



Factory to Foxhole Supply Chain – Efficient or Effective?

Aerospace & Defence

Aerospace and Defence is a truly global industry. Its ecosystem is comprised of a complex, world-wide network of public and private organisations.

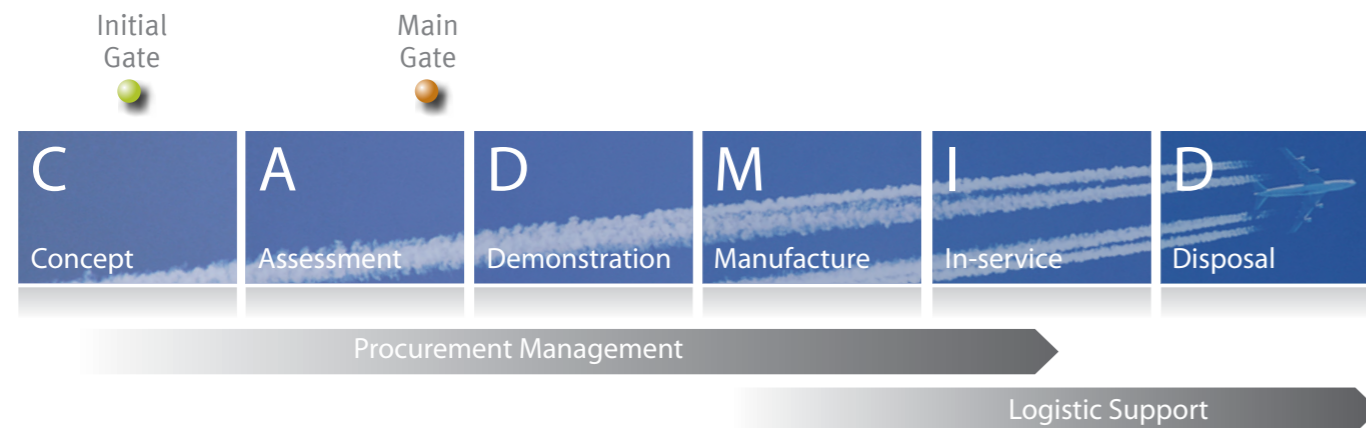
The public organisations include government bodies who specify and use the outputs of the private businesses, e.g. in the UK – The Ministry of Defence and in the USA – The Department of Defence.

The private organisations range across the spectrum of very large and very small businesses and include original equipment manufacturers, systems integrators, airframe suppliers, component providers, transport and cargo carriers, maintenance, repair and overhaul companies and end users.

Unusually, for any industry, it is often the case that these private organisations both collaborate and compete with each other to fulfil the diverse commercial, industrial and military needs of the value chain. All organisations, whether public or private, execute against some part of the CADMID cycle to deliver their products and services. The CADMID cycle is the ‘drum-beat’ that determines the product life cycle in the industry.

Celerant is unique amongst consulting firms insofar as we view the CADMID cycle as a single, seamless value chain creating and delivering the needs of the Aerospace and Defence industry, whether that is a commercial airliner, a jet fighter, a battleship, nuclear submarine, satellite, armoured fighting vehicle, weapons system or simply supplies and rations to the frontline soldier.

This allows Celerant to deliver rapid, cost-effective, high-impact solutions across the industry/government boundary that confounds many other similar firms who have spent years working in this space.



Celerant has developed specific solutions to help all organisations in the Aerospace and Defence industry needing assistance with the following challenges:

- Development and implementation of manufacturing or service excellence models
- Value chain optimisation
- Cost base reduction and asset optimisation
- Capability development and transformation
- Partnering agreements between government and industry
- Through-life support capability development
- Supply chain/logistics chain improvement
- Delivering Performance Based Logistics contracts.

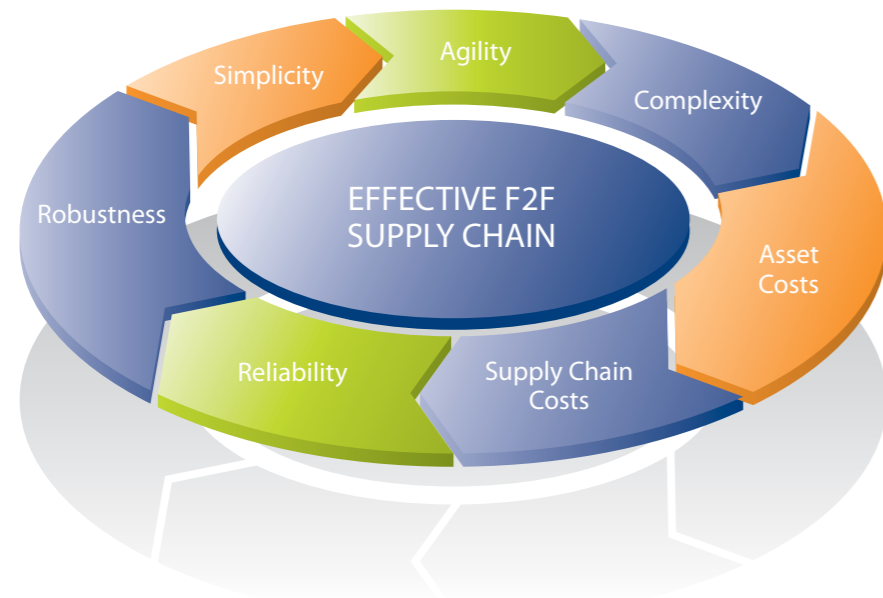
This is predominantly a ‘Complex Supply Chain’ issue that needs an end-to-end solution to be efficient, but with components of that end-to-end solution that need to be simultaneously laterally synchronised to make the overall solution effective.

Historically, supply chain solutions have failed because:

- The development of the end-to-end solution is often corrupted by unnecessary interdependencies, inter-departmental issues and interface friction experienced in the field which affects overall efficiency despite best efforts to introduce the latest lean thinking.
- There is a lack of any lateral synchronisation of components in the supply chain that are essential to account for changes in front-line situational factors such as changing enemy strategy and tactics that affect overall supply chain effectivity.

Celerant’s unique approach addresses both elements of the supply chain to improve both efficiency and effectivity. Only Celerant’s advanced thinking in this area can bring the desired results.

Effective Factory to Foxhole Supply Chains need to be able to dynamically manage and balance the following 7 Key Attributes



SUPPLY CHAIN DEMAND PLANNING

An effective military supply chain depends very much on the accuracy of the medium and long term demand forecast and planning, and the ability to respond to surges in demand caused by unforeseen changes in situational circumstances. The Celerant approach focuses on integration of the top down forecasting and planning process and the bottom up surge demand from the field.

The forecasting process is an integration of known and stable demand based on past consumption related to continuous and fixed events. In addition, forecasted events or potential engagements build up the demand pattern depending on their type and nature.

Based on past engagement experience, standard demand patterns are created by type of engagement, from drills to long term campaigns, short strikes, defence... these demand patterns take into account the standard supply chain model, location, duration, size, specificities and other relevant factors.

This approach builds a simple and reliable forecast that is easy to adapt. Forecast accuracy will drive the supply chain effectiveness. The detail demand plan expresses the exact needs in the field for equipment, food, weapons, ammunitions, fuel, medicine and life support. Driven by the forecast, it is built from standard consumption and firmed detailed engagements specifying standard and specialist needs.

Most importantly it integrates field input from engagements in progress. Here the customer input, the soldier demand, is aggregated by the Battalion Commander up to the division and fed to the demand plan.

Further key inputs come from the suppliers' side. Their ability to deliver on time in full depends on their experience, capacity and commitment.

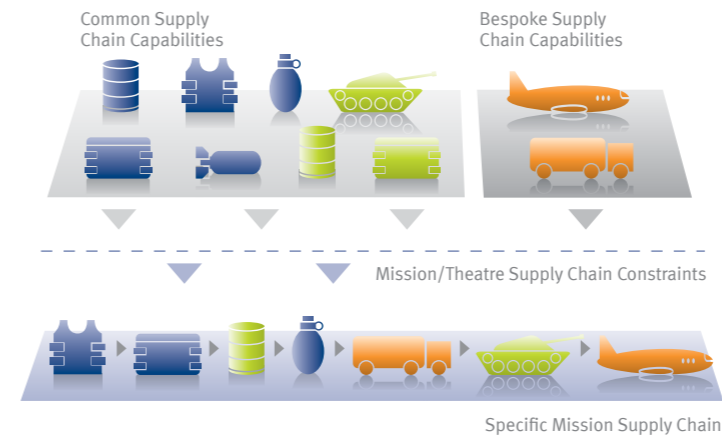
Demand planning is a constant process that balances accurate demand with safety stocks, factory delivery lead time and logistics constraints.

DESIGNING AN EFFECTIVE SUPPLY CHAIN BASED ON COMMON CAPABILITIES

Celerant's solution to the complex and dynamic requirements of a supply chain from factory to foxhole is based on a modular design process.

The first step of the process starts with the identification of the requirements and constraints of the engagement. This can be related to speed, size, strength, type, duration, location, infrastructure, safety, costs and other factors that are key for a structured, robust, fast and effective supply chain design.

The design is based on a combination of 'Supply Chain building blocks' or common capabilities fit for the engagement type and constraints. Each building block has a set of characteristics that differentiates them from each other. The building blocks cover the following categories: factories, warehouses, virtual purple gate, logistics partners, MOD transport, supply chain protection. We also recognise that each supply chain solution requires a level of bespoke design depending on the situation.



MANAGING THE LIFE CYCLE OF YOUR SUPPLY CHAIN

To increase supply chain effectiveness Celerant has differentiated three phases through its life cycle and developed a different approach for each phase.

Phase I: the Ramp Up phase is driven by the 'Supply Chain building blocks' approach giving the best initial set up based on requirements and constraints known at the time.

Phase II: The Operational phase has different requirements than the initial Ramp Up. Here, other factors like reliability, consistency and cost play a bigger role. During this phase we recognise the need for supply chain and logistics optimisation based on new requirements and experience gained from the Ramp Up phase.

An analysis of supply chain effectiveness with a set of standard tools provides quick insight in improvement opportunities and is based on data and field observations.

Once the findings are validated feedback to the original design enables a structured review and adaptation.

In parallel, a performance management system is set up to follow up performance and drive improvement actions at all levels within the supply chain.

Phase III: the Withdraw or Redeployment phase has similar process characteristics as the Ramp Up phase. Successful identification of requirements and constraints based on the type of withdraw or redeployment needed will predefine the effectiveness of the operation. The existing supply chain is the base for phase III. Structured and planned dismantling will prevent losses and reduce costs. Here we pursue with the use of building blocks in the dismantling phase or redeployment to another engagement.

Client Examples

OPTIMISING ASSET MANAGEMENT

In increasingly difficult economic times it is vital that jet engine manufacturing companies maximise the significant investment they make in operational assets. One of the most effective ways this can be done is through the optimisation of their asset management programme to ensure that each and every asset is available for revenue generation (asset uptime).

Celerant's Aerospace and Defence experts have worked with a number of major jet engine users to identify and correct deficiencies in their maintenance, repair and overhaul (MRO) cycle and the planning and configuration management systems that support this.

For one particular client Celerant were able to identify £12.95m of inventory saving potential whilst improving service levels from 88% to 92% (6 weeks average) and reducing annual labour costs by £1.5m.

REDUCE OPERATIONAL COMPLEXITY

A world leader in the design, development and manufacture of jet engines had to create a breakthrough in its operational performance to reduce the cost of goods sold and improve quality.

Celerant's Aerospace and Defence experts helped them to meet these targets by executing a well delivered programme of performance improvement which yielded a 15% to 30% reduction in costs while simultaneously improving quality levels to hit 100% compliance to cost, time and quality schedules.

TRANSFORMING MILITARY LOGISTICS PROCESSES TO INDUSTRY BEST PRACTICE

A solution was developed to enable an extensive tri-service coordination of both the systems and process changes necessary to streamline and improve the military logistics supply chain, whilst also crafting a standardisation of business processes and tools across the entire military supply chain.

For the first time, commanders would have universal access and visibility of consistent, near real time information, allowing for proactive planning and scheduling and total asset visibility across the military value chain.

The solution provided superior information to decision makers and enhanced war fighter capability. It was constructed around four key elements:

1. A global logistics support centre – a single point for Integrated Supply-Chain Planning, Execution and Analysis allowing enterprise wide allocation and distribution of assets to eliminate duplicative management and redundant processes resulting in an increased delivery velocity, while decreasing excess materials.

2. Repair Network Transformation – an enterprise repair capacity / work loading / work standards repair network to meet and satisfy supply chain priorities as set by the global logistics support centre.
3. Centralised Asset Management – centralisation of funding to support the military supply chain enterprise management enabling requirements/priorities to be set at the enterprise level.
4. Expeditionary Combat Support System – updating of support systems to replace 420+ legacy systems to act as a logistics process enabler.

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BAE SYSTEMS								
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or call:
Owen Dowden
Relationship Manager
+44 208 338 5088
owen.dowden@celerantconsulting.com