Leveraging Service Intelligence to Increase Product Uptime and Customer Satisfaction

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As original equipment manufacturers (OEM) try to increase product uptime, increase end user satisfaction and augment their product sales revenues with services revenues, they should consider how product and field services organizations can play a key role. Field service organizations (FSO) have the knowledge and the ability to reduce the impact of product downtime. They can leverage service intelligence powered by sophisticated monitoring and diagnostic solutions to optimize operational metrics like mean time to diagnose, first-time fix rates and work order completion rates.

In fact, nearly 60 percent of companies that trigger their service orders based on data captured directly from their products are above-average performers, compared to their peers, according to a recent study underwritten in part by Qualtech Systems, Inc. (QSI), a field service intelligence solutions company, and published by the Aberdeen Group, a leading industry analyst in the service chain management space. So, optimization of field service makes a lot of sense, especially when sophisticated self-monitoring and self-diagnosing solutions are making it possible to significantly enhance the field service process.

The maturity of an FSO within a given OEM depends on the OEM's philosophy about strategic use of service. More organizations are moving away from viewing the FSO as a cost center and empowering it to become a profit center. Those that do are generally better positioned to achieve relatively higher maturity levels.

To make this a reality, those organizations need to rely more heavily on timely insights from the product itself. "Smarter" products – equipment, tools or machinery with a self-monitoring and self-diagnosis capability – will empower service personnel to get to the root cause quicker, make existing processes more proactive and secure and directly help to reduce costs such as those resulting from multiple escalations or too many unnecessary service parts consumed per service call.

Making Novice Technicians Into Experts

With guided troubleshooting or dynamic service manuals, call center personnel and field service technicians can become dramatically more productive. In fact, novice technicians using some diagnostic software have performed comparably with seasoned experts.

Consider a single advantage of dynamic service manuals. Armed with these powerful tools, workers handling service calls don't need to know the intricate details of products installed in the field in order to accurately diagnose faults. Based on input from the end user, on-site observations or input directly from the product itself, service personnel can simply select appropriate symptoms, specify the resources on hand, follow appropriate cautions and advisories, and get step-by-step instructions for diagnosis until the root cause is identified.

This approach has the potential to significantly reduce mean time to diagnose, reduce false pulls, increase first-time fix rates and increase work order completion rates. Additionally, it enables newer field service personnel to become productive faster – often with less expensive but more effective training – and those personnel can be leveraged to troubleshoot and repair several product lines with varying degrees of complexity. By bringing diagnosis capability to the front lines, this approach also has the potential to reduce the disruptions and the costs associated with service call escalations.

Tipping Tradition on Its Head

Collaborative Service

An enterprise-level collaborative service process can be created by having all service technicians leverage the same asset and service knowledge (ASK). Availability of infrastructure such as network connectivity will make such collaboration easier. When available, all service personnel from different locations can access ASK through Web browsers and have a consistent guided troubleshooting experience. Failures, symptoms and troubleshooting results achieved by service personnel in one location can be captured and transmitted across the organization.

This makes it possible to create a service organization that is not only collaborative but is also continuously learning and improving service capabilities over time. In scenarios where network connectivity does not exist, troubleshooting information can still be captured by local installations of ASK (in a PDA or laptop) that can be synchronized periodically with the master ASK residing in a central server.

A key requirement of continuous learning is the willingness of service personnel to meticulously record the myriad steps taken, and the time required for each step, in order to diagnose a fault. The burdens of a manual process that is heavily dependent upon the compliance of service personnel can be optimized through automation. Information such as repair times and isolation success can be automatically captured from the different service sessions and used to continuously

enhance the accuracy of the dynamic service manuals. And the errors associated with a process demanding that service personnel record diagnostic data manually are largely eliminated.

Diagnosis-Centric Dispatch

With smarter products, the traditional process of performing diagnosis after dispatch can be turned on its head. The health of a product can be monitored and diagnosed either in real time, on demand or a combination. And resulting diagnostic insights can be used to dispatch the right service parts and the right service personnel to the right place at the right time.

The diagnosis-driven dispatch process provides sufficient lead time to act and reduces or eliminates the need for service personnel to carry random service parts. The capability of the service organization shifts from being reactive to proactive, which translates to happier end users. By reducing the mean time to diagnose, increasing first-time fix rates and improving work order completion rates, the service organization can significantly reduce product downtime for its end customers.

Design-Driven Serviceability

By the time the design of a product is firmed up, 70 to 90 percent of the support cost is cast in stone. Consequently, service organizations can realize significant downstream savings if they influence the design of the product up front. The life cycle cost and logistic footprint can be quantified early on. This could involve comparative analysis between different configurations of the product leading to the choice of a configuration that is most supportable.

Consider, for example, the cost associated with a trade-off between having an additional sensor and not having it. Designing the right mix of fault codes into the product to improve testability is one of the most inexpensive ways to improve design for serviceability. Up-front testability analysis can help to predict the following:

- Percentage of the problems that can be solved at a certain level based on access to certain tests;
- Average number of service parts that will be consumed per visit; and
- Average anticipated downtime resulting from troubleshooting with insights on metrics like mean time to detect and isolate.

The earlier the service organization impacts the design, the better the opportunities to develop smarter products that automatically indicate the exact service parts that require replacement, instead of just generating fault codes. The service organization can achieve a maturity level where instead of focusing on troubleshooting, service personnel simply swap the indicated service part.

That means OEMs can focus on the service parts business, which is often more profitable, rather than supplying technicians. This is no small concern in cost-sensitive markets. Where appropriate and a fit exists with an OEM's business model, the aspect of supplying people can be left to third-party independent service organizations.

Trimming the Cost of Service Parts

Service parts tied up in inventory are another source of significant costs for an organization. Very often service parts inventory levels are determined based on historic trends as well as geographic proximity of the end user to the distribution center. But this process can be further >>

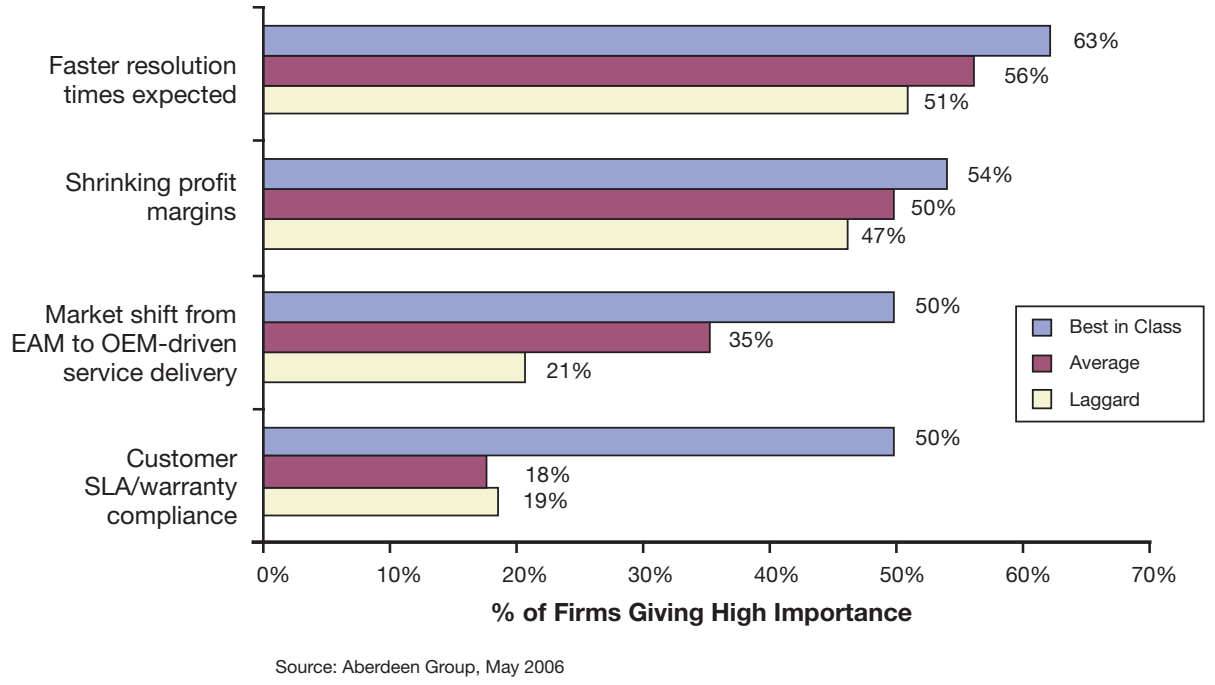

Figure 1. Key Market Pressures Driving Investments in Service Solutions

>> refined and optimized. Knowledge from up-front testability analysis on the product during the design cycle can be used to estimate the fraction of time the root cause of a failure can be uniquely identified rather than ambiguously presumed.

The design of the product can be optimized until the ambiguity is reduced to an acceptable level. This will in turn reduce the number of service parts that need to be carried in field inventories. And as more information is captured from the field and the model, or as knowledge used for testability is refined, the predictions related to service parts consumed per visit can also be refined. That will help to further optimize inventory levels.

Industry Trends

The Aberdeen Group study found that as product-centric companies look to combat saturated markets and falling profit margins on product sales, they are increasingly wrapping post-sale services around their products to grow service-based revenues and profits. To enable these services, leading OEMs are evaluating and deploying technologies that allow service organizations to remotely monitor product performance, diagnose part failures, trigger corrective work flows and carry out repairs.

An OEM's capacity to offer life cycle service contracts, predictive and preemptive maintenance and premium service levels can make the difference between a customer-for-life and a lost deal. Solutions such as those provided by QSI continue to emerge as a critical enabler for OEMs looking to compete more effectively and to supplement their product revenues.

The Aberdeen study highlights key market pressures driving investments in solutions such as those provided by QSI, as shown in the Figure 1.

As the graph of findings from the Aberdeen study shows in Figure 2, dramatic performance improvements are achievable with solutions such as those provided by QSI. ■

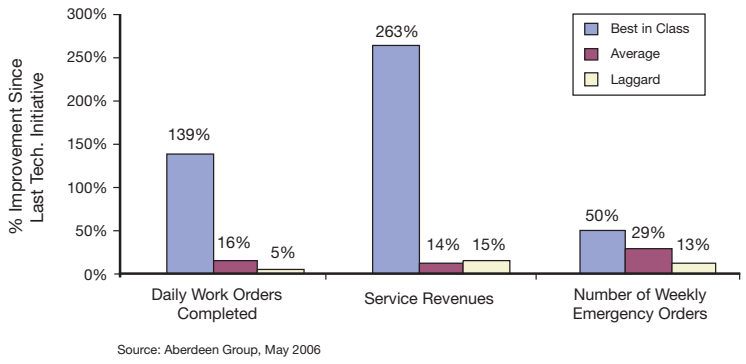

Figure 2. Dramatic service performance improvements are achievable.

About the Author

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Chakrapani (Chuck) Vallurupalli serves as president of Qualtech Systems, Inc., where he is responsible for all aspects of its business strategy and execution. Chuck holds an M.S. in engineering from the University of Missouri-Rolla and an M.B.A. from the University of Chicago Graduate School of Business.