While a tight budget provides a strong incentive to drive out inefficiencies, it also makes it more likely that pressing operational needs will be met at the expense of delays or cuts to future programmes that contribute to the longer-term aim of achieving greater logistics effectiveness. Many members of the logistics community expressed concern

about the impact that this year's Planning Round (PR08) decisions may have. Furthermore, there has been a significant change in the defence landscape since the publication of the Defence Industrial Strategy (DIS) in 2005. The emphasis has shifted from contracting through competition to partnering (where appropriate) with a renewed focus on managing capabilities and equipment on a through-life basis. The formation of Defence Equipment and Support (DE&S) should facilitate the realisation of an end-to-end (E2E) approach from concept to disposal as data acquired from supporting in-service equipment is fed back to inform new programmes. The realignment of budget programming responsibilities will also contribute to enabling a through-life approach as acquisition and support costs are brought together in a single plan.

Industry too faces a challenging business environment with reduced numbers of platforms being ordered, longer life-cycles of platforms (which create industrial capability sustainability issues as well as necessitating through-life equipment upgrades), greater technological complexity, increased risk being transferred from the MoD customer, and the need to reconfigure for the provision of through-life capability services. The latter is needed by a customer seeking better availability, reliability and maintainability, and through-life cost reductions.

Having outlined the context in which the delivery of logistics support takes place, the following paragraphs examine some of the issues that members of the logistics community both within the MoD and industry consider to be critical.

The Evolving Role of Contractors

Commercial contractors have played a role in the delivery of logistics support for centuries so the concept is not new. However, the nature of contracting is changing as the MoD seeks to move away from traditional supply or spares inclusive contracts to Contracting for Availability (CFA), also referred to as Contractor Logistic Support (CLS). Under the former arrangements, spares constituted a revenue stream for industry which therefore had no incentive to strive for reliability; as such it was costly for the MoD. Under the CFA model, spares represent a cost to the contractor whose focus is therefore on the ultimate rather than intermediate outcomes. This reduces risk to the MoD and provides a positive incentive for greater sustained profit to industry. However, CFA will only work if the prime contractor is able to cascade the risk down the supply chain to where it can best be managed. A difficulty that many prime and tier one contractors encounter is that there is often reluctance within small tier two and three companies to accept risk.

Contracting often constitutes a financially attractive option as contractors usually have lower overheads than the MoD and are able to scale their workforce flexibly to meet the needs of a specific contract. Furthermore, as more complex equipment enters service, the maintenance of that equipment may require specialist skills which are only available from a contractor. However, availability-based contracts must be acceptable to front line commanders who ultimately have to carry the operational risk; the drive for efficiency must not trump effectiveness. This is even more so where Contracting for Capability (CFC) is being considered – in other words, where a contractor provides an entire capability such

as air refuelling. Operational commanders need assured delivery and so such contracts have to be watertight. In its report entitled 'Transforming Logistic Support for Fast Jets', the National Audit Office (NAO) recommended that the MoD needed to be certain it had sufficient commercial, cost modelling and project management skills internally to be able to negotiate and write complex contracts.

In addition to providing a fair level of risk-based profit to industry, the contractual frameworks for CFA must recognise the interdependencies of all stakeholders. For example, where aircraft CFA contracts have been set up, what was traditionally called first line servicing continues to be undertaken by military technicians on a squadron. As such, even though the contractor is responsible for availability, he does not control all aspects of the process. Moreover, he is dependent on good quality, accurate and timely information being passed back from the squadrons in order to assess consumption and wastage rates, plan spares and drive continuous improvement but there is invariably no shared data environment, particularly with suppliers to the primes. At present, KPIs tend to be written for the contractor to deliver against but, given the dependencies throughout the stakeholder network, there may be merit in having KPIs against which to measure the performance of all players – this would also reflect the transition from a transactional type relationship to one based on partnership and would drive the necessary behavioural changes on the MoD side.

While the use of contractors can usefully release military capability for employment elsewhere, it is essential that the armed forces' ability to prosecute operations is not compromised. Contractor Support to Operations (CSO) provides 30-40 per cent of

UK defence overseas sustainment effort, a figure that has risen dramatically in the past few years. Some commanders who have recently returned from operational theatres posit that over-reliance on contractors on operations is a cause for concern, creating problems of control, co-ordination, security and management. There is also often uncertainty regarding the likelihood of some contractors remaining in theatre if the environment becomes hostile. While risk may not be significant at the level of an individual contract, the cumulative risk associated with having multiple contracts can be substantial. For risk to be minimised, the military must be clear about what it wants contractors to do in theatre; the maturity of the theatre and the tempo of operations are important considerations in determining whether CSO is appropriate. Contractors deploying on operations have to understand the operational environment – how to get civilians into theatre and how to manage and protect them once they are there. Tactical tempo is often lost if the civil-military interface goes wrong and there are few courses of action open to a commander dealing with a failing contractor when there is no military capability to backfill. Problems arise more commonly with contractors employed under Host Nation Support arrangements, but such contracts are often important for nation-building and also help to minimise the deployed footprint so have to be managed pragmatically.

Realisation of the potential benefits of CLS will depend on the successful management and exploitation of information across the whole enterprise. Where insufficient and/or inaccurate supply and maintenance data comes back from the front line it hampers any effort by the contractor to take early action to address potential performance issues or even just to create a spares plan. There is recognition of the need to automate

data capture to remove the burden of data inputting from busy first line technicians, but transmission will still be via MoD systems which are often very slow. Furthermore, the transmission of logistics data back to the UK is often a comparatively low priority for an operational commander. Increased collaboration between the MoD and industry will require wider availability of commercial infrastructure and the use of common standards. This requirement will be addressed in part by the Logistics Coherence Information Architecture (LCIA) but will still leave issues of data sharing across organisational boundaries to be resolved.

The move towards CFA/CFC has been reinforced by the DIS which seeks to transform the traditional defence procurement business model by shifting emphasis from competition to long-term partnering arrangements. This necessitates a collaborative approach between the MoD and industry. The DIS demands a considerable change in mindset and culture on both sides. Partnering between customer and supplier can deliver millions of pounds in savings over time but decisions to partner must be driven by the business need to both partners rather than purely as a cost-saving measure for the customer. Achieving best value means that MoD must have a clear understanding of what it requires from industry; this has been an area of weakness in the past.

Optimising the Joint Supply Chain

The Joint Supply Chain (JSC) is defined in *JDP 4-00 Logistics for Joint Operations* as ‘the network of nodes (resources, activities and distribution options) that focus on the rapid flow of materiel, services and information between the Strategic Base and deployed Force Elements (FE) in order to generate, sustain and redeploy operational capability’.

The JSC reaches from the factory to the receiving unit in theatre. It is a constituent part of the Defence Support Chain (DSC) which is defined as ‘the entire materiel chain from procurement and provision of an item to the point of consumption for usage and including alternative, or indirect, methods of supply for all commodities’. The Director General Joint Supply Chain (DG JSC) is responsible for delivering a reliable JSC which can be sustained at an appropriate velocity and deal with variability of demand in line with the intensity and scale of an operation. This is an unenviable task, given the number of organisations whose activities must be integrated if logistic support is to be delivered successfully.

Organisations contributing to the JSC at the operational level are J4 Permanent Joint Headquarters (PJHQ), J4 Joint Force Headquarters (JFHQ), Joint Force Logistic Component Headquarters (JFLogC HQ), Defence Supply Chain Operations and Movements (DSCOM) (incorporating the Defence Logistics Operations Centre (DLOC) and the Directorate of Movements Operations) as well as personnel from the Front Line Commands and Contractors in Support to Operations (CSO). At the non-operational level are DG JSC, DE&S and industry. Bringing coherence across this complex network is no small undertaking and activity is guided by the JSC Blueprint and the JSC Board Plan, both of which are approximately half-way through implementation. Current work on the JSC is focused less on the physical movement of people and materiel and more on optimising flows of information to make logistic support more efficient.

In the deployed environment, the JFLogC takes responsibility at the force level for distribution, redistribution and recovery in line with the demands of the operational

support and maintenance cycles. This is increasingly important as current and future operations will involve industry taking materiel as far forward as is safe. The JFLogC has played an important role in bringing together the joint elements and some argue the value of a separate logistics component has already been proven.

A number of the issues associated with coupling bridge (CB) failures in Operation *Telic* have been addressed, especially with respect to organic lift; the UK is now better able to set up, run and maintain substantial CBs through improved use of air- and sea-lift and better prioritisation of loads. Organisational structures have also been improved and a performance management cell has been established in DSCOM to assess supply chain performance against a set of metrics to support continuous improvement. The roll-on roll-off ferries acquired under a private-finance initiative (PFI) arrangement enable better planning as they offer assured delivery. At present some 60 per cent of total airfreight is carried into theatre by charter companies which represent a substantial risk; the acquisition of two additional C-17s to take the fleet to six will alleviate some of the pressures, but will not eliminate the need for air charter. The introduction of the Purple Gate through which all materiel from must pass before being dispatched to theatre will improve the flow of items from the Main Operating Base (MOB) to the point of use. A contractor mounting cell embedded in the DLOC will effectively act as a Purple Gate for civilian personnel; attendance became compulsory for all contractors deploying into theatre from 31 January 2008. This will not only better prepare individuals for deployment, but should enable the deployed operational commander to have accurate information about how many contractors are in theatre, what they are doing there and what the contract terms are. This is

important because the presence of deployed contractors places additional demands on the logistics infrastructure, for example with respect to the use of the air bridge.

Within the JSC, the interfaces and processes work well in the UK. However, in the operational space, there are some problems maintaining the integrity of the JSC within the single-service elements where a degree of stovepiping remains. The physical aspects of the JSC are being used, but each service is essentially running its own supply chain out to the Forward Operating Bases (FOBs). This is partly a consequence of personnel operating legacy single service information systems (IS) which hampers the introduction of standardised processes. Two programmes – Management of the Joint Deployed Inventory (MJDI) and Management of Materiel in Transit (MMiT) – are crucial to making the logistics operational space truly joint but their introduction and rollout will depend on PR08 decisions; if they survive the planning round, MJDI rollout would begin in 2010 and MMiT in 2009. Once tri-service systems are in place, processes and training can become joint which will contribute significantly to the behavioural and cultural changes that will be required for E2E embedding of the JSC.

Improving Logistic Shared Situational Awareness and Visibility of Materiel Flow through the JSC

For the JSC to be efficient, and for the war fighter to have confidence in the system, asset visibility is essential, particularly for high-value, highly active, repairable items which have significant impact on operational output. At present, visibility of assets, stocks and materiel in transit presents a challenge. Programmes to improve materiel management systems had high

priority in the 2007 iteration of the Logistic Decision Support and Management Capability Management Plan but difficult funding decisions have to be made in PR08. Consignment Tracking (CT) improved significantly with CONVIS Stage 1 – which married VITAL/RIDELS with the TAV(-) active RFID tracking system. At present, the CT system does not quite reach as far as the FOB; improvements will be realised with the release of CONVIS Stage 3 (planned delivery in 2008) which will bring all services onto a single system. Materiel movement management will be further enhanced by MMIT and the Air Movements Operations (AMO) programme (currently scheduled to be introduced late 2009) will improve the visibility of freight.

MJDI will deliver the most significant logistical improvement in the operational space by increasing confidence through better inventory management and JAMES2 (initial operating capability currently planned for late 2010) will enable more efficient and effective management of equipment in the land environment. Improving inventory and asset management systems will also help decrease the logistics footprint by removing some of the causes of overstocking in the forward area which should, in turn, allow operational commanders greater agility.

Contractors providing logistics support currently lose sight of equipment and spares once they have left the UK and problems also arise when contractors take non-codified spares with them when they deploy forward, so there is still some way to go before the system could be described as E2E. There is a stated desire to achieve E2E visibility across the whole of the defence enterprise but even the US has not yet been able to achieve this. However, E2E visibility requires more than a technological solution – it also needs efficient and effective manual

systems, processes and training for controlling flow of materiel through the supply chain. The complexity of an E2E system would require the incorporation of a filtering function so that the right information at the right level could be delivered to meet each user's specific requirements. For the deployed user, it is arguably more important to have joint situational awareness than it is to have E2E visibility – increased confidence that demands will be satisfied on time will ultimately reduce the need to know exactly where items are while in transit.

Planning for Operations

The strategic planning for operations undertaken within MoD and the operational level planning undertaken by PJHQ should both be shaped by information from DE&S. Moreover, it is essential that logistics planning be undertaken as an integral element of operational planning and not as an afterthought. Good planning requires accurate forecasting of requirements which must be informed by data from previous operations and exercises; if the right data has not been captured, forecasting becomes inaccurate which can ultimately impact on the operation. Significant headway has been made with operational level supply chain planning but there is more to be done to improve feedback to the long-term planning process.

Force structures are set against the military tasks laid down in defence planning assumptions (DPAs) but it is openly acknowledged that DPAs have been exceeded for many years. In both Iraq and Afghanistan, force structures and lay down have had to be altered to fit the specifics of the campaign; operational imperatives will always override policy guidance. Judgement

is then required to determine at what stage those changes should be made permanent. Anticipated tasks shape equipment choices which often simply will not be up to the task in a new and unfamiliar deployed environment. Urgent Operational Requirements (UORs) will inevitably emerge and these can present many challenges in the logistic support domain. There is clear policy guidance to the effect that UORs need to be compliant with the JSC element of the Support Solutions Envelope. However, timeliness is often a key driver and so risk will be taken on the support solution; it is difficult to configure a support solution when there is no data on likely usage, consumption rates and little by way of reliability trials. In terms of supportability, UORs are not brought in with through-life capability management in mind and this ultimately gives rise to difficult decisions about whether to bring items onto permanent inventory and support them beyond the operation for which they were procured. To do so not only diverts resources from other planned programmes but may impact upon equipment plan coherence and introduce fleet within fleet problems.

Most multinational activity takes place in theatre, but coalition nations are not very good at planning multinational logistics co-operation. Effort needs to be directed towards building multinational logistics capability as every nation cannot do everything and so must have trust in coalition partners. In the same way that the appropriateness of the use of contractors in theatre varies with the intensity and maturity of the operation, so the appropriateness of adopting a multinational approach varies against these same criteria. At the start of an operation, it is prudent to adopt a national approach to logistics support – indeed it is probably the only

option. As an operation becomes more enduring, it is sensible to explore ways of decreasing the logistics footprint and achieving economies of scale by co-operating with other nations. Various options can be considered – nations can adopt lead nation or role specialist status or arrangements can be put in place for collective contracting.

Improving Information Systems and Information Management

The recurring theme which links the aforementioned issues, and which emerged in every interview, was the need to provide better logistics information. The historical absence of a coherent logistics information management policy and a haphazard approach to investment in systems and applications allowed logistics IS to be developed on an ad hoc basis to meet specific (often tactical level) information needs. There was no strategic information need driving the design of applications, no definition of the effect that must be achieved through the IS and no mandated requirement for designers to collaborate or to ensure compatibility with other applications. The lack of common standards, poor infrastructure and unregulated approach to data assurance combined to deliver an inefficient, fragmented logistics information system in which functionality is often duplicated and there is no single repository for data as it is locked into various IS systems which are unable to communicate with each other. In practice this means users may have to interrogate multiple systems to get the information they need to complete a task. This is clearly inefficient in terms of time and it may also be costly to maintain multiple legacy systems.

Service Oriented Architecture (SOA) has the

potential to resolve many of the technical issues in the information area; this is especially so when much of the data held on legacy systems is brought together in an enterprise data warehouse thereby enabling it to be 'written once, read many times'. SOA is more than a technical tool but many organisations fail to realise its full benefits as they never undertake a fundamental re-examination of the business layer (objectives, structures, processes, and human factors) and are therefore unable to achieve organisational optimisation. A great deal of time, resource and energy has been devoted into rationalising and integrating legacy systems and this bottom-up approach may enable the Logistics Applications IPT (LAIPT) to reduce costs associated with supporting legacy systems. However, the presence of the enterprise data warehouse means that application rationalisation no longer *has* to be the focus of main effort – time and resource may be better directed elsewhere. A top-down approach is needed to complement bottom-up rationalisation and to ensure that future IS capability does not simply enable the whole support chain to merely do what it already does only a little better than it currently does it. There is an opportunity to redesign business processes to deliver greater effect, but this will require much more integration between the business and information communities within the MoD. Improved mutual understanding within these communities will be vital to achieving the desired outcomes of the LAIPT's proposed Future Logistics Information Systems (Delivery Partner) (FLIS DP) initiative which seeks to appoint a commercial partner to maintain existing LogIS applications and develop future solutions. At present, there is little incentive for equipment IPTs to adhere to cross-platform information approaches – their principal task is to deliver better equipment availability at lower support cost

and little benefit may accrue to them from investing in improving information. Governance mechanisms need to be put in place to ensure that equipment IPTs adhere to a common information approach.

The Joint Coherence Project 06 sought to establish the basis for a common approach. It defined a control framework of rules, tools and standards within Defence Logistics Information; key deliverables were a high level E2E functional model, a logistics information architecture (LCIA) and logistics information standards. The LCIA was developed in response to changing operational concepts (NEC, Directed Logistics) and logistics transformation issues (such as CFA, lean support and through-life management). It delivers a top-down presentation of functions, information categories and information flows, and sets out the generic logistics information that has to be exchanged in order to execute logistics and through-life management effectively. It also maps functions to support domains for particular contract types and maps information categories to international logistics standards. In essence, LCIA helps business users to identify their information needs; this constitutes a significant step forward. The full LCIA model is extremely detailed and possibly a little daunting for potential users, so the LCIA team has taken on the task of assisting IPTs with building an LCIA model to satisfy their specific business needs. The output of the model is the Logistics Information Plan (LogIP) and the process generates real understanding of the information of the business. It ensures the project aligns with logistics policy and is coherent with other programmes, it facilitates a better understanding of how technical systems can support the business, and it can be used to inform trade-off decisions. The LogIP itself serves as an input to the contract, informs

the requirements documents, and supports the through-life management plan.

Pulling together the LCIA demonstrated that competitors within the defence industry were able to work with each other and the MoD to develop a joint framework. However, in comparison to other sectors, the defence industry is some way behind with SOA. If nothing else, LCIA provides a common language which should assist the trust-building process. Trust is critical to overcoming the issues associated with data sharing as organisational boundaries become ever more blurred across the whole of the support chain. The question of who should share what with whom rarely has a straightforward answer. Making all information available might seem unhelpful as much of what is collected and stored can appear to be of little value at first sight. Nevertheless, the opportunity to exploit real-time usage information should be brought into a direct capability management framework for use by industrial partners, as in the case of aero-engines. Only then will the value be evident to the customer, because suppliers will then be incentivised to deliver effective capability management services.

In the same vein, there are some complex issues around information assurance that need to be addressed as an E2E information model develops, not least the need to agree a common understanding of what is meant by 'information assurance'. Furthermore, there is a need to clarify who pays for assurance, who owns the information (and the liability for it), and who carries the risk. Assurance applies a measure of compliance against standards but standards change fairly frequently so there will always be a legacy tail. Determining ownership is a critical issue as the owner must assume responsibility for quality and security; an

added difficulty in the defence context is classification especially given the cultural tendency in the UK to over-classify 'just in case'. Over-classification increases cost and introduces inefficiency but will not be readily eliminated until there is a way of estimating or measuring the true impact of loss of data. Often, all that is actually required is for data to stay within a trusted path which can be written into specifications for approach to handling of data across boundaries.

A Five-Year Look Ahead

With respect to the development of logistics support, five years is a fairly short period. The nature of logistics is unlikely to change in that timeframe, but the boundary between MoD and industry will have moved and a greater proportion of logistics support, or the mechanisms that enable it, will be delivered by industry. In the context of logistics transformation, the likely position in 2013 is highly dependent on the outcomes from PR08. In such a tight planning round it would be surprising if all logistics information programmes were to pass through unscathed. Moreover, there is little likelihood that defence funding will increase any time in the near future, so even if programmes survive PR08 unchanged, there are future planning rounds to get through. If programmes are pulled or delayed, there is a risk that the MoD will be forced to adopt a piecemeal, 'make do' approach to improving logistics information.

However, if the critical programmes are approved or retain their funding, significant improvements to in-theatre inventory management and asset visibility will have been realised. The deployment of MJDI, MMiT and CONVIS will have reduced data requirements significantly and a culture of asset tracking will be embedded. As logistics

IS converge, improvements in processes and the adoption of a common language will follow which will, in turn, support further integration and coherence across the JSC. According to its current plan, the MoD should also be halfway through implementation of SOA and, in getting there, should have a better appreciation of the dynamics driving the business. Progress will continue to have been made against the DLP targets and the JSC Board Action Plan. There will be a greater understanding across defence of the need for agility in the logistics domain and logisticians will be more at ease providing support to expeditionary operations as the vast majority of the uniformed cadre will have been deployed.

Conclusion

Expeditionary operations place variable and often significant demands on the logistics support system, which has had to undergo substantial redesign and restructuring since the end of the Cold War. Logistics transformation continues apace but against a backdrop of two significant operations and severe budgetary pressures. The delivery of logistics support is becoming more complex as the increasing use of CLS blurs the traditional military-industrial boundary. While there is often a persuasive case for adopting CLS, the issues relating to operational risk must be evaluated and managed appropriately. Moreover, if the full benefit of CLS is to be realised, improvements must be made to the flow of information between the front line and industry, with a clear need to automate data capture to remove the burden of data inputting from busy first line technicians. Performance metrics for CLS must take due account of stakeholder interdependencies and accountabilities.

Significant headway has been made in relation to developing processes and organisational structures to enable optimisation of the JSC. Many of the failures highlighted by Operation *Telic* have been rectified and further JSC enhancement will emerge as DG JSC continues to drive through the implementation of the JSC Blueprint and JSC Board Action Plan. The single-service stovepipes that remain in the deployed environment will be broken down by the introduction of MJDI and MMiT, ensuring that the E2E integrity of the JSC is maintained.

Improved visibility of assets and materiel in transit will enhance shared situational awareness and increase the war fighters' confidence in the supply chain. In addition, improvements to inventory and asset management systems will help to reduce overstocking thereby reducing the logistics footprint. The achievement of full E2E JSC visibility is still some way off but it is clear that a technological solution alone will not deliver this. User confidence that the system can be relied upon to provide an accurate picture of the situation is arguably more important than having E2E visibility.

Delivering effective logistics support to operations requires logistics planning to be undertaken in concert with operational planning. Planning is generally well done, but weaknesses remain in relation to capturing data and feeding it back into the long-term planning process. Planning for multinational co-operation in coalition operations is also not as good as it could be, although models for the actual delivery of logistics support on a multinational basis are fairly well established.

The need to provide better logistics information to support decision-making and shared situational awareness has been a

recurring theme. SOA will help to overcome many of the technical problems associated with logistics IS, but will not provide a complete business solution nor enable optimisation of the organisation unless a thorough review of the business layer is undertaken. While it may be sensible to continue with rationalisation and integration of applications as a means of reducing costs associated with supporting legacy systems, the presence of the enterprise data warehouse means that application rationalisation no longer has to be the focus of main effort – time and resource may be better directed elsewhere. LCIA will help users to identify the information needs and map information flows and, importantly, provides a common language. Issues associated with data sharing across organisational boundaries will need to be addressed as will those relating to information assurance.

The 2013 position with respect to logistics support will be affected significantly by the outcome of PR08. If programmes are cut, progress against the DLP and JSC Board Action Plan will be extremely limited and few tangible improvements would be evident in the deployed environment. If, however, key programmes such as MJDI, MMiT and CONVIS survive PR08, substantial operational benefit will be derived.

Recommendations

IPT leaders and the policy staff who provide guidance to them must ensure that a decision to contract for availability or capability is driven by effectiveness (in through-life capability management services) rather than the need to reduce programme costs.

CLS contractual frameworks and performance metrics should reflect the interdependencies and accountabilities of all stakeholders, not just the industrial partner.

A decision to enter into CSO arrangements must only be taken with a full understanding of the risks including the cumulative risk of managing multiple CSO contracts in theatre.

A ‘top down approach’ to complement ‘bottom up’ rationalisation should be developed to ensure that the full potential of SOA can be realised and governance structures should be put in place to ensure that equipment IPTs adhere to a common information approach.

Key IS programmes related to improving asset visibility, asset management and inventory management must be supported to enable E2E coherence across the JSC and to increase the operational commanders’ confidence in the logistics support system.

The management and exploitation of information across organisational boundaries, and indeed across the whole of the defence enterprise, must be improved if the full benefits of CLS are to be realised.

Rationalisation of legacy systems and applications should continue where there is a business case for doing so; if time and resource are scarce, consider whether effort should be directed elsewhere.

Failure to invest sufficiently in PR08 must be prevented as it would result in further sub-optimisation and proliferation of information capability for logistics, possibly resulting in a recurrence of the issues encountered in Operation *Telic*.

Sources

Development, Concepts and Doctrine Centre, *Logistics for Joint Operations*, Joint Doctrine Publication 4-00 (London: Ministry of Defence, 2006), available at <http://www.mod.uk/DefenceInternet/MicroSite/DCDC/OurPublications/JDWP/>.

The Defence Logistics Support Chain Manual, Joint Service Publication 886 (London: Ministry of Defence, 2008), available at <http://www.mod.uk/DefenceInternet/MicroSite/DES/OurPublications/Jsp886TheDefenceLogisticsSupportChainManual.htm>.

Defence Logistics Programme Update (2007).

Defence Logistics Programme (2006).

Joint Supply Chain Board Action Plan (January 2008).

Logistics Decision Support and Management Capability Management Plan (2007).

DE&S Business Strategy (April 2007).

Guide to Using the Logistic Coherence Information Architecture (London: Ministry of Defence, 2007), available at <http://www.mod.uk/DefenceInternet/MicroSite/DES/OurPublications/LogisticsCoherenceInformationArchitecture/ciaUserGuide.htm>.

Defence Industrial Strategy, Defence White Paper (London: The Stationery Office, 2005).

Ministry of Defence, 'Acquisition Operating Framework', www.aof.mod.uk.

Author's notes from RUSI-DEM Focused Logistics Conference, April 2007.

Author's notes from RUSI C4ISTAR Conference, October 2007.

Author's notes from Shephard Defence IT Conference, February 2008.

Author's notes from interviews with Ministry of Defence and industry representatives.

RUSI Membership

Members of the Institute enjoy a range of benefits that encourage maximum participation in our key roles. Membership opportunities cater for both individuals and businesses.

The Individual Membership package has been designed for those with a personal interest in national and international defence and security. Members include serving and retired armed forces personnel; ministers and government officials; academics; journalists; emergency response planners and operators; facilities managers; advisors and students. They meet regularly at the Institute, many taking advantage of the impressive library. For a one-off joining fee and an annual subscription, individual members receive an official identity card giving access to the premises, and to a busy programme of lectures, seminars and conferences, plus a regular copy of the *RUSI Journal* and *RUSI Defence Systems*. Additional publications can be added to the membership subscription at any time. These include RUSI's *Homeland Security and Resilience Monitor*, RUSI's *Whitehall Papers* and *Newsbrief*.

The Corporate Level Membership packages have been designed both for organizations in the public sector, such as government departments, embassies and high commissions and universities; as well as for private sector companies which trade in the defence and security markets and whose business interests are affected by developments in the international security field.

The logistics role during the Cold War was demanding but predictable – it was based on mass outload to a known, nearby destination and was duration-limited due to the nature of the expected warfare. The last two decades have seen a marked change in the way UK armed forces have been employed, in both location and in type of operation, and this has placed very different challenges on logistics support systems. Expeditionary operations have demanded substantial redesign and restructuring of many elements of the armed forces.

This paper considers the progress which has been made in reconfiguring the tri-service logistics system to meet current demands, and examines some of the key issues that must be addressed to complete the transformation needed to satisfy the demands of present defence posture.

The Royal United Services Institute for Defence and Security Studies (RUSI) is the leading professional forum in the United Kingdom for those concerned with national and international defence and security.

For more information, visit www.rusi.org

The Royal United Services Institute, Whitehall, London, SW1A 2ET

Printed by Stephen Austin & Sons Ltd.