Panasonic

Examining The Current And Future States Of Field Mobility

Results of a survey of field service executives

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> INTRODUCTION

Field service organizations (FSOs) were among the earliest adopters of mobile computers and continue to find new ways to take advantage of this technology as mobility systems evolve and improve. As the pace of change accelerates, however, FSOs have had to reevaluate their mobile deployment and upgrade strategies. Whereas in the past, rugged mobile devices were almost uniformly based on the Windows environment and remained in service five years or more. The accelerated introduction of new software and hardware features has made it necessary to leverage different operating systems, more flexible hardware platforms, and cloud-based software models.

Panasonic and Field Technologies Online first conducted a survey of field service executives in 2016 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. That data was originally published in the report: *What Does the Next-Generation of Field Mobility Solutions Look Like?*

Two years later, Panasonic and Field Technologies Online have updated that research with new insights into field service executive preferences when it comes to mobile devices and other enabling technologies.

The results reflect a highly dynamic field service market and provide insight into technology trends that other FSOs can use to guide their own mobility projects. This year we surveyed 89 field service executives across several different markets. As was the case in the previous research, industrial/commercial field services companies were the largest group of respondents (just over one-quarter of the total). The majority of the other respondents were split among residential/consumer field services, construction, utilities, and manufacturing, with a slightly smaller group in the transportation/distribution segment.

Smaller field service organizations were significantly represented in the data, with more than 40% of respondents reporting they had between 1 and 25 mobile workers. Roughly 15% of respondents reported they had more than 500 mobile workers. Other respondents had between 101-500 mobile workers (16.85%); 51-100 mobile workers (15.73%); and 26-50 mobile workers (11.24%).

The data reveals that FSOs have deployed a wide array of mobile hardware and are investing in new technology features that will help them deliver service more proactively and with greater visibility into work orders and technician status. Among the key findings of the survey:

- 29.21% of respondents plan to refresh their mobile solutions in the next 12-18 months
- 25.84% plan to do so in the next 6-12 months
- 33.71% of respondents plan to refresh their technology to take advantage of new mobile devices
- 64.04% of respondents will deploy tablet computers during their next refresh, a slight decrease compared to 2016
- Interest in handheld devices has increased, with 40.45% planning to deploy handheld computers during their next refresh (up from 35% in 2016)

New technologies that FSOs hope to take advantage of in their next refresh cycle include:

- Cloud-based applications 60.67%
- Customer portal/self-service technologies 39.33%
- Artificial intelligence 29.21%
- 22.47% report that ease of use is the most important selection criteria for new mobile technology

One area of increasing interest for FSOs is mobile technology that enables a more customer-centric and predictive approach to service. The results of this year's survey can serve as a gauge for

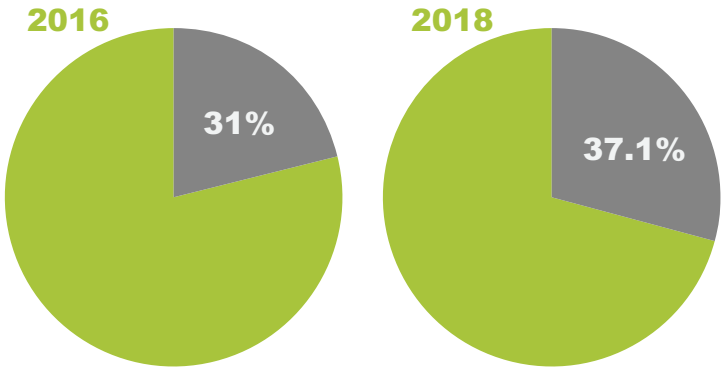
the evolving competitive landscape faced by FSOs across multiple industries. As field service companies plan their own mobile technology deployments and upgrades, they will have access to solutions that not only improve their productivity, but also help them anticipate customer needs, gain better visibility into equipment status and performance, and better equip their technicians for an increasingly demanding and competitive market.

> Current Mobility Deployments

A variety of form factors

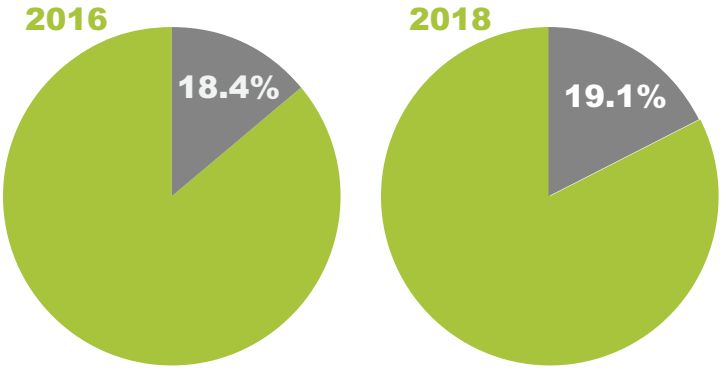
The survey respondents in our research reflect the diverse range of mobile hardware form factors available, as well as the unique needs of the various field service sectors. Smartphones continue to dominate in field service, with 37.1% of respondents reporting the use of these devices for their mobile workers. In our 2016 survey results, that figure was 31%. Tablets also slightly increased their share of deployed devices (from 18.4% to 19.1%). Laptops/convertibles account for 14.6% and handhelds for 4.5%.

Smartphones in Field Service



In 2016, nearly 32% of respondents reported using multiple devices, compared to 24.7% in the current data. This might be explained by the increased feature set and processing power available on phones and tablets or by the larger representation of smaller companies in the survey. These organizations may be less likely to have the resources to deploy and support different types of hardware.

Tablets in Field Service



Top four software capabilities

Software vendors now offer a variety of field service capabilities. Capturing real-time data and exchanging information between the field and back office is the most common field service functionality supported, according to 62.9% of respondents. Real-time exchange of data is critical for service companies struggling to remain competitive. With better visibility into what is happening in the field, FSOs can track progress against service level agreements (SLAs), re-route technicians when there are unexpected delays or schedule changes, and keep customers updated on the status of their service requests.

Work order management was the second most common feature, cited by 44.9% of respondents. This is another critical function that enables FSOs to stay on top of work order status, which improves service delivery and impacts everything from SLA management to billing.

Dispatch/work order assignment and routing/navigation capabilities tied for third-place in the survey at 42.7%. In the past, these functions were frequently implemented as a separate piece of software for many FSOs, but are increasingly incorporated into field service solutions. When combined with work order management, automated dispatch and routing

solutions can help technicians get to the job site faster, and make it easier to adjust the schedule as new assignments arrive.

Worth noting, our survey shows that the ability for technicians to interface with the back office or other technicians for help has increased in importance. As is the case in other sectors, field service faces a technician shortage as senior staffers retire and fewer younger workers enter the trades. Remote support and communication tools have helped make it easier for technicians to collaborate with each other and support new employees without having to send multiple technicians to a single job site. Many field service software packages now include knowledge management and social media tools to help facilitate this communication. Also worth noting: less than a quarter of respondents (21.4%) reported no real automation in place; their technicians used their mobile devices only for email and basic communications. However, that's an improvement compared to the 2016 survey, when 29.0% said they had no real automation.

> Next-Generation Mobility

New mobile technology drives upgrades

Almost half of respondents plan to refresh their mobile solutions within the next 12 months, with 20 percent in three to six months and 25.8 percent in six to 12 months. Another 29.1 percent are planning longer term refreshes in 12 to 18 months.

The introduction of new mobile technology, devices, and functionality was the primary driver behind most of these upgrades. According to the survey, 33.7% want to take advantage of new mobile devices. Another 23.6% were motivated to update their software solution, while 18.0% indicated that their entire solution had become outdated or reached its end of life.

Interestingly, just 11.2% were motivated by an interest in taking advantage of a different operating system. As Windows has made enterprise and rugged-device mobile operating systems like Windows CE obsolete, Android is expected to gain market share in line-of-business computing. While some respondents may be switching to Android devices as part of an upgrade, most field service organizations are not updating solely to move from one operating platform to another.

Handhelds lead the way

Interest in refreshing with handhelds has increased from 35% to 40.5% between 2016 and 2018. While the majority still plan to deploy tablets (64.0%), that's nearly 4 percentage points less than in 2016. Use of laptops/convertibles will decline (39.3%, down 7 points from the previous survey).

The increased interest in handhelds (and the dominance of smartphones in the existing installations) maps to VDC Research data that indicates the rugged smartphone and handheld market will experience a CAGR of 7.9% through 2020, reaching $3.8 billion.

The number of respondents planning to deploy a combination of devices also fell from 14% to 9.0%. Again, this could indicate that the functionality of these devices has increased so that most FSOs can get everything they need from a single mobile computer, regardless of form factor.

Wearables: Potential for growth

Interest in wearable devices held steady at roughly 20%. Wearables remain a niche in field service, but have gained traction in applications that benefit from hands-free use (consumer adoption of wearable devices like fitness trackers has also helped raise the profile of the technology). The introduction of practical augmented reality solutions (that allow technicians to superimpose schematics and other data onto a real-time view of the equipment they are servicing) has also made wearables more attractive in some sectors such as utilities and oil and gas. In other applications, field technicians are using wearable cameras to provide a real-time view of their work to supervisors, customers, and other technicians.

The importance of durability and ruggedness

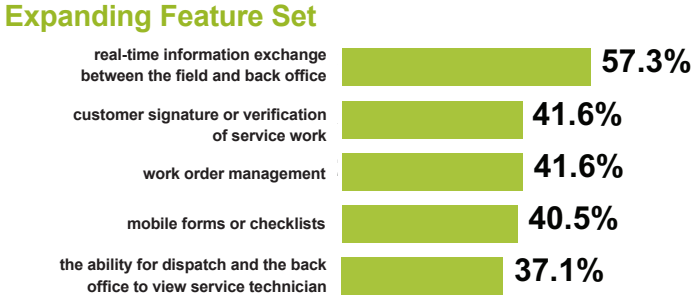
Durability remains top-of-mind for FSOs, with 55.1% responding that durability and ruggedness were essential to their next mobile solution. Another third recognized the importance of ruggedness, but did not consider it essential.

Employee behavior and operating conditions were the primary drivers behind the need for rugged devices. According to the survey, 50.6% of respondents said durability was important because “our mobile workers aren’t exactly gentle with their mobile devices,” while 47.2% said that their operating conditions were too harsh for consumer-grade hardware. Other key motivating factors for choosing a rugged device: ensuring optimal uptime to maximize productivity (42.7%) and the mission-critical nature of the mobile operations (32.6%).

> What’s Next: Expanded Integration, Cloud-Based Access and More

Expanded functionality

FSOs plan to continue expanding the feature set of their mobility solutions in the next refresh cycle. In terms of additional functionality, respondents were most interested in real-time information exchange between the field and back office (57.3%), customer signature or verification of service work (41.6%), work order management (41.6%), mobile forms or checklists (40.5%), and the ability for dispatch and the back office to view service technician locations (37.1%).



Each of those features emphasizes the need for greater visibility into the entire service process. While FSOs in the survey clearly want to improve their ability to push work orders to their technicians and receive real-time updates on work order status, they also want to further automate field service processes.

Mobile forms and checklists help technicians do their work faster and more accurately (in some solutions, checklists have to be completed before a work order can be closed). They also digitize work that was previously done on paper. That digital record can be tied to a specific work order and used by managers to grade employee performance, gauge SLA compliance, and help monitor adherence to standard processes among the technicians.

Likewise, being able to digitally capture customer signature and verify work completion creates a time-stamped and auditable record that can be referred to if there is a dispute and can provide data needed for continuous improvement programs. Technician location data helps verify arrival and departure times and is a required component of dynamic scheduling solutions.

Integration

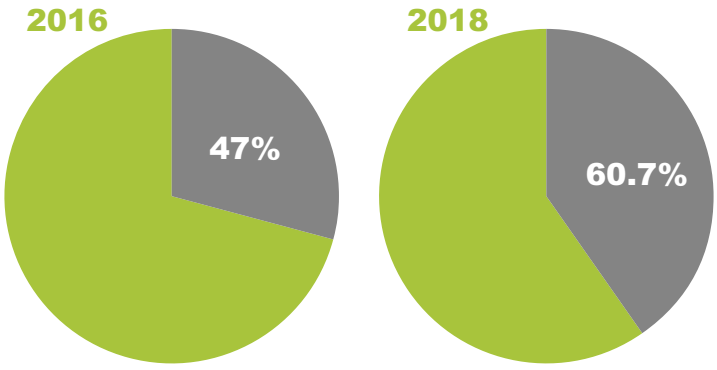
Our data shows that the level of integration for both current and future mobility solutions will be a key

competitive differentiator in the field service space. Next-generation field service systems will incorporate access to customer and asset data, knowledge management, remote support and communication with other technicians, inventory functions, and the ability to rapidly alter schedules and dispatch technicians on the fly. This will enable the level of flexibility and responsiveness that customers increasingly require.

The cloud

When it comes to incorporating new technologies in their mobility solutions, FSOs were keenly interested in cloud-based applications. The cloud not only accounted for the largest number of positive responses (60.7%), but also showed the second highest growth compared to the 2016 data (previously, just 47% of respondents were interested in the cloud).

Cloud interest



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-based applications can also accelerate deployment times, make it easier to implement software upgrades, and reduce the up-front cost of a mobility deployment/upgrade.

Improvements in wireless network coverage and the expansion of higher bandwidth networks (LTE, 4G) have also made it easier to adopt cloud-based solutions, which are more reliant on ubiquitous connectivity. Selecting the right combination of device, wireless carrier, and virtual private network (VPN) tools is more essential in a cloud framework, as their combined performance will affect the success of the mobile application.

More wearables

Wearables experienced the highest increase in interest among new technologies compared to 2016, growing from 11% of respondents to 27.0%. As mentioned before, this is in part because wearables can help enable knowledge management and remote support; and because wearable technology is becoming more familiar to field services techs following consumer application trends.

The Internet of Things (IoT)

The Internet of Things (IoT) also showed considerable growth, with 28.1% of respondents interested in adopting it compared to 18% in 2016. FSOs have used remote connectivity solutions to monitor assets and equipment for years, but advancements in smart sensors and data analysis have exponentially increased the potential benefits of the technology.

By continuously monitoring connected equipment, FSOs can receive alerts about potential failures before they happen or even provide remote service before the customer is aware there is a problem. The IoT also enables much more accurate remote troubleshooting, diagnostics, and customer service. These capabilities can improve first-time fix rates, mean-time-to-repair, and remote resolution rates – all of which directly impact customer service and SLA compliance.

Customer portals and self-service

This year we included two new technology categories in our survey, and both received healthy interest from respondents.

Customer portals and self-service technologies are an option that is growing in popularity, with 39.3% of respondents expressing interest. These solutions

can help further improve productivity and efficiency by allowing customers to self-manage low-level support issues without the cost of dispatching a technician. Portals also make it easier to schedule service, track service progress, log complaints, order parts, and other activities that can relieve the burden on the call center and potentially reduce the number of expensive truck rolls.

Artificial intelligence (AI)

The other new tech category, artificial intelligence (AI), is of interest to 29.2% of respondents. Along with the IoT, AI is an important enabler of field data analytics and predictive service models. An AI engine can quickly analyze the mountains of data generated both by connected equipment and field service software and help FSOs identify potential equipment flaws, new contract opportunities, and ways to optimize processes. AI can also help find ways to increase customer retention, create new service offerings, and reduce costs.

> Mobile Solution Selection Criteria

Ease of use most important feature

Once again, ease of use topped the list of mobile selection criteria, with 22.5% of respondents reporting that it was an important part of the evaluation process. Because most technicians and other employees are familiar with mobile technology through the use of their personal phones and tablets, enterprise mobile computer manufacturers have responded by adopting user interfaces that closely resemble their consumer counterparts.

By doing so, device manufacturers have made it easier for end users to learn how to use these devices without lengthy training sessions. This reduces the time and cost required for deployments and makes it easier to get new employees up to speed on the devices and applications.

Rugged devices have a lower cost of ownership

Ease of use was followed by cost and ROI (both 16.9%), flexibility and the ability to customize (14.6%), and durability/longevity (10.1%). The cost of rugged mobile computers is generally higher than consumer-style devices, but FSOs are aware that the increased frequency and cost of replacing those devices can quickly erode their ROI calculations. Rugged devices have a lower total cost of ownership overall. They are also expected to stay in service much longer than the typical consumer smartphone, making them a better investment.

Third-party services important for deployment

The survey results also indicate that most FSOs will require some form of third-party assistance to deploy their next-generation mobility solution. Mobile technologies can be highly complex, and many field service companies have limited IT staff and resources to implement the deployment.

Most respondents indicated they would utilize some form of professional services from a vendor to help select, deploy, and/or manage their mobility solutions.

The largest group (33.7%) plans to use mobility application services such as security, mobile device management, or a mobile VPN.

That's a significant jump from 2016, when just 24.6% of respondents planned to do so.

Consultants/integrators will assist in solution selection for 28.1% of respondents, while 23.6% of respondents plan to seek out assistance with their solution rollout and employee training.

Although a majority of respondents are interested in cloud-based mobility solutions, only 18.0% planned to outsource ongoing management of their solutions via a mobility-as-a-service provider. That indicates that while these organizations may hope to leverage the use of cloud resources to reduce costs or make it easier to centrally manage their devices and applications, they still want to maintain some measure of ownership/control over their mobile solutions.

> Conclusion

Over the next few years, FSOs will face increasing pressure to be more responsive and flexible in how they dispatch and manage their technician force while also providing more proactive service. The industry is transitioning from a break/fix model where profits stemmed from the markup on parts and labor, to one in which service companies sell uptime and reliability to their customers through ongoing maintenance contracts.

That transition will require mobility solutions that can integrate with IoT, analytics, and other emerging technologies, while continuing to provide a real-time view of technician and work order status. Mobile technology will be the center of this data-driven field service approach.

About Panasonic

Panasonic mobile solutions combine a broad product line of devices with software, connectivity and services. Our industry-leading TOUGHBOOK® laptops, 2-in-1s, tablets and handhelds are purpose built for extraordinary people doing extraordinary jobs. Engineered to withstand drips, drops, dust and grime, they'll survive even the harshest environments. With multiple wireless options built in, workers have anytime access to critical data with the most durable mobile laptops and tablets on the market, so they can work more efficiently, minimize downtime and reduce operational costs. Not only is a TOUGHBOOK built to withstand the challenges of field service mobile environments, it also has the exclusive TOUGHBOOK Services team standing behind it.

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