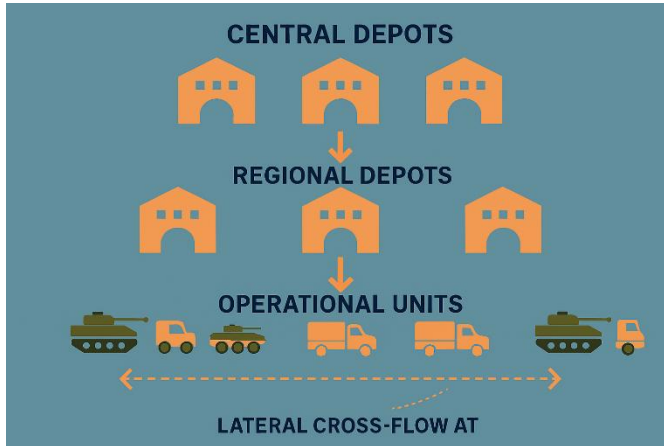


## LATERAL THINKING IN DEFENSE PARTS INVENTORIES

Another in our series of ideas and topics for discussion within the Life Cycle Support community... this time looking at an idea (and, in fact in our experience, an often-used fix) to improve repair parts supply and reduce downtime.

This graphic depicts the traditional *hub & spoke* military supply chain model and adds the



idea of lateral flows (often called *lateral transshipments* or *inventory pooling*) for spare parts between local units, for discussion.

### HUB & SPOKE MODELS DOMINATE

Most military supply chains operate as *hub & spoke* models. When an operational unit technician needs a part, they 1<sup>st</sup> go to their unit-held spares inventory. If no stock is held, their unit supply team demands the needed spare

part from the designated supporting regional depot, who in-turn – if the demand cannot be satisfied from stock – pass the demand on to a designated *hub* central depot to satisfy and ship back down the designated chain of *spokes* to the requesting unit. The Canadian Department of National Defence (DND) Defence Supply Chain is an example of such a hub & spoke model.

However, in situations where the supply chain is extended and there are several nearby operational units holding similar spare parts (like in deployed army formations), this model ignores readily available nearby stocks that could be used to reduce downtime waiting parts re-supplied from central warehouses.

### COMMERCIAL USE OF LATERAL FLOWS

Looking at the commercial world, across retail, healthcare, and spare-parts networks, lateral flows are introduced to address local **demand volatility faster** than upstream replenishment can react. Documented advantages include:

1. **Faster response times during local demand spikes...** Lateral transshipments allow a warehouse experiencing a stockout or surge to source from a nearby peer rather than waiting for delivery from a central distribution centre or manufacturer. Research shows this improves **service levels without increasing total inventory**. [[cdn.intechopen.com](http://cdn.intechopen.com)]
2. **Reduced safety stock through risk pooling at the edge...** Instead of each local facility buffering independently, stock is effectively pooled across nearby locations. Empirical

and simulation studies find this can **lower total safety stock** for the same fill rate. [\[csjournals.com\]](#), [\[mdpi.com\]](#)

3. **Better utilization of slow-moving or high-value inventory...** Lateral flows help rebalance excess inventory before it becomes obsolete, especially when replenishment lead times from upstream hubs are long or unreliable. [\[dspace.mit.edu\]](#)
4. **Resilience to disruption...** After COVID-era disruptions, several industries explored lateral replenishment to cope with regional imbalances when central nodes were constrained or delayed. [\[dspace.mit.edu\]](#), [\[onlinelibr....wiley.com\]](#)

It seems these reasons might apply for military spare parts, and therefore, there could be value in incorporating lateral flows for spare parts within military supply chains.

### “CREATIVE” LATERAL FLOWS FOR PARTS ARE NOT UNCOMMON

In our experience, military technicians often **find a way** to restore equipment to service using **creative (and often officially unsanctioned) lateral flows**. In the author’s experience, these can include:

1. **Shared Awareness of Holdings...** while serving on brigade maintenance staff in Germany in the 1980s, our team deployed with copies of MIUSR (material in use status reports) of the 10 operational unit supply accounts holding 1<sup>st</sup> line spares. When issues arose – especially when there was nil stock in Europe and the traditional supply chain had to reach back to Canada – we would examine to see if local sharing could solve the problem, particularly during high intensity fall training periods where every downtime day really mattered. Such flows were often **creatively** reported in information systems.
2. **RCN TranReqs...** The RCN has a number of HALIFAX-class frigates on each coast, some at high readiness or deployed, some at lower readiness levels or in major refit. TranReqs were a way to laterally flow serviceable equipment from low-readiness ships to high readiness ones, to enhance availability for the most needed ships. They did provide a traceability within DND ERP systems.
3. **Army Robbing Cannibalization & Salvage...** Canadian Army workshops often used robbing (taking a serviceable item from another equipment with intent to replace), cannibalization (without intent to replace) or salvage (removed from written off equipment) as lateral flow alternatives. Often, such lateral flows are poorly reported in information systems.
4. **“Loans from Allies”...** in some cases, it may even be possible to secure **loans** of spare parts from nearby allied units, sometimes enhanced by the spirit of cooperation among allies, and perhaps Canadian Club Whisky!

### ARE LATERAL FLOWS WORTH INCORPORATING WITHIN DEFENSE SUPPLY CHAINS??

- **Do lateral flows of spare parts make sense?**
- **Have you used it?**
- **Does your supply chain enable/condone it?**