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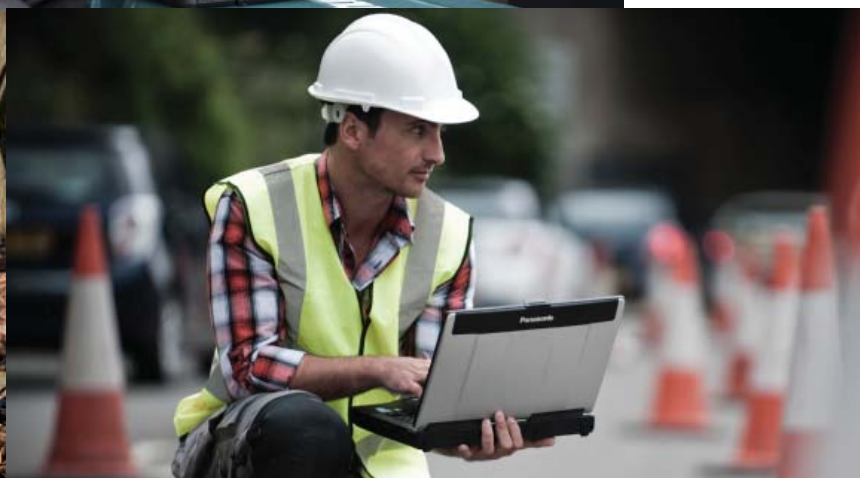

WHAT DOES THE NEXT-GENERATION OF FIELD MOBILITY SOLUTIONS LOOK LIKE?

FIELD SERVICE PROFESSIONALS WEIGH IN AND PROVIDE INSIGHTS

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INTRODUCTION

Mobile solutions for field service are constantly evolving, with new devices, operating systems, software features, wireless options, and other technologies emerging with increased frequency. Field service organizations (FSOs) are faced with an expanding array of choices that they have to carefully match to their own operational requirements while ensuring greater levels of service for their customers.

To get a clearer view of the current state of field mobility and what next-generation field service solutions may look like, Panasonic and Field Technologies Online surveyed field service executives to find out what mobile technology they were currently using, how soon they planned to refresh those solutions, and what types of hardware and software they hoped to deploy in the future.

The results reflect a diverse range of perspectives and provide insight you can use to guide future mobility projects within your own organization. We surveyed 114 field service executives across a number of vertical markets. The largest group (roughly a quarter of respondents) were in industrial/commercial field services, with the bulk of the others split among residential/consumer field services, utilities, manufacturing, transportation/distribution, utilities, and government.

Roughly one-third of respondents reported having more than 500 mobile workers in their organization, while 27% had just 1 to 25 mobile workers. The remaining respondents had between 101 to 500 mobile workers (17.5%); 51 to 100 mobile workers (14.91%), and 26 to 50 mobile workers (8.77%).

Field service has become an important revenue center for most companies (in many cases, surpassing even new product sales), and how FSOs approach technology has changed in response. While early mobility projects were targeted at reducing costs through improved efficiency, the focus has shifted to customer service improvements, retention, outcomes-based service models, and revenue generation.

That shift is also reflected in the way these companies select their mobile solutions, with operations playing a greater role in the process. While the information technology (IT) department plays a big role (76% indicated IT was involved in selection), operations now plays an equally important part. According to respondents, nearly 65% reported that operations was involved in the selection process, outpacing even executive-level management (58%).

With these findings, we can gain a clearer picture of where the service industry stands in its use of mobile technology and how FSOs plan to leverage new technologies to improve the quality of the customer experience. FSOs should review these results as they evaluate next-generation solutions, as the survey responses reflect the competitive landscape many companies will face in the future and can highlight how your organization stacks up against your peers.

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IF COMPANIES AREN'T ABLE TO USE MOBILITY TO STREAMLINE WORK ORDER MANAGEMENT, MAKE DISPATCHING MORE EFFICIENT, AND IMPROVE THE OVERALL CUSTOMER EXPERIENCE, THEIR COMPETITIVE POSITION WILL RAPIDLY DECLINE.

EXPLORING CURRENT MOBILITY DEPLOYMENTS

Mobile hardware needs can vary widely between different field service segments. What works for an HVAC repair operation may not be appropriate for a utility worker or technician calibrating laboratory equipment.

To that end, current mobility deployments reflected in the survey include a mix of smartphones, tablets, laptops/convertibles, and other devices. Smartphones lead the pack with approximately 31% of respondents currently using them, followed by tablets (18.42%), laptops/convertibles (14.04%), and handhelds (5.26%).

The largest group of respondents (almost 32%), however, are using a combination of devices. Generally, these companies are using smartphones in tandem with either a tablet or a laptop. This reflects the diverse needs of field technicians, who present a mix of voice and data requirements that can't necessarily be served with a single device.

In many cases, smartphones (either consumer-grade or rugged) can be used for voice communications along with some dispatch, work order management, and mobile forms features. However, in applications where the technician may need a larger screen to access diagrams or schematics, require a Windows-based device to run diagnostic software, or connect to machinery with legacy serial port connections, tablets or laptops are a must.

On the software side, current deployments have focused on basic functions like work order management, dispatch, and data capture. The responses indicate that there is still work to be done at many field service organizations when it comes to automating critical business functions.

The majority of respondents (just above 50%) have mobile solutions in place that support work order management. Other key capabilities already in place include real-time data capture and information exchange (45.61%), customer verification of completed work (41.23%), dispatch/work order assignment (41.23%), and mobile forms/checklists (38.6%).

But while a large percentage of these companies have leveraged mobility to improve their ability to get the right technician to the job site and help them effectively complete and track their work, another 28.95% responded that they had no real automation in place. They simply used the mobile devices for email and basic communications with the back office.

That represents a significant opportunity to improve service and reduce costs — one that may be going to waste if mobile technology isn't used to its fullest potential.

Mobile technology can provide far more value to the service organizations than simply letting technicians check their email on the road. The field service landscape is extremely competitive and growing increasingly so every year. If companies aren't able to use mobility to streamline work order management, make dispatching more efficient, and improve the overall customer experience, their competitive position will rapidly decline.

Even organizations that are actively using mobile to improve their business still have some work to do, and the survey results indicate where some of the next areas of improvement may lie for these companies. Less than a quarter of respondents currently have solutions in place that allow them to accept mobile payments,

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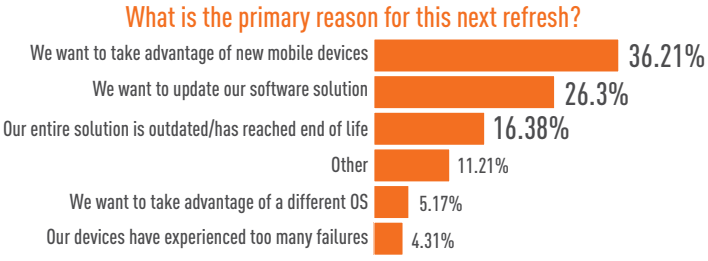
perform dynamic job scheduling, provide fleet management/visibility, or automate inventory management. These are all features that have a direct impact on customer satisfaction, first-time fix rates, costs, and cash flow.

WHAT WILL NEXT-GENERATION MOBILITY LOOK LIKE?

The rapid advancement of mobile computing technology has also accelerated technology refresh cycles within the enterprise. Part of this quickening is because of the influence of consumer mobile device cycles (new devices are released annually), along with evolution of new software capabilities, cloud platforms, higher speed wireless networks, and falling costs across the board.

In the survey, almost half of respondents planned to refresh their mobile solutions within six to 12 months (26.3%) or 12 to 18 months (22.8%).

When asked for the motivation behind this next technology upgrade, nearly 36% indicated it was because they wanted to take advantage of new mobile devices. Software updates were the driver for 26.3% of respondents, followed by replacing obsolete hardware and software (16.38%).



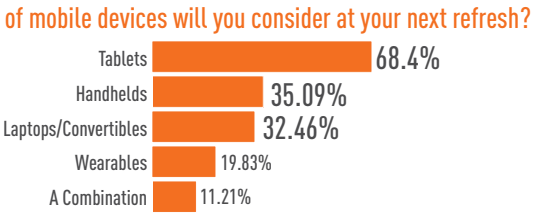
Mobile hardware has advanced rapidly, so interest in upgrading devices is Mobile hardware has advanced rapidly, so interest in upgrading devices is not surprising. In addition to new form factors being introduced — including tablets, touchscreen handhelds and phones with larger screen sizes, convertible devices, and wearables — end users also have a wider variety of OS platforms to selection from. Where Windows once clearly dominated the market for rugged devices, there are now Android-based highly rugged tablets and handhelds.

New mobile devices are more secure (thanks to OS-level enhancements), more durable, and more flexible than ever before. They are also available with additional functionality and peripherals that allow end users to take high-resolution photos, scan both linear and 2D barcodes, accept credit card payments, and read RFID tags.

Software updates were the second most common reason for a refresh, which is also understandable given the evolution of field service automation software. Cloud-based solutions have made it easier and less expensive to deploy and support these systems. Most software providers have also expanded their feature set beyond workforce or work order management to include higher level functionality (like dynamic scheduling or inventory management) that can work in conjunction with the capabilities of the new mobile hardware available.

Field service software can take advantage of built-in GPS capabilities, barcode scanning, cameras, and other features to make the technician's job easier, improve first-time fix rates, and enhance customer service.

What type of hardware will be used in this next round of upgrades? For the largest group of executives (68.4%) the new solution will be centered around tablet computers, nearly double the number of respondents reporting that they will deploy handhelds (35.09%) or laptops/convertibles (32.46%).



According to VDC Research, line-of-business (LoB) tablets remain a fast-growing segment of the mobility market, even as overall shipments of tablets have contracted for the past few years. Enterprise LoB tablet shipments will grow at a CAGR of 3.3% through 2020.

Tablets have been embraced for enterprise applications because they provide a familiar touchscreen interface, offer a larger and more visible screen, and are highly portable. Convertibles or 2-in-1 laptop models, which can be easily used with a detachable keyboard, provide users with the benefits of a more portable handheld device, while still offering laptop-like functionality when it comes to applications that require heavier data entry.

The data also indicates a renewed interest in handheld computers, which have been shrinking in terms of overall share of the rugged mobile market, according to VDC. Currently, just 5% of respondents

are using handheld devices for the mobility solutions, but more than 35% plan to deploy them during their next round of updates.

Prior to the explosion of tablet devices, handheld computers were among the most common devices found in field service applications. This renewed interest may be in response to some of the inherent limitations of the tablet form factor within some applications. Handheld computers make it easier to consolidate to one mobile device — there are rugged models available that include wide mobile application support, slightly larger touchscreens, and even voice capability, allowing companies to replace both tablets and smartphones.

Handheld computers are also much more portable than tablets for some line-of-business applications and can provide a higher level of durability than smartphones. Handhelds are general smaller and lighter and provide one-handed operation options — this is particularly important for utility workers or other technicians who may have to operate the device while managing tools or working in cramped or dangerous conditions. Imagine trying to balance a tablet while suspended from a utility pole, for example.

Even more intriguing is the interest in wearable devices, with 20.18% of respondents indicating an interest in them. Wearables have taken off in the consumer space, particularly with the availability of wearable fitness trackers and smart watches. In some industries, heads-up display devices similar to Google Glass could be combined with augmented reality applications to provide a hands-free way to view repair or installation procedures. Other industries are using wearable cameras that allow technicians to transmit live video from a work site.

NEW MOBILE FEATURES: WHAT FIELD SERVICE WANTS

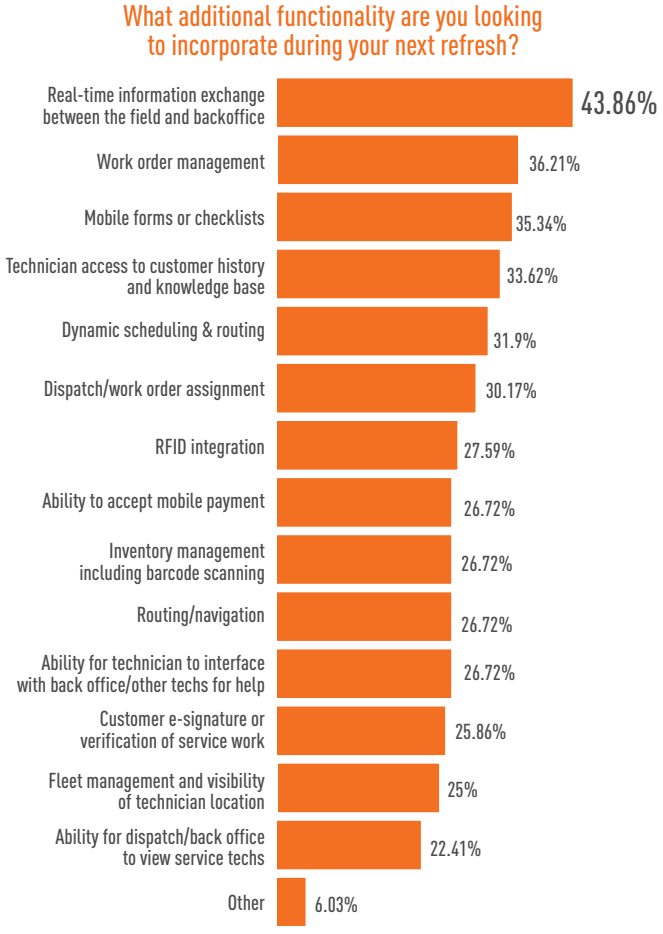
As noted previously, companies that have already deployed mobile field service automation solutions want to take these systems to the next level in order to improve their competitive position. The number-one item on their next-generation field service solution wish list is achieving real-time information exchange between the field and back office (43.86% of respondents).

Real-time information exchange isn't a "want" for companies today; it's a must to remain competitive and to deliver the level of service customers expect. Note that this is not restricted to real-time communication, which most companies already have; field service organizations need more than just the ability to push work orders out to technicians and receive status notifications.

Next-generation field service will require true integration between the field and the back office systems and applications so that technicians can access and update customer and asset information, access and add to enterprise-level knowledge management databases, interact with other technicians and support staff, view and order parts based on accurate inventories, and come equipped to each assignment with all of the information and equipment they need to complete the job.

This level of integration makes your entire workforce more informed, which will positively affect first-time fix rates, productivity, and SLA compliance, and ultimately help attract and retain customers through excellent service.

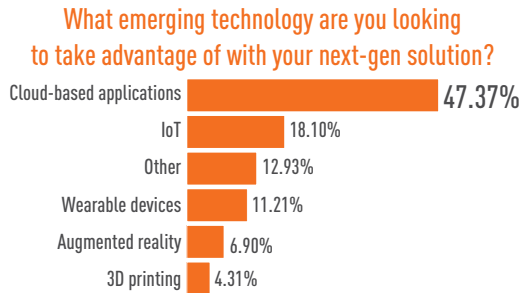
The next "most wanted" features were work order management (almost 36%) and the use of mobile forms or checklists (35%) that speak to the opportunity for performance improvement among FSOs that have either not yet deployed automation or haven't fully exploited their mobile solutions — the companies that have little or no automation in place, even though their



field force may already be armed with mobile computers or smartphones.

Other top features companies are hoping to deploy include access to customer history/knowledge base (33.33%), dynamic scheduling and routing (31.58%), dispatch/work order assignment (29.82%), and RFID integration (28%).

FSOs also plan to migrate to the cloud, with 47.37% of respondents saying that they want to take advantage of cloud capabilities in their next-generation solution. The cloud is a natural fit for field service, where end users are widely dispersed and may need to access applications or data while in remote locations.



Cloud applications require reliable, secure wireless connectivity. Weak wireless signals and dropped connections can sink a mobility project. Selecting the right purpose-built device and the right carrier (or mix of carriers) is important to optimize productivity and worker safety, as well as to ensure the ability of employees to work offline when necessary.

Where real-time connectivity is critical, a mobile virtual private network (VPN) solution can manage the connection, providing compression, caching, forward error correction, and other features. Some of these systems provide application and tunnel persistence, so users can maintain a session even when the signal is gone. This minimizes disruptions and optimizes data traffic.

The Internet of Things (IoT) was also top of mind, with 17.54% of respondents interested in integrating the IoT with service operations. Connected devices and equipment can potentially revolutionize field service by alerting technicians about problems before they cause a failure; providing remote troubleshooting, diagnostic, and repair capabilities; and helping FSOs avoid costly truck rolls.

According to The Service Council, using the IoT in service can improve remote resolution rates by 41% and first-time fix rates by 11%, while reducing mean-time-to-repair by 9%. FSOs can also use the data generated by connected equipment to develop new service contract offerings, increase revenue, and improve new product designs.

DEFINING MOBILE SOLUTION SELECTION CRITERIA

The ubiquity of mobile devices in the consumer space has significantly raised enterprise expectations when it comes to line-of-business mobile solutions. Companies and their technicians expect the same intuitive user interface and responsiveness that they experience with their personal mobile devices.

Not surprisingly, then, ease of use topped the list of mobile solution selection criteria, with 23.68% of respondents citing it as their top consideration. Ease of use not only improves the employee end user adoption rates and helps ensure technician productivity, it can also reduce the time and cost required for training. If employees are already generally familiar with the user interface and don't have to memorize complex interactions with the software to complete their work, it will take less time to get the entire organization online with the new solution.

Return on investment (ROI) and solution cost were also important selection criteria, at 20.18% and 18.42% respectively. While organizations in the field service space may be price sensitive, they are generally open to total cost of ownership discussions that leverage both the ROI and long-term costs of the hardware and software to evaluate a mobile solution.

Rugged mobile computers almost always have a higher sticker price than their consumer cousins, but a TCO evaluation will typically reveal that rugged devices cost less over time because of their durability, lower replacement rates, and longer lifecycles (five years or more in some cases).

The majority of field service executives also plan to take advantage of vendor professional services for their deployments. Just over a quarter of respondents expect to utilize consultant/integrator assistance in solution selection, while 24.56% will use mobility application services (such as security, mobile VPNs, or mobile device management solutions), and assistance in solution rollout/employee training (20.18%).

As mobile deployments become more complex, often involving a mix of hardware, software, multiple wireless carriers, MDM solutions, and other components, it has become more difficult for internal IT resources to successfully manage these projects.

Professional service organizations provide industry expertise and experience, which helps reduce the time required to select, design, and deploy a solution. Handing off solution selection, deployment, and training

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to a third party also allows companies and their IT staff to focus on their core competencies and strategic IT initiatives, minimizing the strain on internal resources who are often already overtaxed.

CONCLUSION

The mobile technology market is highly dynamic and rapidly changing, which has accelerated the pace of change for field service organizations. A new generation of rugged tablets, handhelds, and other devices, combined with more advanced software, cloud infrastructure, and "smart" IoT-enabled equipment, are providing unprecedented levels of visibility and productivity to service providers.

The field service executives who responded to this survey recognize that in an increasingly competitive industry, technology that enables them to not only reduce costs but also deliver enhanced levels of service to their customers could mean the difference between long-term growth or failure.

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