An Analysis of the UK MoD's "Through-Life" Approach to Weapon Systems Sustainment

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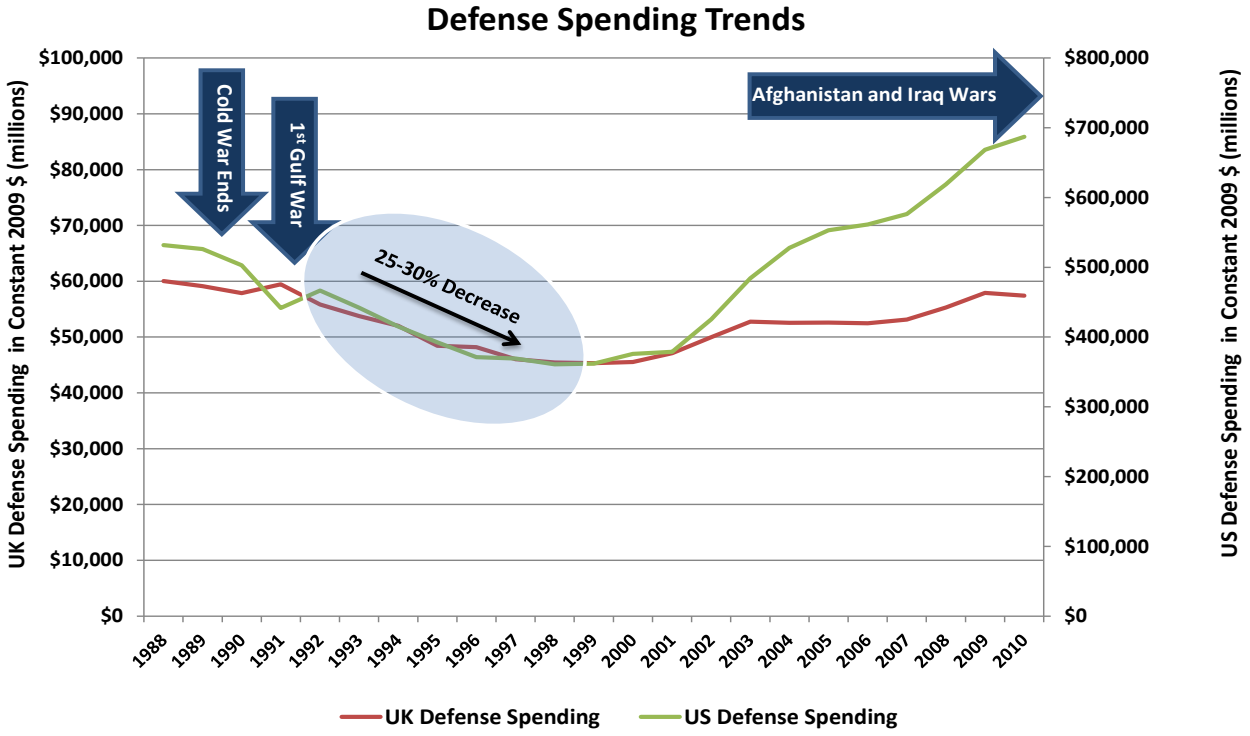
Agenda

- Background
- Through-Life Support Concept
- TLS Case Studies
- Lessons Learned & Challenges
- Conclusion

The Need for Change

- Post-Cold War peace dividend, saw major budget reductions
- Involvement in Afghanistan and Iraq, pushed defence spending upward again
- The UK's economy declined as Europe and the world dropped into deep recession



Rapidly escalating budget constraints create pressure to re-engineer UK defence spending to deliver needed capability while significantly improving cost performance.

Restructuring the Defence Acquisition System

1998 Strategic Defence Review (SDR) initiated a series of major changes to improve organizations and processes, adopting a through-life approach. These included:

- **Formation of the DPA & DLO (1999):** The former Procurement Executive was vested with agency status creating the Defence Procurement Agency (DPA), and the three single Service logistics organizations were consolidated to form the Defence Logistics Organization (DLO)
- In 1999 the DLO (Now **Defence Equipment and Support** (DE&S) established a goal to reduce costs by 20% by 2006, which marked the beginning of "availability contracting"
  - The MoD believed that this would create incentives to reduce support chain costs while also making weapons systems more reliable and efficient
  - The MoD also shifted its focus from "inputs" to "outputs"
  - This shift led to the development of the Through-Life Support Concept

The TLS Concept

- **Through-Life Support (TLS)** is an integrated, **performance-driven approach** to the activities associated with **supporting a product during the operational phases of the product life-cycle**
- Traditionally, support was provided in the context of a customer-supplier relationship
  - MoD held the majority of the risk and industry provided spares and maintenance services
- In contrast, "contracting for availability" partners MoD with industry in joint working teams
  - More risk is apportioned to the contractor

Also incentivizes contractors to meet specified availability and reliability targets while driving down the long-term costs of support

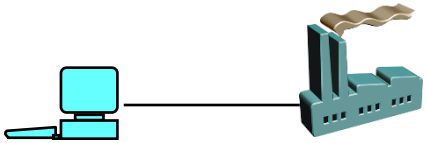
Key Themes of TLS

- Collapsing lines of support: Rationalizing repair organizational structure to 2 types – Forward and Depth
- Lean methods: Applying lean methods to streamline MRO, improve efficiency, eliminate waste
- Outsourcing and long-term partnering: Migrating acquisitions contracting to longer-term support agreements with Industry
- Provider & Decider roles:
  - The MoD, as the 'decider', retains core skills necessary to defence
  - Industry as 'provider', delivers those skills that are not core for the MoD
- Acquisition reform: Contracting for 'outputs' rather than 'inputs'

The Transformation Staircase

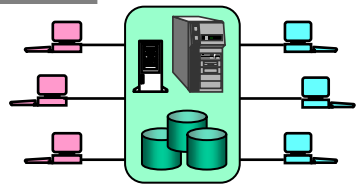
TLS is a foundational approach to weapons systems sustainment

4. Contracting for Capability



Portal to Capability Provided by Industry

3. Contracting for Availability

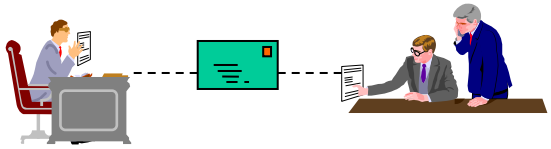


Shared or Outsourced Maintenance. Exchange of Engineering, Usage and Performance Information

2. Spares Inclusive

Outsourced Ownership and Management of Spares. Electronic Interfaces and e-Commerce

1. Traditional



Exchange of Paper-Based Information

Tornado-Harrier TLS

- "Depth repair" hubs are run by MoD jointly with industry partners
  - Provides improved access to Design Authority
  - Capitalizes on industry's expertise in SCM and asset management
- RAF Strike Command handles forward repair

Tornado and Harrier TLS Results: Costs

Implementation of the new repair process has produced positive results in terms of cost and performance

- Reduced Tornado Integrated Project Team's costs from £601 million in 2001-02 to £258 million in 2006-07—**a 57% reduction**
  - The cumulative savings over the period amount to £1.3 billion
  - The Department anticipated additional annual cost reductions to £250 million by 2010-11
- The Harrier* Integrated Project Team's costs dropped from £110 million in 2001-02 to £70 million in 2006-07—**a 36% reduction**
  - Cumulative savings over the period of £109 million.
- Cost per flying hour has been reduced for both aircraft fleets: 51% for Tornado; 44% for Harrier

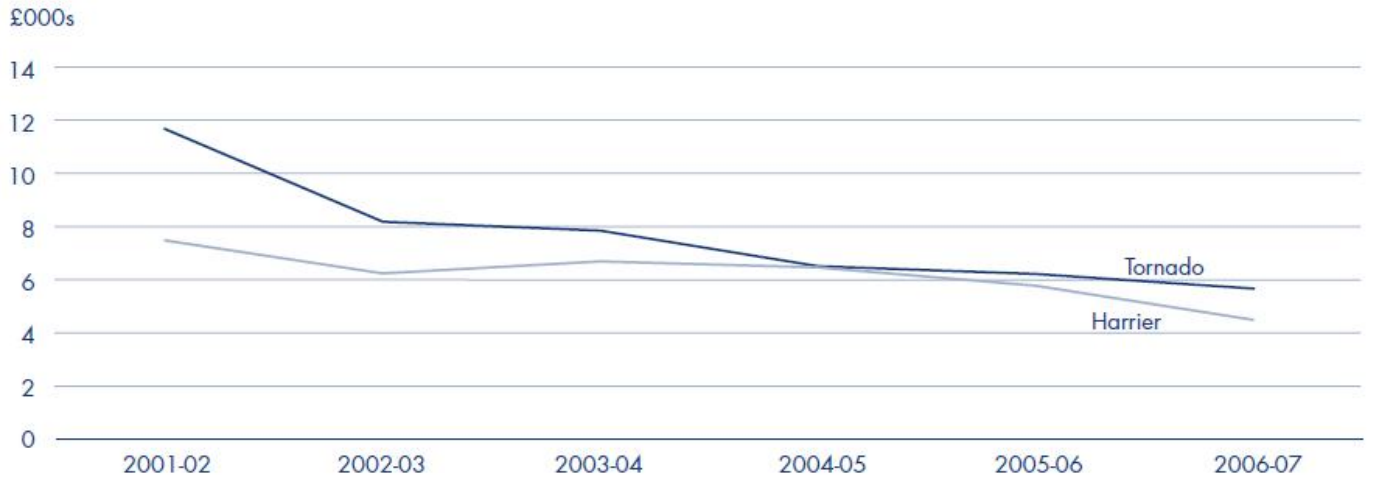
Achieved significant reductions in the cost of support

* Note: The Harrier fleet was retired and sold to the United States in 2011.

TLS Results: Costs per flying hour Tornado and Harrier

8 Cost per flying hour for Tornado and Harrier aircraft

The cost per flying hour for Tornado aircraft has reduced by 51 per cent and for Harrier by 44 per cent based on the Integrated Project Team budgets.



Source: National Audit Office analysis of Ministry of Defence data

NOTE

Harrier budget excludes the capital cost of the GR9 upgrade programme.

Tornado and Harrier TLS Results: Schedule

- MoD introduced a pulse line for the Harrier aircraft in October 2002, and over the next two years **the number of days required to complete successful minor maintenance** was, on average, **down from 115 to 93 days (19% decrease)**
- When a pulse line was established for Tornado GR4 aircraft in December 2005, **the elapsed time for scheduled minor maintenance has decreased by 37%**

Through the implementation of the transformation, the RAF broadly maintained the operational availability of both Harrier and Tornado, while at the same time reducing maintenance times

Tornado and Harrier TLS Results: Reduced Manpower

Availability Contracts have also allowed the Department to reduce the manpower required to support depth repair

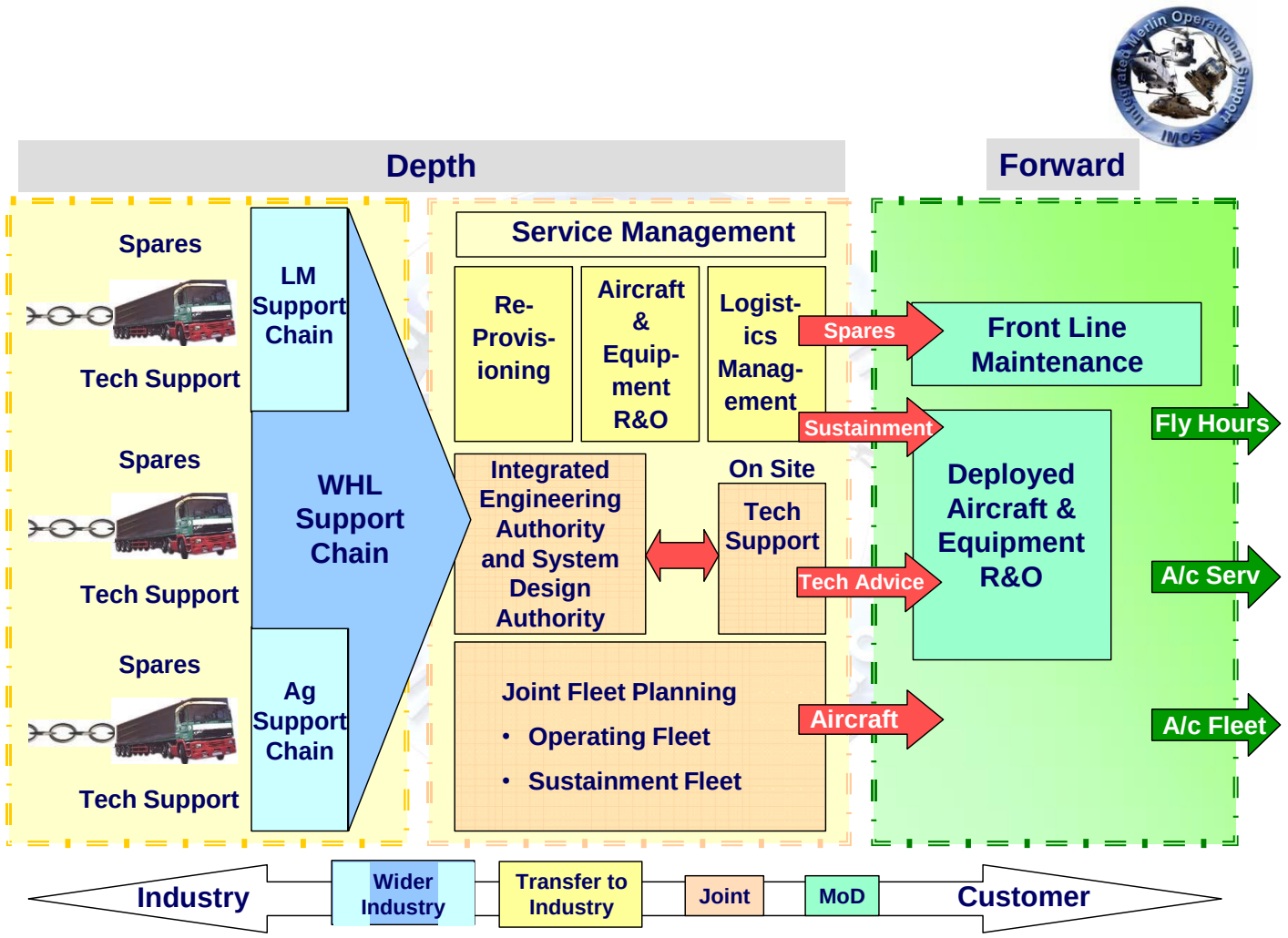
- Manpower reductions of 8% for Tornado since August 2005 and 21% for Harrier since March 2001
- The number of Service personnel employed in Harrier repair has also been **reduced from 1,078 to 984 (- 8.7%)** between 2004-05 and 2006-07, and the number employed in Tornado repair has been reduced from **5,282 to 5,012 (- 5.1%)** with further reductions planned
- These reductions would equate to an additional savings of £12 million

Manpower has been reduced

Integrated Merlin Operational Support (IMOS)

- Contract awarded in 2006 to provide through-life support for the entire MoD EH101 Merlin fleet
  - Previously operated separate support systems for the 2 different types of Merlin aircraft (Mk1 and Mk3)
- 25 year contract with 5 year breakpoints
  - Only initial 5-year period was firm-fixed priced
  - Thereafter, rolling 5-year contract, with annual 1-year extension, based on previous performance
  - Pricing linked to banded flying hours with fixed and variable elements identified
- Contract incentivizes industry to increase availability. Profit is based on performance achieved

Partnering for Support



IMOS Results

Statement by Peter Luff (Parliamentary Under Secretary of State (Defence Equipment, Support and Technology), January 2011

> *I am pleased to announce the continuation of the 25-year Integrated Merlin Operational Support (IMOS) contract with the agreement of the second pricing period with Agusta Westland valued at approximately £570 million. The IMOS contract was awarded to Agusta Westland in 2006 to secure the future availability of the Merlin helicopter fleet to the front line* ***while saving the Ministry of Defence and UK taxpayers around £12 million per year compared to previous contractual arrangements****.*

Key Challenges & Lessons Learned

Key challenges and lessons learned from over a decade of implementation experience:

- **Organizational**: Major change in culture, behaviors, skills and training. Continued need for leadership and the correct governance structures to drive change. Need for improved change management processes , training, and effective management
- **Information systems**: Ongoing need for robust information systems to track programs and provide visibility, proper accounting, reporting, process management, oversight, etc. Good data is critical
- **Acquisition approach/mentality**: Major shift from focus on transactions to focus on output/outcome. Shift from buying on price to optimizing total lifecycle cost, delivering greater value for money
- **Metrics/measurement:** Shift from measuring transactions & inputs (i.e., price of a part) to measuring performance and outcomes. Requires mutually agreed upon, fully understood metrics, which vary by program/platform.

Challenges & Lessons Learned (cont.)

- **Contracts**: Transition to long term contracts; use gain- and pain-sharing where possible to incentivize performance for both provider and decider; use a combination fixed and variable cost model
- **Supplier/Industry relationships**: Clear identification of roles, responsibilities, expectations, constraints; continued training on the change issues required to migrate to a partnership model; sufficient margin incentives to encourage innovation and performance improvement; clear metrics. Early supplier involvement in new platform development. **Trust is critical**
- **Platform approach:** Weapons systems designed as a long-term platform, with service life ranging between 30-50 years. Requires platform design to include through-life upgradeability, longevity, maintainability, sustainability. Requires open systems architecture, COTS, modular components, standardized parts/sub-systems, etc.

Conclusion

- Partnering with industry has transformed the way in which the MoD contracts for repair and overhaul
- Effective TLS works:
  - Improves platform/system capability, reliability, availability
  - It saves money, reduces total sustainment costs
  - Supports readiness
  - Shifts risk from MoD to suppliers; rewards suppliers for successfully managing this risk
  - Encourages continuous improvement, best practices, innovation
- Win-win for MoD and Industry

TLS has delivered greater value