Tech-Clarity

making the value of technology clear

Service Lifecycle Management Goes Mobile

Taking Field Service Applications into the Field

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Executive Overview

In the world of service, value is often perceived - if not generated - in the field. The technician at a customer site is a critical point of contact between a service company and its customers. During a call, the service company can earn the customer's respect and further a long-term relationship, or potentially discredit the company and damage the relationship. To be fair, one service call isn't usually the difference between a happy customer and a dissatisfied one, but a series of these interactions helps to determine the view that the customer has of its service provider. Despite everything that goes on behind the scenes to prevent service problems from occurring in the first place, and without regard to the office and depot functions, a customer's perception of value still comes primarily from the perception of the field personnel.

Mobile technology, when coupled with a strong SLM approach, can help to ensure better customer service at reduced total cost.

Moving beyond the experience with the field personnel and the break/fix mentality is a higher level of value. This higher value, coined by industry analyst firm AMR Research as Service Lifecycle Management (SLM), is an approach for service-oriented companies to better serve their customers for enhanced profitability. Furthering this value, mobile technology provides more effective communication, timeliness and quality of business interactions. Mobile technology, when coupled with a strong SLM approach, can help to ensure that service organization is able to serve the customer to their satisfaction, and do so at a reduced total cost to the service organization. Further, Mobile SLM capabilities can help companies grow revenue through better and more timely information about customer needs.

Adopting Service Lifecycle Management techniques alone is a compelling proposition, providing increased revenue, lower costs and improved customer satisfaction. This paper explores the additional value that mobile applications provide across the service life of a product or piece of capital equipment. The paper will discuss the direct value of the mobile applications, and also explore the ability for mobile technology to drive SLM changes into the business to get the highest value and satisfaction out of every customer interaction. In addition, the paper will highlight how mobile technology can not only improve the actual value offered to service customers, but add to customers' perceptions of value.

Furthering Service Value with Mobile Technology

As much as most service companies would like them to, their customers don't always appreciate equipment that just works. Despite all of the effort that is being invested in preventive and predictive maintenance to avoid the need for service calls, customers often don't recognize the value of service until they see it in the field. Most customers recognize the importance of avoiding equipment failure and downtime, and often value service level agreements (SLA) that include call avoidance, but what is most visible to them is typically the break/fix response when something has gone wrong. When equipment is not working, they value seeing a professional, capable technician that they know is working to solve their problem.

World-class service companies know that an integrated approach that ties call centers, depots, field service, sales and office personnel together provides the most value to their customers

Of course, it is probably more appropriate to say that service value is *recognized* in the field as opposed to saying that service value is *earned* in the field. World-class service companies know that an integrated approach that ties call centers, depots, field service, sales and office personnel together provides the most value to their customers. Service companies that continue to focus on remote diagnostics, self-service and other best practices in SLM will continue to provide greater service value to their customers and do so at a higher level of profitability for their own businesses.

Recognizing that their customers perceive value in the field, however, service companies should try to maximize the value of the face-to-face opportunity. The service technician is a critical link to providing the service that the customer values – and probably the most visible link to the customer. The service technician must be properly enabled to deliver that value in the field, and also to take advantage of the onsite experience to increase customer satisfaction and sales. Wireless field service technology provides the ability to capitalize on the service experience as well as make the service more effective and efficient. It also reflects positively on the field service technician when they use modern technology and can instantly tap into the resources of the entire service organization. "*Our goal for enabling our field force with wireless is to improve customer service and decrease our administrative costs*," says Kim Partridge, manager, systems & processes for Data#3 Limited in Brisbane, Australia, "*but it will also make us look good - it's the right image for a high tech company*." Image isn't everything, but don't discount it either. Field technicians represent the way the service organization does business and the way it is viewed by the customer. In fact, some customers may not even know anybody else.

Tie the Field to the Business

If the goal is to help the service technicians do their jobs more effectively, more efficiently, and possibly even look good at the same time, then they must be in tight communications with the rest of the business. Getting the right technician, with the right parts, with the right tools, and with the proper information to take care of the problem takes a coordinated effort. Updated status from the call center, service level and warranty information from the front office, past service history and diagnostic aids from the service organization, and required parts and logistics support from the depot all play a critical role. With access to the right information on a real-time basis, the technician can get to the call prepared, close the call the first time, please the customer, and do all of this at efficiencies that allow a profit for the business. With real-time access to technicians, dispatchers can adjust schedules more dynamically based on new service requests, current technician status and actual call durations - so technician utilization and service levels can be increased. Some companies are investigating the use of GPS (Global Positioning Systems) and Automated Vehicle Location (AVL) so dispatchers can know not only the technicians' current status, but also their location. Tying the field to the rest of the business provides numerous opportunities to increase the profitability of service organizations.

> *Tying the field to the rest of the business provides numerous opportunities to increase the profitability of service organizations*

Of course, depending on your perspective, maybe the field is the business. From the perspective of the field personnel, access to information is critical to meeting increasing demands for efficiency. Service technicians are increasingly expected to cover more equipment, and often expected to perform preventive maintenance for additional equipment while on site fixing a problem. Simply knowing what inventory is required and whether it's available - whether it's in the truck, on another technician's truck nearby, at the customer site, or at the depot – can be a tremendous challenge. Real-time access to inventory needs and availability can reduce wasted time spent waiting for parts, sitting on hold at the depot, or driving to pick up a part that should have already been on the truck. Improved logistics is a common goal for companies that are looking to wireless technology to improve field service. Other potential areas of value include access to decision support and diagnostic tools, customer standard operating procedures, access instructions, directions, user manuals, and other work aids from the field.

Remove Paper from the Process

In addition to improving the communications and coordination within the business, wireless technology can also provide value by reducing paperwork. Paper based processes are inherently slow, inefficient, and prone to errors. By replacing paper in the process with handheld computers or laptops, a significant source of inefficiency can be removed from the process. Technicians don't like to do paperwork, and there is probably reasonable employee satisfaction and retention value simply from removing that chore from their daily lives. There are direct benefits of removing paperwork from the process as well.

> *By replacing paper in the process with handheld computers or laptops, a significant source of inefficiency can be removed from the process*

Transitioning from paper-based forms and business process to electronic methods greatly increases the timeliness of information. Increased information timeliness has been proven in many industries, and can provide service organizations with increased profitability in several ways. The first is through faster collections. Invoices can be generated on the spot because parts usage, time, and expenses are all known at the time of service, and the technician has access to contracts, pricing, warranties and other relevant information. By having the invoice signed or the charges paid by credit card at the time of service, invoices get paid more rapidly and with fewer disputes. The second increase in profitability comes from better control of inventory. Inventory levels can be more tightly managed because inventory balances can be kept up to date and require less "safety stock". Finally, timeliness provides more accurate history of what happened on the service call, because the technician enters the information while they are still on site.

> *Data that is captured closer to the point of creation contains fewer errors*

Another benefit of reducing paper is efficiency. Having a technician write notes and part numbers on paper to be keyed in by another person is double work. Personnel re-keying the information often have to contact the technician to decipher notes or part numbers, further wasting time for both the office worker and the technician. Paper processes also must be delivered to the office through the post office, courier, fax, or by a special trip by the technician. These inefficiencies lead to higher costs and lower margins on services.

Finally, paperless processes have higher quality. Experience shows that data that is captured closer to the point of creation contains fewer errors. Incorrect part numbers or expense codes can be flagged immediately for correction while the information is still fresh and the technician can access part and serial numbers easily. Also, paperwork doesn't enforce consistency. By digitizing the process, the company can begin to collect data in standard formats so that they can easily be used later for analytical reporting to determine areas for operational improvements or customer sales opportunities. For information to be reportable, it must be repeatable. This consistency is also important for reporting purposes when customers with large, multi-facility contracts want to see consolidated information about the service they have been receiving.

Mobile Technology Enables Better SLM

Mobile technology, by itself, is not enough to provide the value of SLM. Mobile technology must be incorporated into an SLM framework that supports service-oriented business processes across the field organization, the call center, the depot and other parts of the business. Mobile technology is a key enabler of an integrated SLM process, providing enhanced communication and data integration, but relies on strong application support for the entire service process.

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In order to understand the value of an integrated SLM process, let's look at an example of an integrated service-oriented process enabled by mobile technology. The process starts when the company gets an e-mail from a piece of equipment that has self-reported a problem based on the equipment's own diagnostics. The call is logged, and the process begins. First, the customer account and contract are reviewed, and the equipment is verified as being under contract. The system automatically determines that the customer has a Service Level Agreement (SLA), and that the customer is guaranteed a two-hour response time, so the call is automatically escalated through business rules. A customer service representative calls the customer and informs them of the potential problem, and then walks the customer through several steps to verify and diagnose the problem using a diagnostic tool from the knowledgebase. After identifying the problem, the representative informs the customer that a technician will be dispatched immediately to resolve the problem.

The dispatcher receives an urgent e-mail requesting a technician be dispatched to the customer. Based on the urgency due to the SLA, the dispatcher also gets an automated call on his cell phone that alerts him to the problem. The dispatcher returns early from break because of the call, reviews the diagnosis and pulls up the associated resolution instructions. Quickly reviewing the skills, parts and tools required for the job identified by the system, the dispatcher uses an automated agent to check for part, tool and technician availability along with customer preferences and other factors. The system suggests the appropriate technician for the job, identifying why that individual was selected. Based on that recommendation, the dispatcher chooses to reroute the suggested technician, who was heading to a low priority maintenance call when their handheld activates and redirects them to the higher priority service problem.

The technician arrives on site and reviews the history of the problem and the corrective action they will need to take. They review the access instructions and customer procedures, and remember that they are supposed to enter through the rear of the building during office hours. They grab the right tools and parts, locate the equipment based on the service records, and get to work. They quickly verify the problem and resolve it based on the work instructions provided.

The customer is happy because the problem is fixed before a failure occured

The technician cleans up the job and notifies the depot that the troubled part will be returned. One of the parts is identified as under warranty, so the customer will not be billed for it. While on site, the technician notices that another piece of equipment under contract has been moved into the same area, and updates the records along with the serial numbers. The technician enters the time spent on the job, notes the parts consumed, and prepares to leave. Before leaving, the dispatcher reviews the customer information and notices some scheduled preventative maintenance at the site. The dispatcher notifies the technician to stay and perform the maintenance. During the preventative maintenance, the work procedures call for the consumable materials (inks and toners, in this case) to be checked. On finding that the levels are low, the technician asks the customer if they would like to order more, and fills the order from trunk stock. The ordered parts and service call information are finalized on the handheld for the customer to review, and then signed off as completed. The consumables are paid for on the spot by credit card, while the repair work requires an invoice – just as the customer procedures specify. The customer signs off on the work completed, and the technician prints an invoice on the spot.

Back at the depot, they are automatically notified of the serial number of the part to be returned, parts usage is reviewed and replenishment parts inventory is updated based on the current usage. The warranty for the part being returned is also reviewed, and the part is dispositioned for factory refurbishment based on the warranty information reviewed. Based on current usage, the planned return of the refurbished part, and an increasing level of problems with the part, additional inventory is planned to cover short term needs.

A well-managed service call enabled by mobile technology, SLM-oriented applications, and an integrated service methodology

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Dispatch is notified that the technicians are now available, and are already on their way to their next calls. Accounting receives payment information, time and expense reports and updated sales figures. The warranty entitlements for the part are reviewed and results in the costs of the service call being billed to the vendor of the failing part. Customer service reviews the call, and upon seeing that the service call was signed off by the customer confidently closes the call within the 2 hour response limit. The equipment is up and running. The customer is happy because the problem was fixed before a failure occurred. The technician closed the call on the first trip. There will be no complaints for technicians using the main entrance during work hours. An additional order has been captured and paid on the spot. Accounting has all of the information they need, including time reports from the technician. There will be no inventory surprises in the depot. The equipment and warranty information are all up to date, and the service company is prepared for the next call. This is a well-managed service call enabled by mobile technology, SLM-oriented applications, and an integrated service methodology.

Mobile Technology Furthers the Benefits of SLM

Clearly, mobility is not just a tool or a technology, but a way for the service company to maximize internal processes. Through process improvement, the company can provide better service, at reduced costs and at higher profitability. By enabling the technician to work within an overall service-oriented process, the value of SLM is more readily achieved and sustained.

> *By enabling the technician to work within an overall service-oriented process, the value of SLM is more readily achieved and sustained*

A 2002 Survey by the Gartner Group reported the benefits of improved field service automation as:

- Repair cycle time improvements of 30%-50%
- Time to invoice up 40%-60%
- Warranty sales up 15%-40%
- Service response time improvements of 50%-80%
- Time to collection dropped 25%-50%
- Call avoidance improved 30%
- Cross-selling up 100%
- Reassign 50% of dispatchers to higher value tasks
- Close redundant dispatch centers (40% of facilities)
- Travel costs drop 35 percent
- Technicians handle 20 percent more calls

Source: Michael Maoz, Gartner Group, Fall/Winter CRM Survey 2002

Mobile technology can help to achieve these benefits. In May of 2003, Tech-Clarity published a white paper titled "The Service Lifecycle Management Approach". That paper highlighted some practical ways in which companies could adopt SLM concepts into their business. The following table highlights how some of these approaches are enabled by mobile technology:

SLM Tenant	Mobile's Contribution
Never Ignore a Call for Help	Take order for service items Log customer calls from the field Open a work order in the field Escalate calls on site
Reduce Waste in the Call Center and Office	Current information on field status without phoning Reduced data entry requirements Decreased billing errors Reduced paperwork / courier charges
Avoid the Service Call (or at least Reduce the Urgency)	Know the status of draw-downs Perform upcoming preventive maintenance while onsite Accurate serial and configuration tracking for preventive planning and remote support
Make the Right Calls First	Know the location of technicians Real-time dispatching based on current status Route history and tracking for analysis
Close the Call the First Time	Request parts Access standard procedures Easy access to history and configuration Look up part numbers
Keep Technicians Productive, not just Busy	Access to directions and maps (GPS, GIS) reduces travel time Real-time dispatching Ability to view real-time technician status Selection lists for codes, etc. Submit reports without returning to office
Turn the Service Call into an Opportunity	Fields quotes for additional work Moving a preventative call sooner (added benefit of accelerated revenue) Selling service contracts Access to contracts and quotes
Turn Service into Cash – Rapidly	Customer signs at time of service Invoice can be generated immediately Credit card payment can be accepted on the spot Reduced disputes and bad debt Decrease billing times and disputes
Stop Revenue Leaks	Drive administration to the customer site (billable) Fast access to SLA and contracts for terms of service Visibility to warranty and entitlements Real time and expense tracking reduces missed entries Expenses and material usage get classified and charged to proper work orders Online returned materials authorization (RMA) for credits
Enhance the Customer Relationship	Clear signoff that problem is addressed Can show additional proactive work as well
Grow Revenue by Restarting the Service Lifecycle	Notification of renewals Visibility to other equipment at customer Sales person has access to all service, repair, equipment configurations, etc. Capture sales opportunity information
Turn to Proactive Management	Information from point of service is more accurate More information captured for future diagnostics and data mining

Table 1: Mobile Technology Contribution to Service Lifecycle Management Objectives
Source: Tech-Clarity

Taking SLM Mobile

The value of Service Lifecycle Management is compelling in terms of customer satisfaction and higher profitability - simultaneously increasing revenue while decreasing costs. This value can be reinforced and extended by enabling the field with mobile technology that supports SLM concepts. When taking SLM mobile, there are some key considerations that should be taken into account during the planning phases. There are a number of choices that will need to be made when determining the appropriate tools and technology to deploy. Choices include determining the applications required, identifying the most appropriate communications methods and selecting the hardware devices that will best bring the right capabilities into the field.

The mobile strategy must fit with both the business process requirements and with the available hardware and infrastructure

When making these choices, it is important to understand some lessons learned from others that have already deployed mobile applications. Common lessons learned include the recognition that mobile applications are different than back office applications, that field employees are a different type of user than those that work in an office and use their systems, and that the mobile strategy must fit with both the business process requirements and with the available hardware and infrastructure. More than with office-based applications, these factors need to be considered in advance because the types of functions the user will use, and how they will use them, may have a significant bearing on the type of equipment required to deploy the applications successfully.

Mobile Apps - Not Backoffice Applications Taken on the Road

A favorite armchair may work very well in the family room but would make a terrible choice for a trip to the beach. In the same way, applications designed for mobile users have a fundamentally different design than those built for the office. Simply taking a backoffice application and moving it onto a mobile device is seldom effective. Mobile applications need to take into account the inherent differences between the way mobile workers work and the way office workers work. Mobile users require applications that are optimized for the way they do their jobs. Lengthy data entry is not a realistic expectation when somebody is using a handheld device standing in front of a customer, for example. Graphical representations, drop-down lists, intuitive workflows and efficient use of limited screen size are important factors in application design.

"In front of the customer, you can't afford to look inefficient", says Kim Partridge of Data#3 Limited

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The required application characteristics may change somewhat if the mobile devices are laptops as opposed to handhelds, of course. This observation supports the concept that the proper strategy drives the best selection of applications and hardware tools. The decision for applications and devices needs to be based on what is expected from the field service personnel and how their work fits into the overall business process. Kim Partridge, for example, is responsible for both systems and business process at Data#3 Limited. His strategy involved the mix of requirements based on the needs of the technician as well as the integration to the rest of the business. For the technicians, he highlighted the need for applications built for mobile users, "*in front of the customer, you can't afford to look inefficient.*"

"Implementing mobile processes can create problems if upstream and downstream processes developed to work with the old paper based processes are not considered", says Kristi Urich, director of field service marketing for Intermec

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In-depth knowledge of how service industry business processes work across the customers, call centers, field service, depot and office functions needs to be tapped to ensure that the field service applications fit into an overall business process and can integrate easily to existing systems. "*Service is highly integrated to the business and information flows back into the business in a lot of ways,*" says Kristi Urich, director of field service marketing for Intermec. "*Implementing mobile processes can create problems if upstream and downstream processes developed to work with the old paper based processes are not considered.*"

Living Within the Reality of Mobile Constraints

A strong understanding of the current infrastructure available is also important when developing the mobile SLM strategy. To achieve the benefits available, companies must plan for the reality of what is currently available in terms of supporting capabilities. Nothing is more frustrating than technology that only works part of the time, and unreliable service can quickly lead to user frustration and a failed effort. In field service, the "field" may be literal. If technicians have to service equipment that is located off the beaten path, they may not have access to a wireless connection on a consistent basis. If the technicians need to work in sensitive areas like a hospital or a mine, then wireless transmissions may be prohibited. In most cases in field service, the application shouldn't have to rely on 100% connectivity. The mobile strategy, including both the applications and the hardware, must support these realities. If the technician will not be able to transmit information real-time, then the applications must be able to support them when they are "untethered" and then synchronize when a connection can be established. That connection might be a phone line, a wireless connection, or a cradle at their house that allows for greater transmission bandwidth – and at lower costs. The important thing is to recognize the limitations, and adopt a strategy that provides the desired benefit given the available capabilities.

> *To achieve the benefits available, companies must plan for the reality of what is currently available in terms of supporting capabilities -*
> *there are trade-offs to be made*

This is also true for devices. If technicians are expected to accept payments from customers, print receipts, or scan barcodes on equipment or parts, then the equipment must support those needs. Again, the intended business processes will both drive and be constrained by hardware choices. There are trade-offs to be made in selecting devices, of course. Laptops can provide greater data entry capabilities, larger screens and a more familiar interface to the technician. On the other hand, they are typically slower to boot up, more cumbersome to carry, less convenient to use in many service environments and often do not have the appropriate battery life required to support field technicians. Handheld devices, on the other hand, offer convenience in transportation, fast boot up times and longer battery life, but the applications will need to address smaller screen sizes and limited ability for data entry.

The expected functions that will be performed by the technician will help determine the appropriate hardware. For example, if the business requires technicians to enter lengthy text descriptions of their service call in the field, handheld devices may not be the best choice. If the technician needs to carry a device in harsh environments and scan barcodes, on the other hand, then a handheld may be the only viable solution. If significant volumes of information are to be transferred, then more powerful mobile devices are required as opposed to WAP phones that aren't meant to transmit large amounts of information. There are other device considerations as well, such as whether a "rugged" device is required and what transmission service to use. The key is to evaluate these decisions in advance.

Get the Right Partner

Clearly there are a lot of decisions to be made when developing the mobile strategy for a service organization. The key to making these decisions is to partner with a provider that understands the business of service, and understands how those processes can be taken mobile on a pragmatic basis to improve profitability. The supplier must be both field service savvy and mobile savvy. Kim Partridge of Data#3 Limited spoke at a recent conference held by Astea International. He explained that Data#3 had already extended the value of the SLM applications they use to manage their service operations, Astea Alliance, by providing web access to technicians, a portal for their customers to see updated service information, and laptop applications for their technicians. He described the benefits that they had already achieved in terms of internal efficiencies, more valuable information about their customers, better service visibility for Data#3 customers and improved efficiencies. "*We are deploying mobile applications to further reduce administration costs, increase the utilization of field staff, reduce field staff office and administration time, provide more timely information, and to promote a professional high tech image,*" Mr. Partridge said, "*we chose Astea because of their focus on the business of service.*"

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Don't forget that moving to mobile applications and devices will be a big change for many technicians. The technicians will need training and support as they adopt the new processes. By working with a partner that understands the service industry and has a vision for SLM, companies will face less of a change effort with technicians because the service provider and the software "speak their language". Deep service industry experience is important to reduce the risk of a mobile application implementation, because mobile applications must be able to work directly with users in their daily lives.

Summary

Mobile technology can provide significant benefits to service organizations by increasing efficiencies in the field and tying the field personnel into the business. Companies that are adopting a Service Lifecycle Management approach can achieve further benefits by supporting the SLM concepts with mobile applications. To achieve these benefits, companies must develop a mobile service strategy that encompasses the right business processes and supporting applications to meet the business needs, but also do so in a way that works with the current mobile technology choices. An experienced partner can help to develop an integrated strategy that includes business processes, mobile applications, connectivity choices and hardware requirements. By adopting an integrated strategy, companies can achieve higher levels of benefit with a reduced implementation risk, and take their field service applications out into the field to provide better service at a lower cost – and increase their own profitability.

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