

Boeing 787: Global Supply Chain Management Takes Flight



Challenges

How to maintain visibility and control while transitioning from a vertically integrated manufacturing model to a global partner model that leverages providers of best value components and technology.

Solution

The Exostar® Supply Chain Management Solution powered by E2open software to provide end-to-end management of the order, inventory, and planning processes executed across multiple tiers of supply partners.

Results

- Enabled management of the complete order life cycle and returns process across multiple partner tiers while also tracking planning schedules and consumption and managing replenishment for the Boeing Partner Managed Inventory program with Tier 2 partners
- Implemented reporting capabilities that allow Boeing and its partners to track overall performance of the supply chain
- Gained the ability to monitor events and process exceptions that occur between partners and evaluate the impact against the master schedule.
- Minimized waste in the supply chain while managing on-time delivery to the end customer

Leveraging Global Partners to Maximize Customer Value

The new Boeing® super-efficient jetliner is the 787 Dreamliner®, providing passengers with a better flying experience and operations with a more efficient commercial jetliner. Because it uses 20 percent less fuel per passenger than similarly sized airplanes, the 787 is designed for the environment with lower emissions and quieter takeoffs and landings while traveling as fast as today's fastest wide bodies, Mach 0.85.

In order to achieve this exceptional performance, Boeing established a core team of the world's most capable aerospace companies to design key components of the airplane. As an example, Boeing partnered with General Electric and Rolls-Royce® to develop engines for the new airplane and expects the advances in engine technology alone will contribute as much as 8 percent to the increased fuel efficiency of the new airplane.

Boeing has worked collaboratively with its partners to engineer the new Dreamliner®, and has also adopted a completely new manufacturing model to produce the airplane. Boeing will leverage its extended supply chain and partner manufacturing resources as a competitive advantage to improve time-to-market and reduce total cost. For the first time in Boeing history, the majority of the airplane will be fabricated by global partners and will be delivered as major subassemblies which Boeing will assemble and test at its facility in Everett, Washington.

With Boeing now operating as the final assembler of the airplane, coordinating the many structural and systems partner locations spread around the globe is paramount to the manufacturing success. Boeing has

to synchronize demand/supply and logistics information across multiple partner tiers so key components arrive at the Boeing Everett, Washington facility at just the right time for final assembly over a three-day period.

Strategy for achieving results

- Leverage best-in-class component and technology providers from around the world
- Establish shared risk model between Boeing and its supply partners
- Synchronize demand/supply, order, and inventory information across supply partners
- Establish a highly coordinated set of logistics processes and transportation mechanisms to ensure on-time delivery of all assemblies

How the strategy was executed

- Move to partner-led manufacturing and fabrication model for the 787 Dreamliner
- Establish partner managed inventory programs with Boeing managed contracts to share risk and improve supply availability
- Implement common tools to provide global visibility to all demand/supply, order, and inventory information across multiple tiers of partners
- Invest in logistics visibility tools and specialized transport mechanisms to reliably move large subassemblies globally

Challenges Posed by Partner Manufacturing Model

The Boeing 787 Dreamliner represents a fundamental shift in manufacturing philosophy and approach for The Boeing Company. With 135 structural and systems partner locations around the world involved in the manufacturing and fabrication of the airplane, coordinating the end-to-end supply chain across these partners is paramount to the program's success.

One of the biggest challenges in this production model is ensuring that all partners have access and visibility to the latest demand information from Boeing and that Boeing has visibility to the supplier's ability to meet the delivery schedule. It is crucial that all of the major subassemblies arrive in Washington at the same time for final assembly. If a subassembly is late or missing, there is very little time or space for Boeing to store the other large components. If a partner cannot meet an expected delivery date then Boeing must adjust the schedule and potentially delay the arrival of the other assemblies.

Another critical success factor is to ensure continuity of supply of component parts being consumed by the Tier 1, volume partners. Due to the critical nature and dollar value of some of these component parts, Boeing retained contractual relationships directly with the Tier 2, providing partners. One of the benefits to the Tier 2 suppliers is shorter payment cycles. The challenge was implementing a pull-based replenishment model between the Tier 1 and Tier 2 partners that could be supported by the commercial relationship and payment process between Boeing and the Tier 2 partners.

Above all else, Boeing and their partners needed a way to quickly identify potential problems across the supply chain and immediately assess their impacts on other partners or aspects of the manufacturing process. As an example, if a component part replenishment shipment was late, will it cause a potential stock out at a Tier 1 provider? If it will, then which delivery schedule will be impacted and against which finished airplane? What are the other subassembly production schedules that must be adjusted as a result? Having global visibility to process exceptions across the supply chain is critical to delivery performance.

Exostar's Supply Chain Management Solution Powered by E2open

Boeing turned to Exostar for a solution to help manage processes executed across multiple tiers of their supply network. The Exostar Supply Chain Management Solution, powered by E2open software, is used to manage the complete order life cycle and returns process across the multiple partner tiers, while also tracking planning schedules, consumption, and managing replenishment for the Boeing Partner Managed Inventory program with Tier 2 partners.

The Exostar solution is designed to allow Boeing and its partners to collaborate on planning schedules, issue purchase orders, track purchase order changes, exchange shipping information, manage returns, track shipments, and manage inventory consumption across the multiple tiers involved in the manufacturing process. The system also monitors events and process exceptions that occur between partners and evaluates the impacts of these events against the master schedule using synchronized time-sequenced information. The solution includes reporting capabilities that allow Boeing and its partners to track overall performance of the supply chain.

Exostar's software-as-a-service (SaaS) delivery model and existing network of connectivity into the A&D supply chain enabled Boeing to go live with the solution in less than 90 days from project kick off. Boeing was able to leverage its investment in Enterprise Systems to quickly connect to Exostar in order to enable its supply chain processes across the extended supply chain. Exostar's solution was configured to meet Boeing's current process requirements, and can evolve as process requirements or partners change over time.

Leveraging the Exostar Supply Chain Management Solution to manage Boeing's 787 program, was a logical decision for Boeing who has standardized on Exostar for managing their external information flow with supply partners. Exostar is a well-established technology and service provider to the A&D community, currently managing demand and supply processes between 20,000+ companies in the industry. The Exostar Supply Chain Management Solution is powered by E2open software. E2open software currently powers some of the world's largest supply chain hubs in various industries including electronics, telecommunications, and heavy equipment.

“ By helping us proactively flag any business process exceptions as they occur among our network of partners, and providing a consolidated view of all material movements across the supply chain, the Exostar solution is expected to tighten our efficiency in the way airplanes are manufactured. ”

Tim Opitz
Director of 787 Production and Support Tools, Boeing

Benefits

Boeing again is leading the way in commercial aviation with the introduction of the 787 Dreamliner. By leveraging a world-class, global team of partners, they are able to provide unparalleled value and advanced technology to their customers. By leveraging a world-class supply chain management solution from Exostar and E2open, they are able to minimize waste in the supply chain while managing on-time delivery to the end customer. Some of the anticipated benefits of the integrated supply chain solution include:

- Eliminate latency in communicating demand/supply changes across multiple tiers
- Ensure continuity of supply and minimize supply disruptions through the real-time synchronization of demand with available supply
- Improve cash flow for supply partners participating in partner managed inventory programs
- Early identification of potential demand/supply imbalances and their impacts on other partners or aspects of the supply chain
- Improved on-time delivery to the end customer while minimizing logistics costs
- Eliminate many of the manual activities associated with communicating new delivery schedules and order changes across multiple tiers
- Reporting and analysis for continued process improvement over the life cycle of the program
- Move to exception-based management of the end-to-end process across partners and partner tiers

About Exostar

Exostar powers secure collaborative supply networks helping manufacturers and suppliers work together to gain visibility, control, and integration of critical business processes, speeding time to market, increasing profitability, and reducing risk. Exostar was founded to support the complex trading needs of the world's largest A&D companies, including BAE Systems, The Boeing Company, Lockheed Martin Corp., Raytheon Co., and Rolls-Royce. Today, its on-demand solutions provide business collaboration, secure infrastructure, and supply chain execution capabilities for 34,000 trading partners worldwide. For more information, please visit www.exostar.com.

About E2open

At E2open, we're creating a more connected, intelligent supply chain. It starts with sensing and responding to real-time demand, supply and delivery constraints. Bringing together data from customers, distribution channels, suppliers, contract manufacturers and logistics partners, our collaborative and agile supply chain platform enables companies to use data in real time, with artificial intelligence and machine learning to drive smarter decisions. All this complex information is delivered in a single view that encompasses your demand, supply and logistics ecosystems. E2open is changing everything. *Demand. Supply. Delivered.* Visit www.e2open.com.

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