# Operational Availability, Resilience and Supportability

In his 2020 annual speech to RUSI, the UK Chief of Defence Staff remarked that the Defence Review must be honest about the true state of our forces and how we mobilize ourselves to improve readiness and enhance resilience. The Coronavirus pandemic has also restored focus on resilience identifying that stockpiles are perhaps not the financial anathema they have been.

He observed that what worked for the predictability of stabilization and counter insurgency operations for the last 20 years will not work today. 25 years of efficiency initiatives had taken risk against readiness and resilience as the UK optimized logistic infrastructure, reduced inventory, rationalized stock, and outsourced much work to industry.

Ever since the end of the Cold War and the desire for a Peace Dividend, nations have sought to reduce the cost of spare parts inventory. While before 1990, stock dispersal and holding war reserves were deemed essential, there has been a progressive shift since towards optimization, centralization, contingency stocks rather than war reserves in an incessant drive to reduce cost. In response, the extra cost of 2 Gulf Wars and Afghanistan, was met by additional government contingency funding rather than out of peacetime budgets. Natural impatience with large, complex and opaque supply chain generated multiple demands. Quartermasters inflated demands to bolster stocks, improve satisfaction rates and avoid delays.

CDS summarized this with some pertinent questions about lessons to learn to fight the next war:

- Do we know what just-in-time logistics has done to our supply chains?
- Have we assured sovereign capability where needed?
- Has competitive procurement shared risk for our support solutions worked with our suppliers as well as it should?
- How do we improve the availability of key platforms?

**Resilience and Supportability**

**Resilience** can be defined as ***the capacity to recover quickly from difficulties - to spring back into shape.*** For many years, resilience has been synonymous with large spare parts inventory but, in practice, is more complex with multiple factors.

TFD use the term **Supportability** to define responsiveness to unreliability that prevents a system's use. In other words, ***'when there's a problem on a system, how quickly can its utility be restored'***. In other words, **Resilience**. Un-Supportability is a metric describing the sum of system downtime due to preventative and corrective maintenance, condition-based monitoring, and Administrative & Logistic Delay Time (ALDT). Less downtime through better system Supportability means more operational availability.

Although linked to availability and maintainability, Un-Supportability is independent of reliability and cost. Improving reliability does not make a system more supportable. Spending money on stock does not, by itself, make a system more supportable although it can mitigate some operational impacts. Supportability management can help to identify and make the most important and cost-effective Resilience improvements for both peace and war. For example, prioritizing the critical spares and moving them quicker is far more effective and less costly than holding potentially redundant stocks.

**A Spare When I want One**

Maintainers naturally want spare parts immediately available to satisfy their remit to restore systems to full operational capability as quickly as possible. They cannot control reliability, and only shorten repair time with technical documentation and training, ALDT can be reduced with additional stock but at exponentially increasing cost.

However laudable this approach for operations, capacity in peacetime will always be cost limited. The objective should be to sustain the required Operational Availability ($A_o$) – to take a system view of $A_0$ and cost rather than an individual part view, to provide ***Happy Systems*** not ***Happy Shelves*** within the available budget.

Resilience implies a need for additional stock to be available in contingency reserve for increased operational tempo and at additional deployed locations. However, the same logic applies to all resources of skilled people, parts and equipment.

**Supportability Improvement**

While additional contingency reserves of resources can provide more capacity or Resilience for surge conditions albeit at additional cost, improving **Supportability** can have positive effects all the time. TFD's techniques of Supportability Audit of current systems can identify how to drive down delay time, improve operational availability and Resilience.