

ORDER FULFILLMENT

BEST-IN-CLASS PROCESSES FROM
CAT LOGISTICS

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EXECUTIVE SUMMARY

INCREASE REVENUE IN THE SERVICE PARTS MARKET

Today's organizations – such as those in the aerospace and defense, automotive, agricultural, heavy equipment, high-tech, and industrial machinery industries – are pursuing the service parts and spare parts market for revenue and profit growth. At the same time, increasing customer demand and a dynamic marketplace require them to operate at unprecedented levels of flexibility and responsiveness in order to make the grade in this new market. They must efficiently address customer requirements and attain desirable profit margins.

Ultimately, to reduce costs and improve service effectiveness, contenders must shift from being reactive service parts organizations to proactive service providers. They must be prepared to address a range of issues related to service levels, inventory investment, transportation, fulfillment, and value-added services. By combining best-in-class processes and planning techniques supported by an appropriate IT infrastructure, organizations of all sizes can improve their efficiency and boost the success of their service parts management businesses.

As the fifth paper in a five-part series that describes the best-in-class processes of Cat Logistics Services Inc. (Cat Logistics), a wholly owned subsidiary of Caterpillar Inc., this paper focuses on order fulfillment. Cat Logistics developed best-in-class processes applicable across a range of industries by leveraging its decades of experience managing large multitier networks and supporting the needs of global companies relating to service parts logistics.

INTRODUCTION

SERVE DEMANDING CUSTOMERS IN A DYNAMIC MARKETPLACE

Organizations in the aerospace and defense, automotive, agricultural, heavy equipment, high-tech, and industrial machinery industries are pursuing the service parts and spare parts market for revenue and profit growth. This is a complex challenge for these companies, whose objective is to serve demanding customers in a dynamic marketplace. Although sales of service parts generate high margins and contribute significantly toward profits, organizations must address and manage a number of issues to be successful, such as:

■ Service levels

How long will a customer wait for a specific part before going to a competitor? What level of service will increase the likelihood of the customer coming back to place repeat purchases for that product?

■ Inventory investment

How much inventory is needed, and where should it be placed to satisfy the service-level requirements? While this is a fairly straightforward decision for fast-moving parts, it is a challenging one for slow-moving parts, which make up the majority of parts serviced.

■ Transportation

What are the various transportation modes available to meet customer requirements, and what are the associated schedule constraints and costs?

■ Fulfillment centers

How many fulfillment centers are needed, and where should they be located?

■ Value-added services

Which value-added services – in addition to the normal services provided – can the organization offer in order to differentiate itself from the competition?

The service parts environment is fraught with new challenges and complexity due to the growing number of

low-volume items (see Figure 1). In the mid-1980s, market demand for new products and more frequent updates to those products resulted in tremendous growth in the number of active parts serviced. That growth continues today. Now organizations must manage a growing number of parts and warehouses to support an ever-increasing number of slow-moving, low-volume parts while maintaining high transaction volumes on fast-moving items.

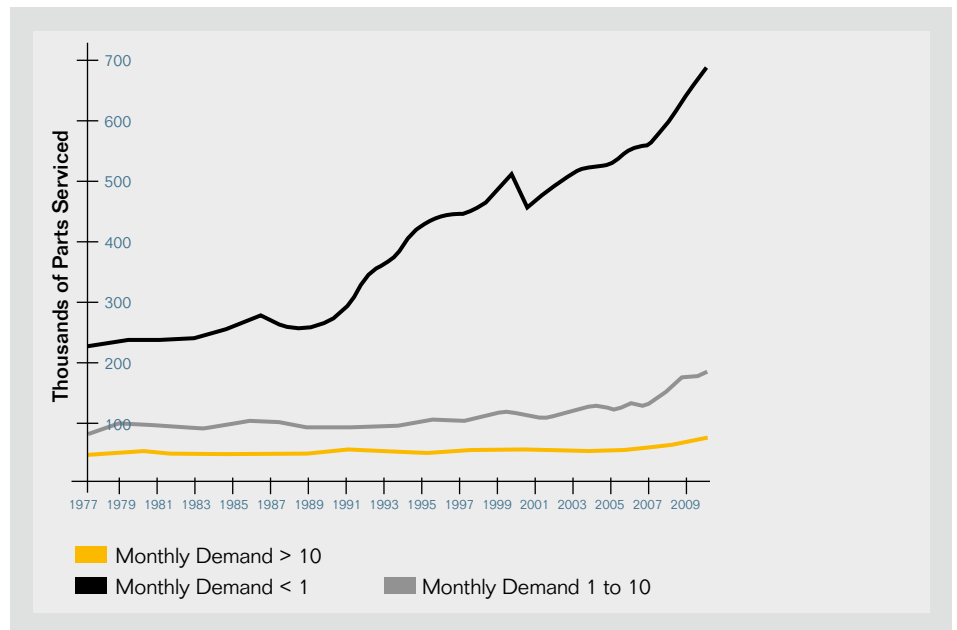


Figure 1: Growth in Slow-Moving Items at Cat Logistics Services

By combining best-in-class processes and planning techniques supported by an appropriate IT infrastructure, organizations of all sizes can improve their efficiency and boost the success of their service parts management businesses.

Demands from customers for better service are dictating new approaches to service parts management that call for available inventory and fulfillment of committed delivery dates. This trend requires a new level of flexibility and responsiveness. Organizations need to make decisions more quickly, and the flow of work through the organization has to be efficient and accurately prioritized.

In 1987, Cat Logistics was formed as a wholly owned subsidiary of Caterpillar Inc. to provide world-class logistics solutions. Today, Cat Logistics serves more than 65 client companies, including Caterpillar, in a number of market sectors worldwide.

Cat Logistics understands that shareholder value is directly linked to rapidly evolving process improvements in supply chain management that enhance customer service and help achieve higher revenue and margins while

reducing costs. The company's culture revolves around a large-transaction-volume, high-velocity business, a commitment to total customer satisfaction, and a continual pursuit of process efficiencies. These considerations have driven the company to an integrated problem-solving approach that first identifies a problem, then analyzes the root cause, and finally implements a sustainable solution that improves the overall business. The progress Cat Logistics achieves is guided by an operating philosophy that drives results. Integral to this approach is a close connection to its dealers and a commitment to respond to customer demands as quickly as possible. A key factor is a highly integrated service

parts planning and management solution, which helps Caterpillar attain success in its parts and service lines of business and ultimately realize additional sales of its equipment.

This paper is part five in a five-part series that describes the best-in-class processes Cat Logistics developed from its decades of experience managing large multitier networks. It shares the know-how Cat Logistics gained over this period of time meeting the needs of global companies for service parts logistics in diverse product lines. The series is organized around the operational processes illustrated in Figure 2. This paper focuses specifically on order fulfillment.



Figure 2: Key Processes in Effective Service Parts Planning and Management System

ORDER FULFILLMENT

CAPTURE TRANSACTIONS ACCURATELY FOR SMOOTH OPERATIONS

Order fulfillment comprises a number of steps that must be executed smoothly to keep customers satisfied. A manufacturer's order fulfillment system must capture the transaction accurately, price items properly, see to it that the customer receives the order on time, ensure 100% line fill and 100% correct invoices, and avoid warranty issues. Manufacturers also need the flexibility to:

- Receive orders over the Internet, through electronic data interchange, and by phone
- Autopopulate intercompany and intracompany orders from forecasting routines
- Accommodate unique customer pricing and corporate buying arrangements
- Accommodate reverse logistics functions for returns and repair

Because order fulfillment is a point of critical interaction with customers, manufacturers need to ensure customer-friendly order processing. This requires that certain aspects of the supply chain – including warehousing, transportation, and parts-planning applications – be tightly integrated with a customer relationship management (CRM) application.

Order Management

The order management process can be as basic as taking customer orders and performing simple checks (for example, verifying that customer numbers and part numbers are valid) or as complex as processing based on business rules and parameters specific to each customer and part number.

Since the mid-1980s, market demand for new products and more frequent updates to those products have resulted in tremendous growth in the number of active parts serviced. That growth continues today. Now organizations must manage a growing number of parts and warehouses to support an ever-increasing number of slow-moving parts while maintaining high transaction volumes on fast-moving items.

Some examples of the complex processes that Cat Logistics employs are:

- Rule-based availability checking
- Credit checks
- Overrides allowed during and after order creation and submission
- Consolidated shipments
- Partial versus complete shipments
- Regulated products
- Marketing program eligibility
- Carrier selection
- Order priority for fulfillment
- Complex pricing rules (including taxes, uplifts, and discounts based on rules)
- Return-order processing
- Entitlement processing

All of the above are driven by order type. In other words, some or all of the rules will vary depending on the type of order entered by the dealer or customer. By applying rules based on order type and by defining possible business situations in the order fulfillment system, Cat Logistics can streamline its order management process.

Claims and Surplus Returns

Like order processing functionality, the claims and returns functionality in the order fulfillment system is designed to simplify the process for the dealer and Cat Logistics. Claims processing, which can result from shipping the wrong part, an overage, or a shortage, is straightforward, because the orders involved were processed only days before the claims are submitted. The claimed items may or may not be returned to Cat Logistics by the dealer, depending on the scenario.

The following are a few examples of the claims process:

- The dealer ordered two parts but received three (an overage). In this case, the dealer wants to keep the excess, so the dealer will receive a debit for the additional part and Cat Logistics' inventory will be decremented by one when the claim is approved.

Cat Logistics understands that shareholder value is directly linked to rapidly evolving process improvements in supply chain management that enhance customer service and help achieve higher revenue and margins while reducing costs.

- The dealer ordered ten items but received nine (a shortage). The dealer will receive a credit for one part, and Cat Logistics' inventory will be increased by one when the claim is approved. If the dealer still wants the one part that was missing in the order, the part must be reordered.
- The dealer ordered part A but received part B. In this case, the dealer chooses to keep part B. The dealer will receive a credit for part A (and the inventory will be increased) and will receive a debit for part B (and the inventory will be decremented) once the claim is approved. If the dealer still wants part A, it must be reordered.

In all of these examples, the dealer would cross-reference the invoice as part of a claim. This process enables Cat Logistics to investigate and process all claim types quickly, resulting in fast credits or debits back to dealers or customers. It also keeps inventory balances accurate.

When a claim results in a return, it follows the normal returns process. A return request will be generated by the dealer, and all of the necessary financial transactions will occur once the claim is approved. When the return is physically received and inspected,

the appropriate offsetting debit or credit will be generated automatically. Tight integration between various systems, including CRM, warehouse management, and financials, allows Cat Logistics to automate this process.

The surplus returns process is more sophisticated because the material could have been on a dealer's shelf for months or even years, so there are not necessarily any prior documents to cross-reference. A dealer will systematically enter a surplus returns request, which is then evaluated by the CRM software or by a returns analyst to determine the parts and quantities that can be returned. Cat Logistics assigns a specified time frame in which the dealer must return the parts. This is done to avoid a flood of parts being returned to a facility. If the parts are returned outside of that window, they can be rejected and sent back to the dealer.

Once the parts have been received at Cat Logistics' returns processing center and have been approved to be brought into the network via an inspection process, these items are available for sale. Inspection results are recorded in the surplus return area of Cat Logistics' CRM application. After the return inspection is complete, appropriate credit is given to the dealer.

The surplus return process allows Cat Logistics to work more effectively with its dealer network to move surplus material off the dealer's shelf and back into the supply chain and to free up space at the dealer location. By invoking the inspection process and recording the results in its CRM software, Cat Logistics makes better financial decisions regarding credits.

Multilevel Pricing and Invoicing

Cat Logistics' system supports multi-tiered invoicing that enables it to invoice from one Caterpillar sales organization to another, down through the dealer, and finally to the end consumer.

Integrated Applications

All the relevant business applications of Cat Logistics are integrated to provide order analysts with access to a single information platform. Once orders are in the ordering system, the information is immediately available and visible to the warehouse and materials systems. The warehousing applications receive information on what orders are being fulfilled at their locations and include parameters that can be used to control and plan the processing of outbound order fulfillment. This visibility ensures that emergency orders and back orders are processed in a timely manner and that trucks are loaded in the most efficient way possible. An emergency order – such as for a “vehicle off road” – can be processed and transported quickly to get the vehicle back on the road rapidly.

As an item is put away into a bin, the warehouse application notifies the materials and order processing system that a part is now available for sale. This triggers real-time back-order processing, when applicable. The material planning system can in turn establish alerts or event-based triggers based on unusual order patterns. For instance, in the case of an unexpectedly large order, the system can alert the material planner so that this person has the insight needed to react rapidly to this surge in demand.

Worldwide System

Cat Logistics can perform real-time planning because it knows the exact inventory situation at any given moment as well as the expected inventory for future periods for all its facilities worldwide. Order analysts at Cat Logistics have direct access to every function they need to, for example, enter quotes, perform inquiries, and file claims and returns. This access obviates the need for intervention by parent company staff, which reduces the burden on it and increases customer service efficiency.

Enhanced visibility into the status of orders enables a quicker response when the warehouse does not have the inventory at a facing facility. Order analysts can quickly determine where the parts will come from and when they will arrive. They can then share accurate information with the customer, which leads to improved customer satisfaction.

Global Available to Promise

Most manufacturers experience situations when inventory is placed in

the “best” location, but then something happens that causes the inventory to be located in the wrong place to fulfill demand. Increasingly, as companies reduce buffer inventory, they need to improve their ability to respond to stock-out situations, which will inevitably occur. Rapid response to such situations requires tight integration of the ordering system with planning and inventory management systems. Cat Logistics invokes global available-to-promise functionality to search locations and substitute parts for available products. This functionality can initiate kitting and third-party orders, including dealer-to-dealer referrals, or it can trigger staff to check supersession and substitution rules to determine if another part may be substituted. These methods help ensure higher order fill rates to satisfy customer demands.

Global Referral Pattern

When inventory is not in the right place, the next best option is to send the order to where the inventory is located. Ideally the order will be fulfilled by the next closest facility to the customer. Manufacturers can implement order search functionality that enables them to search for inventory at the second-closest facility, then the third-closest, and so on.

Cat Logistics' global referral pattern provides stacked rule sets that allow the company to efficiently search world regions in the proper sequence. Subsequently, order analysts and customers can view inventory at parsed distribution facilities in a logical sequence that may also include other dealer inventories within that region in the search. Because Cat Logistics

tracks dealer inventory positions, it can perform two types of searches. The company may include dealer inventory in the referral pattern or perform a regional dealer search at the end of its internal region search. In addition, Cat Logistics is able to search for direct ship suppliers by region.

Cat Logistics' “order search engine” includes functionality that protects floor inventory based on customer type and order type. For instance, the search engine will consider if Cat Logistics should be allowed to deplete inventory at a certain location. For emergency orders, the message might state: “The inventory of this part at the facing facility can be taken down to zero. However, if this inventory is needed for an OEM, or to fulfill a stock order, check with another facility instead.”

As part of the order search functionality, users can partially or fully close a facility with a single update. This is valuable for addressing situations affecting a certain facility, such as planned or unplanned (weather-related, for example) outages. Additionally, when the facility is reopened, it can be “metered in” – in other words, only certain order types from facing dealers will be sent to the facility for a specified amount of time.

Expediting Orders

Any time Cat Logistics cannot promise a part right away according to its global availability-to-promise rules, an alert is issued and the order is routed through an expediting process. Cat Logistics provides its dealers with a promise date based on what is known about material in transit. For every order with a reasonable requested date that

cannot be met, a back order is created and an alert is sent to an expeditor, whose job performance evaluation is based on reacting within 24 hours of notification. The expeditor either confirms that the information generated by the system was correct or provides newer information. All alerts are routed through a standard interface, and users can choose which orders get routed to them.

Dealer-to-Dealer Referrals

Dealer-to-dealer referrals enable dealers to sell off parts they had intended to return to Cat Logistics and provide an opportunity and environment for dealers to sell new parts. Cat Logistics handles the order's entire transaction process in the following steps:

1. A purchase or sales order is sent as a request to the selling dealer's system.
2. When the selling dealer ships the material, Cat Logistics sends an advance shipping notice to the buying dealer.
3. Cat Logistics purchases the part by crediting the selling dealer for what was sold.
4. Cat Logistics invoices the buying dealer and assumes accountability for that sale. All financial transactions, part-quality issues, and returns are handled by Cat Logistics.

To make this program work, Cat Logistics had to manage change-related issues and provide incentives to dealers by partially funding the program. After taking part in a pilot for a year, however, the participating dealers saw the value of the program and convinced the remaining dealers of it. One result has

been a 25% decrease in back-ordered items. Dealers are satisfied by having the opportunity to sell parts that they could not move within their own network, and customers are satisfied by having better access to hard-to-get parts. The program was made possible through the tight integration between Cat Logistics' ordering system and the dealers' ordering systems, with systems able to automatically update each other through a system-to-system "handshake."

Ensuring Customer-Friendly Order Processing

The following is a sampling of the many methods Cat Logistics employs to perform customer-friendly order processing:

- Product characteristics and logic are built into the ordering system to ensure that customers are ordering the correct part. Sales agreements determine if the customer can order any given part. If the part ordered is not typically serviced for that customer, the order fulfillment system notifies the customer.
- Algorithms – such as logic detecting reasonable and excessive quantities – help ensure that the quantity ordered is correct. Cat Logistics tracks statistics about part demand in inventory levels and informs the customer if it seems that the order placed is too large.
- The warehousing system informs dealers if the order was entered after the cutoff for the day, based on the chosen route.
- Customer profiles within the ordering system provide dealers with flexibility and control. For instance, if the order

is placed on a weekend or holiday or late in the day, the dealer can enter the order under a certain profile number or identifier to choose a referral pattern so parts are sent from a different location first. Or the dealer may opt to have the part shipped directly to the customer site by choosing different addresses or carriers.

- Dealers have full inquiry access to every order and to significant status changes, from delivery through billing. Dealers can maintain an order online up to various milestones.
- Dealers receive an acknowledgement for every change in an order. A handshake between the Cat Logistics' system and the dealer system then automatically updates the dealer's database. If one or more ordered parts are unavailable, Cat Logistics provides an estimate for a new expected ship date.

Statistically, Cat Logistics knows if it met an order via a safety fill or had to enter into global availability-to-promise mode and invoke search strategies to do it. To be even more effective, the company measures why it did not fulfill an order at a facing facility by tracking answers to questions such as:

- Did the dealer's referral pattern force Cat Logistics to go elsewhere for parts?
- Did the dealer partially fill the order at the facing facility?
- Did the dealer give preference to another facility and not give the facing facility a chance to fill the order?
- Did a marketing program force Cat Logistics to source from a certain location?

CONCLUSION

RUN AN EFFICIENT SERVICE PARTS SERVICE TO SATISFY CUSTOMERS

The quality of service that organizations deliver can be a key competitive differentiator. The quality and timeliness of delivering that service depends on the availability of the parts needed to successfully conclude the service. To reduce costs and improve service effectiveness, organizations must shift from being reactive to being proactive service providers. By combining best-in-class processes and planning techniques supported by an appropriate IT infrastructure, organizations of all sizes can gain efficiencies and boost the success of their service parts management businesses.

Cat Logistics runs an efficient service parts business that keeps customers satisfied, in part by employing a customer-friendly ordering system that supports its order processing methodology. This methodology also allows it to deal successfully with a large number of slow-moving parts. Be sure to read the other papers in this five-part series to gain insight into best-in-class processes for demand planning, inventory planning, distribution logistics, and warehousing from Cat Logistics.

A manufacturer's order fulfillment system must capture the transaction accurately, price items properly, see to it that the customer receives the order on time, ensure 100% line fill and 100% correct invoices, and avoid warranty issues.

To learn more about how the SAP® Service and Asset Management solution can help you improve service parts management, call your SAP representative today or visit us on the Web at www.sap.com/solutions/sam.

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