

e-Commerce in the Transportation Market

A White Paper

Executive Summary

The maintenance and service of complex equipment have become new areas of focus as well as a means of competitive differentiation for manufacturers of that equipment. Efficient delivery of information as well as interactive collaboration with dealers and customers is critical to that maintenance and service effort.

The internet has emerged as a new IT backbone and with it new markets and information sharing opportunities and it has begun to exert pressure on pricing models. How can we use the internet as a channel for the delivery of rich content, and a new forum for collaboration between the manufacturer, the dealer and the equipment operator? The uptime of complex equipment is critical, and as complexity increases, that uptime can only be achieved through more efficient communication between the supplier, the dealer network and the operator. Content is the key to improved uptime for both dealers and customers.

E-commerce and e-business systems that can deliver the necessary product support content and aid the operator in improving the equipment uptime are vital to the effective operation of today's business.

Uptime is Critical

Manufacturers of rail, trucking and automotive products understand that the uptime of their equipment is critical to the operators of that equipment. Whether they move people or freight, the effect is substantial when the equipment is not operational. Revenues are decreases and additional costs are incurred in the process or attempting to find alternate modes of transportation. Schedules are thrown into complete disarray. Fleet managers need to know that their equipment will not be out of service when it is required. Ensuring high uptime requires effective maintenance and service. The maintenance and service departments of both dealers and equipment operators have become increasingly dependent on technical information. In fact, technical information is instrumental in inventory planning, decision support as well as eService initiatives.

In order to increase uptime, maintenance staff must be able to quickly troubleshoot problems, procure spare parts and make the necessary repairs. Efficient troubleshooting of complex systems requires access to all of the required and relevant information, so that the correct decisions can be made. Once a decision has been made, it must be easy to procure the required spare parts so that the machine can be repaired. In order to maintain high uptime, dealers also stock a large inventory of spares. More effective maintenance predictability could help to reduce this inventory.

Complex Distribution Channels

In order to get closer to their customers, manufacturers have established complex distribution networks consisting of distributors as well as dealers that can provide service and spare parts. Dealer can provide the benefits of being close in location geographically to the customers, as well as having an ongoing relationship with those customers. The manufacturers offer the product support content as well as service bulletins to inform the dealer of safety or performance and service issues.

The more effective these distribution channels are, the higher the spare parts sales will be. Dealers will be able to trade excess inventory for more complete information including service bulletins that allow them to achieve better inventory predictability, as well as increased uptime that will drive more spare parts sales. As a result of their close location to the customer, dealers have the ability to develop a closer relationship with the equipment operator. This allows them to keep better track of the current maintenance state of the equipment. They can also track service bulletins to ensure that the equipment is maintained as effectively as possible. In fact, efficient delivery of product support content to the dealer channel will actually drive an increase in the uptime of the equipment.

Manufacturers have looked at their content production processes and realized that they are strategic to the management of their dealer channel. Information Technology (IT) support to the dealer network will also be a strategic advantage to the "clicks and mortar" over the traditional storefronts by allowing infrastructure costs to be shared between manufacturer and dealer and therefore minimized. Service departments will be able to better drive information dependent processes.

For the manufacturer, keeping the dealer channel happy is crucial to keeping operators satisfied and driving future business.

Delivering Complex Information

A recent study of search times for information by the telecommunications standards group Telcordia showed that given content presented in an HTML web-based format, users could find information in about 60% of the time it took to find the same information in a paper-based catalog. However, given content presented in Adobe PDF format, users took the same or longer times as finding information in the paper-based catalog. Content delivered in a structured format in HTML (and XML) is almost twice as effective as either PDF or paper-based information. Since maintenance staff typically spend up to 10-20% of their time searching information, effective structured information can save them almost half of that time. By improving access to information, maintenance productivity can be increased substantially.

In some situations each piece of equipment is built exactly to the specification of the customer. Each product is therefore completely unique. The maintenance manager faces the problem of troubleshooting a piece of equipment that may bear only some similarity to any other piece of equipment in their plant. They must locate maintenance information based upon the unique key of the Vehicle Identification Number (VIN) in order to troubleshoot and resolve problems. Manufacturers in this situation must solve the very complex problem of delivering information to their customers uniquely per piece of equipment. The situation where information is different depending on the specific model of the equipment is termed *effectivity*. The importance of effectivity in content delivery solutions increases as the number of unique models of the equipment increase.

Delivering content in a structured fashion is the key to effective troubleshooting and problem resolutions. Additionally, service bulletins enable dealers to ensure that the operators are up to date with current safety and performance information. Service bulletins also increase spare parts revenue as the operators will be replacing the parts listed in the bulletins in order to satisfy a safety issue, increase the performance of the machine or reduce the cost of operation.

Effective content delivery combined with parts ordering information is the key to decreasing disorder rates. Some of this information is electronically available in Adobe PDF form. However, as discussed earlier, this is a step backward from the original paper form, so most of it still exists as paper documentation. A complete collection of maintenance and service information available through a web-based portal can also lead to increased customer self-service. Electronic delivery can also result in increased maintenance productivity by reducing the time spent looking for information, which can be 10-20% as mentioned earlier.

Training

Effective problem resolution depends on the supply of well trained service technicians. Customer and dealer training departments typically re-purpose the equipment manufacturer's manuals and documentation, as well as add their own content, to train their staff. This is a time intensive procedure requiring re-keying of information found in paper or possibly Adobe PDF documents.

This process may yield excellent training information, but the support staff will be faced with the original documentation in the field. Training would be much more effective if the original documentation was usable as training material, so that staff would be able to directly re-use what they had learned in training. By directly incorporating the OEM documentation along with their own best practices into one information delivery system and then structuring their training procedures to match the actual on the job use, one high technology company was able to substantially increase the effectiveness of their staff training. At a hiring rate of approximately 700 support employees per year, they were able reduce their training time by approximately 45%. In fact, when they surveyed their staff they found that 89% of the employees regularly used the skills they had learned in training. They also discovered that 79% of their employees felt that they were able to work more independently, and 25% felt more confident in their jobs.

Better content and better references to that content are keys to reducing the cost of, and the time required to train employees. This can also reduce the turnover of staff.

Finding and keeping skilled network maintenance staff is becoming increasingly difficult. In fact a 1999 study of network operations among service providers showed that 58% of respondents felt that recruiting and retaining talented staff was their greatest challenge. When staff are changing rapidly, training becomes extremely important in ensuring that employees are effectively prepared to perform the tasks assigned to them.

Aftermarket Support

Complex equipment has an appropriately complex lifecycle given the 10-20 year lifetime of the product. This lifecycle involves the product, the customer and the product support content. It begins with the manufacturers, from design through component procurement, build and equipment sale. The cycle continues through maintenance, repair and operation on the customer side. The aftermarket comprises all of the aspects of service and support after the initial sale of the equipment. This also includes all of the spare parts required to maintain the equipment and operate it efficiently.

The aftermarket is essentially a feedback loop from the customers to the manufacturers, either directly or through the dealer network. Manufacturers are increasingly turning to using the internet as a channel for that feedback loop, and to provide the most current product support content to their dealers and their customers. This allows them to deliver documentation updates and product support updates to the dealers immediately as soon as they are available, and aid in customer self service. It also allows the dealers and customers to add Post-It Note style annotations to the content in order to share their information with the manufacturer. The customer can use this feature to communicate their issues back to the manufacturer, and the manufacturer can use the customer feedback to help to improve their products. The customer can also incorporate their own best practices into their documentation. This product input can also aid the manufacturers in understanding how their customers use their products, and potentially how they may be redesigned to be more effective in the future.

Manufacturers are beginning to move downstream in the supply chain by providing services that are much closer to the customer than merely the sale of the equipment. Though they generally do not wish to alienate their dealer network, they understand the value of a direct channel between themselves and the end users of the equipment. In some cases though, the equipment manufacturer does want to eliminate the dealer by communicating directly with the operator. This concept of “removing the middleman” is known as *disintermediation*. Manufacturers who take this step may continue to pay commissions to their dealers to keep their dealers happy. For example, the construction equipment division of Hitachi pays a commission to their dealers based upon the location of the customer even for a web-based sale in order to keep their distribution channel intact.

This can also act as a channel for cross-selling and up-selling of equipment and spare parts to existing customers. Manufacturers can offer all of the content required to make purchasing decisions. Such a collection of information is referred to as *transactive content*. Customers who need equipment and spare parts can use the support content as well as product and pricing information to make a purchasing decision.

Service bulletins can also be used to increase spare parts revenue as the operators will be replacing the parts listed in the bulletins in order to satisfy a safety issue, increase the performance of the machine or reduce the cost of operation.

Spare Parts Issues

In highly specialized equipment markets such as aerospace, the original equipment manufacturer typically controls up to 65% of the aftermarket spare parts market. The remaining share is composed of 15% from excess inventory, 15% refurbished parts, and *only 5% from alternative suppliers*. In the overall transportation market, parts are far more standardized, and the share of aftermarket spare parts from alternative suppliers may be *up to 40%*.

The result is that manufacturers must offer greater incentives to purchase their OEM spare parts. These incentives do not necessarily need to be cost-based, but may instead result from product differentiation, or a greater perceived value in buying the OEM parts on behalf of the customer. The simplest and most effective way for a manufacturer to differentiate themselves is to offer the most complete collection of product support content. More effective information delivery allows more efficient troubleshooting and problem resolution, and therefore overall higher uptime. OEM spare parts sales are also driven by service bulletins, which operators will implement to achieve either increased performance or reduced operational costs. If the OEM offers a way to purchase these spare parts via their web site, especially if the order can be initiated directly from the service bulletin, there is a strong initiative to purchase the parts directly to save time.

In addition, by delivering the most complete, timely and accurate information you can lock in customers to your channel, which depends on the information you provide. In this way you can effectively grow your market share over those suppliers that do not provide content. Your content is your best weapon to increase spare parts revenue.

This is also a way to fight the problem of “fake” parts. These are lookalike spare parts produced typically by offshore companies. These parts are designed to look exactly like the OEM parts. They are not the actual parts and do not meet the same stringent standards that the OEM parts do. However, the manufacturer sometimes takes the blame when these parts fail in service.

Keys to Customer Satisfaction

The keys to satisfying the customer in terms of availability, training and aftermarket support are effective content management and delivery, simplified purchasing decisions and procurement, and collaboration between the manufacturer and the customer. Or to put it more simply, the most important elements are *Content*, *Commerce* and *Collaboration*.

Content

An effective solution for manufacturers must be able to deliver a large volume of content electronically. It must also make that volume of information navigable and searchable. When information is delivered in this fashion, especially in a structured form using HTML or XML, versus a format such as Adobe PDF, the time required to find information is substantially decreased and employees are correspondingly more productive.

Commerce

Commerce, and more recently e-commerce refers to providing all of the information required to drive purchasing electronically. Equipment manufacturers can sell spare parts via the web, by providing the information that their customers need to make procurement decisions. These web-based systems can also integrate with enterprise resource planning (ERP) and order management (OM) systems on the sides of both the manufacturer and the operator of the equipment, allowing a complete solution.

Collaboration

Effective problem resolution is a product of ongoing collaboration between the customer, the dealer and the product manufacturer, as well as collaboration among the customer’s and the dealer’s support staff. The incorporation of best practices within the product support content can also improve the ability of the customer to maintain and grow their infrastructure with greater reliability.

Integration with the Back Office

Equipment operators have a number of back office systems to deal with. The systems generally center on the operations processes. Solutions for the maintenance of equipment should be able to integrate with those systems, as well as with automated diagnostic systems in order to enable employees to more effectively diagnose and resolve problems,

In addition to this, where manufacturers offer the potential for e-commerce, the solutions should be able to integrate with the customer's procurement and order management and inventory systems, allowing the efficient procurement of spare parts. This type of integration can allow the service provider to manage their inventory with greater predictability, and therefore reduce their excess inventory, while still maintaining a level of comfort regarding the ability to have equipment available where necessary.

Conclusions

Consider some of the following decision points and questions about your customers, your organization, its business goals, and its technical infrastructure and approach.

Identify the Requirements of Your Customers

- ◆ Is technical support a major cost or issue for your dealers?
- ◆ Would better information make your customers more productive?

Identify Where Your Organization is Regarding e-Content

- ◆ Do you author your content in a structured format?
- ◆ Do you deliver thousands of pages of technical and catalog content to the operators of your equipment?
- ◆ Do you have a solution in place to deliver your product support content?
- ◆ Is it easy to find information when required?

Identify Where Your Organization is Regarding e-Commerce

- ◆ Are you evaluating or rolling-out content management or catalog management software? Or do you have such technology in place already?
- ◆ Do you require your content to be integrated with technical data, e-commerce information, or other back office information?
- ◆ Would you like to deliver integrated content and technical information to customers and channel partners?
- ◆ Do your content systems on both the sell-side and buy-side need to be integrated with transaction systems?

Identify Where Your Organization is Regarding e-Collaboration

- ◆ Do you provide web-based customer support and/or selling? Have your customers ever asked to be able to do this?
- ◆ Could you benefit from knowing more about how your customers use your products?

Assemble the Right Technologies and Solutions

- ◆ Concentrate on assembling best-of-breed technologies for content management, e-commerce, applications serving, and applications integration.

Decide on the Business Objectives of the Implementation

- ◆ Clearly, you will be looking for improved reliability and maintenance productivity. You will want to evaluate certain customer support metrics to look for an increase in self-service customer support among operators, as well as increased customer satisfaction.

Implement, Measure for Success, and then Build on that Initial Success

This early success will convince management, employees, and partners of the viability of the new content-commerce-collaboration business models. Other parts of the organization, and other partners, will be ready to participate as you expand these solutions across your enterprise.