



Transforming field service operations: Drive costs down and service levels up with mobility





Executive summary

The impact of the field service function can be felt throughout the business. When field service organizations operate at less than maximum effectiveness, many areas of the business are impacted — including customer satisfaction, service and retention levels as well as overall profitability. Achieving maximum productivity involves streamlining and automating processes to reduce or even eliminate the large volume of paperwork traditionally involved. In addition, it also requires the efficient delivery of the wealth of information service technicians need to best perform service calls and take advantage of possible sales opportunities — as well as the visibility to maximize utilization of staff and vehicles. This white paper explores the affect mobility can have on the field service operation, as well as the criteria involved in implementing a mobile field service application and technical considerations in evaluating potential solutions.

Background: the issues in field service

Many types of businesses rely daily on field service teams — from manufacturers servicing equipment in homes and businesses to utilities repairing and performing maintenance on infrastructure, reading meters, and more. Regardless of whether the function is in-house or outsourced to a third party company, the field service function is a crucial aspect of the business. Often the primary or only source of customer contact post sale, this function can make or break customer loyalties. And the effectiveness of this division can have a widespread reach throughout the enterprise, affecting everything from customer retention to company profitability. To maximize the value of a field service organization and achieve world class service levels, companies must realize maximum efficiency in all related business processes — from the dispatch of service tickets, tracking of inventory and invoices, and the completion of work orders to the ability to take advantage of cross-sell and service contract renewal opportunities and

maximize staff and vehicle utilization. The ability to achieve maximum efficiency in those processes hinges upon three related core capabilities:

On-site data access

On site, technicians need a wealth of information to perform the job quickly and properly. A lack of information can result in longer service times and possibly a second service visit — which can translate into longer periods of downtime for customers. Whether you are repairing industrial equipment on the manufacturing floor or on a farm, a copier in an office, medical equipment in a hospital or restoring service such as telephone, cable or electric, for the customer, every second counts. A malfunctioning piece of industrial machinery on a manufacturing floor can translate into tens of thousands of dollars per minute. A broken printer in an office can slow the speed of business. Malfunctioning medical equipment can affect the ability to protect patient health. And for utility providers — such as telephone, cable or electric — customer satisfaction and regulatory compliance are at stake.

Resolving the many challenges in field service with mobility

The following chart provides an at-a-glance look at how mobility can address the specific challenges of today's field service organizations.

Challenge	Opportunity
Unacceptable repair times: Need to improve repair times and first-visit fix rates.	Provide on-site access to repair procedures, maintenance manuals and customer service history.
SLA compliance: Need to achieve 100 percent compliance with Service Level Agreement commitments.	Enable dynamic scheduling that allows the identification and dispatch of the nearest qualified technician.
Low technician productivity: Time consuming paperwork reduces the productivity of service technicians.	Eliminate manual data entry with automated forms and bar code scanning to enable the same workforce to handle more calls per day.
Lost revenue: Inaccurate capture of repair costs as well as lack of visibility into SLA agreements translates into invoices that do not accurately reflect actual charges.	Simplify and automate the capture of all repair-related costs on site (such as parts and time spent) combines with real time SLA visibility to ensure the accurate capture of and billing for all actual charges.
Long billing cycle times: Service-to-invoice-to-payment times are too long, impacting inventory carrying costs, cash flow and more.	Enable instant electronic transmission of billing information (complete with customer signature) to reduce the billing cycle from weeks to days — significantly improving the cash-to-cash cycle and overall profitability.
Data errors: Errors in the original capture of data or during data entry of handwritten forms translates into reduced staff productivity, inaccurate invoicing and inaccurate customer history files.	Achieve near Six Sigma data accuracy by automating data collection via drop down menus, check boxes and the ability to auto fill appropriate fields with information that resides in business systems.
Lack of availability of parts and tools: Technicians do not always have access to the parts and tools required to perform the job on the first visit.	The ability to electronically correlate service orders with required parts and tools enables the technician to review and ensure that the list of tools and parts needed for today's scheduled service is on board before leaving the dock. In addition, dynamic dispatch can take into account not only proximity and skill level of technicians, but also what tools and parts are on board as well.
The high cost of parts inventory: In order to ensure that the right part is available at the right time, the enterprise is forced to purchase high levels of stock, impacting overall cash flow and profitability.	Since parts are deducted from inventory as they are used, real-time parts inventory visibility becomes a reality. The result is a reduction in the established stocking levels, reducing capital requirements to support the service function.
The high cost of fuel and vehicle maintenance: Rising fuel costs combine with vehicle maintenance to erode the profitability of this business unit.	Mobile dispatch enables the easy aggregation of service calls by geography at the start of the day, and dynamic dispatch enables the identification of the worker nearest the service location. This unique combination of capabilities reduces miles driven, which in turn reduces fuel and maintenance costs.
The high cost of accountability: Customer issues and disputes require an inordinate amount of time tracking down paperwork and records to determine accountability.	Mobility provides a complete and auditable record of each service call. There is no paperwork to track. Granular information related to the service visit is just a keystroke away, including technician, arrival and departure times, detailed records of what service was performed and how it was performed, parts utilized and more. The result is instant access to proof of service, rapid resolution of customer-related issues, and identification of any staff related service quality issues.
Inability to take advantage of potential sales: While service technicians are not traditionally sales people, they have valuable face-to-face time with clients each day that could be leveraged to extend an expiring service contract, upgrade service levels and cross-sell related products.	The ability to present this non-sales oriented workforce with a simple screen listing the appropriate services and products for each customer makes it easy for service technicians to step into a sales role, improving the value of the visit — and potential revenues.



With a quick scan of a bar code, an electronic form can automatically be automatically populated with customer and equipment information, eliminating data entry errors and time-consuming paperwork.

On-site data capture

Technicians also need the ability to quickly and easily capture information on site, such as time and materials. Traditionally, paper, pen and clipboard are utilized to capture information about the service call, and the information captured on the form is later entered into the computer by either the service technician or an administrator. This manual process has a number of associated issues. The administrative time requirements come at a high cost — service representatives could use that time to provide service to more customers per day, ultimately improving service response and delivery. The ‘double touch’ of data combined with the challenges of reading handwritten forms often results in a significant error rate in data. You may not be invoicing for all the actual time and materials associated with a given service call, impacting income potential. And if parts inventories are not accurate, the right part may not be available at the right time, requiring an expensive second service call — and delivering an inferior level of service to your customers.

Workforce and fleet management

While technicians need to access and capture information to perform the job on site, the company needs to be able to maintain visibility into the whereabouts of technicians at any given moment of the day to maximize personnel and asset utilization — and ensure Service Level Agreement (SLA) compliance. In the dynamic environment of field service, without that visibility, service calls cannot be dispatched intelligently. As new calls continue

to come in for service throughout the business day, dispatchers do not have the visibility to select a technician to respond to an urgent call for service based upon technician skill level and proximity to the customer location. As a result, more miles are often driven, translating into increased fuel costs and higher vehicle maintenance costs. And in the event a technician is dispatched who does not have the experience required to quickly perform the job, customers may experience less than stellar service levels.

The answer: mobility

For today’s field service organizations, mobility is no longer a ‘nice to have’ – it is a ‘must-have’. Without mobility, service levels, customer satisfaction, customer retention and department profitability are all impacted. With mobility, the specifics of your application are irrelevant — the benefits are the same regardless of the type of equipment you are servicing and whether your customers are in enterprise locations or homes. With a mobile computer in-hand, complete with a real-time connection to business systems and automated data capture capabilities such as bar code scanning and image capture, the mountain of paperwork typically associated with field service processes can be virtually eliminated, and technicians are enabled to fully leverage the data in your business systems while on-site with a customer.

Mobility becomes a key enabler, providing the core capabilities required to achieve peak efficiency in field service operations: on-site data access, on-site data capture, visibility into real-time information on service representatives and vehicles – from physical location to skill set and inventory on board the vehicle. Through mobility, enterprises give service technicians the power in hand to automatically execute tasks right at the point-of-work. The benefits are realized in the field service organization and beyond. With this single powerful solution, enterprises can simultaneously reduce costs and improve customer service levels as well as reduce the cash-to-cash cycle — and more.

The architecture of a mobile field service solution

There are four key aspects involved in any field service mobility solution — the mobile data (or integrated voice and data) devices for service representatives, the wireless networks for connectivity from the field to the business systems, the field service applications (for example, dispatch or work orders) and the ability to manage the entire solution.

The mobile devices

Selection of a mobile device is driven by environmental and application requirements. Questions to consider are:

- **What level of durability do you need?**

In field service applications, mobile devices are exposed to the elements as well as drops to concrete, accidental spills and more. Be sure to check the specifications for the devices you are considering. Things to look for include:

- Environmental sealing: Look for a rating that offers protection against moisture and dust, ensuring reliable operation in spite of exposure to the typical dirt, humidity, rain and more found in outdoor environments.
- Intrinsically safe: To enable mobility in areas where flammable or explosive materials are present, devices must be intrinsically safe (where the electrical power usage of the device is below the level required to cause an explosion).

- Drop specification: How much of a drop can the device withstand and still deliver reliable performance? And on what material was the drop specification test performed? A device that can survive a three-foot drop to a tile floor cannot necessarily survive a three-foot drop to a concrete sidewalk or parking lot. Be sure to check the temperatures at which the drop tests were performed — some tests are performed only at ‘room temperature’, which does not ensure reliability in the event a device is dropped outdoors in the cold.
- Connectors: One of the most overlooked areas when examining durability is the connectors. Check to see if the connectors offer some type of protection to prevent ingress of dust and moisture into the device.

- **What data capture capabilities are required?**

Advances in mobile computing allow you to select a single device to meet all your data capture needs, including any combination of 1D or 2D bar codes, direct part marks (DPM), RFID tags and image capture. Multi-function devices deliver two distinct advantages. The number of devices required can be reduced, which also reduces capital as well as operational costs. And the devices can also provide a platform for future growth, enabling the implementation of additional data capture types without requiring a full scale upgrade.

- **Do technicians need mobile voice as well as data?**

Service technicians may currently have or need cell phones for on-the-road voice communications, and if so, selecting a single device capable of voice and data communications eliminates the need for service representatives to carry two separate devices — as well as the related device, training, maintenance and support costs.

- **What accessories are available for the device?**

Are accessories available to customize the device to meet the specific needs of the enterprise? Are optional keypads available to enable the most efficient interaction between user and device (such as QWERTY, AZERTY or numeric)? What other accessories are available that can enable functionality that might be needed in the future? For example, while a field service organization



With mobility, service representatives can make a voice call; access service level agreements, repair history, maintenance procedures and a list of appropriate products to cross-sell; and capture parts used and time spent on the job — all with a single rugged device.

- may not have the need to accept payment on site at a customer location today, the availability of a magnetic strip reader could allow the addition of this functionality in the future. And the ability to expand functionality without replacing devices future-proofs your mobile device investment.
- **Do you need on-site printing capability?**
Do technicians need the ability to print invoices or other documentation on site? If so, you'll want to factor in the type of internal or external connection needed — for example, Bluetooth for a wireless connection or a USB port for a wired connection.

The wireless networks

Today's mobile devices can be configured with multiple radios to meet all the wireless connectivity requirements for a given application:

- **Wireless wide area network (WWAN):** Public and private wireless wide area networks enable real-time communications for workers outside the building. If the public WWANs will be used, determine which networks you want to use or which networks might offer you the best value prior to narrowing your device selection. Alternatively, a private wireless wide area network can be implemented when complete control over volume and capacity is required — for example, a utility that wants to ensure mobile communications capabilities, even in the event of a major storm or other natural disaster.
- **Wireless local area network (WLAN):** When an 802.11a/b/g radio is integrated into the device, enterprises can control which networks are used at what times for connectivity. While workers in the field will always be dependent upon the WWAN connection, devices with a WLAN radio enable enterprises to configure devices to automatically switch to the enterprise wireless LAN for more cost-effective voice and data services when employees return to the building.
- **Wireless personal area network (WPAN):** The integration of a third radio, the WPAN or Bluetooth radio, gives workers the ability to wirelessly connect to personal devices — from headsets to printers. The purchasing costs are eliminated, the risk of losing the cables is eliminated, and the lack of physical wired connections to personal devices can improve worker safety.
- **Global positioning system (GPS):** For field service operations, the inclusion of GPS capability enables real-time visibility of all personnel and/or vehicles at all times. This information can have a significant impact on:
 - Customer service levels by enabling dynamic routing
 - Overall departmental efficiency by reducing the number of miles driven — as well as the associated fuel and fleet maintenance costs

The software application

Streamlining and automating paperwork and providing access to the wealth of data in back-end systems requires a feature-rich field service application running on the mobile device. The proliferation of field service mobility solutions has led to a wide range of application options to meet the varied technical and financial requirements of the enterprise:

- **Configurable off-the-shelf (COTS) application:** Configurable off the shelf (COTS) packages are cost-effective applications that can be tailored to specific business process flows. These packages generally provide a wide variety of electronic forms and business object fields that can be easily customized as needed. The application and server maintenance are the responsibility of the enterprise.
- **License-based application:** A license-based software package is hosted on an enterprise server behind the firewall. In this scenario, a systems integrator might be utilized to implement the application, but the enterprise would ultimately be responsible for the maintenance of the application and server.
- **Managed Service Provider (MSP):** A hosted model involves a subscription payment based on the number of subscribers. In this model, the large upfront investment costs are replaced with the ability to ‘pay as you go — and grow’. In addition, the application and server are the responsibility of the ASP — there is no involvement required by the enterprise. While the subscription payments are ongoing throughout the lifetime use of the application, this model generally provides a rapid deployment time with minimal cost.
- **‘Build-it-yourself’ applications:** For companies that wish to create their own proprietary application, middleware tools are available that enable the rapid and cost-effective development and deployment of field service applications.

One final factor to consider with applications is scalability and security — be sure to investigate how the application would scale to accommodate more users, and expand to incorporate new functions and technologies.

Management of the mobility solution

There are many aspects involved in the day-to-day management of a mobility solution. You will need a means to remotely and cost-efficiently:

- Stage devices for initial use with the right device settings, operating system and software applications
- Upgrade devices regularly as updates to the operational and application software resident on mobile devices become available
- Monitor the mobile devices as well as any private WWAN or WLAN wireless network in use to ensure issues are discovered and resolved before network and device uptime are impacted

The benefits of mobility in field service operations

With mobility as a key enabler, enterprises can now provide core capabilities that enable the realization of peak efficiency, inside the field service operation and throughout the enterprise.

Benefits in the field service organization

Enable real-time on site data access

Mobility enables service technicians to access all the information needed to best perform the job, right at the customer site. There is no need for technicians to gather physical customer files or product manuals — all the information is available on a mobile computer with just the press of a button. Armed with a mobile device and a real-time connection to back-end systems, technicians can pull any information needed:

- **A complete customer service history** provides the insight to potentially enable a more rapid resolution of the issue at hand.
- **Maintenance routines and detailed product information** eliminate the need to carry volumes of manuals, while ensuring that service is performed properly and as expeditiously as

Electronic signature capture enables service representatives to capture and transmit work order completion acknowledgements and charge authorizations in real time, streamlining the invoicing process — and improving the cash-to-cash cycle.



- possible. In addition, the ability to present an electronic checklist of steps and a dropdown list of parts can provide field service operations with a new level of detail — a complete audit trail, including who performed the service, the exact services performed — and how, as well as a complete accounting of any parts used.
- **Warranty and Service Level Agreement** status ensures that the right level of service is provided, protecting customer service and revenue levels. With this information at the fingertips of service technicians, customers are not wrongly charged for covered services, and all valid charges for services rendered are captured and billed.
- **A list of appropriate related products and services** enables service technicians to perform double duty as salespeople to fully leverage sales opportunities in these valuable face-to-face visits. Since sales is not the primary competency of your service workforce, the ability to provide a list of appropriate items helps guide your service representatives through the sales process. And whether the customer wants to upgrade or extend a service contract, or purchase an add-on product, completion of the sale can be as simple as selecting a checkbox and obtaining the customer's signature right on the electronic form.

Automate and error proof on site data capture

Mobility enables the automation of any on-site data capture required, improving technician productivity by replacing paper-based forms with an electronic version that can be transmitted directly into your business systems — no data entry required. The use of drop-down menus and checkboxes removes the potential for data entry errors, enabling enterprises to practically achieve Six Sigma levels of data accuracy. For example:

- **The instant and accurate capture of parts as they are utilized** is easy through either a quick scan of the bar code on the part or selecting a checkbox on a drop down menu of parts.
- **Automatic capture of accurate labor time** through a simple 'start' and 'stop' checkbox that utilizes the clock on the mobile device to calculate the exact time spent on the job.
- **Real-time verification of completed work and authorization of any related charges** through the ability to capture and transmit an electronic signature.

Enable real time workforce and fleet visibility

The world of service and support is dynamic — all day long, customers are calling with service requests for malfunctioning equipment. Dispatchers are faced with the overwhelming task of sorting through calls and re-prioritizing dispatch orders as needed. But performing this task efficiently requires knowledge of the customer's service level agreement (SLA) and the required service times the company is committed to provide — as well as which technicians have the skills required to perform the job, and of those technicians, which one is closest to the customer location.

When you select a mobile computer with GPS capability, the real-time location of service representatives is available throughout the day. And this information can be cross-referenced with SLA and technician skill level information to automatically and instantly identify which service call should be dispatched next — and which technician should receive the dispatch. Just moments after a call for service is received, dispatchers can make the right decision — without sifting through paperwork and trying to analyze data on the fly. As a result:

- **Customers receive the right level of service:** Contractual commitment times are honored, and since the technician with the right knowledgebase is dispatched, service is completed promptly and efficiently.
- **Workforce utilization is improved:** The ability to select the closest representative with the required skills enables maximum utilization of the workforce.
- **Fleet utilization is optimized:** With visibility into the location of each vehicle, dynamic dispatching becomes a reality. Now, dispatchers can easily identify the service technician who is closest to the next customer location, minimizing mileage — which in turn reduces fuel as well as vehicle maintenance costs.

Benefits beyond the field service organization

In addition to benefits in the field service organization, mobility reaches beyond to positively impact all the areas of the enterprise that touch this critical business unit.

Achieve big business benefits from real-time communications

When information is collected via pen and paper, there is a significant lag time between when the data is collected and when it is available in your business systems. Minimally, the data will be available at the very end of the business day when technicians return to the office — provided the technicians or data entry personnel are able to enter the data that day. More frequently, the data entry process takes a day or more.

Service technicians armed with a mobile computer and a real-time connection to back-end systems (including CRM, ERP and WMS) can eliminate that time lag by transmitting information to enterprise systems as soon as the data is collected. The results are big business benefits that are felt well beyond the field service function:

- **Workforce productivity is improved:** The ability to automate access to and collection of information on site as well as transmit data electronically translates into a significant improvement in worker productivity throughout the enterprise. When time-consuming manual administrative processes are eliminated, staffing costs throughout the business are impacted:
 - The same number of service technicians can complete more service calls in a day
 - Data entry clerks dedicated to entering the volumes of paperwork into the computer systems can be eliminated
 - Billing staff productivity increases due to the instant electronic transmission of completed work orders that are ready to invoice — no paperwork processing required
- **Billing cycle times are reduced:** The ability to eliminate lag time in the invoice-to-payment process time condenses the cash-to-cash cycle time, improving cash flow and overall profitability.
- **The accuracy of parts and tools inventories is improved:** Real-time accurate part and tool inventories ensure that the right parts and tools are available when needed, protecting customer service and satisfaction levels.

When you place a mobile computer and a real-time connection to back-end systems (such as CRM, ERP and WMS) in the hands of your field service workers, the results are big business benefits that are felt throughout and well beyond the field service function — from improved workforce productivity to a reduction in billing cycle times.

Enable convergence of business data as needed

Mobility allows the easy integration of multiple enterprise data sources as needed to best serve customers and improve the company's bottom line. For example, technicians on site can interact with the Customer Relationship Management (CRM) system as well as the inventory database, product information and billing systems. On any given call, regardless of how many different systems house your business data, mobility can allow technicians to pull information from and push information to your business systems — such as the CRM, Warehouse Management System (WMS) and Enterprise Resource Planning (ERP) — allowing you to more fully leverage these existing major business investments.

Technical considerations in field service mobility solutions

When selecting a field mobility solution, there are a number of factors to consider:

- **The technical architecture:** Does the solution integrate as easily as possible into your existing technology infrastructure? As your needs grow, can the solution easily scale to meet increasing staff requirements? As your application is upgraded, can the solution easily accommodate increased bandwidth and performance requirements?
- **Security:** One of the most crucial aspects of any mobility solution is security. One concern is the security of the data while in transmission between your back end systems and the mobile devices in the field. The other concern is the ability for hackers and other unauthorized personnel to utilize the wireless connection as a 'roadway' into your wired network. Careful evaluation of security protocols that your mobile device and wireless networks will support and best practices in security will help ensure that the solution you select will offer maximum protection for the data — as well as the assets in the enterprise network.
- **Ease of use:** If the devices and applications are not easy and intuitive to use, adoption rates will be affected — which in turn affects the overall success of the mobility implementation. Training requirements are also affected — the easier to use, the less training and associated expense required. The most successful field service mobility deployments utilize devices that are built on industry standard platforms, supporting development of applications with familiar and intuitive interfaces. Other environmental considerations include:
 - The configuration of the keys: Are there dedicated keys for major functions, such as push-to-talk on integrated voice and data devices? Are there programmable function keys to simplify application interaction? Are they easy for any size finger to press?

- Display: Is the display backlit for easy viewing in low lighting conditions? Is the display easy to view in direct sunlight as well as indoor?
 - **Manageability:** Since mobile devices are always on the move, one of the largest expenses post-deployment is the day-to-day management of the mobile solution. Look for a provider that offers a mobility management solution that will enable IT personnel to deploy, monitor and troubleshoot devices in the field — without requiring hands on with the devices. This capability will:
 - Dramatically reduce post-deployment costs.
 - Reduce the drain on precious IT time, keeping IT free to focus on more critical business issues.
 - Maximize device uptime and protect service representative productivity: When a device fails, the effect reaches beyond the device to the service representative who now may no longer have the tools to perform the job. The ability to see the device statistics and more enables IT to troubleshoot and resolve many issues from afar. And the ability to provide on-the-spot correction of device problems keeps technicians in the field servicing customers — instead of returning to the office for technical support or a temporary replacement device.
 - **Complete solution provider:** There are many different elements of a field mobility solution, from the mobile devices to the carriers and applications. To maximize the opportunity for success in these often complex solutions, look for a vendor who offers all the products and services your specific solution requires
- The prompt completion of service
 - The ability to take advantage of the customer 'face-time' for possible cross-sell opportunities
 - Judicious management to fully utilize staff and reduce vehicle costs

Through mobility, you can ensure that service representatives arrive on time with all the information, parts and materials required to perform the job right — leading to improved customer satisfaction, loyalty, retention and referrals. Through mobility, you can deliver the information needed to allow service representatives to act as salespeople to leverage cross-sell and up-sell opportunities that can increase revenue. And finally, through mobility, enterprises can achieve a real-time picture of the workforce, leading to improved productivity and vehicle utilization.

Turn your field service organization into a competitive differentiator — through the power of mobility.

About Motorola

Motorola offers true end-to-end mobility solutions for field service and more that include: a comprehensive portfolio of mobile devices with extensive wireless communications capabilities; affiliations with the leading wireless public network providers; a portfolio of private wide area and local area network infrastructure; a partner channel delivering best-in-class applications; and a complete range of pre- and post-deployment services to help you get and keep your mobility solutions up and running at peak performance. And when you choose Motorola, you choose the strength only an industry leader can offer, with proven technology in successful customer deployments in many industries around the world.

To find out how Motorola can streamline your field service operations, please visit us on the web at www.symbol.com/cross-industry-solutions/field-service-solution or call us at 1-866-416-8593.

Summary

Making the most of every contact with a customer is crucial in these highly competitive times. And a frequently overlooked opportunity is the service call. Achieving the highest level of success in any given service call requires:



Establishing ROI Metrics for Field Service Mobility Solutions

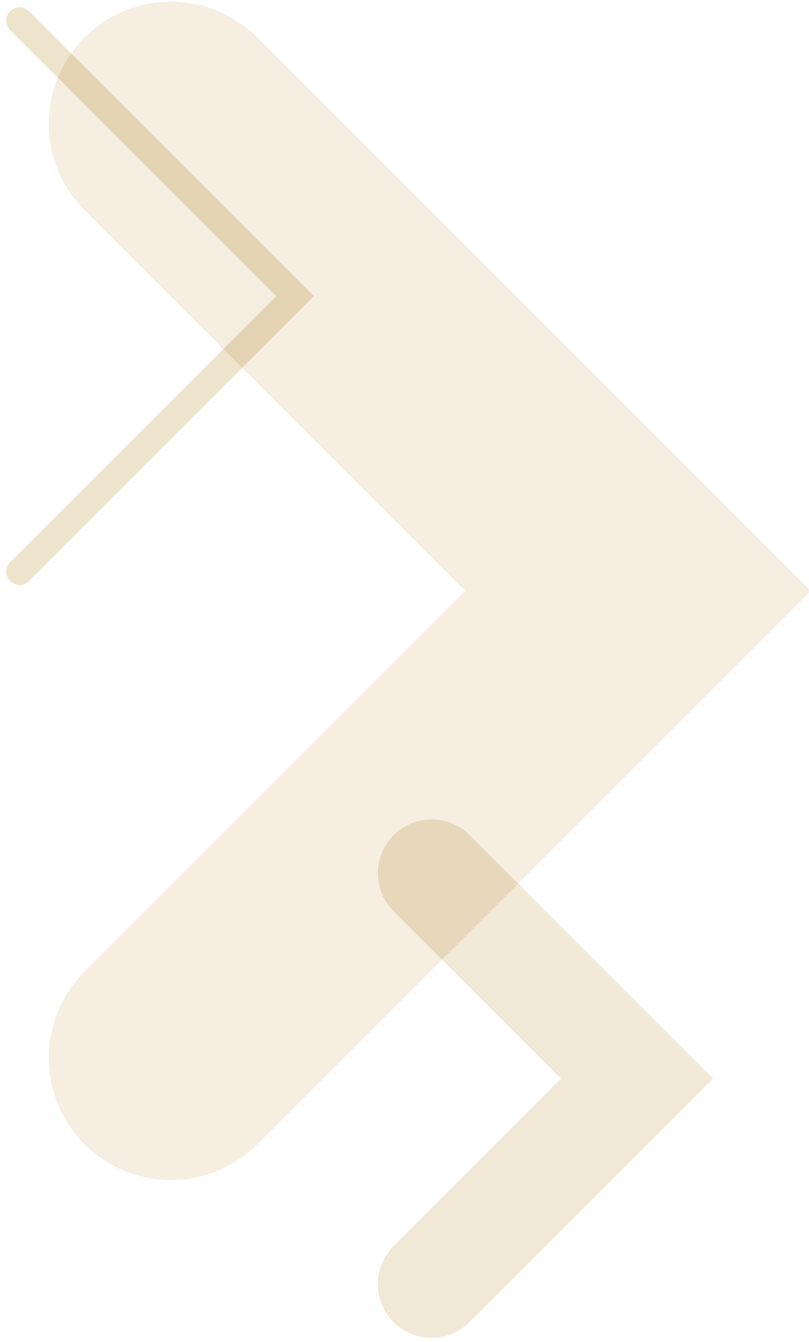
Mobilizing field service operations generally returns a substantial and quantifiable financial benefit, as well as a rapid return on investment. While field service applications in different industries are not identical, the tool on the following page provides a framework for criteria to include on a return on investment calculation (ROI) for typical field service repair operations.

Establishing ROI metrics for mobile field service

Cut costs, increase revenues: speed, flexibility, efficiency, and visibility

Performance Indicators	Evaluation Criteria ROI	Valuation Metric
1. Management Visibility	<ul style="list-style-type: none"> Quality control feedback/trends regarding manufacturing or service variations not identified or acted upon in a timely manner 	<ul style="list-style-type: none"> Management can not only view improved reporting dashboards but can now act upon them
2. Customer Service	<ul style="list-style-type: none"> Preventative/corrective maintenance Reduction of call backs to customers to provide status on open service ticket 	<ul style="list-style-type: none"> # of repeat service calls per week # of customer call backs to provide status of open ticket
3. Scheduling & Dispatch	<ul style="list-style-type: none"> Transmission & close-out of work orders Faster response time Average travel time and distance Technician to dispatcher communications 	<ul style="list-style-type: none"> # of service calls per day Average response time per tech Travel costs reduced Talk time
4. Delays & Penalties	<ul style="list-style-type: none"> Contractual penalties due to customer downtime resulting from delayed service 	<ul style="list-style-type: none"> Average # of penalties x Average cost of penalties
5. Idle Time	<ul style="list-style-type: none"> Idle time of techs due to poor visibility 	<ul style="list-style-type: none"> Idle time
6. Inventory/Parts/Assets/ Tools Management	<ul style="list-style-type: none"> Parts Management: getting right parts at the right time by combining bar code scanning w/real-time inventory management to expedite refunds, credits and part replenishment. Minimizing excess inventory & charges associated w/expedited orders 	<ul style="list-style-type: none"> Average # of times parts are not available or the wrong parts
7. Parts/Asset Management	<ul style="list-style-type: none"> Tracking field assets, tools and equipment 	<ul style="list-style-type: none"> Lost time attributable to misplaced or lost assets
8. Asset Management	<ul style="list-style-type: none"> Tracking field assets provides better scheduling of maintenance to tools & equipment 	<ul style="list-style-type: none"> Longer life and utilization of parts, or lost assets
9. Account Receivable	<ul style="list-style-type: none"> Streamline & accelerate billing/invoices by closing out & transmission of work order 	<ul style="list-style-type: none"> Average time to invoice Average time of collections/Improved cash flow/faster revenue recognition Eliminate double billing
10. Warranty Management	<ul style="list-style-type: none"> Capture extra services performed not under warranty at time of service Better information lets tech sell new parts and renew or upgrade service agreement via wireless access to enterprise systems 	<ul style="list-style-type: none"> Incremental service revenue # Warranty sales per tech # Renewal sales per tech # of billing disputes/incorrect warranty claims Materials, parts revenue
11. Paperwork	<ul style="list-style-type: none"> Excessive amount of paperwork eliminated via automation of forms in mobile device Data Entry Errors eliminated via bar code capture and drop down windows Persons employed to keep track of orders, re-key service data into enterprise systems Automate time & attendance via real-time clock & initiation of mobile processes 	<ul style="list-style-type: none"> Time lost per tech per day in admin, reports & order entry % number of data entry errors # of persons employed for these functions % error on tech time & attendance
12. Information Access	<ul style="list-style-type: none"> Solve problems on first visit Better access to information about customer Remote access to parts inventory; locate part & availability Reliable and consistent audit trail 	<ul style="list-style-type: none"> Avg # of repeat visits per trouble call First time repair rates Response rate Audit time spent
13. Reporting	<ul style="list-style-type: none"> Real-time information capture 	<ul style="list-style-type: none"> Improved strategic input for future improvements by better tracking/recording timely/accurate data at point of activity
14. Cross & Up Selling (parts, products, upgrades, service)	<ul style="list-style-type: none"> Automatic processes built into sales data capture require referral or recommendation; service access to customers at opportune times 	<ul style="list-style-type: none"> Increase in sales due to automatic processes
15. Customer Satisfaction	<ul style="list-style-type: none"> Encourage customer loyalty & referrals; improved customer retention 	<ul style="list-style-type: none"> Customer satisfaction levels: Customer chum level

Establishing ROI Metrics for Mobile Field Service is meant to serve as a customer tool to assist the client in establishing ROI Metrics. The document provides specific performance indicators, evaluation criteria and valuation metrics to help in the analysis of KPI's associated w/service mobilization. The areas upon which mobilization has a direct influence have been highlighted. The Post Mobile column, is determined after piloting or some level of deployment has occurred.



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