



SAS® for Aerospace and Defense Supply Chain Optimization

Improve sourcing, production, inventory management, logistics and sustainment

For aerospace and defense organizations and contractors, complex products mean complex supply chains. In fact, an effective and efficient supply chain is needed to produce and sustain everything from commercial airplanes and military aircraft to defense systems, missiles, strike weapons, electronics and space systems, including rockets, satellites, launch vehicles and more. As a result, these organizations have extensive inventories to track and move, quality issues to worry about, numerous suppliers to work with, different operational systems to connect and the need to properly maintain aircraft in the post-production environment for more “time on wing.”

While improvements in operational technology have sped up production processes, reduced cycle times and improved production quality, these advances have only taken aerospace and defense organizations so far in their highly competitive environment. Operational and transactional systems can collect mountains of data about each separate link in the chain – sourcing, production, inventory, logistics and sustainment – but are not effective at integrating, analyzing and turning this data into the knowledge needed to make decisions about how to actually improve the supply chain. A complete supply chain solution integrates all relevant information and then allows you to analyze every aspect of the extended supply chain and create a global view. By turning the available enterprise data into insight, that information can be used to guide intelligent decisions.



Turn a data deluge into meaningful insight

The [SAS Business Analytics Framework](#) and SAS solutions for aerospace and defense supply chain optimization are founded on an integrated platform that includes:

- **Data integration.** Bring together existing and separate supply chain systems and operational data to create a unified, accurate and consistent view of engineering, finance, inventory, procurement, logistics, post-production and other areas.
- **Analytics.** Predict demand and inventory forecasts and create forward-looking scenarios about purchasing, production, logistics, spares replenishment and more.
- **Business intelligence.** Deliver self-service reporting and analysis to everyone along the supply chain so decision makers spend less time looking for answers and more time driving decisions.

With SAS, your organization can derive analytics-based insight from your operational data and share information for timely decisions, providing numerous advantages that keep you a step ahead of the competition.



A global view of the supply chain guides intelligent decisions

The SAS® advantage creates a competitive edge

- **Deliver insights you can act on.** Place the right information in the hands of the right decision maker at the right time to create a competitive advantage across your extended supply chain operations.
- **Leverage existing IT investments.** Maximize significant investments in existing operational and transactional systems by extracting more information out of operational data and turning it into forward-looking insight.
- **Optimize supplier strategies.** Determine quickly how well the sourcing process is functioning within a department, division or organization; identify cost-saving opportunities; and align procurement with specific goals based on key performance indicators.
- **Anticipate demand.** Forecast demand with unparalleled accuracy, allowing for better inventory management, production and sustainment.
- **Improve product quality, yield and cycle times.** Create a unified view of processes, products and equipment, a rigorous framework for historical analysis, tools for proactive analysis and a living archive of collective knowledge that is readily available for all contributors.
- **Derive financial insights across the extended supply chain.** Develop a complete understanding of what is being spent across the supply chain and model what-if scenarios about the financial consequences of decisions in critical areas.

Aerospace and defense supply chain optimization life cycle

SAS helps aerospace and defense organizations maximize the potential of each phase in the supply chain life cycle – sourcing, production, inventory management, logistics and sustainment.

Sourcing. Aerospace and defense organizations often work with multiple vendors to acquire common parts and are striving for a way to better leverage their procurement spending. Procurement activities cut across all departmental lines – and, consequently, the function is the hub of much of the organization's business activities. Knowledge of supplier capabilities and participation in the make-or-buy process can provide essential information to management, especially in the manufacturing segment of an organization's operation. How can you rate suppliers based on lead time, price and other criteria? How can you provide decision support to determine which suppliers to use and reduce supplier redundancy?

SAS provides intelligent insight to support procurement organizations, providing answers to such questions and opportunities to optimize their supply base management strategies in order to create a greater competitive advantage. Our comprehensive, integrated solution helps you achieve substantial returns through three main areas of procurement:

- Strategy alignment and scorecarding.
- Opportunity exploration.
- Detailed analysis and decision support.

Production. Predicting and preventing production bottlenecks is paramount to the continued success of any aerospace or defense organization. No matter the product – aircraft, electronics, space systems, etc. – the ability to look into the future and identify likely production slowdowns allows organizations to save time and money by preventing production hurdles. How can you pinpoint – by aircraft, product or part – the likelihood of a future production slowdown?

How can you look ahead to make sure you will have the right number of specific parts and adequate materials on hand at the right time to avoid halted production lines and cost overruns?

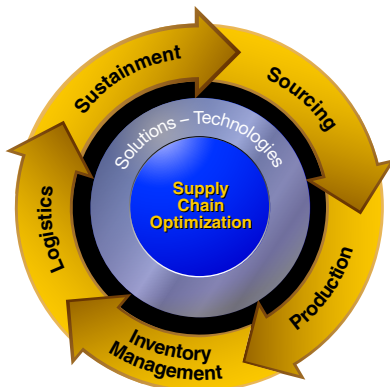
With SAS, you can improve production with the ability to:

- Produce high-quality forecasts quickly and automatically.
- Improve production planning and decision making.
- Reduce excess inventory and its associated expenses.
- Get the right inventory to the right location at the right time.

Exploit integrated data and drive problem solving, monitoring, control and improvement activities that align with value creation across your enterprise – all from a single, integrated vantage point. The result? Reduced cycle times and time to market, increased product quality and throughput, and better asset utilization. SAS delivers a flexible, extensible platform for intelligent

processes that contains five essential elements:

- A unified view of processes, products, manpower and equipment.
- A rigorous framework for historical analysis.
- Tools for proactive analysis and action.
- A living archive of collective knowledge.
- Knowledge that is readily available to all contributors.



Inventory management. Inventory management problems often arise from the inability to accurately forecast demand and answer key questions about supply parts and replenishment. For instance, how many parts or how much material do we need, at what warehouse or military depot and at what time? What is the transit time required for specific parts and which ones will have the most conducive lead times? Which inventory items will have the least risk for the production line and sustainment? With SAS you can:

- Create what-if scenarios to answer inventory management questions.

- Connect all the related processes of demand forecasting and replenishment planning for an in-depth understanding of demand.
- Increase inventory turns, while minimizing expenses.
- Develop better replenishment strategies for repeatedly ordered, fast-moving items and materials.

SAS helps you determine how inventory should be replenished to meet the forecasted demand at desired service levels. The focus is on fast, accurate calculation and evaluation of inventory replenishment policies, determining when each item should be reordered and in what quantity. Replenishment can be planned at any level of detail, ranging from strategies across all categories down to item-by-item plans. Analysis of multiple scenarios enables you to explore and compare different options. With optimal decisions, you meet targeted demand at the lowest cost.

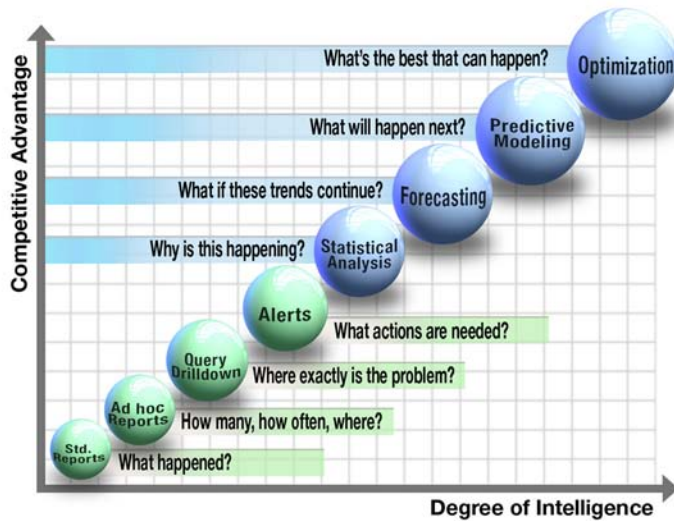
Logistics. Vital to an effective supply chain is the ability to optimize logistics so that organizations can move the right inventory at the right time to the right place in the right quantities. However, the last thing aerospace and defense organizations need is another reporting system that only tells them what assets they have stored at different locations. Instead, they need the ability to consider a specific logistics requirement, develop a course of action based on numerous factors and options to help meet that requirement, and determine how they can optimize the entire supply chain looking forward.

Ten sustainment benefits made possible with SAS®

1. Achieve affordable readiness.
2. Enable condition-based maintenance.
3. Enhance mission reliability and safety.
4. Increase time on wing.
5. Reduce maintenance manpower, spares and repair costs.
6. Eliminate the need for scheduled inspections.
7. Maximize lead time for maintenance and parts procurement.
8. Provide real-time notification of an upcoming maintenance event.
9. Catch potential catastrophic failures before they occur.
10. Reduce operations costs and labor intensity of support operations personnel.

SAS Data Integration brings together different sources of logistics-related information, including static and in-transit inventory, supply points, demand requirements, geographical inputs and transportation connectivity modes. Then, with SAS Analytics, you can find the answers to critical questions and deliver them to decision makers:

- Can the logistics requirement be met and what is the risk?
- What do we need to move?
- When do we need to initiate movement?



SAS helps you understand the past, monitor the present and predict future outcomes.

- By what mode should the inventory be moved (air, sea, truck or rail)?
- When and where will shipments arrive?
- What is the cost?
- What are the assembly requirements and how many units are needed?

With SAS, you can go beyond basic reporting with advanced analysis to create multiple what-if scenarios that take into account specific logistics constraints. Managers can select the most appropriate course of action from among several logistical options, each with varying degrees of risk, cost and timeliness, so that decision makers not only understand the various choices available to them, but can be more proactive in making the right choice.

Sustainment and reset. In the post-production environment, leading organizations are searching for answers to questions about how to proactively ensure the continued safety, reliability and mission readiness of the aircraft, electronics, space systems and other products they deliver in the most cost-effective manner possible. Successfully sustaining aircraft and other products requires accurate diagnostics - determining the ability of a component or part to function properly – and prognostics – predicting the remaining life or time span for correct part operation.

By bringing together information from different sources and providing advanced analytics, SAS helps aerospace and defense organizations engage in prognostics and health management (PHM) to make appropriate decisions about maintenance actions based on diagnostics/prognostics information,

the resources available and operational demand. This means making operational aircraft and equipment available in the most cost-effective manner possible, ensuring maintenance actions are based on real conditions and needs, rather than blind routine schedules.

SAS produces statistically sound, large-scale demand forecasts that serve as the foundation for improved sustainment. SAS adjusts to irregular demand series, while automatically generating statistically advanced forecasts for every item at every level of detail. Because each forecast is individually calculated using patent-pending optimization techniques, you get a clearer picture of demand even at the granular level. Accurate, large-scale forecasting is the first step to ensuring proactively that aircraft spend more time in the air and less time in repair.

About SAS

SAS is the leader in **business analytics** software and services, and the largest independent vendor in the business intelligence market. Through innovative solutions delivered within an integrated framework, SAS helps customers at more than 45,000 sites improve performance and deliver value by making better decisions faster. Since 1976 SAS has been giving customers around the world THE POWER TO KNOW®

SAS helps aerospace and defense organizations obtain greater business speed, flexibility and agility. For more information, please visit www.sas.com.