



Should the Private Sector be  
Influenced by the Military?





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## Executive Summary

Open any newspaper and you wouldn't be surprised to read an article criticising defence sector projects that are vastly over budget, or years behind schedule - or worse still, both. It's no wonder there's public interest in the performance of these projects, as it's the taxpayers' pounds that are wrapped up in the procurement of equipment and services to support the UK's military. It's the journalist's job to report on projects that aren't delivering, but if you look behind the headlines and take time to understand the intricacies involved in defence contracting, it's not as straightforward as some might believe.

The complex strands involved in effectively and efficiently delivering - for example - the next aircraft carrier, armoured fighting vehicle, or fast jet on time and on budget are numerous, interlinked and need to work together seamlessly. So, effective implementation of systems management processes that track the Life Cycle of equipment procurement, delivery and support - known as Integrated Logistic Support (ILS) - has proven to be critical to a project's success.

With its proven ability to effectively manage and minimise project risk, and its fundamental role in project performance, ILS has become so successful that it's now mandatory for all UK defence contracts. Witnessing its successful adoption, the private sector has begun to integrate ILS across multiple and diverse industries such as oil and gas, rail transport and healthcare.

Quorum has operated since 2000 as an expert and independent ILS specialist and is recognised and relied upon for its skills and expertise by the Ministry of Defence and wider industry. The Quorum team benefits from decades of industry and military experience in the Armed Forces and works in close partnership with those supplying the sector. Using first-hand knowledge and expert insight they're increasingly evaluating opportunities for, and being called upon to work with, other industries in which to apply ILS to help the private sector reap the potential benefits.

But how can ILS help the private sector, and should it even be influenced by public sector contracting and programme management? This white paper delves into how the military uses ILS, how it can be truly effective, what it can prevent in terms of spiralling costs and overwhelming delays, and how it forms a critical role in the military's future. What can the private sector stand to learn - or lose - by following the lead of the defence sector?

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# The UK's Defence Sector

## A World Class Reputation

**Across the globe and at home, the UK enjoys an unrivalled reputation in defence thanks to the agility, professionalism, integrity and reliability of its Armed Forces.**

Supporting operations as a major world power, the UK's defence budget is a significant factor in the overall make-up of the economy, with 2.2% of GDP spent on defence in 2016 - £35.3bn in the 2016/17 financial year, and £8.7bn of that total spent on equipment and infrastructure alone.<sup>1</sup>

So, it's no surprise that the support network in place to provide rigour and the necessary operating structure is both vast and complex.

**The aim of the UK Ministry of Defence is to ensure that the Armed Forces have the training, equipment and support necessary for their work, and that it keeps within budget, and keeps equipment in the hands of the user when they need it.**

As the keyholder to the reputation of all our Armed Forces, it is the role of the Ministry of Defence (MoD) to not only showcase power and influence overseas through bilateral and multilateral relationships, but to act as guardian of some of the most complex and technically advanced defence requirements in the world.

**The complex strands involved in effectively and efficiently delivering - for example - the next aircraft carrier, armoured vehicle, or fighter jet on time and on budget are numerous, interlinked and need to work together seamlessly.**

The MoD is one of the biggest public procurement organisations in Europe and its dedicated arm's-length body, Defence Equipment & Support (DE&S), manages an extensive and diverse range of contracts that underpin all UK defence support requirements to allow effective operations.

Working across over 150 sites around the world, DE&S employs approximately 11,500 civil servants and military personnel and is responsible for the procurement and support of ships, submarines, aircraft, vehicles, missiles, weapons, supporting services and more.<sup>2</sup>

## The Defence Industry in Numbers

**£22.1 billion**

TURNOVER

**£7.3 billion**

AVERAGE EXPORTS (2012-16)

**13%**

GROWTH SINCE 2017

## The Military's Approach

Boasting world-class excellence in its operations isn't something the UK's Armed Forces enjoy by chance. Over many years a strict internal operating structure has been introduced into the procurement of defence equipment and support services, honed to protect and enhance implementation and use. From the first moment of contract sign, through to delivery to the customer, and ongoing maintenance through to obsolescence management - consistent and effective project management is crucial to success.

AROUND

**2,500**

SMES WORK INTO DEFENCE SUPPLY CHAINS ALL AROUND THE UK, PRODUCING UNIQUE IDEAS AND VITAL COMPONENTS RELIED UPON BY CUSTOMERS AND THE WIDER INDUSTRY

SALARY

**42**

PERCENT ABOVE THE NATIONAL AVERAGE

IN 2017/18, THE MOD'S CORE DEPARTMENT PLACED

**2,096**

NEW CONTRACTS WITH A COLLECTIVE VALUE OF

**£5.8billion**

“

**It is MoD policy to procure equipment that meets the required performance to time and cost, and which is fully supportable at the optimum Life Cycle Cost (LCC).**

”

DEFENCE STANDARD (DEF STAN) 00-600

**140,000**

DIRECT EMPLOYEES

**4,200**

APPRENTICES

**120,000**

INDIRECT EMPLOYEES

Therefore having highly secure and robust systems, processes and procedures that minimise risk, avert over-budgeting and mitigate project delay is not only recognised as being highly valuable and advantageous, but **project-critical**.

## Integrated Logistic Support

Acting as foundation to the project management of multiple and complex elements is ILS - and when implemented well, is a discipline proven to be highly effective at reducing risk to both costs and timescales, while at the same time improving quality, efficiency, and capability.

Within equipment provision, ILS considers each element in the manufacture and procurement process - from early concept design and development, through to successful contract bid and physical manufacturing, testing, delivery, and ongoing maintenance, servicing and disposal.

Its role is to not only identify potential project risk, but also provide solutions to mitigate the impact and likelihood of those risks, ultimately assuring DE&S, and in turn the MoD, that equipment will not incur significant additional (and unplanned) costs throughout its lifespan, that it will be delivered within the specified timescales, and that the Armed Forces receive kit that is fit for purpose and which enables successful operations within land, sea and air environments.

**With its proven ability to effectively manage and minimise project risk and its fundamental role in project performance, ILS has become so successful that it's now mandatory for all UK defence contracts and as a result, the private sector has begun to adopt ILS across multiple diverse industries such as oil and gas, rail transport and healthcare.**

## The History of ILS in the Defence Sector

The discipline was first adopted by the US Army in the 1950s, and was later introduced by the UK's MoD in 1993 under the DEF STAN 00-60, making it mandatory for all MoD contracts worth more than £1 million.

In 2010 it became mandatory for all equipment procurement in accordance with the evolved DEF STAN 00-600, to ensure equipment was designed with the necessary support infrastructure in place and with Through Life Cycle Costs fully integrated into project budgets.

Today, across the entire defence sector, ILS is applied to all technology demonstrator programmes, major upgrades, software projects, collaborative projects, and off-the-shelf procurement. Where equipment has already been developed and the design cannot be affected, ILS is still used to influence the selection of equipment on the grounds of supportability and Through Life Finance.



## ILS - A Silver Bullet?

Despite its success, and being mandatory in defence contracting, the level to which ILS is applied can vary, and its implementation, if not carried out with adequate strategic oversight, can leave contracts open to greater risk.

Moreover, the procurement and delivery of defence equipment also regularly makes the headlines. The impact on the public purse of Government decisions on defence means there is a vested public interest, and the spotlight is rightfully turned on those projects that are underperforming whether that be in delays or in budgets being blown.

**The MoD reported in its annual Finance and Economics Bulletin of 2018 that forecast costs for boats 4-7 of the Astute Class submarine were £516million over budget. The increase, it said, was due to a range of factors including ‘increased schedule durations’ (i.e. delays).<sup>4</sup>**

**The Times newspaper reported in January 2019 how an MoD IT modernisation programme, aimed at providing “mission critical” services was around £210million over budget and more than two years late.<sup>5</sup>**

## Financial Pressures & the Greater Need for Effective ILS

As a Government department, the MoD's financial management is rightly under continual scrutiny from the National Audit Office (NAO). In a report in 2015, the NAO analysed performance of the department, and compared this with its previous review of 2010, a year in which the MoD was found to be ineffectively managing future spending plans, with a significant gap between forecast and actual costs.<sup>6</sup>

At that time, it was found that there was a cycle of over-committed plans, short-term cuts, and the re-profiling of expenditure, which resulted in poor value for money for the public and reduced front-line military activities.

As of 2015, the NAO found that the MoD had brought its costs under greater control and that its Head Office had demonstrated that it had taken on a more strategic role in managing the defence budget, focusing on overall affordability challenges and greater management of financial risk. Structural changes also encouraged each military discipline to take on greater responsibilities for day-to-day financial management of their own budgets.

However, for this to be effective, the NAO report concluded that each discipline needed to develop its financial skills and project and programme management capability to take on this enhanced role.

One could assume, therefore, that there would be the potential for poor implementation of an ILS strategy, which isn't facilitated within the supply chain in the way it should be, or one that is used sporadically on separate activities and with separate contractors. Not only does this jeopardise the specified customer requirements, but also future supplier relationships.

So maintaining a focus on excellence in project management for equipment and support programmes to ensure continued optimum capability, efficiency and supportability for both new and existing projects, has continued to be a crucial part of the MoD's governance structure.




It is clear that since its introduction, ILS as a foundation underpins the UK's exceptional military operation and serves to ensure excellence in the defence sector. With projects that are so intrinsically complex with so many contributing strands, poorly implemented ILS can be the difference between success or catastrophic failure in budgets, project viability, safety, reputation and more.

# Integrated Logistic Support

## In More Detail

ILS is a disciplined process used to ensure that systems are fully supportable through-life at optimum cost.

The ILS process aims to influence design during the development phase or assess impact of design on supportability, determine the support requirements and Through Life Finance with the objective of:

-  **Optimising costs**
-  **Maximising supportability**
-  **Ensuring capability**

Through strategic planning, from cradle to grave, ILS considers every aspect of equipment procurement from initial concept, to the design, manufacture and end delivery - identifying risks and influencing design.

Through the focused application of ILS, it is possible to ensure that the designed system is usable, sustainable, and that it meets the required capability during its intended service life in the most cost-efficient and operationally effective manner.

ILS will streamline the manufacturing, delivery and use of equipment throughout its whole lifespan, including the cost and time associated with running, maintaining, servicing, supporting, and repairing equipment.

For all parties involved, from Original Equipment Manufacturers (OEMs) and engineers, to operators, logistics and commercial teams, a successful ILS plan will ensure they work seamlessly together to optimise efficiencies and cost-savings associated with any equipment acquisition activity.



## Service Levels

There are various service levels when specifying ILS for a project or within an organisation as part of its internal processes and requirements. These range from complete management of all ILS activities, including Supportability Analysis (SA), Technical Documentation, training and Through-Life Finance Analysis - or a tailored combination of services based on specific requirements.

Once equipment has been designed and developed, equipment maintenance is considered – essentially looking at how it will be managed and by whom, and how the maintenance will be recorded and documented.

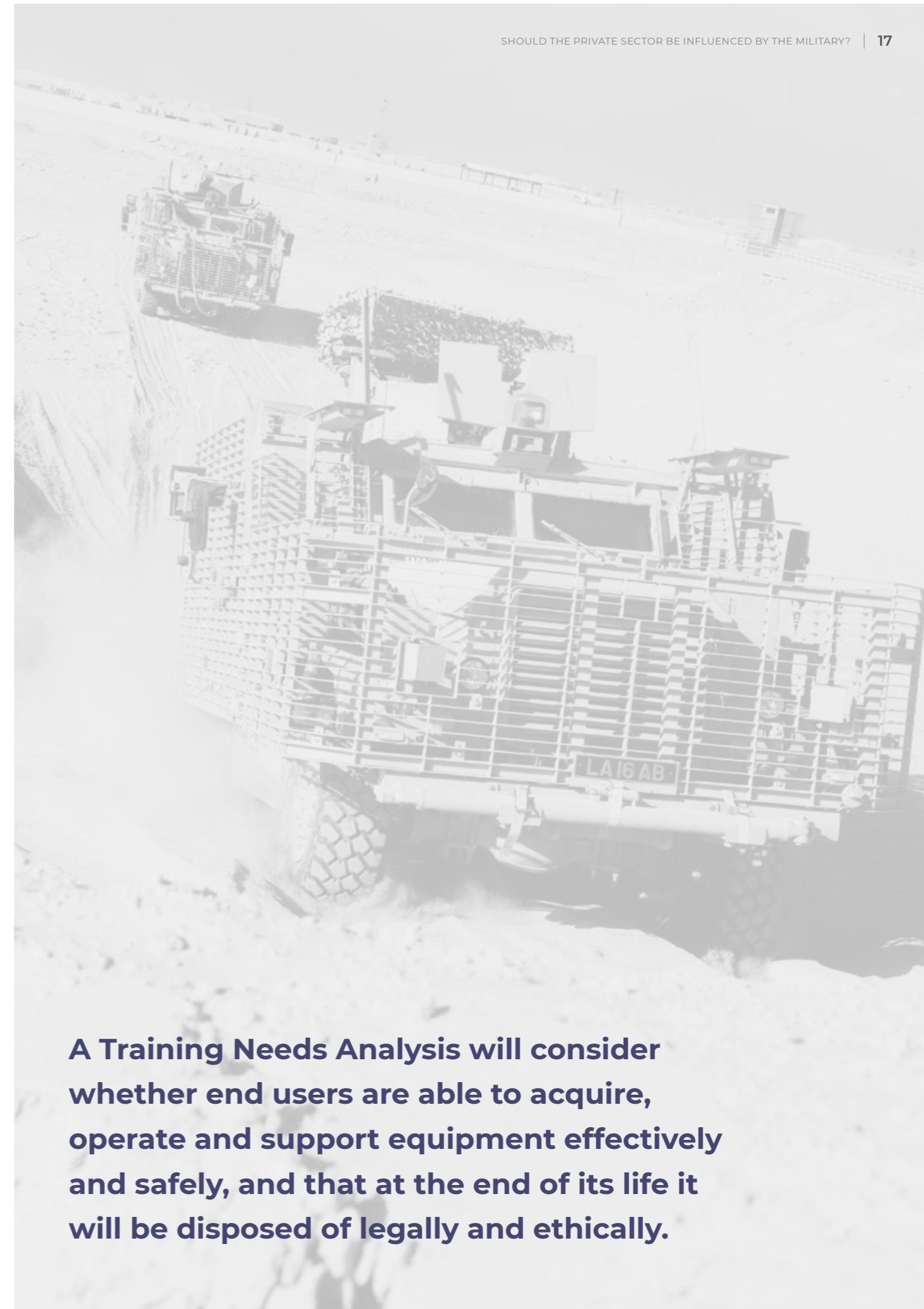
Training and associated support are factors within ILS, required to ensure ultimate safety and operational effectiveness. Whether civilian, employees or contractors, a training needs analysis will consider whether end users are able to acquire, operate and support equipment effectively and safely, and that at the end of its life it will be disposed of legally and ethically.

The facilities in which the equipment will be based during its build and prior to delivery will also be considered as part of the ILS process. It considers the facilities necessary to establish permanent and semi-permanent capital works, such as associated machinery or construction of facilities (e.g. any expected downtime of facilities, upgrades of facilities, and how likely these are), as well as subsequent plans for how to effectively mitigate potential disruptions to both time and cost.

## ILS in Practice

The starting point for any ILS programme needs to be SA. This is the principle tool behind any ILS programme, and consists of various structured analytical tasks aimed at developing the optimum support.

Considerations typically made through SA include planning support and management requirements, identification of major cost drivers and risks, alternative support solutions, determining the optimum solution, identifying required resources to implement the chosen solution, and validation of the solution once the project enters service.



**A Training Needs Analysis will consider whether end users are able to acquire, operate and support equipment effectively and safely, and that at the end of its life it will be disposed of legally and ethically.**

## Further Core Elements of ILS

### Availability, Reliability & Maintainability (AR&M)

AR&M is the cornerstone to most ILS activities, providing input to safety, spares optimisation, training, risk, Technical Documentation, maintenance (corrective and scheduled), Human Factors Integration, Obsolescence and Life Cycle Costs. Ultimately, AR&M activities ensure that the design meets the required operational performance targets.

### Technical Information & Documentation

Comprising hard paper and soft copy, including text, graphics, animation and video to develop system descriptions, operating information, maintenance and repair information, diagnostic support data, system flow, wiring diagrams and software information.

### Training Needs Analysis (TNA)

Can be used as a standalone activity or as part of a wider integrated programme to determine the training requirements and identify the most cost-effective means of meeting that requirement.

### Through Life Financial (TLF)

The terminology 'Cradle to Grave', 'Through Life Management', 'Through Life Costs' and 'Whole Life Costs' all refer to Life Cycle Costs, and are elements of Through Life Finance. System design decisions made during the early phase of a project will have major impact.

### Supply Support Planning (SSP)

Ensuring that equipment has a defined supply support structure in place. Consideration is also given to in-depth areas like consumables, spares pipeline, stocking rate, and lead time of suppliers.

### Contractor Logistics Support (CLS)

The onus of responsibility is placed on the equipment manufacturer. This can be tailored to cover specific elements or the complete project, and provides incentives to ensure supportability issues are considered and addressed during the design stage.

### Project Management (PM)

Ranging from collaboratively mentoring, training and advising existing teams, through to sourcing highly-skilled personnel for specific projects, and externally managing an entire ILS programme, this service can vary hugely depending on the level of project management support required.

### Safety & Environmental Protection

This is a systematic process for identifying, tracking and resolving safety and environmental hazards and quantifying and managing risk to a level that is either acceptable or tolerable using the 'As Low As Reasonably Practicable' principles. It is a key factor in the drive to improve safety, minimise the environmental impact, and reduce risk whilst maintaining operational capability and equipment cost effectiveness.

### Obsolescence Management

If undertaken as early as possible and as an integral part of the design, production and in-service support stages, potential remedial expenditure and overall cost of ownership is kept to a minimum.

### Human Factors Integration (HFI)

Often the most challenging part of design and development is how to integrate equipment with the human element. Any equipment design that reduces training requirements will provide considerable long-term savings, and using HFI processes ensures related Whole Life Cost issues will be addressed.

## ILS Can:

- **Improve efficiency and reduce cost**
- **Minimise long-term unnecessary delays**
- **Improve safety and legislative expectations through training**
- **Reduce downtime through efficient maintenance and servicing**
- **Improve reliability**
- **Resolve problems quickly and efficiently**
- **Forecast any risks or potential disruptions**
- **Plan in advance staff and personnel requirements**
- **Boost operational cost efficiency**

# ILS in the Private Sector

## There are increasing opportunities for private sector organisations to apply and reap the benefits of ILS, but how can it help and should private industry be influenced by public sector contracting and programme management?

Despite originating as a military discipline, the proven effectiveness of ILS as a concept has seen its appeal as a project and programme management framework broaden to other industries to effectively manage cost, reduce maintenance requirements, mitigate delays, and ensure an efficient supply chain.

ILS can help contractors and service providers working within any sector to understand the specific requirements of their work, and permits them to deliver not only what a project needs, but enables them to sustain equipment at the greatest operational capability, availability and efficiency throughout its Life Cycle.

### Healthcare & Pharmaceutical

ILS in the healthcare and pharmaceutical sectors enables the efficient production, sourcing, and delivery of products and maintains quality and reliability on a global scale. Healthcare has already seen the benefits of adopting a systems-based approach after recent incorporation of defence standards.

### Renewable Energy

Due to the geographic locations and access limitations particularly associated with offshore windfarms, maintenance costs can be substantial, with any system failures resulting in significant financial losses for operators. In order to negate such an impact, ILS processes are commonly utilised within renewable energy systems.

### Rail

An efficient and safe rail transport network relies on ILS, which is used extensively across the industry to control multiple interconnected aspects and bring together fragmented supply chains.

## Case Study:

### Hitachi Rail Europe: Class 395 Supportability Engineering

Rail industry expertise, historical knowledge, and engineering judgement were employed by the Quorum team to analyse historical data for two Hitachi HSI Class 395 Sub-Systems to establish spares requirements.

- By analysing the data using an internal Logistic Data Table (LDT) and Poisson Distribution Theory, Quorum was able to demonstrate Supportability Engineering (SE) capabilities.
- The LDT was tailored to cover Part Identity, Quantity, Reliability Information, and Spares Provisioning, while the Poisson Distribution Spares Analysis theory calculated the probability of a certain number of failures occurring over a certain length of time.
- Taking assumptions and averages over train running and distance, each identified component was allocated a theoretical and actual failure rate, and a spares provisioning rate established.

#### Analysis results

- Spares were identified as having a theoretically good failure rate.
- Large differential factor in identified failure rate was highlighted.
- A run-down of spares holding was established at depot level, per unit and per fleet, and an uplift in necessary spares provision was highlighted once differential factors were applied.

#### Conclusion

**Results provided to Hitachi showed that by re-evaluating spares holding, both maintenance and down time could be avoided and unnecessary costs could be saved.**

Due to its comprehensive and overarching nature, ILS within the private sector can prove to be complex and challenging to implement effectively, so many businesses opt to engage external providers to work alongside as a support partner to offer advice and guidance and to ensure the system is working well.



## What lessons can the private sector learn from the defence sector?

While it was initially designed solely for military application and is still an integral part of its acquisition and procurement process, ILS is increasingly being used in the private sector. As such, having stolen a march on other industries, examples of poor implementation of ILS in defence can serve as lessons to others.

Moreover, current disparate processes for individual project requirements existing within the private sector only highlight the benefits of adopting ILS as an holistic management process, in order to avoid a siloed approach, ineffective overall project management and the risk of ultimate project failure.

**Even with ILS in place, as we have seen from its application in the defence sector, there still exists a risk of poor execution, which can lead to poor results and poor project performance.**

**As demonstrated by the earlier Hitachi Rail Europe case study, adoption of an effective and joined-up support structure can avoid unnecessary extra expenditure in spares holding.**



# The Implications of Poor Execution

## Reliability & Availability

To have reliable equipment in the right place at the right time, and in the hands of the user is the central aim of the defence sector. But this mantra isn't exclusive to the military, and can be applied to project-critical equipment in any industry.

Usage over time will naturally impact the lifespan of parts, for example. Therefore improper understanding of failure rates, and mitigation of these, brings about a poor or complete lack of adequate spares holding, ultimately impacting financially through increased down time and subsequent lack of productivity.

## Resources & Training

When a contract is secured, the necessary manpower required to deliver on that project needs to be accurately factored into the forecast. If it isn't, it stands to reason that quality, costs, and timescales can be negatively impacted.

Once established, having the right level of knowledge within the resources base for effective interaction with systems, equipment, and processes is crucial. Without the necessary and proper training and competencies in place, systems and equipment will not be operated to maximum capability and with optimal efficiency.

Properly implemented, a Training Needs Analysis will identify and provide recommendations on the best route available, including addressing any skills or training gaps within the organisation, in order to support equipment and systems throughout their Life Cycle.

## Equipment

Poorly-managed equipment can be devastating to both a project and those contributing to it. Projects can be cancelled and/or equipment become dangerous or unfit for purpose, resulting in huge cost losses both short- and long-term.

Key areas to consider throughout the process of design and development:

### Capability

Equipment needs to operate at the desired capability level to ensure that it remains effective throughout its specified Life Cycle, and that it is operating at the capability level intended. Without the processes in place to effectively document, manage, maintain, and analyse the equipment, capability will decrease over time leading to increased programme costs.

### Supportable

Is the equipment provided supportable throughout its lifetime? This incorporates the training required, the maintenance of the equipment, and supporting documentation.

### Optimising Costs

Not only should the equipment be reliable, operating at optimum capacity, and supportable, but it also needs to be cost-efficient and meet the project's specified running and operational costs.

Project losses due to poor equipment maintenance, training, and documentation can be significant and can impact on the overall success of the project's delivery - with some major military projects having to be cancelled due to inaccurate forecasts around the associated costs of maintaining, servicing and repairing equipment.

## Documentation

Technical Documentation provides the information necessary to operate, maintain, repair, support and dispose of equipment throughout its life.

Inaccurate operating information, out-dated processes and systems for repairing and maintaining equipment, inaccurate diagnostics and failure rates, and inconsistent information can all pose huge risks to safety, bring about human error and operational inefficiencies.

## Conclusion

**The UK military is a pillar of success in operation and it's clear that the introduction of ILS as a mandatory project management framework is now critical to that success.** Moreover, when ILS is implemented well, it has been hugely effective in helping to avoid project overspend and ensure timely delivery of all systems and equipment.

The role of ILS at each stage of strategic planning can positively impact equipment design, manufacture, delivery, training, safety, maintenance, and support. Lessons have been learned over its implementation in the defence sector and there are many examples, both good and bad, which other industries can look to when deciding on the best approach.

It could be argued that in certain sectors yet to fully embed truly effective systems management, there is scope for those companies to lead the way through their own deployment of ILS, not only in meeting project milestones, deadlines and budget constraints, but in delivering excellence at every stage of the process.

## About Quorum

Quorum Logistic Support Limited is a forward-thinking consultancy, specialising in Integrated Logistic Support (ILS), and related services such as Reliability & Maintainability, Safety, Environmental Protection, Risk Analysis, and Project Management. Proudly independent, the company launched in 2000 and is headquartered in Telford, Shropshire.

Quorum consultants bring a diverse and extensive range of practical and theoretical knowledge for clients. These skills, coupled with strong management skills, ensure delivery of projects within timescales, to budget, and performance requirements — without compromising on customer capability.

Covering expert data capture, analysis, and modelling techniques, Quorum is ISO 9001:2015 accredited, has seen its achievements recognised by its MoD capability sponsor and the wider industry, and has delivered major programmes for the likes of BAE Systems, Rheinmetall and more recently Rheinmetall BAE Systems Land (RBSL), Lockheed Martin, General Dynamics, and Miller Industries.

Quorum is also a proud Member of the Aurora Partner Network Advisory Group, an Engineering Delivery Partner for Defence Equipment & Support; supports the Programme Delivery Partner (PDP) framework; and is listed on the Joint Supply Chain Accreditation Register (JOSCAR) Stage 1 and 2.

Committed to continually innovating and offering flexibility of approach, Quorum's dedicated industry-first 'Virtual Bench' provides clients with a 'bank' of the top talent available based on common skills requirements for specific projects.

This allows the assessment and register of contractors' very niche and specific skills and means they can be called into contracts as the client requires (once they've been through the rigorous interview and on-boarding processes). Quorum guarantees availability within five days which has provided a revolutionary level of flexibility for clients, and speed of access to expert contractors too.

As an organisation committed to playing its part in developing the next generation of skilled technical engineers, Corporate Social Responsibility is hard-wired into everything the company does. Quorum is involved in education supporting local schools and running Science, Technology, Engineering and Maths (STEM) Ambassador Programmes. The company is also endorsed for engineering competence by, and provides consultancy to, the Institution of Engineering and Technology (IET), and employees have been recognised for proving Sustained High Levels of Achievement in business.

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## References

1. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/652915/UK\\_Defence\\_in\\_Numbers\\_2017\\_-\\_Update\\_17\\_Oct.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/652915/UK_Defence_in_Numbers_2017_-_Update_17_Oct.pdf)
2. <https://des.mod.uk/who-we-are/>
3. <https://www.gov.uk/government/publications/growing-the-contribution-of-defence-to-uk-prosperity-a-report-for-the-secretary-of-state-for-defence-by-philip-dunne-mp>
4. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/761434/Finance\\_and\\_economics\\_annual\\_statistical\\_bulletin\\_trade\\_industry\\_and\\_contracts\\_December\\_2018.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/761434/Finance_and_economics_annual_statistical_bulletin_trade_industry_and_contracts_December_2018.pdf)
5. <https://www.thetimes.co.uk/article/crucial-defence-network-is-late-and-210m-over-budget-7g5hs79q7>
6. <https://www.nao.org.uk/report/strategic-financial-management-in-the-ministry-of-defence/>
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