Improving Field Service Productivity & Profitability With Mobile Automation Tools



APPLICATION WHITE PAPER





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It pays to be good at field service. Efficient field service companies have lower operating expenses, better productivity, higher SLA compliance and customer satisfaction levels, and capture more service revenue than their peers. For these reasons, best-in-class operators have 2.5 percent higher service margins than average companies, and are about 50 percent more profitable than laggards.¹

Outstanding profitability is not all that sets best-in-class companies apart from their peers—they are also much more likely to use mobile computers and other mobility automation tools. Only 22 percent of best-in-class companies rely on paper-based processes in their field service operations.² Instead, they have automated their paperwork, inventory management, dispatch and other operations with mobile computers and printers—with strong results. Companies who automated field service improved service revenues an average of 17.5 percent, SLA compliance by 22.1 percent, and reduced repair time by 9 percent.³ Top field service performers contribute at least 35 percent of their overall corporate revenues and profits.⁴

Manual processes and paperwork processing simply have no place in efficient field service operations today. But automation doesn't automatically produce profits and add efficiency. Return-on-investment depends on getting a complete, well integrated solution that supports the specific features and processes your business needs.

This white paper provides guidance to help you identify specific field service activities that would benefit from automation, presents use cases and ROI opportunities for automating various processes, explains what to look for in mobile computers, printers and connectivity options, and presents guidelines for evaluating and selecting solution providers.

Should you automate? — If yes, where?

ROI depends heavily on how complete the mobility automation solution is, the specific processes that are automated, and the compatibility and reliability of the mobile equipment. For some organizations, basic mobile messaging and on-site invoice generation will clear bottlenecks and improve cash flow. Others can get rapid ROI from implementing a full suite of automated dispatch, work-order management and supply parts inventory management applications. Often, expanding projects actually reduces the time needed to realize full return on investment because the original mobility investment is leveraged as more processes are automated.

Here's an example of how organizations can benefit by leveraging their mobility systems. Consider a basic application where field service technicians complete work orders on mobile computers instead of filling out paper forms. Automating this process saves time because technicians can complete work orders faster using dropdown menus, and portions of the form can be pre-filled with customer contact information. The data can simply be uploaded to the host computer (through a plug-in dock at headquarters or via a wireless or modem connection), so no clerical labor is required to manually enter the work order data into the host system.

- 2. Ibid.
- 3. Ibid.

^{1. &}quot;The Mobile Field Service Update: 2007 and Beyond" Aberdeen Group, December 2006.

^{4. &}quot;Profit-Minded Service Organizations Focus on Service and Maintenance Contracts" Aberdeen Group, February 2007.

Now consider the additional benefits available if the application were leveraged to automate service parts inventory. Technicians would use an integrated bar code scanner in the mobile computer to record the parts and materials used on a job. The data would be recorded instantly in a fraction of the time it would take to enter part numbers (even if the tech was scrolling through a predefined list of part numbers loaded in the mobile computer). The data would also be recorded accurately, eliminating handwriting errors or accidentally recording a look-alike part number. Improved accuracy would help ROI in two ways. First, it would ensure that customers were billed for all parts and materials. Second, the automated application would keep inventory accurate and up-to-date, which would probably allow the organization to lower stock levels and balance inventory more accurately across its service network.

Mobile printing provides another way to easily leverage the applications to provide more value. Work order data captured on mobile computers can be used to create customer invoices back at headquarters or right at the job site at the time of service. If invoices are issued on site, no clerical prep time is needed in the office, and postage expenses are eliminated. The process also eliminates the time lag between when work is performed and when the invoice is received, which cuts at least a few days from the billing cycle and thus improves cash flow. This lag time is cut to virtually zero when credit cards are accepted on the spot.

These examples illustrate just a few opportunities to improve field service with mobility solutions. They also illustrate how field operating procedures impact billing and accounts receivable operations, inventory control, and clerical support requirements in the office. To see the how mobile automation could affect your organization, consider the following questions:

- How consistently do you meet your SLA commitments?
- Are you billing the right amount to the right customer?
- Are you tracking warranty information to individual customers?
- What is your first-time-fix rate?
- What happens to your profit margin when the technician has to make more than one visit?
- Would your technicians benefit from more "wrench time" at the work site?
- How easily can you re-dispatch your workforce to respond to emergency/priority service requests?
- Are you prioritizing your customers accurately and profitably?
- Are you dispatching your technicians in real time to keep customers happy?
- What happens in the office when handwritten work orders and invoices are not legible?
- How much time is spent on data entry, both in the field and in the office?
- Are service parts inventory records accurate? Do inaccuracies cause problems in the field?
- How often do customers call about billing disputes?
- How long does it typically take to resolve these questions? Which departments are involved?
- How would operations benefit if your technicians could complete more calls per day?
- Is your customer service an advantage, a liability, or neither?

• How often are cell phones and other mobile devices repaired or replaced?

• How much time does your IT staff spend on deployment, configuration, troubleshooting and support?

The discussions and answers your organization has for these questions will provide clues to which processes would benefit most from mobile automation. The following section presents use cases, user examples and documented results that show how mobility automation solutions can address specific businesses challenges.

How Automation Can Help

Automation is not the silver bullet that will make field service operations more efficient and profitable. For businesses to benefit from automation, they must identify specific operations to improve then develop appropriate technology-enabled processes. For example, real-time on-demand voice and data connectivity is essential for technicians that are responsible for emergency repairs and maintaining mission-critical equipment. Service operations that are dominated by regularly scheduled inspections and maintenance may not require real-time connectivity or dynamic dispatch, but would benefit greatly from scheduling and workforce automation software. Businesses with customers who frequently dispute service or maintenance conditions could consider using handheld computers with integrated digital imagers so technicians can take before-and-after pictures to document conditions and work performed; many businesses could simply rely on electronic signature capture on a pen computer to satisfy customer proof-of-service or proof-of-delivery inquiries.

Here are some other ways mobile automation can be applied to address different business challenges.

Challenge: Improve Field Service Worker Productivity

Automating field service operations resulted in average improvements of 9 percent reduction in mean-time-to-repair, and best-in-class field service performers complete 8 percent more work orders per day than average companies.⁵ As noted, mobile computing applications help make field service professionals more productive by reducing data entry time. There are also less obvious ways to improve productivity. For example, UPG, a propane distributor, calculated that its mobile workers saved three to four minutes per delivery by preparing invoices with mobile computers and printers instead of manually. Faster invoice preparation reduced the total time spent at each customer site by 15 to 25 percent, which in turn enabled workers to complete more stops per day.

Improve First-Time-Fix Rates

Technicians benefit from having access to configuration information and service histories before they arrive at the job site. This data can either be preloaded into a mobile computer with the day's dispatch instructions, or be available on demand via a wide-area wireless data network, which also enables real-time updates and gives technicians visibility to see if the parts they need are available. Companies reported a 23 percent average improvement to first-time-fix rates after implementing a technology solution; best-in-class operators improved by 37 percent.⁶

^{5. &}quot;The Mobile Field Service Update: 2007 and Beyond" Aberdeen Group, December 2006.

^{6. &}quot;Optimizing the Service Supply Chain" Aberdeen Group, September 2007.

Reduce Errors

Mobile computer-based electronic forms with drop-down menus, check-boxes and pre-populated customer data fields reduce the chances for data entry errors, while software safeguards validate input and issue alerts for questionable entries (e.g. incorrect job codes, illogical parts quantities consumed, etc.). Transactions are also time stamped, which helps document labor time spent at the job site. Automated data entry with bar code readers or digital imagers built into the computer further reduces errors and enhances documentation. Remember, only 22 percent of best-in-class field service operators use paper-based procedures. Mobile printing also plays a role in error reduction. Printing work orders and invoices and reviewing them with customers at the time service is performed can eliminate a lot of misunderstanding that leads to customer dissatisfaction or service revenue write-offs.

Reduce Paperwork

Mobile computing can practically eliminate paperwork from field service operations by creating electronic records that can be uploaded and shared among various enterprise systems. However, many organizations consider it a best practice to give customers paper invoices and work orders, while maintaining only electronic records for their internal operations. The process prevents errors and disputes as noted above, which results in fewer calls to the billing and customer service departments and lower overall support requirements.

Pathology Associates Medical Laboratories (PAML) offers its customers the choice of paper or electronic receipts. PAML is the largest independent medical laboratory in the Pacific Northwest and employs more than 100 couriers who pick up medical specimens for testing from hospitals and doctor's offices. Specimens are bar coded and all pickups are recorded on a handheld computer, which can also generate a pickup receipt from a mobile printer the couriers carry.

"We thought not too many people would want paper, since the industry is moving to more electronic medical records (EMR), e-mail and other electronic communication. But paper is still popular and convenient," PAML's enterprise logistics manager reported. "Having that piece of paper to reference gives customers the ability to clearly see what was picked up. It has saved a tremendous amount of work for our customers and for us to check whether or not we have a specimen. Paper receipts have proven to be a very valuable part of the system."

Improve Dispatch Flexibility

Improved dispatch execution is a gateway to multiple benefits. Many dispatch solutions can plan efficient routes and work schedules, but may not provide differentiation from your competition. Enhancing operations with real-time communication lets you do dynamic dispatch that can provide measurable operational and competitive benefits. Mobile computers with wide area wireless network (WWAN) connectivity provide real-time visibility into the mobile workforce that helps dispatchers or sophisticated software make better decisions.

For example, imagine an emergency service request comes in and the provider has two crews in the area. A GPS system can find the nearest crew, but the closest is not always the best. Rather than relying solely on GPS to find the vehicle location, the dispatcher could use the wireless network to call the technicians, with the handheld computer serving as the cell phone (handheld computers certified for voice and data are now available). The dispatcher, or dispatch software application, could also determine which crew has the best skill set and experience to handle the emergency call, and if they have enough parts and materials on their truck to likely complete the emergency repair. Plus, with real-time connectivity, repair histories and configuration data for each customer can be accessed whenever and wherever they're needed, without having to be preloaded onto the computer, making technicians more effective when they respond to unplanned calls.

Improving responsiveness provides a real opportunity for organizations to create differentiated service and win new business. The proof? Best-in-class field service operators attained customer satisfaction ratings nearly doubly those of laggards after adopting technology systems.⁷

Reduce Fuel Costs & Drive Time

Improving dispatch efficiency produces immediate, measurable benefits in reducing transportation time and fuel expenses. The benefits of using GPS and optimization systems are well proven and well documented. LinksPoint, a GPS solutions provider that makes snap-on attachments to GPS-enable Motorola mobile computers, estimates businesses can save at least one half gallon per vehicle per week with GPS navigation and routing. Reduced travel time gives field service reps more time to spend on value-added activities and helps them to complete more calls per day.

Increase SLA Compliance

Aberdeen Consulting identified the average SLA compliance rate as 78.7 percent, with best-in-class performers achieving 91.2 percent compliance.⁸ The analyst and research firm also found companies who automated field service improved their SLA compliance by an average of 22.1 percent.⁹ The reasons behind these improvements have been outlined in the previous examples: mobility automation helps companies respond to customers more quickly and work more productively on site. If improved SLA compliance or service responsiveness could provide a competitive advantage to your business, mobility solutions should be investigated.

Improve Inventory Management

Mobility automation can also improve the service supply chain, helping to ensure parts are available when needed without tying up excessive capital in safety stock. Mobile computers and bar code scanning makes it easy to accurately record parts and materials used in the field, without burdening the technician with having to write down part numbers. Most business wouldn't think of running their physical warehouses without automation tools, but many don't treat mobile and depot inventories with the same care. Yet inventory-related problems can be more acute in the field—organizations take a big productivity hit if field service workers don't have the parts they need and have to make a return trip to the work site. Best-in-class operators are 84 percent more likely than laggards to give field service staff real-time visibility into parts availability. Not coincidentally, they have much higher first-time-fix rates, are more productive, and are more profitable.

Increase Service Revenue

Automated, efficient operators also capture more field service revenue. It's easy to see the advantages of completing service calls faster. The average service profit improvement following field service automation was 12 percent, which reflects both increased revenue and improved margin. What's not so apparent is the cumulative benefit from seemingly small time savings in different processes. Recall United Propane Gas, the fuel delivery firm that was introduced earlier. The company's drivers saved three to four minutes per stop by

- 7. Ibid.
- 8. "The Mobile Field Service Update: 2007 and Beyond" Aberdeen Group, December 2006.
- 9. Ibid.
- 10. "Optimizing the Service Supply Chain" Aberdeen Group, September 2007.
- 11. Ibid.

preparing invoices with mobile computers and printers instead of handwriting. The time savings helped each driver make an average of one more delivery per day, which had an immediate and sustainable impact on billings.

Shrink the Payment Cycle

Mobile automation not only helps earn more revenue, but to collect it faster too. On-site invoicing can cut days from the billing cycle while reducing processing costs at the office. Consider a technician who finishes his Monday shift and turns his daily invoices into the billing department. In the best case, the information will be entered into the billing system and invoices mailed the next day. The customer will receive them in the mail two or three days later, a total of three to four days after the visit. Companies that follow this standard business practice are at least at a three or four day cash-cycle disadvantage compared with their competitors that bill on site. They also build postage expenses into each service call. Collecting credit card payment on site with a secure mobile computer improves cash flow even more.

The longer the lag time between when work is performed and when the activity is recorded, the greater opportunity to benefit from mobile automation. NuCo2 is an industrial gas distributor that previously had a persistent data entry backlog. Mobile automation had an immediate effect: "Our route representatives make 20 to 25 stops per day, and the elapsed time between their transactions in the field and data entry into our central information system has been reduced from up to 12 days to just 24 hours. This has increased the speed of problem resolution, while enabling us to improve customer service," the company's field liaison reported.

Selecting the Right Solution

As you've seen, a broad range of automated field service processes can provide value. The same goes for mobile computers and peripheral devices. Businesses have improved responsiveness, productivity and profitability with devices ranging from simple cell phones to fully rugged, handheld Windows computers with real-time connectivity. The main differentiators among product options are ruggedness and reliability, size and ease of use, input/output (I/O) support, wireless communications capabilities and management features. Total cost of ownership (TCO) varies significantly among mobile computers and peripherals used in field service -- but perhaps not as you might think: more rugged devices tend to be more expensive, but cost much less to own and operate than consumer-grade PDAs and printers. The following sections provide brief overviews of the options, capabilities and differentiators for mobile computers, printers and their communications options.

Mobile Computers

Mobile computer for field service can be handheld or vehicle mounted, which are usually some form of notebook. Handheld models are extremely popular for field service because they can be ruggedized and provide computing, data capture and communications functions in a single, reliable unit. Handhelds are available with a wide range of screen sizes and keypad configurations, and also differ greatly by ruggedness and support for different peripherals and communications options.

Ruggedness ranges from consumer-class PDAs to fully sealed units that can be immersed in water and withstand multiple six-foot drops to concrete. Ruggedness and reliability are key considerations when selecting products for field service operations, because if the equipment fails while the user is out in the field, the mobile worker will be hampered and service commitments will be threatened. In fact, lost productivity from failed devices costs organizations more than three times as much as the devices themselves, according to research firm Venture

Development Corp. (VDC).¹² That is a major reason ruggedized handhelds and peripherals have supplanted consumer-grade electronics for field service operations.

Peripheral and I/O support is another important consideration. At the very least, the mobile computer must have the connection ports, card slots or Bluetooth connectivity to support bar code readers, digital cameras, printers and other peripherals workers user. Ideally some of these features will be integrated into the device itself. Integrated functionality improves reliability and convenience by reducing the number of devices -- and appropriate batteries -- that need to be carried and maintained, and eliminating the chance of damage and failure from cables connecting computers and peripherals.

Management features are an overlooked aspect of mobile computers. Deploying, configuring, troubleshooting and updating mobile assets can be very time consuming for the IT department unless remote management capabilities are available. Some enterprise mobile computers can be supported remotely and offer management software that lets a single administrator monitor and manage mobile devices that may be deployed across the country. Consider management requirements when comparing mobile computing products.

TCO issues to include:

Failure rates for consumer vs. rugged—working out TCO requires replacing consumer devices 1 to 2 times over a five year deployment cycle. Rugged devices are designed to last five to 7 years. Application and device management capabilities area must to keep TCO down.

Mobile Printers

Printers used to support field service operations are typically mobile thermal printers that can be worn on a belt or strap, or secured in the vehicle, or vehicle-mounted ink jet or impact models. Thermal has displaced impact as the dominant print technology used in field service because of its outstanding reliability, ease of use and superior total cost of ownership. Thermal printers are available to suit a variety of mobile operations, whether users prefer vehicle-mounted or portable units, cable or wireless connectivity and other features. Some mobile printers also support remote management.

Mobile printers are able to print text, logos, graphics, and bar codes on long-lasting forms, receipts and labels of different sizes and thicknesses. Some models have integrated magnetic stripe readers for payment card processing. The key printer performance criteria for field service are durability, battery life and interface flexibility so the printer can be used with mobile computers, cell phones, bar code readers and other devices.

Thermal printers provide operating cost advantages compared to other technologies. One Zebra customer performed an analysis to compare the costs of legacy 8.5-by-11 inch invoices used in its field operations with a 4-by-6 inch invoice produced on a Zebra mobile thermal printer. The thermal media cost was measured at 2.7¢ per invoice, compared to 6¢ for full sheets used in inkjet or impact printers—making the thermal media 45 percent less expensive. Companies that use multi-part forms could save even more.

Mobile printers may use two forms of wireless connectivity to interface with computers and applications. Bluetooth can be used instead of a cable to connect the printer and mobile computer. Printers may also have a direct connection to 802.11-standard wireless networks. Field service technicians can access wireless networks when they are in their own company facilities to receive their daily assignments and instructions, download customer lists and inventory records, and transfer transaction data at the end of the shift.

[&]quot;Mobile Device Downtime Destroys Workforce Productivity," Venture Development Corp., July 2007.

Connectivity

Connectivity issues to consider include: how the mobile computer will interface with a mobile printer or other peripherals; whether wireless voice or data communication is needed; how workflows will be impacted if devices are out of coverage; and whether GPS or location-based services will part of the solution. Wide-area voice and data communication, wireless LAN, Bluetooth and GPS wireless communication are all available in a any combination on a single handheld computer. Mobile printers offer Bluetooth and wireless LAN connectivity. Many real-world implementations include multiple wireless interfaces, and some do combine all four. Below is a brief guide to the common wireless connectivity methods used in field service.

Wireless Wide Area Networks (WWANs)

Public and private wireless wide area networks enable real-time communications for workers outside the building. If the public WWANs (e.g. cell phone networks, which offer voice and data services) 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 Networks (WLANs)

When an 802.11a/b/g/n 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 Networks (WPANs)

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. Cable purchasing and repair costs are eliminated, so is the risk of cable failure, 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 and on overall departmental efficiency by reducing the number of miles driven and the associated fuel and fleet maintenance costs.

See Motorola's white paper *Transforming field service operations: Drive costs down and service levels up with mobility* for more details about mobile computing and communications options. Zebra's white paper *Understanding Mobile Printing Technology and Capabilities* provides a complete overview of mobile printer considerations for field service and other enterprise operations.

TCO Considerations

The best-known component of total cost of ownership is the price paid for mobile equipment -- which is also perhaps the most overrated measure of TCO. Equipment reliability and support requirements each have much more effect on TCO than acquisition costs. As Figure 1 shows, lost productivity resulting from unreliable equipment costs organizations more than three times as much as they pay for their mobile devices, and support expenses are nearly twice as high.

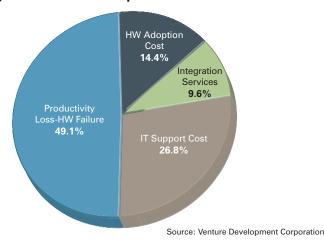


Figure 1: Mobile Computer TCO Contribution

When evaluating mobile computers and printers for field service operations, it is important to understand how their design and features will impact reliability, productivity and support.

Reliability, not initial cost, should be the key requirement for equipment issued to field service workers. Some organizations choose to deploy consumer-grade PDAs and printers with the full expectation the hardware will have to be replaced in a year. The rationale is that two off-the-shelf PDAs will cost less to purchase than a ruggedized mobile computer designed and optimized for field service operations. Experience and the VDC research shows that the "low cost" consumer-grade equipment actually costs organizations much more. For example, PDAs commonly stop working after they're dropped; enterprise-class handheld computers should not. If the PDA stops working, or if a connector is damaged so a peripheral printer can't be used, the user has to complete work manually and may need to return to the base office for a replacement unit. Either way, productivity dips, work schedules and customer service are threatened, and a skilled, specialized and expensive mobile worker has his or her time wasted. These "soft" costs related to productivity begin to show why hardware reliability is the biggest factor in TCO. As VDC stated when it released its research:

"The findings of the research clearly indicated a lower TCO for rugged mobile computers in comparison to non-rugged or consumer/commercial-grade mobile computers for many applications because of the significantly higher failure rates of non-rugged hardware."

Support costs are another significant component of TCO and are also hard to measure. Organizations may frequently want to update mobile computers with new parts lists and customer files, enhancements to software applications, security upgrades, or perform routine cleanups and maintenance. Such activity optimizes the computer, but the frequency such changes are made depends on how convenient they are for IT support staff to

^{13. &}quot;Mobile Device Downtime Destroys Workforce Productivity," Venture Development Corp., July 2007.

execute. Remote management capabilities built into mobile computers and peripherals help minimize TCO by saving support time and making it practical to maintain and optimize equipment. Similarly, computers and peripherals that are proven to work well together and integrate easily with enterprise IT standards also help TCO by reducing integration and support requirements.

Solution Provider Success Criteria

It is one thing to recognize the product types and features that will be reliable and return value, but quite another to sift through the many choices and determine which ones will perform best in your actual, specific working conditions. Experienced solutions providers are extremely helpful in making these assessments -- but choosing a provider can be just as hard as specifying the system.

Motorola and Zebra maintain large partner networks because we firmly believe in recommending specialists experienced in different industries and operations. Based on our experience with these partner networks and from hundreds of successful field service deployments, we recommend you insist your solution provider meets the following four criteria:

- A successful track record with your specific industry and application—Each mobile work
 environment is unique. The way specific business processes, documentation requirements and other
 workflow issues are handled has a strong impact on productivity and system value. Experienced
 providers can suggest process changes, software functions and product features to help your field
 service staff maximize productivity.
- Reference customers—Experienced providers should have no problem putting you in touch with customers who have systems similar to the one you are considering. Speaking with these customers provides valuable insight for your own system planning as well as an opportunity to validate the solution provider's qualifications.
- Support for multiple product lines and customization abilities—you may not need a customized solution, but you need a partner who can provide one or can offer multiple product options. This ensures you'll get the system that best meets your workers' needs -- instead of having your processes changed to fit a limited, inflexible solution offering.
- Longevity—Experience is very valuable, and so is a long-term commitment to customers and the market. Make sure your prospective solution provider intends to stay involved in your industry and application, can provide prompt service and support, and will keep you updated on technology changes and suggested system enhancements.

Conclusion

In field service, automation, performance and profitability are strongly linked. There are many opportunities to improve service, reduce operating costs and increase productivity by automating various processes with mobility technology. Mobile automation systems can often be leveraged to support other processes and deliver more improvements. Field service automation consistently provides strong return on investment, which can be enhanced significantly by considering total cost of ownership when specifying the system.

This white paper has identified the major opportunities, benefits, technology and TCO issues for field service operators. Visit the Motorola (www.motorola.com) and Zebra (www.zebra.com) Web sites for additional white papers on specific system components and field service issues, plus customer case studies and other resources.

Motorola is known around the world for innovation and leadership in wireless and broadband communications. Inspired by our vision of Seamless Mobility, the people of Motorola are committed to helping you get and stay connected simply and seamlessly to the people, information, and entertainment that you want and need. We do this by designing and delivering "must have" products, "must do" experiences and powerful networks—along with a full complement of support services. A Fortune 100 company with global presence and impact, Motorola had sales of US \$35.3 billion in 2005. For more information about our company, our people and our innovations, please visit www.www.motorola.com.

Zebra offers the widest range of mobile printers in the industry. Zebra Technologies Corporation (NASDAQ: ZBRA) delivers innovative and reliable on-demand printing solutions for business improvement and security applications in 100 countries around the world. More than 90 percent of Fortune 500 companies use Zebra®-brand printers. A broad range of applications benefit from Zebra-brand thermal bar code, "smart" label and receipt printers, and plastic card printers, resulting in enhanced security, increased productivity, improved quality, lower costs, and better customer service. The company has sold more than five million printers, including RFID printer/encoders and wireless mobile solutions, as well as ZebraDesigner software, ZebraLink connectivity solutions, Genuine Zebra printing supplies and ZebraCare services. Information about Zebra specialty printing solutions is at www.zebra.com.





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