Preparing for Tomorrow's Supply Chain

Executive Summary of Panel Discussion
Preparing for Tomorrow’s Supply Chain

Panelists:
Charlie Covert, VP Customer Solutions, UPS (Moderator)
Craig Gaubert, Procurement Controller, UPS Airlines
Patrick Markham, VP HPG Technical Services, HEICO Aerospace
Eric Nelson, VP Commercial Engines & Helicopter Programs, Aviall

Overview
The supply chain for the Maintenance, Repair, and Overhaul (MRO) industry is extremely complex. Global in nature, it involves millions of items and touches thousands of operators, manufacturers, service providers, and distributors. Having high service levels and minimal down time (especially unexpected down time) are essential, as customers are more demanding than ever. Reliability of parts and processes, along with regulatory compliance, is critical. Industry trends that include an explosion in data and analytics, increased globalization, growth in new business models (like power by the hour), multiple disruptions such as 3D printing, and continuing challenges with customs and brokerage are increasing the complexity.

Keys to success in this challenging environment include frequent and open communication between operators and suppliers, developing trusted relationships, increasing the visibility of key information, and deepening the level of integration with critical supply chain partners.

Context
On April 15, 2015, UPS hosted a panel discussion about “Preparing for Tomorrow’s Supply Chain.” The speakers—representing an operator (UPS Airlines) and two major industry suppliers (Aviall and HEICO)—described their businesses, challenges they face, and supply chain trends they are seeing.

Key Takeaways
From an operator’s perspective, the supply chain impacts on-time performance and delivery.

For UPS Airlines, the supply chain is highly strategic in that it enables the company to provide a level of service and performance that its customers expect. Managing UPS Airlines’ supply chain starts with understanding the size and scope of its fleet. UPS Airlines operates a fleet of 237 aircraft, composed of five aircraft models. Each model is flown in different geographies, including the U.S., Asia, Europe, and the Americas.

To support each type of aircraft and maintain high levels of service, UPS uses an internal forecasting model to determine the probability of when and where specific spare parts will be needed. Using this model, UPS Airlines determines where to pre-place spare parts throughout its network. High-dollar/lower-demand parts are strategically positioned in a more regional/recovery fashion. NoGo parts are positioned differently from deferrable parts. Heavy maintenance MRO locations are stocked according to the demand level in those locations.

“Parts are placed strategically to minimize an airplane’s out-of-service time.”
Craig Gaubert

After UPS determines which parts will be needed, in which locations, at which timing, UPS procures those parts by purchasing from multiple suppliers, either under contract or on a quote basis. UPS works closely with Original Equipment Manufacturers (OEMs) and third-party suppliers to procure large quantities of parts, both during an aircraft’s entry into service and throughout its life cycle.
UPS Airlines utilizes six airframe and eight powerplant MROs, with locations in the U.S., Europe, and Asia. UPS also works with numerous component repair and purchase vendors, who support the inventory of parts needed throughout the supply chain.

Among the key challenges UPS Airlines faces are:

• Repair turnaround times, as well as purchase lead times.
• Reliability of components, which need to meet or exceed design specifications. UPS works with suppliers to determine the reliability by component and holds suppliers accountable for reliability.
• Regulatory compliance, which is constantly monitored during all supply chain activities.
• Part quarantine rates, which UPS works with vendors and suppliers to reduce.
• Customs and brokerage, which is increasingly important due to international growth. Customs and brokerage, which differ in each market, can slow down important deliveries.
• Having visibility of Aircraft on Ground (AOG) to smoothly perform maintenance at the exact time a plane is scheduled to be out of service.

HEICO PMA has existed for more than 50 years, and HEICO PMA and DER parts are found everywhere—including in engines, wings, cockpits, landing gear, and interiors—for a wide range of aircraft, from new models to phase outs. HEICO supports the entire fleet.

HEICO’s most significant challenges are making the right parts and logistically managing those parts. For parts that can be manufactured quickly, this is relatively easy and simple. But other parts may use special materials and have very long lead times.

In helping an airline or an MRO have the right parts in the right place at the right time, FSG has multiple management options, with differing levels of supply chain integration. These include:

• **Supply chain responsibility.** Provides complete integration where HEICO is fully responsible for ensuring a client gets the right parts at the right time. This can involve having HEICO employees embedded within a client’s organization.
• **Supply chain integration.** Involves slightly less integration, where HEICO is still significantly integrated with a client’s supply chain and has visibility into systems but is not fully responsible for all results.
• **Information integration.** Provides HEICO with visibility into a client’s business so HEICO can better plan and respond.
• **Information sharing.** Consists of a client providing information about a specific topic, such as their fleet retirement schedule.
• **ERP visibility.** Provides visibility into a customer’s ERP system, which includes information on inventory and orders. By having access to this information, HEICO can plan manufacturing to minimize out-of-stock situations.
• **PO/shipment and tactical quote.** A purely tactical option with no integration. A customer might say they need 50 of a certain item. If HEICO has them on hand, it will provide them. If the item is not available, then HEICO can convey a lead time to provide it.

FSG’s offerings include strategic options like Parts Manufacturer Approval (PMA) management programs, asset and repair management, and PMA and repair strategic partnership option. FSG’s tactical options include PMA parts, component MRO, Designated Engineering Representative (DER) repair, distribution, and manufacturing.

“HEICO’s Flight Support Group integrates with customers in different ways based on each customer’s preferences. HEICO consists of multiple individual companies that work together. HEICO’s Flight Support Group (FSG) consists of a parts group, a repair group, a distribution group, and special products.”

“UPS, the UPS brand mark and the color brown are registered trademarks of United Parcel Service, Inc. All rights reserved.”
HEICO works with each customer to customize its level of integration and support, ranging from highly strategic and deeply integrated to purely tactical with no integration.

**Aviall manages the gaps between OEMs and operators.**

Aviall, a subsidiary of Boeing, is the world’s largest diversified aircraft parts and services provider. Aviall has over 2 million part numbers in its catalog, represents more than 240 brands, and has over 25,000 customers. The company has a central distribution center in Dallas and uses a hub-and-spoke network with over 40 strategic stocking locations around the globe.

Aviall’s role is to manage the gaps between operators and OEMs. These gaps can cause disruption in the supply chain.

![Aviall Supply Chain Process Diagram](image)

Gaps depend on the age of equipment, an imbalance between the demand for critical parts and the supply of these parts, and the risks associated with carrying inventory. Gaps grow as an aircraft matures, and put stress on turnaround time and dispatch reliability.

Aviall’s supply chain process is focused on closing these gaps. The process starts with an elaborate forecasting process which incorporates historical demand; involves optimization, particularly of inventory management as well as service-level planning; and entails planning supply, collaborating with suppliers, and managing the order process, including stocking and replenishment.

“**Our process is a very integrative, collaborative supply chain process between the customer and supplier.**

—Eric Nelson

Among the key trends Aviall sees are:

- Customers continue to want more for less. They are not interested in carrying inventory or queuing for parts.
- Suppliers are expected to operate at high standards of performance.
- Communication and close relationships between the operator base, the user base, MROs, and back through the supply chain are vital.
- Capacity is being strained, making optimization critical. This also puts a tremendous strain on aftermarket support, which makes information and planning critical.
- Used-serviceable material and additive manufacturing are big supply chain disruptors.
- More information allows for smarter, more collaborative supply chains.

**The panelists discussed major trends affecting supply chains.**

Among the current and future trends panelists see are:

- **Increased use of power-by-the-hour.** Some systems suppliers are increasingly adopting a “power-by-the-hour” model, as opposed to a traditional time-and-materials approach. Power-by-the-hour is seen as an attempt by some industry players to increase market share. It entails taking on risk, but may make sense in the short term, especially for newer equipment where there is more predictability and less risk.

- **Different ways of supporting legacy equipment.** As an operator, UPS looks at how long it will fly its aircraft and uses those estimates to forecast its future needs for parts and support. Historical data is combined with knowledge about future plans in working with suppliers to develop plans to support the company’s fleet.

Aviall encourages operators not to think about individual parts or components, but to take a more holistic “platform perspective” and a total material solution approach.

HEICO forms a range of different types of relationships with customers—from highly strategic and integrated to more tactical—to help customers support their legacy equipment, which can involve taking full responsibility for managing equipment (most integrated) or merely providing parts (least integrated).
• **Growth in international operations.** International will continue to drive growth. However, for operators’ planned maintenance and MRO awards, key considerations will be turnaround time, reliability, and price. For HEICO, the growth of international is just an additional factor in integrating with customers however a customer prefers to integrate.

An international issue is customs and brokerage delays. The only long-term solution is a regulatory fix, which is outside of the control of those managing supply. In the short term, the key is having local experts on the ground, who understand a particular country’s system and processes, and are working to pull items through.

• **Rapid evolution to customer-driven supply chains.** A disruptive behavior in marketplaces is the ability for consumers to use technology to access information and order products (think Amazon). This is creating a more “customer-driven supply chain” in all industries, is disrupting established players and supply chains, and is causing a blurring of channels. Some larger manufacturers are trying to disintermediate distributors and go direct to end customers. Major disruptions are occurring, forcing all supply chain players to provide value.

> “The customer-driven supply chain is having a disruptive impact. People experience capabilities as a consumer and then go to their job as a buyer for an operator and say, ‘I want this same functionality here.’”
> — Charlie Covert

In the aviation supply chain, technology is improving access to and visibility of information. But the panelists do not currently see disintermediation as a major factor. Many vendors and service providers lack the scale and capital to put in place infrastructure and IT systems to support going direct. In addition, many operators are showing interest in consolidating their number of suppliers and purchasing more from fewer sources.

• **Increased use of predictive analytics.** The emergence of big data is giving rise to greater use of predictive analytics and automation. In addition to using data to better understand the past, analytics are increasingly being used to predict the future. This might include looking at data about the reliability and life of parts, as well as maintenance patterns, to understand and predict failure. With this data, action can be taken in advance to prevent failure. And, IT can use technology to automate some communications. Keys to success include having clean data and deciding on the right data to analyze to make better decisions.

• **3D printing provides the potential to manufacture to demand.** 3D printing doesn’t make sense for high-volume products with predictable demand. But for low-volume products where the demand is unpredictable, the ability to manufacture on demand has enormous potential. It could be used early in a product’s life cycle for testing before investments in costly tooling, or late in a product’s life cycle when demand is inconsistent and less certain. However, questions remain about regulation, certification, and reliability.

• **Sustainability remains a big trend in the aviation supply chain.** Sustainability is not a passing fad. It remains an important topic, particularly in Europe, as well as elsewhere. As organizations work to optimize their supply chains, reduce costs, and improve service levels, they are also interested in sustainability and are being intentional about it. UPS sees more organizations measuring their sustainability, managing it, and communicating about it.

Areas of focus include reducing fuel and emissions, using less material in making parts, and minimizing a company’s overall environmental footprint.

In all of these trends, which include potential disruptions, essential elements of supply chain success include communication, collaboration, partnership, and visibility of important supply chain information. To learn more about UPS® Solutions for aerospace and defense, visit ups.com/aerospace.
Panelist Bios

Charlie Covert  
VP Customer Solutions, UPS

As Vice President, Customer Solutions, Charlie is responsible for supply chain design, sustainability, and consulting for the aerospace, government, professional services, industrial manufacturing, and automotive sectors. Charlie works with UPS customers to understand their supply chain strategy as it supports their business strategy. He then leads development of strategic and tactical alternatives, evaluation of business cases that drive customer value, and execution of the selected strategy.

Prior to joining UPS, he performed logistics engineering functions for Sedlak Management Consultants and McDonnell Douglas. He also served in the Ohio and California Air National Guard.

Craig Gaubert  
Procurement Controller, UPS Airlines

As a Procurement Services Controller, Craig is responsible for the planning, purchasing, repair management, inventory management, vendor management and requisition of aircraft parts. His team also includes the critical procurement AOG team. Craig’s team works very close with the vendor to improvement overall performance.

Craig has been with UPS for 22 years. Including his recent addition to the UPS Airline operations, his background includes a broad perspective working as a Controller in several UPS Small Package operations. He holds a Bachelor of Business Administration in Finance from the University of Georgia and a Masters of Business Administration from Colorado State University.

Patrick Markham  
VP HPG Technical Services, HEICO Aerospace

Patrick Markham received his BS in Mechanical Engineering (Aerospace) from Worcester Polytechnic Institute, and his MS in Mechanical Engineering from Purdue University. Pat worked on PW4090, PW4098 certification programs and F119 development programs while at Pratt & Whitney. In 1997, Pat joined HEICO to work on the PMA compressor blade certification programs. Pat is currently VP of Technical Services for HEICO, with technical oversight responsibility for HEICO’s PMA activities.

Eric Nelson  
VP Commercial Engines & Helicopter Programs, Aviall

Eric Nelson is Vice President of Commercial Engine and Helicopter Programs for Aviall. Eric has more than 25 years of sales, marketing and product development experience working within the aviation OEM supply chain. Eric joined Aviall in 2005 as Director of Commercial Engine Programs. Previous to Aviall, he held senior level positions in marketing and sales and was responsible for product line business development activities at PTI Technologies. Prior to PTI, he spent 13 years in aerospace engineering, project management and marketing capacities at Barry Controls. Eric holds an MBA from California State Northridge and a Bachelor of Science in Engineering from UCLA.